DEPARTMENT OF THE INTERIOR

Office of Surface Mining Reclamation and Enforcement

30 CFR Parts 700, 701, 773, 774, 777, 779, 780, 783, 784, 785, 800, 816, 817, 824, and 827

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RIN 1029–AC63

Stream Protection Rule

AGENCY: Office of Surface Mining Reclamation and Enforcement, Interior.

ACTION: Final rule.

SUMMARY: We, the Office of Surface Mining Reclamation and Enforcement (OSMRE or OSM), are revising our regulations, based on, among other things, advances in science, to improve the balance between environmental protection and the Nation's need for coal as a source of energy. This final rule will better protect water supplies, surface water and groundwater quality, streams, fish, wildlife, and related environmental values from the adverse impacts of surface coal mining operations and provide mine operators with a regulatory framework to avoid water pollution and the long-term costs associated with water treatment. We have revised our regulations to define ''material damage to the hydrologic balance outside the permit area'' and require that each permit specify the point at which adverse mining-related impacts on groundwater and surface water would reach that level of damage; collect adequate premining data about the site of the proposed mining operation and adjacent areas to establish an adequate baseline for evaluation of the impacts of mining and the effectiveness of reclamation; adjust monitoring requirements to enable timely detection and correction of any adverse trends in the quality or quantity of surface water and groundwater or the biological condition of streams; ensure protection or restoration of perennial and intermittent streams and related resources; ensure that permittees and regulatory authorities make use of advances in science and technology; ensure that land disturbed by mining operations is restored to a condition capable of supporting the uses that it was capable of supporting before mining; and update and codify the requirements and procedures for protection of threatened or endangered species and designated critical habitat. Approximately thirty percent of the final rule consists of editorial revisions and organizational changes intended to improve consistency, clarity, accuracy, and ease of use.

DATES: This rule is effective January 19, 2017.

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I. Executive Summary

Significant advances in scientific knowledge and in mining and reclamation techniques have occurred in the more than 30 years that have elapsed since the enactment of the Surface Mining Control and Reclamation Act of 1977 (SMCRA or the Act) [1] and the adoption of federal regulations implementing that law. This rule acknowledges the advancements in science, technology, policy, and the law that impact coal communities and natural resources, based on our experience and engagement with state regulatory authorities, industry, non-governmental organizations, academia, citizens, and other stakeholders.

The rule has the following seven major elements:

- First, the rule defines the term ''material damage to the hydrologic balance outside the permit area'' and requires that each permit establish the point at which adverse mining-related impacts on groundwater and surface water reach an unacceptable level; *i.e.,* the point at which adverse impacts from mining would cause material damage to the hydrologic balance outside the permit area.
- Second, the rule sets forth how to collect adequate premining data about the site of the proposed mining operation and adjacent areas to establish a comprehensive baseline that will facilitate evaluation of the effects of mining operations.
- Third, the rule outlines how to conduct effective, comprehensive monitoring of groundwater and surface water during and after both mining and reclamation and during the revegetation responsibility period to provide timely information documenting mining-related changes in water quality and quantity. Similarly, the rule addresses the need to require monitoring of the biological condition of perennial and certain intermittent streams during and after mining and reclamation to evaluate changes in aquatic life. Proper monitoring will enable timely detection of any adverse trends and allow timely implementation of any necessary corrective measures.

[1] 30 U.S.C. 1201 *et seq.*

• Fourth, the rule promotes the protection or restoration of perennial and intermittent streams and related resources, especially the headwater streams that are critical to maintaining the ecological health and productivity of downstream waters.

• Fifth, the rule ensures that permittees and regulatory authorities make use of advances in information, technology, science, and methodologies related to surface and groundwater hydrology, surface-runoff management, stream restoration, soils, and revegetation, all of which relate directly or indirectly to protection of water resources.

• Sixth, the rule ensures that land disturbed by surface coal mining operations is restored to a condition capable of supporting the uses that it was capable of supporting before mining or to higher or better uses of which there is reasonable likelihood. Soil characteristics and the degree and type of revegetation have a significant impact on surface-water runoff quantity and quality as well as on aquatic life and the terrestrial ecosystems dependent upon perennial and intermittent streams. The rule also requires use of native species to revegetate reclaimed mine sites unless and until a conflicting postmining land use, such as intensive agriculture, is implemented.

• Seventh, the rule updates measures to protect threatened and endangered species and designated critical habitat under the Endangered Species Act of 1973.[2] It also better explains how the fish and wildlife protection and enhancement provisions of SMCRA should be implemented.

This rule more completely implements SMCRA's permitting requirements and performance standards and provides regulatory clarity to operators and stakeholders while better achieving the purposes of SMCRA as set forth in section 102 of the Act.[3] In particular, the rule more completely realizes the purposes in paragraphs (a), (c), (d), and (f) of that section, which include establishing a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations and assuring that surface coal mining operations are conducted in an environmentally protective manner and are not conducted where reclamation is not feasible. Furthermore, the rule addresses court decisions and strikes the appropriate balance between environmental protection, agricultural productivity and the Nation's need for coal as an essential source of energy, while providing greater regulatory certainty to the mining industry.

Summary of Benefits and Costs

The final regulatory impact analysis (RIA) for this rule contains a detailed discussion of the rule's benefits and costs. We estimate that, among other things, the rule's benefits to streams and forests between 2020 and 2040 will include—

• Restoration of 22 miles of intermittent and perennial streams per year.

• Improved water quality in 263 miles of intermittent and perennial streams per year downstream of minesites.

• Four miles of intermittent and perennial streams per year not being covered by excess spoil fills or coal mine waste facilities.

• Improved reforestation of 2,486 acres of mined land per year.

• Avoidance by mining operations of eight acres of forest per year.

In terms of economic impacts, we estimate that the rule will result in an average annual employment gain of 156 fulltime equivalents between 2020 and 2040. This estimate includes an average annual reduction of 124 fulltime equivalents in employment related to coal production and an average annual gain of 280 fulltime equivalents in industry employment related to implementation of the rule.

We estimate that the rule will result in an average annual 0.08% reduction in coal production between 2020 and 2040, which equates to 0.7 million tons of coal. That amount includes 0.2 million tons produced by surface mining methods (0.04% of the total amount produced by surface mining methods) and 0.5 million tons produced by underground mining methods (0.14% of the total amount produced by underground mining methods). The final RIA projects that this reduction in production will be accompanied by an increase in average annual coal prices ranging from 0.2% in the Powder River Basin to 1.3% in Central Appalachia and the Illinois Basin.

We estimate that total industry compliance costs per year during 2020–2040 would average $81 million, which is 0.1% or less of aggregate annual industry revenues, ranging from an additional one cent per ton of longwall-mined coal on the Colorado Plateau to an additional $1.40 per ton for surface-mined coal in the Illinois Basin. Of the $81 million in increased annual costs to industry, surface mining operations will bear an estimated $71 million, while underground mining operations will absorb $10 million. In the aggregate, state regulatory authorities will incur estimated additional costs of $0.5 million per year between 2020 and 2040.

Implementation of this rule will result in reductions in greenhouse gas emissions from coal production. Expressed in terms of carbon dioxide equivalents, we project that those reductions will total 2.6 million short tons in 2020. ''Carbon dioxide equivalent'' is a unit used to describe the impact of different greenhouse gases on a comparative basis by expressing the impact in terms of the amount of carbon dioxide that would have the same global warming impact as the type and amount of greenhouse gases at issue. We also project that implementation of the final rule will result in the annualized benefit of $57 million due to the reduced carbon dioxide emissions from fossil fuel consumption across the timeframe of the analysis (2020—2040).

II. Why are we revising our regulations?

Our primary purpose in adopting this rule is to strike a better balance between ''protection of the environment and agricultural productivity and the Nation's needs for coal as an essential source of energy.'' [4] Specifically, the rule is designed to minimize the adverse impacts of surface coal mining operations on surface water, groundwater, and site productivity, with particular emphasis on protecting or restoring streams, aquatic ecosystems, riparian habitats and corridors, native vegetation, and the ability of mined land to support the uses that it was capable of supporting before mining. The final rule reflects our experience during the more than three decades since adoption of the existing regulations, as well as advances in scientific knowledge and mining and reclamation techniques during that time and consideration of the comments that we received on the proposed rule. The final rule more completely implements sections 515(b)(24) and 516(b)(11) of SMCRA, which provide that, to the extent possible using the best technology currently available, surface coal mining and reclamation operations must be conducted to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and to achieve enhancement of those resources where practicable.[5] It also updates our regulations concerning compliance with

[2] 16 U.S.C. 1531 *et seq.*

[3] 30 U.S.C. 1202.

[4] 30 U.S.C. 1202(f).

[5] *See* 30 U.S.C. 1265(b)(24) and 1266(b)(11).

the Endangered Species Act of 1973.[6] In addition, as proposed, we have revised and reorganized our regulations for clarity, to make them more user-friendly, to remove obsolete and redundant provisions, and to implement plain language principles.

The preamble to the proposed rule sets forth the detailed rationale for adoption of this rule and the history of prior rulemaking and litigation concerning stream buffer zones and stream protection. *See* 80 FR 44436–44585 (Jul. 27, 2015).

Final Environmental Impact Statement (EIS)

The final EIS for this rule contains an expanded discussion of the impacts of mining on the environment. Almost all the literature surveys and studies reviewed for this rulemaking process have been published since the adoption in 1983 of our principal regulations concerning protection of the hydrologic balance [7] and protection of fish, wildlife, and related environmental values,[8] which underscores the need to update our regulations to reflect new scientific understanding of impacts associated with coal mining.

III. What opportunity did we provide for public comment on the proposed rule and supporting documents?

On July 16, 2015, we announced that the proposed rule, draft environmental impact statement (DEIS), and draft regulatory impact analysis (DRIA) were available for review at *www.regulations.gov*, on our Web site (*www.osmre.gov*), and at selected OSMRE offices. On July 17, 2015, we published a notice in the **Federal Register** announcing the availability of the DEIS for the proposed rule. *See* 80 FR 42535–42536. The notice reiterated that the DEIS was available for review at *www.regulations.gov*, *www.osmre.gov*, and the OSMRE offices listed in the notice. The comment period for the DEIS was originally scheduled to close on September 15, 2015. On July 27, 2015, we published the proposed stream protection rule in the **Federal Register**. *See* 80 FR 44436–44698. That document reiterated that the proposed rule, DEIS, and DRIA were available for review at *www.regulations.gov*, *www.osmre.gov*, and the OSMRE offices listed in the notice. The comment period for the proposed rule and DRIA was originally scheduled to close on September 25, 2015. In response to requests for additional time to review and prepare comments on all three documents, we extended the comment period for the proposed rule, DEIS, and DRIA through October 26, 2015. *See* 80 FR 54590–54591 (Sept. 10, 2015).

During the public comment period, we held six public hearings on the proposed rule in Golden, Colorado (September 1, 2015); Lexington, Kentucky (September 3, 2015); St. Charles, Missouri (September 10, 2015); Pittsburgh, Pennsylvania (September 10, 2015); Big Stone Gap, Virginia (September 15, 2015); and Charleston, West Virginia (September 17, 2015). In addition to the testimony offered at the hearings and meetings, we received approximately 94,000 written or electronic comments on the proposed rule. In developing the final rule, we considered all comments that were germane to the proposed rule. In the remainder of this preamble, we summarize the comments received and discuss our disposition of those comments and how and why the final rule differs from the proposed rule.

IV. What general comments did we receive on the proposed rule?

A. We Should Reopen the Comment Period To Allow Adequate Time for Public Review and Comment

Many commenters contended that we should have extended the time for public review and comment on the proposed rule and supporting documents. These commenters generally raised objections about the amount of material, primarily the proposed rule and its preamble, the DEIS, and the DRIA, all of which were lengthy. The commenters noted that we cited many studies, reports and supporting documents, which would take time to locate and review. Some commenters claimed that they lacked staff to review the material and provide meaningful comments within the time provided. These commenters stated that the 102 days we provided for review was too short, particularly in contrast to the time it took us to prepare and propose a rule.

As described in Part III of this preamble, the stream protection rule has been the subject of robust public involvement, starting in 2009. During that year, we published an advance notice of proposed rulemaking,[9] conducted 15 stakeholder outreach meetings, held nine public scoping meetings, and provided two public comment periods totaling 76 days on scoping for the DEIS. The scoping process generated over 20,500 comments, including input from state regulatory authorities.

On July 16, 2015, we announced that the proposed rule, DEIS, and DRIA were available for review at *www.regulations.gov*, on our Web site (*www.osmre.gov*), and at selected OSMRE offices. On July 17, 2015, we published a notice in the **Federal Register** announcing the availability of the DEIS for the proposed rule. *See* 80 FR 42535–42536. The notice reiterated that the DEIS was available for review at *www.regulations.gov*, *www.osmre.gov*, and the OSMRE offices listed in the notice. The comment period for the DEIS was originally scheduled to close on September 15, 2015. On July 27, 2015, we also published the proposed stream protection rule in the **Federal Register**. *See* 80 FR 44436–44698. That document reiterated that the proposed rule, DEIS, and DRIA were available for review at *www.regulations.gov*, *www.osmre.gov*, and the OSMRE offices listed in the notice. The comment period for the proposed rule and DRIA was originally scheduled to close on September 25, 2015. In response to requests for additional time to review and prepare comments on all three documents, we extended the comment period for the proposed rule, DEIS, and DRIA through October 26, 2015. *See* 80 FR 54590–54591 (Sept. 10, 2015).

Interested parties, therefore, received a total of 102 days to review the proposed rule and supporting documents. During that time, we also held six public hearings in Colorado, Kentucky, Missouri, Pennsylvania, Virginia, and West Virginia. We received approximately 95,000 comments from all sources on the proposed rule, DEIS, and DRIA.

The proposed rule, DEIS, and DRIA included citations to references that we relied upon in developing the documents. These reference citations were available from the time of publication of the proposed rule, DEIS, and the DRIA in the **Federal Register**. We used these references in discussing both specific components of the rule and our analysis, as well as for support of our discussion on more general concepts. We did not receive any requests for copies of these references during the comment period. However, in response to language that Congress included in a report accompanying the Consolidated Appropriations Act of 2016, Public Law 114–113, we placed all publicly-available references on *www.regulations.gov*. Copyright-protected materials are easily obtainable through state or university libraries or the publisher. We were not able to provide copyright-protected items to

[6] 16 U.S.C. 1531 *et seq.*

[7] 48 FR 43956 (Sept. 26, 1983).

[8] 48 FR 30312 (Jun. 30, 1983).

[9] 74 FR 62664–64668 (Nov. 30, 2009).

requesters directly because doing so might violate copyright laws. We also scheduled meetings between us and state technical personnel to discuss the scientific studies and other reference documents on two dates (April 14 and 21, 2016). The meetings were held simultaneously in Denver, Colorado; Alton, Illinois; and Pittsburgh, Pennsylvania. Staff from six state regulatory authorities participated in the meeting on April 14, 2016, and staff from five state regulatory authorities participated in the meeting on April 21, 2016.

The comment period we provided fully complies with the Administrative Procedure Act, 5 U.S.C. 553, which does not set a minimum public comment period for a proposed rule. We also exceeded the 60-day minimum comment period recommended by Section 6(a)(1) of Executive Order 12866 for meaningful public participation. This time is comparable to the comment periods for similar regulations that we have issued in the past. For example, the now-vacated 2008 stream buffer zone rule was subject to a 90-day comment period,[10] while the comment period for the 1978 proposed rule containing most of the original permanent regulatory program regulations was 71 days.[11]

It is also noteworthy that many commenters, primarily environmental groups, opposed our 30-day extension of the comment period. They maintained that 60 days was sufficient to review the materials and provide meaningful comment. These and other commenters, including state regulatory authorities, were able to provide extensive, detailed, meaningful comments on the proposed rule in the comment period provided.

B. We Should Further Engage the State Regulatory Authorities Before Finalizing the Rule

Most state and industry commenters urged us to refrain from finalizing the proposed rule at this time. Instead, these commenters requested that we engage in additional meaningful collaboration with the state regulatory authorities. Many of these commenters stated that we could benefit further from the insight, experience, and practices of the state regulatory authorities when developing the regulatory text, final EIS, and final RIA. According to the commenters, we did not provide the regulatory authorities and other state agencies that had agreed to be cooperating agencies in the National Environmental Policy Act of 1969 (NEPA) process with the opportunity for meaningful engagement. The commenters expressed their belief that we had not acted in accordance with the terms of the memoranda of understanding describing the roles and responsibilities for the effort. The commenters noted that, as a consequence, all but one of those regulatory authorities had terminated their cooperating agency status.

We have substantially engaged with stakeholders, including the regulatory authorities. The rulemaking process began with an advance notice of proposed rulemaking, 15 stakeholder outreach meetings, nine public scoping meetings, and two public comment periods on the scoping for the DEIS. The scoping process generated over 20,500 comments, including input from the states. A number of state agencies, including state SMCRA regulatory authorities, participated as cooperating agencies in the early development of the DEIS for the stream protection rule. As of November, 2010, we had sent Chapters 1, 2, 3 and 4 of the DEIS to all cooperating agencies. Chapters 1–4 are the heart of an EIS. Those chapters include the statement of purpose and need, a description of the alternatives considered, a description of the affected environment, and an analysis of the environmental consequences of the alternatives. The cooperating agencies provided meaningful input and comments. We used this information to prepare the DEIS. In response to this and other feedback, we revised the DEIS over the next several years. Shortly before we announced the availability of the DEIS for public comment, all but one of the state regulatory authorities voluntarily terminated their role as cooperating agencies.

We made the DEIS available on July 16, 2015, to all cooperating agencies and the public to review and provide input on during the public comment period. We subsequently extended the public comment period to provide interested parties, including the states, more time to review and comment on the DEIS. We conducted six public hearings in Colorado, Kentucky, Missouri, Pennsylvania, Virginia and West Virginia during the public comment period. Although not required to do so, in a letter dated October 7, 2015, prior to the close of the public comment period on October 26, 2015, we invited the former cooperating state agencies to re-engage as cooperating agencies under NEPA. None accepted this invitation. Ultimately, OSMRE received approximately 95,000 comments, including hundreds of pages of comments from state SMCRA regulatory authorities, on the DEIS, DRIA, and the proposed stream protection rule. We considered these comments in developing this final rule, the final EIS, and the final RIA.

The Department's Assistant Secretary for Land and Minerals Management, the Director of OSMRE, and other OSMRE officials continued to meet with representatives of states after the close of the comment period, consistent with congressional direction in a report accompanying the Consolidated Appropriations Act of 2016, Public Law 114–113. In addition to meetings with state SMCRA regulatory authorities in conjunction with Interstate Mining Compact Commission meetings, Department of the Interior and OSMRE representatives have either met with or held telephone or video conferences with 14 different state regulatory authorities since the proposed rule was published. We also scheduled meetings of OSMRE and state technical personnel to discuss the scientific studies and other reference documents on two dates (April 14 and 21, 2016). The meetings were held simultaneously in Denver, Colorado; Alton, Illinois; and Pittsburgh, Pennsylvania. Staff from six state regulatory authorities participated in the meeting on April 14, 2016, and staff from five state regulatory authorities participated in the meeting on April 21, 2016. Notice of the Final Environmental Impact Statement was published in the **Federal Register** on November 16, 2016 (81 FR 80592 and 81 FR 80664), by OSMRE and the U.S. Environmental Protection Agency, respectively.

We understand the state regulatory authorities wanted more input, not only in the EIS, but also in the rule and the RIA. However, through this extensive outreach we have met our obligations as set forth in the Administrative Procedure Act, NEPA, and the pertinent executive orders and have sought the input from state regulatory authorities at crucial junctures in the development of the rule—early in the rulemaking process and after publication of the proposed rule. These are the points where their insights could best shape the proposal and refine the final rule without impinging on our deliberative process and our ability to craft a rule to meet our purpose and need. The final regulations that we are publishing today have been shaped by this direct input as well as by the information we have gleaned through our oversight of the state programs.

[10] 72 FR 48890 (Aug. 24, 2007); 72 FR 57504 (Oct. 10, 2007).

[11] 44 FR 14902, 14908 (Mar. 13, 1979).

C. We Have Not Accorded Sufficient Deference to Principles of Cooperative Federalism and the Primacy of States With Approved Regulatory Programs

According to numerous commenters, the proposed rule impinges on the concepts of cooperative federalism and state primacy in SMCRA. Because of this alleged impingement on states' rights under SMCRA, many of these commenters asserted that the proposed rule exceeds our statutory authority and contravenes the Tenth Amendment to the U.S. Constitution. They also charged that it ''flips the central SMCRA mandate of state primacy on its heads.''

We disagree with these commenters. While it is true that primacy states play a key role in enforcing SMCRA, it is also true that we maintain a role in the implementation and oversight of SMCRA. *See, e.g., Hodel* v. *Virginia Surface Mining and Reclamation Ass'n Inc.,* 452 U.S. 264, 289 (1981) (''The most that can be said is that the Surface Mining Act establishes a program of cooperative federalism that allows the States, *within limits established by federal minimum standards,* to enact and administer their own regulatory programs, structured to meet their own particular needs.'' (Emphasis added.) These federal standards ''provide [a] blueprint against which to evaluate [a] state's program.'' [12] The U.S. Supreme Court has held this statutory scheme to be a proper exercise of Congressional power under the U.S. Constitution. *Hodel,* 452 U.S. at 290–291.

We have clear authority to issue regulations such as this rule to establish federal minimum standards. Section 102 of SMCRA sets forth thirteen purposes of the Act.[13] The first of these purposes is to ''establish a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations.'' [14] Several other purposes are related to assuring that surface coal mining operations are conducted in a manner that protects the environment.[15] This authority also contains a purpose unique to SMCRA: ''whenever necessary, exercise the full reach of Federal constitutional powers to ensure the protection of the public interest through effective control of surface coal mining operations.'' [16] SMCRA then vests the authority to carry out these purposes with us; specifically, under section 201(c)(2), we have clear authority to ''publish and promulgate such rules and regulations as may be necessary to carry out the purposes of the Act.'' [17] Our strong federal role, which includes updating the federal minimum standards, ensures that regulation of surface coal mining and reclamation operations remains environmentally protective and is not plagued by many of the problems that led to the enactment of SMCRA in the first place. *See, e.g.,* H.R. Rep. No. 95–218, at 90 (''For a number of predictable reasons—including insufficient funding and the tendency for State agencies to be protective of local industry—State enforcement has in the past [*i.e.,* prior to the passage of SMCRA in 1977] often fallen short of the vigor necessary to assure adequate protection of the environment.''). This rule, therefore, is a valid exercise of our authority to update the federal minimum standards to reflect 30 years of scientific development and 30 years of experience in implementing SMCRA.

Contrary to the contention of some commenters, we are not abrogating primacy. Nor are we creating a rigid one-size-fits-all rule. Primacy states can and should tailor their state laws and regulations implementing this rule to local conditions as long as they meet minimum federal standards and are no less effective than the federal rules in meeting the requirements of SMCRA. In addition, the final rule provides discretion to the regulatory authority in certain areas, including, but not limited to, the following examples:

- Final § 773.15(j): Compliance with the Endangered Species Act. Provides the permit applicant and the regulatory authority with several options for demonstrating compliance with the Endangered Species Act of 1973.
- Final § 780.16(d): Potential Enhancement Measures. The regulatory authority has the discretion to determine the type, scope, and location of fish and wildlife enhancement measures.
- Final § 780.19(a): Information on Hydrology, Geology, and Aquatic Biology, Baseline Information. The regulatory authority has the discretion to determine what constitutes ''sufficient detail'' with respect to the information required in this section, including the location and number of monitoring locations.
- Final § 780.19(b)(6)(ii): Groundwater Information. The regulatory authority has the discretion to determine the baseline groundwater quality and quantity sampling protocol and subsequent analyses of these data.
- Final § 780.19(c)(5): Precipitation Measurements. The regulatory authority has the flexibility to determine whether the permit applicant must prepare a hydrologic model of the proposed mine site.
- Final § 780.19(c)(6)(vii): Assessing the biological condition of intermittent and perennial streams. The regulatory authority has the flexibility to choose from available scientifically defensible protocols, including indices of biological integrity, to determine the biological condition of streams.
- Final § 780.21(b)(7): Evaluation Thresholds. The regulatory authority has the flexibility to determine the parameters it will use as evaluation thresholds.
- Final § 780.27(b)(2): What Permitting Requirements Apply to Proposed Activities in or Through Ephemeral Streams? The regulatory authority has the flexibility to approve a drainage pattern that differs from the premining pattern based upon a variety of site specific conditions.
- Final § 780.28(c)(2): Proposed Activities In, Through, or Adjacent to Perennial and Intermittent Streams. The regulatory authority has the flexibility to approve a drainage pattern or stream-channel configuration that differs from the premining pattern based upon a variety of site-specific conditions.
- Final § 780.28(e)(2): Conversion of Streams. The regulatory authority has the flexibility to approve limited stream flow regime conversions on a case-by-case basis as long as certain criteria are satisfied.
- Final § 780.28(g)(1): Standards for the Restoration of Ecological Function to Perennial or Intermittent Streams. The regulatory authority has discretion to establish objective criteria for determining the standards for restoring the ecological function of a reconstructed perennial or intermittent stream.

The underground mining counterparts to these surface mining provisions offer the same flexibilities to the regulatory authority.

D. We Did Not Adequately Demonstrate a Need for This Rulemaking

Many commenters stated that we have neither provided sufficient rationale for the development of this rule nor any evidence to support what many commenters consider a complete rewrite of the federal regulations implementing SMCRA. A number of commenters also raised concerns about whether the proposed rule articulated a legally

[12] *Bragg* v. *W. Va. Coal Ass'n,* 248 F.3d 275, 289 (4th Cir. 2001).

[13] 30 U.S.C. 1202.

[14] 30 U.S.C. 1202(a)

[15] *See, e.g.,* 30 U.S.C. 1202(d) and (f).

[16] 30 U.S.C. 1202(m).

[17] 30 U.S.C. 1211(c)(2); *See also, id* at 1251(b) (''[T]he Secretary shall promulgate and publish . . . regulations covering a permanent regulatory procedure for surface coal mining and reclamation operations performance standards based on and conforming to the provisions of Title V . . . .'').

adequate justification for a nationwide rulemaking on issues related to stream protection. In particular, some commenters noted that the June 11, 2009, Memorandum of Understanding (MOU) among the U.S. Department of the Army, the U.S. Department of the Interior, and EPA implementing the interagency action plan on Appalachian surface coal mining was limited to six states in Appalachia and primarily focused on issues related to steep-slope mining. The commenters questioned our decision to propose a nationwide rule in response to the MOU, which, by its own terms, was designed to significantly reduce the harmful environmental consequences of surface coal mining operations in Kentucky, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia and ensure that future mining is conducted consistent with federal law. The 2009 MOU provided impetus and support for this rulemaking, but it is not the sole reason for the rulemaking. After extensive outreach, we determined that development of a comprehensive, nationally applicable, stream protection rule would be the most appropriate and effective method of achieving the purposes and requirements of SMCRA, as well as meeting the goals set forth in the MOU. Streams are important components of the hydrologic regime everywhere that streams are found, so there is no scientific reason to limit stream protection efforts to one region of the country or to steep-slope mining. In addition, it is not clear that we have authority under SMCRA to conduct rulemaking on a regional basis. Section 101(g) of SMCRA [18] provides that ''surface coal mining and reclamation standards are essential in order to insure that competition in interstate commerce among sellers of coal produced in different States will not be used to undermine the ability of the several States to improve and maintain adequate standards on coal mining operations within their borders.'' The implication is that the surface coal mining and reclamation standards to which it refers must be national in scope. In addition, section 102(a) of SMCRA [19] provides that one of the purposes of SMCRA is to ''establish a *nationwide* program to protect society and the environment from the adverse effects of surface coal mining operations.'' (Emphasis added.)

Our primary purpose in adopting this final rule is to strike a better balance between ''protection of the environment and agricultural productivity and the Nation's need for coal as an essential source of energy,'' which section 102(f) of SMCRA [20] lists as one of the purposes of SMCRA. Specifically, this final rule will better protect the water resources needed by current and future generations for drinking, recreation, and wildlife from the adverse effects of coal mining, while balancing protection of those resources with the Nation's energy needs.

The final rule published today reflects advances in science and technology, updates 30-year-old regulations, and addresses important stream protection and related issues in a manner consistent with SMCRA, while providing regulatory certainty to operators. State and industry practices helped shape this rule. Many commenters supported the proposed rule and encouraged us to proceed with a final rule.

SMCRA recognizes the importance of nationwide minimum standards for the hydrologic balance by not limiting the provisions related to the hydrologic balance to any particular types of mining or areas of the country as it did with other provisions. *Compare, e.g.,* Section 510(b)(3) [21] (no permit may be issued unless the operation has been ''designed to prevent material damage to the hydrologic balance outside the permit area'') *with* Section 510(b)(5) [22] (alluvial valley floor protections apply only west of the one hundredth meridian west longitude). We have never issued regulations that expressly apply only to a portion of the country without specific statutory language authorizing or mandating adoption of regulations with a geographically-restricted scope. SMCRA provisions with a geographically-restricted scope include sections 510(b)(5) (alluvial valley floors west of the one hundredth meridian west longitude), 527 [23] (special bituminous coal mines west of the one hundredth meridian west longitude), 529 [24] (anthracite coal mines regulated by a state), and 708 [25] (coal mines in Alaska, for a limited time only).

As stated in our analysis in the final EIS, the need for this final rule is to improve implementation of SMCRA, ensure protection of the hydrologic balance, and reduce impacts of surface coal mining operations on streams, fish, wildlife, and related environmental values. The final rule will provide major benefits to water resources, not just in the Appalachian Basin, but also in the Illinois Basin. In addition, this rule will provide moderate benefits to water resources in three other regions—the Colorado Plateau, the Gulf Coast, and the Northern Rocky Mountains and Great Plains.[26] Even if these were the only benefits of the rule, and they are not, the benefits to water resources alone are sufficient to support and justify a nationwide rulemaking.

As we set forth in the proposed rule and in documents in support of the proposed rule, SMCRA provides us with the authority to protect the hydrologic balance from coal mining operations nationwide. Despite that fact and the benefits that could be realized nationwide, some commenters cite data contained in our annual evaluation reports of state regulatory programs in an attempt to show that there is no nationwide problem. According to these commenters, our annual evaluation reports ''show that 90 percent of operations were free of any offsite impacts'' and ''routinely include highly positive narrative reviews of each state's SMCRA program.''

While it is true that our annual evaluation reports routinely do not indicate problems with the states' implementation of their programs, we disagree with the conclusion the commenters attempt to draw from this information, *i.e.,* that our experience does not show that there is a problem that this rule is designed to address. OSMRE inspections and other oversight activities in primacy states, including the annual evaluation reports, focus on the success of state regulatory authorities in achieving compliance with the approved regulatory program for the state. Directive REG–8,[27] which establishes policy and procedures for the evaluation of state regulatory programs, specifies that the offsite impacts identified in annual evaluation reports do not include impacts from mining and reclamation that are not regulated or controlled by the state program. In other words, the annual evaluation reports generally do not identify or discuss situations in which the existing regulations provide inadequate protection. While Directive REG–8 provides discretionary authority for evaluations of impacts that are not prohibited by the regulatory program, that authority may be exercised only if both OSMRE and the state agree to do so, and if they are not characterized as

[18] 30 U.S.C. 1201(g).

[19] 30 U.S.C. 1202(a).

[20] 30 U.S.C. 1202(f).

[21] 30 U.S.C. 1260(b)(3).

[22] 30 U.S.C. 1265(b)(5).

[23] 30 U.S.C. 1277.

[24] 30 U.S.C. 1279.

[25] 30 U.S.C. 1298.

[26] FEIS at Chapter 1—Sections 1.1 and 1.2, Table 4.2–15.

[27] Directive REG–8. ''Oversight of State and Tribal Regulatory Programs,'' Transmittal No. 967, January 31, 2011.

offsite impacts. Historically, that discretionary authority has not been exercised. Thus, annual reports are of little assistance in assessing how the existing minimum federal standards that are incorporated into the approved state programs could be improved to better implement SMCRA. Part II of the preamble summarizes the water quality and land reclamation problems that developed under the previous rules. In addition, speakers at the public hearings described their experiences with dewatering of streams as a result of subsidence from underground mining operations.

E. We Should Limit the Final Rule to the Effects of Surface Mining Operations and Not Underground Mining Operations

Several commenters requested that we limit the rule to the effects of surface mining operations and not the effects of underground operations. These commenters often questioned the adequacy of our support for extending stream protections to the areas overlying underground mine workings. According to the commenters, the rule would make some methods of underground mining operations impractical and would effectively prohibit underground mining using longwall technology.

Part IV.K. of this preamble summarizes the principal provisions of this rule that directly impact underground mining. The final rule does not preclude any specific method of underground mining either directly (*e.g.,* a prohibition of underground mining) or indirectly (*e.g.,* make underground mining uneconomical or impossible). Our primary focus in the proposed rule was to clarify our position that the obligation to prevent material damage to the hydrologic balance outside the permit area applied to areas overlying the underground workings of an underground mine, which is part of the adjacent area as that term is defined in § 701.5 of our regulations. As explained in more detail in the portion of this preamble that discusses the definition of ''material damage to the hydrologic balance outside the permit area'' in § 701.5 of our regulations, we have always considered the area overlying the underground workings of an underground mine to be part of the evaluation for prevention of material damage to the hydrologic balance outside the permit area. Although this has been our longstanding position and is clearly mandated by SMCRA, the definition of material damage to the hydrologic balance outside the permit area that we are finalizing today removes any of the ambiguity that may have resulted in this comment. In addition, to address concerns that requiring underground operations to prevent material damage to the hydrologic balance outside the permit area would effectively preclude any underground mining likely to result is subsidence, we have clarified that temporary impacts resulting from subsidence are allowed provided they do not rise to the level of material damage to the hydrologic balance outside the permit area. This issue is discussed in more detail in Part IV, section K of this preamble.

F. We Underestimated the Costs and Regulatory Burden of the Proposed Rule to State Regulatory Authorities and Industry

Numerous commenters expressed concern that the proposed rule would impose significant additional costs on the industry and state regulatory authorities. Many of these commenters alleged that the costs of the proposed rule were grossly understated in the DRIA. Appendix I of the final RIA provides responses to all specific comments on the DRIA.

In response to comments received on the DRIA, as well as in response to recent changes in the coal market, we revised the DRIA to ensure that the final RIA better reflects current circumstances. These changes include:

- *Updated coal market baseline:* Since the DRIA was developed conditions in the coal market have changed considerably. As a result, we updated the baseline coal production forecast for the final RIA, which resulted in an almost 20 percent decrease in the level of coal demand and production forecasted under the baseline.
- *Updated regulatory baselines.* Since the DRIA was developed, changes to the regulatory environment have occurred, including but not limited to the finalization of the Clean Power Plan and ratification of the Paris Agreement made at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change. Additional climate policy proposals have been advanced that are anticipated to have an effect on coal production nationwide. As a result, we updated the final RIA.
- *Clarified potential impacts of the rule on longwall mining:* A number of commenters misinterpreted the proposed rule's impacts on longwall mining. The commenters thought longwall mining would be impossible under the proposed rule, which would result in devastating economic impacts to the underground mining industry. The final rule clarifies that the rule does not prohibit temporary impacts to streams and other water resources as a result of longwall mining as long as those impacts do not rise to the level of material damage to the hydrologic balance outside the permit area. The final RIA continues to reflect the fact that the final rule will not prohibit longwall mining.
- *Incorporated economic impact of bonding requirements:* The DRIA did not include costs associated with bonding requirements for restoration of the ecological function of perennial and intermittent streams that are mined through. While the bonding requirements for stream restoration have been revised, the final rule is nonetheless anticipated to result in some additional costs to operators associated with this requirement that were not captured in the DRIA. These additional costs are reflected in the final RIA.
- *Revised administrative costs:* A number of commenters remarked that the administrative costs of the proposed rule to industry and state regulatory authorities appeared to be underestimated in the DRIA. Upon further review, we determined that the industry and state regulatory authority administrative costs estimated in the DRIA were not consistent with OSMRE's Paperwork Reduction Act analysis. As a result of updating the RIA to be consistent with the Paperwork Reduction Act calculations, administrative costs for industry and the state regulatory authorities have increased in the final RIA. As discussed below, we also made some changes to the final rule that reduced administrative costs to the state regulatory authorities as well as to industry.
- *Corrected width of streamside vegetative corridor:* Some commenters questioned whether the engineering analysis had correctly interpreted the width of the riparian corridor, known as the streamside vegetative corridor in the final rule, which is required to be established adjacent to perennial, intermittent, and ephemeral streams that are mined through under certain circumstances. Upon further review, we determined that the engineering analysis incorrectly assumed that a 100-foot riparian corridor was interpreted as being 50 feet on either side of a restored stream rather than 100 feet on each side. Correction of this incorrect assumption resulted in a modest increase in model mine costs.
- *Revised impacts to small businesses analysis:* The Regulatory Flexibility Act

analysis has been revised in the final RIA to reflect the recent changes to the small business size thresholds identified by the Small Business Administration for coal mining companies.

• *Incorporated the social cost of carbon:* In response to comments, the final RIA includes an estimate of the benefits related to the social costs of carbon of the final rule.

In summary, compared with the DRIA, the final RIA forecasts lower baseline coal production and increased industry compliance costs. Lower baseline coal production means that the final rule will have fewer adverse impacts to production-related employment and fewer benefits to streams and forests.

The final rule also differs from the proposed rule in several ways that should reduce costs and the regulatory burden on state regulatory authorities and on the industry. The following list provides examples of cost-saving or potentially cost-saving provisions:

• *Applicability to existing operations:* We added a new section, 30 CFR 701.16, specifying when the stream protection rule would take effect and to which operations and permit applications it would apply. Existing permits will not be subject to the rule unless they either add acreage or revise the permit to add a new excess spoil fill, coal mine waste refuse pile, or coal mine waste slurry impoundment or move or expand the location of an approved excess spoil fill or coal mine waste facility.

• *Permit application format:* We deleted the proposed requirement in 30 CFR 777.11 that permit applicants submit their applications in electronic form. Regulatory authorities and mining companies expressed concern about the expense. Furthermore, we cannot guarantee the availability of grant funds to cover installation of electronic permitting systems by states. However, transition to electronic permitting systems ultimately will result in cost savings and greater efficiencies.

• *Baseline data and monitoring:* First, we are not adopting the proposed requirement in 30 CFR 780.19(b) and (c) that the regulatory authority extend the baseline data collection period if the Palmer Drought Severity Index for that period exceeded certain values. The regulatory authority has the discretion to determine whether and how long to extend the baseline data collection period under conditions of extreme drought or abnormally high precipitation. Second, under 30 CFR 780.19(b) and (c), the regulatory authority may modify the interval or the 12-consecutive-month sampling requirement for groundwater and surface water if adverse weather conditions make travel to the sampling location hazardous or if the water at that location is completely frozen. Third, in 30 CFR 780.19, we deleted six baseline data parameters (ammonia, arsenic, cadmium, copper, nitrogen, and zinc) upon which coal mining typically has little impact. Fourth, we added 30 CFR 783.26 and 784.40, which provide that the regulatory authority may allow permittees to submit baseline data and development of water monitoring plans for areas overlying proposed underground mine workings in increments. This will ensure more up-to-date information and avoid unnecessarily high data collection and analysis costs at the time of the initial permit application. It also will reduce monitoring costs.

• *Mining in or near Streams and Excess Spoil:* First, we revised the definitions of ephemeral, intermittent, and perennial streams in 30 CFR 701.5 to clarify that only conveyances with channels that have both a bed-and-bank configuration and an ordinary high water mark will be classified as streams. Second, final 30 CFR 780.19(c)(3) and 780.20(a)(5)(iv) do not include the proposed requirements for baseline data and analysis of peak flow magnitude and frequency, actual and anticipated usage, and seasonal flow variations for ephemeral streams. Third, final 30 CFR 780.19(c)(6) does not include the proposed requirement to assess the biological condition of ephemeral streams within the proposed permit and adjacent areas. It also modifies the proposed requirement to assess the biological condition of intermittent streams within the proposed permit and adjacent areas. In the final rule, assessment of the biological condition of intermittent streams within the proposed area and the adjacent area is required if a scientifically defensible protocol has been established for assessment of intermittent streams in the state or region in which the stream is located. But, if a scientifically defensible bioassessment protocol has not been developed in the relevant state or region, a description of the biology of each intermittent stream would be required to determine the biological condition of the intermittent stream. Fourth, final 30 CFR 780.28(g) specifies the best technology currently available for assessment of the restoration of the ecological function of intermittent streams for which no scientifically defensible protocol exists consists of the establishment of standards that rely upon restoration of the form, hydrologic function, and water quality of the stream and reestablishment of streamside vegetation as a surrogate for the biological condition of the stream. Finally, the excess spoil fill construction requirements in final 30 CFR 816.71(k) require only one certified report per calendar quarter and to provide an alternative to daily examinations by an engineer or other specialist.

• *Soils and Revegetation:* First, the final rule does not include a provision in proposed 30 CFR 779.19(a) that would have required descriptions of vegetative communities in the adjacent area. In addition, the final rule does not include the requirement in proposed 30 CFR 816.116(b) that revegetation success standards demonstrate restoration of the capability of the land to support all uses that it was capable of supporting before mining.

G. Whether We Should We Revise the Rule To Provide for Direct Enforcement of Water Quality Standards

Section 816.42 in our previous regulations required that discharges of water from areas disturbed by surface mining activities be made in compliance with all applicable state and federal water quality laws and regulations and with the effluent limitations for coal mining operations set forth in 40 CFR part 434. Proposed § 816.42 contained five paragraphs. Proposed paragraph (a) incorporated previous § 816.42 and clarified that permittees must comply with all water quality laws, including effluent limitations in the applicable NPDES permit. Proposed paragraph (b) explicitly incorporated the longstanding requirement for permittees to comply with section 404 of the Clean Water Act[28] if they sought to discharge overburden (including excess spoil), coal mine waste, and other materials into waters of the United States. Proposed paragraphs (c) through (e) established enforceable performance standards requiring proper operation and maintenance of water treatment facilities and environmentally appropriate disposition of precipitates from those facilities.

In the preamble to the proposed rule, we requested comment on whether proposed § 816.42(b) should be informational or directly enforceable under SMCRA.[29] As mentioned, this paragraph required that discharges of overburden (including excess spoil), coal mine waste, and other materials into waters of the United States be made in compliance with section 404 of the Clean Water Act and its implementing

[28] 33 U.S.C. 1344.

[29] 80 FR 44549 (Jul. 27, 2015).

regulations. Commenters were divided on the merits of this issue. Several environmental groups and citizens asked us to make standards under both sections 402 and 404 of the Clean Water Act directly enforceable under SMCRA. These commenters typically suggested changes to proposed § 816.42 to clarify that water quality standards established under the Clean Water Act are directly enforceable under SMCRA. According to these commenters, section 702(a) of SMCRA [30] and prior preamble statements concerning § 816.42 provide authority for direct enforcement of water quality standards under SMCRA. Similarly, these commenters asked us to clarify whether proposed § 816.71(a)(7) (excess spoil) and 816.57(b) (mining in, through, or adjacent to perennial and intermittent streams) require operators to comply with water quality standards and, if so, whether the SMCRA regulatory authorities will directly enforce these water quality standards. Some commenters asked us to provide for direct enforcement of Clean Water Act water quality standards through citizen suits under section 520 of SMCRA.

In contrast, other commenters considered § 816.42 to be unnecessary and duplicative of the Clean Water Act. Some commenters detailed the Clean Water Act's own ''robust, but carefully tailored, enforcement scheme[,]'' which includes both direct enforcement by the state Clean Water Act authority of any aspect of the Clean Water Act that it has been delegated, enforcement by the U.S. Environmental Protection Agency, enforcement by the U.S. Army Corps of Engineers, and enforcement by citizen suits under the Clean Water Act. These commenters noted that the Clean Water Act does not confer authority on other agencies, such as us or state SMCRA regulatory authorities, to enforce the Clean Water Act, and the SMCRA regulatory authorities are not equipped to do so. Moreover, some commenters claimed that making the provisions of the Clean Water Act directly enforceable under SMCRA would directly conflict with the Clean Water Act because it would give a state with SMCRA primacy the direct authority to enforce violations of the Clean Water Act—even where that state does not have full delegation to administer Clean Water Act programs. These commenters generally urged us to consider this paragraph as informational or to remove it altogether.

In developing the approach we adopted in the final rule about the direct enforcement of Clean Water Act provisions under SMCRA, we considered the applicable requirements of SMCRA in light of an overarching purpose of SMCRA: To protect society and the environment from the adverse effects of coal mining operations.[31] Section 510(b)(3) of SMCRA specifically provides that coal mining operations must be designed to prevent material damage to the hydrologic balance outside the permit area.[32] Likewise, section 508(a)(9) of SMCRA provides that a permit application must include ''the steps to be taken to comply with applicable air and water quality laws and regulations[,]'' [33] and section 702(a) of SMCRA provides that nothing in SMCRA ''shall be construed as superseding, amending, modifying, or repealing'' the Clean Water Act or any rule or regulation promulgated under the Clean Water Act.[34] Thus, while we cannot supersede the Clean Water Act, under SMCRA, regulatory authorities do have a duty to ensure that surface coal mining operations are permitted, operated, maintained, and reclaimed in a manner that complies with the Clean Water Act, which includes, but is not limited to, compliance with NPDES permits and water quality standards.

Section 816.42 of the final rule is the primary regulation that sets forth the duty under SMCRA for coal mining operations to comply with the Clean Water Act. This regulation is tailored to accomplish this objective while avoiding conflicts between SMCRA regulatory authorities and Clean Water Act authorities about what constitutes a Clean Water Act violation. In particular, final § 816.42(a) clarifies that neither this section of the final rule, nor any action taken pursuant to it, supersedes or modifies the authority or jurisdiction of federal, state, or tribal agencies responsible for administration, implementation, and enforcement of the Clean Water Act including decisions that those agencies make pursuant to the authority of the Clean Water Act. This includes decisions on whether a particular set of facts constitutes a violation of the Clean Water Act.

With regard to enforcement under SMCRA, final rule § 816.42(b)(1) retains our longstanding regulatory requirement that coal mining operations must comply with all applicable water quality laws and regulations, including the effluent limitations set by Clean Water Act authorities in NPDES permits under section 402 of the Clean Water Act.[35] Since our final rulemaking in 1982 was promulgated to be consistent with effluent limits established by the U.S. Environmental Protection Agency, our regulations have required that discharges from coal mining operations be in accordance with a valid NDPES permit and that this is a performance standard directly enforceable under SMCRA.[36] This approach has been upheld by the Interior Board of Land Appeals and has been expressly incorporated by several regulatory authorities.[37] Direct enforcement of the NPDES effluent limitations typically begins with an inspector for the SMCRA regulatory authority conducting a routine inspection.[38] During these inspections, water samples are taken from sediment pond discharges to verify compliance with the SMCRA permits, which incorporates the NDPES effluent limitations by reference. When violations of those standards are found, a SMCRA notice of violation is issued requiring the violation to be corrected.

With the final rule, we are changing this process slightly. In response to Federal agency comments, we have revised final § 816.42(b)(1) to require the SMCRA regulatory authority to add an additional step to the end of the process: Notification of the appropriate Clean Water Act authority of any notice of violation issued under SMCRA for a violation of an effluent limit. We also added a provision requiring the SMCRA regulatory authority to coordinate with the Clean Water Act authority whenever necessary to determine if a violation exists. This provision is intended to address those situations where there may be some uncertainty as to whether in fact a violation exists. In addition to ensuring that there is no ambiguity about the requirement for a permittee to comply with NPDES effluent limits under SMCRA, we have added paragraph (i) to final rule § 773.17, which requires the regulatory authority to condition every permit on compliance with all effluent limitations and conditions in any NDPES permit issued by the Clean Water Act authority.

With regard to enforcement of water quality standards, § 816.42(b)(2) was also added to make it clear that coal mining operations cannot cause or contribute to a violation of any applicable water quality standards. In addition, in response to comments, we

[30] 30 U.S.C. 1292(a).

[31] *See, e.g.,* 30 U.S.C. 1201(d); 1201(j), 1202(a), 1202(c), 1202(d), 1202(f), and 1202(m).

[32] 30 U.S.C. 1260(b)(3).

[33] 30 U.S.C. 1258(a)(9).

[34] 30 U.S.C. 1292(a)(3).

[35] 33 U.S.C. 1342.

[36] 47 FR 47220 (Oct. 22, 1982).

[37] *West Virginia Highlands Conservancy* et al.,152 IBLA 196 (2000); *see also,* Ohio Division of Reclamation Policy/Procedure Directive 95–2; June 1, 1995.

[38] Active mining operations require complete inspections quarterly and partial inspections monthly.

have added language similar to that contained in § 816.42(b)(2) to final § 816.57(a)(2) to clarify that activities in, near, or through streams may not cause or contribute to a violation of applicable water quality standards. Similarly, in response to comments, we adopted a provision in final § 816.71(a)(7) which provides that the permittee or operator must place excess spoil in a manner that will ensure that the fill will not cause or contribute to a violation of applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), for surface water downstream of the toe of the fill.

In addition § 816.42(c) of the final rule mirrors proposed paragraph (b) and provides that discharges of overburden, coal mine waste, and other materials into waters subject to the jurisdiction of the Clean Water Act, must be made in compliance with section 404 of the Clean Water Act.[39]

In order to better ensure compliance with sections 508(a)(9), 510(b)(3), and 702(a)(3) of SMCRA and address concerns about the role of the regulatory authority in assessing violations related to water quality standards and section of the Clean Water Act, we added final rule § 816.42(d). This provision requires that the regulatory authority investigate any situation in which it has information indicating that mining activities may be causing or contributing to a violation of the water quality standards to which paragraph (b)(2) of this section refers, or to a violation of section 404 of the Clean Water Act to which paragraph (c) refers. When conducting an investigation the SMCRA regulatory authority will coordinate with the appropriate Clean Water Act authority. The purpose of the coordination is to ensure that both agencies assess the most appropriate course of corrective action to remedy any confirmed violation. However, nothing in this section precludes the SMCRA regulatory authority from initiating enforcement action independently of the Clean Water Act authority. In fact, because the SMCRA regulatory authority is statutorily obligated to take immediate enforcement action when any ''permittee is in violation of any requirement of this Act, which condition, practice, or violation also creates an imminent danger to the health or safety of the public, or is causing, or can reasonably be expected to cause significant, imminent environmental harm to land, air or water resources'' [40] it may be necessary for the SMCRA regulatory authority to act, at least initially, independently of the Clean Water Act authority. In such a situation, after coordination with the Clean Water Act authority additional enforcement action may be necessary by the SMCRA regulatory authority, the Clean Water Act authority, or both. This process of coordination more fully satisfies the mandates of section 702(a) of SMCRA.[41]

Some commenters also requested that we explicitly allow citizens to enforce water quality standards through citizen suits. In our proposed rule, we did not propose any changes or ask for comment on the enforcement of water quality standards through SMCRA citizen suits. Nothing in the proposed or final rule was intended to alter or inhibit the ability to initiate citizen suits under SMCRA,[42] the Clean Water Act,[43] or the Endangered Species Act.[44] Moreover, we consider any questions about the extent of enforcement under the citizen suit provision of SMCRA to be beyond the scope of this rule.

H. We Should Define ''Existing Uses'' To Be Consistent With Clean Water Act Terminology

The proposed rule contained numerous regulations that refer to ''existing uses'' in the context of uses of groundwater and surface water. With respect to surface water, the regulations at 40 CFR 131.3(e) implementing the Clean Water Act defines ''existing uses'' as ''those uses actually attained in a waterbody on or after November 28, 1975, whether or not they are included in the water quality standards.'' We did not propose to define ''existing uses'' in the proposed rule, but we stated in the preamble that we interpret the term ''existing uses'' as meaning those uses in existence at the time of preparation of the permit application, regardless of whether those uses are designated uses under section 303(c) of the Clean Water Act.[45] *See* 80 FR 44475 (Jul. 27, 2015). We also stated in the preamble that, alternatively, we might replace the term ''existing uses'' with ''premining uses'' for purposes of clarity. *Id.* We invited comment on which course of action we should take.

One commenter stated that the term ''existing uses'' is acceptable as long as we distinguish between existing uses and designated uses. Another commenter found our de facto definition (''those uses in existence at the time of the preparation of the permit application'') to be potentially less protective than, and therefore inconsistent with, the Clean Water Act definition of ''existing uses'' at 40 CFR 131.3(e). The commenter asserted that, in the context of a permit application prepared in 2016 for a watershed that had no mining activity before November 28, 1975, the existing uses in 2016 likely would be more impaired than the existing uses before November 28, 1975. Preserving the ''existing uses'' at the time of the new 2016 mining application might simply perpetuate the existing level of impairment caused by prior mining in the same watershed. The commenter argued that our rules must provide at least the same level of protection as the Clean Water Act definition. The commenter recommended that our rules use the term ''premining uses'' and that we interpret that term as meaning all uses in existence at the time of the enactment of SMCRA. According to the commenter, the statutory mandate to prevent material damage to the hydrologic balance outside the permit area means that the rule must extend protection to all water sources impaired by mining since SMCRA was enacted in 1977.

Our rule implements SMCRA, not the Clean Water Act, so we are under no obligation to adopt the same definition of ''existing uses'' that has been adopted under the Clean Water Act, especially when our definition pertains to a term (material damage to the hydrologic balance outside the permit area) that does not appear in the Clean Water Act. We also have not discovered any support for the commenter's assertion that Congress intended that we look back to the baseline conditions on the date of enactment of SMCRA (August 3, 1977) to determine whether an operation is preventing material damage to the hydrologic balance outside the permit area. In addition to the practical difficulty of determining the baseline condition of water bodies on a date almost four decades ago, there is no statutory support for viewing the date that SMCRA was enacted as the baseline for determining whether an operation will prevent material damage to the hydrologic balance outside the permit area. To the contrary, SMCRA indicates that such a finding should be made at the time of permit application. For instance, section 510(b)(3) of SMCRA [46] provides that the regulatory authority *may not approve any application for a*

[39] 33 U.S.C. 1344.

[40] 30 U.S.C. 1271(a)(2).

[41] 30 U.S.C. 1292(a).

[42] 30 U.S.C. 1271.

[43] 33 U.S.C.1365.

[44] 16 U.S.C.1531.

[45] 33 U.S.C. 1313(c).

[46] 30 U.S.C. 1260(b)(3).

permit or permit revision unless the regulatory authority finds that *the proposed operation* has been designed to prevent material damage to the hydrologic balance outside the permit area. Thus, this section implies that the finding on material damage to the hydrologic balance outside the permit area should be based upon the assessment of the cumulative hydrologic impact of all anticipated mining in the watershed. That assessment looks forward to future impacts, not backward to impacts that have occurred since 1977.

To avoid confusion with the term ''existing uses'' as employed under the Clean Water Act, however, we have decided to replace the term ''existing uses'' with ''premining uses.'' We intend no change in practical effect by this change in terminology because ''premining uses'' are the uses in existence at the time of preparation of the permit application or, in other words, the conditions in existence before the proposed or current operation. There are some places in the regulations, primarily related to approximate original contour, where we address conditions in existence before any mining activities. In those instances, we do not use the term premining. Instead, we refer to conditions ''prior to any mining'' or ''before any mining''. For consistency in terminology, we are making these changes with respect to both groundwater and surface water.

I. We Should Remove Provisions That Are Duplicative of or Inconsistent With the Clean Water Act

Several commenters asserted that the proposed rule was inconsistent with SMCRA and would conflict with or duplicate the requirements of other federal laws—primarily the Clean Water Act. As support, many of these commenters cited Section 702 of SMCRA, which provides that ''[n]othing in this Act shall be construed as superseding, amending, modifying, or repealing . . . any of the following Acts or with any rule or regulation promulgated thereunder, including, but not limited to . . . [t]he Federal Water Pollution Control Act, as amended, the State laws enacted pursuant thereto, or other Federal laws relating to the preservation of water quality.'' [47] They also cited *In re Surface Mining Regulation Litigation,* 627 F.2d 1346 (D.C. Cir. 1980) where the court held that we exceeded our authority by issuing effluent limitations more stringent than those issued by EPA under the Clean Water Act. *Id.* at 1366–1367.

These commenters typically failed to appreciate the significance of the court's further holding in that case: ''where the [Clean Water Act] and its underlying regulatory scheme are silent so as to constitute an 'absence of regulation' or a 'regulatory gap', *the Secretary may issue effluent regulations without regard to EPA practice so long as he is authorized to do so under the Surface Mining Act.*'' *Id.* at 1367 (emphasis added). Thus, the court expressly held that we, under the authority of SMCRA, could issue regulations to address the hydrologic impacts of coal mining operations that are not adequately addressed under the Clean Water Act. In this final rule, consistent with this ruling, we are using our SMCRA authority to fill many of the very regulatory gaps that the Court mentioned in *In re Surface Mining Regulation Litigation. See, e.g., id.* (gaps in the Clean Water Act include, but are not limited to, ''discharges from abandoned and underground mines or from nonpoint sources'' and the ability ''to establish standards ''requiring comprehensive preplanning and designing for appropriate mine operating and reclamation procedures 'to ensure protection of public health and safety and to prevent the variety of other damages to the land, the soil, the wildlife, and the aesthetic and recreational values that can result from coal mining.' '').

Several commenters argued that this rule was not, in fact, filling regulatory gaps, but instead was creating a regime that would be inconsistent with the Clean Water Act and associated water quality laws and would improperly require SMCRA regulatory authorities to set water quality standards and enforce the Clean Water Act. We disagree. The Clean Water Act is designed to cover many industries and activities. SMCRA, by contrast, is designed to regulate the environmental impacts of one specific industry. This distinction is significant because the later-enacted statute, SMCRA, unlike the Clean Water Act, provides for the regulation of the environmental impacts, including the hydrologic impacts, of all phases of mining operations—design, operation, and reclamation. Absent SMCRA, coal mining operations that impact waters outside the permit area would be subject only to the limited regulation authorized by the Clean Water Act. By including requirements in SMCRA to regulate the effects of coal mining on water and hydrologic balance,[48] Congress clearly indicated that it intended to go beyond the protections it had afforded in the Clean Water Act. In SMCRA, Congress required the development of focused design requirements and performance standards for surface coal mining operations, including numerous standards related to water and the hydrologic balance. Thus, as long as these SMCRA standards do not conflict with the Clean Water Act, regulation under SMCRA will complement the Clean Water Act standards and requirements, which means that the final rule legitimately fits within the confines of what Congress intended.

Although nothing in the proposed rule conflicts with the Clean Water Act, because of commenters' concerns and to better effectuate our intent to improve coordination with Clean Water Act authorities, we modified the proposed rule in several key respects. We discuss these changes in more detail in the section-by-section analysis of the final rule.[49]

Some commenters alleged that our proposed rule would conflict with the Clean Water Act because it does not afford the same degree of flexibility that the statute does. However, our rule does not reduce the flexibilities afforded to operators under the Clean Water Act. Under our final rule, mining operations may not preclude attainment of any designated uses under the Clean Water Act, if such uses have been established. Precluding such designated uses would constitute material damage to the hydrologic balance outside the permit area under SMCRA. However, if no designated use exists, the standard becomes whether the operation is precluding any premining use of surface water outside the permit area.

One commenter asserted that designated uses under the Clean Water Act are ''aspirational and cannot be met due to ambient values or nonpoint sources'' and requested that we better explain what should occur in such situations. Another commenter raised similar concerns about how this proposed rule would account for the ''flexible and adaptive implementation'' of Clean Water Act standards. This commenter cited use attainability analysis, variances, and compliance

[47] 30 U.S.C. 1292(a)(3).

[48] *See, e.g.,* 30 U.S.C. 1201(c), 1260(b)(3), 1265(b)(2), 1265(b)(10), 1265(b)(24), 1266(b)(4), 1266(b)(9), 1266(b)(11), 1266(b)(12), 1266(c).

[49] *See, e.g.,* § 780.21(b)(6)(i) (removing the requirement that parameters of concern used to assess the potential for material damage to the hydrologic balance be expressed in numerical terms in the CHIA); 773.15(e)(3); and § 701.5 (definition of parameters of concern).

schedules and deadlines as examples of the flexible implementation inherent in Clean Water Act implementation. To the extent that the Clean Water Act provides flexibility, this final rule does not supersede, amend, modify, repeal, or otherwise conflict with the Clean Water Act. In addition, contrary to comments made by other commenters, SMCRA allows for some environmental impacts caused by mining; however, these are not without limitation. For example, section 515(b)(10) of SMCRA [50] requires that surface coal mining and reclamation operations minimize disturbances to the prevailing hydrologic balance at the mine site and in associated offsite areas and to the quality and quantity of water in surface and groundwater systems, which means that some damage is permissible. However, section 510(b)(3) of SMCRA [51] effectively prohibits approval of a permit application unless the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

J. We Should Remove the Provisions That Grant ''Veto Power'' Over SMCRA Permits to the U.S. Fish and Wildlife Service

Multiple commenters alleged that the proposed rule gave the U.S. Fish and Wildlife Service (FWS) ''veto power'' over issuance of SMCRA permits. Specifically, the commenters expressed concern that proposed §§ 779.20(d)(2)(iv) and 780.16(e)(2)(iv), would subordinate state permitting authority to the FWS because those provisions specified that the regulatory authority may not approve a permit application until all issues related to the Endangered Species Act of 1973 [52] are resolved and the regulatory authority has received written documentation from the FWS that all such issues have been resolved.

In the final rule, we replaced proposed §§ 779.20(d)(2)(iv) and 780.16(e)(2)(iv) with a single consolidated provision in § 780.16(b)(2). That provision specifies that the regulatory authority may not approve a permit application before it finds that there is a demonstration of compliance with the Endangered Species Act through one of the mechanisms listed in § 773.15(j) of the final rule.

Nothing in SMCRA supersedes the Endangered Species Act or exempts surface coal mining operations from compliance with applicable provisions of that law and the implementing regulations. Sections 7(a)(1), (2) and (4) of the Endangered Species Act of 1973 provide authority for adoption of the regulations referenced above, which are intended to ensure that surface coal mining and reclamation operations conducted under approved state and federal SMCRA regulatory programs avoid violations of the Endangered Species Act. Section 7(a)(1) of the Endangered Species Act [53] directs federal agencies to use their authorities to further the purposes of the Endangered Species Act. Section 7(a)(2) of the Endangered Species Act [54] requires all federal agencies, in consultation with FWS or the National Marine and Fisheries Service,[55] to ensure that their actions are not likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Section 7(a)(4) of the Endangered Species Act [56] requires federal agencies to confer with the FWS on any agency action that is likely to jeopardize the continued existence of any species proposed to be listed. Other sources of authority for this rule are sections 515(b)(24), 515(b)(10), 515(b)(17), and 201(c)(2) of SMCRA.[57]

Section 4 of the Endangered Species Act directs the Secretary of the Interior, through the FWS, to list threatened or endangered species of fish and wildlife or plants and to designate critical habitat for those species.[58] The Endangered Species Act prohibits the unauthorized ''take'' of listed species,[59] a prohibition that applies to all persons and entities, including coal mine permittees and state regulatory authorities.[60]

The Endangered Species Act provides several routes by which applicants may demonstrate compliance. An applicant may demonstrate that the proposed actions would have no effect on listed species. If the proposed action may affect a listed species or destroy or cause adverse modifications to designated critical habitat, the applicant must consult with the FWS under section 7 [61] of the Endangered Species Act for federal permits or for mining plan approvals involving leased federal coal. Alternatively, the applicant may utilize the procedures of section 10 [62] of the Endangered Species Act for state permits on non-federal lands. Some applicants have obtained incidental take coverage by complying with the terms of a biological opinion that establishes a process for obtaining incidental take coverage that is significantly less time-consuming and less resource-intensive than the individual section 7 or section 10 processes. An applicant seeking to obtain incidental take coverage under a biological opinion, must comply with all the procedures, terms, and conditions of the biological opinion. We do not, however, require an applicant to use a biological opinion to obtain coverage. A biological opinion merely provides one avenue by which an applicant may obtain the coverage it needs against civil or criminal liability [63] for unauthorized take of threatened or endangered species in violation of the Endangered Species Act.

Paragraphs (j)(1) through (4) of final § 773.15 list four pathways by which the applicant and the regulatory authority may document compliance with the Endangered Species Act for surface coal mining and reclamation operations conducted under a SMCRA regulatory program. Paragraph (j)(1) applies when the applicant can document that the proposed surface coal mining and reclamation operations would have no effect on species listed or proposed for listing as threatened or endangered or on designated or proposed critical habitat. The joint U.S. Fish and Wildlife Service and National Marine Fisheries Service ''Final Endangered Species Act Section 7 Consultation Handbook'' (March 1998) states that the term ''effect'' means any impact, regardless of the severity or whether the impact is positive or negative.[64] Further, the implementing Endangered Species Act regulations found at 50 CFR 402.02, define ''effects of the action'' in relevant part as ''the direct and indirect effects of an action on the species or critical

[50] 30 U.S.C. 1265(b)(10).

[51] 30 U.S.C. 1260(b)(3).

[52] 16 U.S.C. 1531 *et seq.*

[53] 16 U.S.C. 1536(a)(1).

[54] 16 U.S.C. 1536(a)(2).

[55] The Secretaries of the Department of the Interior and Commerce (Secretaries) have the responsibility for administering the Endangered Species Act, and have delegated this responsibility to the FWS and National Marine Fisheries Service (NMFS), respectively. 16 U.S.C. 1533. The FWS manages and administers most ESA-listed species except marine species, including some marine mammals, and anadromous fish, which are the responsibility of NMFS. *Id.* We determined that this rulemaking will not impact any of the species under the jurisdiction of the NMFS. However, we included the NMFS in all sections of our rule relating to the Endangered Species Act to insure that, in the unlikely circumstance that a coal mining operation may impact an ESA-listed species or its habitat under the jurisdiction of NMFS, the applicant and regulatory authority coordinate with the appropriate NMFS office.

[56] 16 U.S.C. 1536(a)(4).

[57] 30 U.S.C. 1265(b)(24), 1265(b)(10), 1265(b)(17), and 1211, respectively.

[58] 16 U.S.C. 1533.

[59] 16 U.S.C. 1538(a).

[60] 16 U.S.C. 1532(13).

[61] 16 U.S.C. 1536.

[62] 16 U.S.C. 1539.

[63] 16 U.S.C. 1540.

[64] Final ESA Section 7 Consultation Handbook, March 1998 (pg. xii–xiii).

habitat, together with the effects of other activities that are interrelated or interdependent with that action.''

Paragraphs (j)(2) through (4) apply when the proposed surface coal mining and reclamation operations may have an effect on species listed or proposed for listing as threatened or endangered or on designated or proposed critical habitat for those species. Paragraph (j)(2) allows an applicant to obtain protection against liability for incidental take of a threatened or endangered species by documenting compliance with a valid biological opinion that covers issuance of permits for surface coal mining operations and the conduct of those operations under the applicable regulatory program. Through the process of completing a section 7 consultation on the continuation of existing permits and the approval and conduct of future surface coal mining and reclamation operations under both state and federal regulatory programs adopted pursuant to SMCRA, as modified by this rule, OSMRE and the U.S. Fish and Wildlife Service entered into a Memorandum of Understanding to improve interagency coordination and cooperation to ensure that proposed, threatened, and endangered species and proposed and designated critical habitat are adequately protected for all surface coal mining and reclamation permitting actions, including exploration operations, initial permit issuance, renewals, and significant revisions. The MOU complements the U.S. Fish and Wildlife Service's 2016 programmatic Biological Opinion. Thus, compliance with the terms of that biological opinion and the MOU would satisfy final paragraph (j)(2).

Final paragraph (j)(3) applies where we are the regulatory authority or where a mining plan is required under part 746 of our regulations to mine leased federal coal. This provision specifies that the applicant may provide documentation that interagency consultation under section 7 of the Endangered Species Act has been completed for the proposed operation. The provision may also apply in the case where other federal permits are required for the proposed operation, depending upon the scope of the formal consultation. Paragraph (j)(4) provides an alternative that applies where a state regulatory authority is responsible for permitting actions and the proposed operation does not involve leased federal coal, and the operator does not utilize paragraph (j)(2) or (j)(3), where applicable. It specifies that the applicant may provide documentation that the proposed operation is covered under a permit issued pursuant to section 10 of the Endangered Species Act of 1973.

K. We Should Better Explain How the Definitions of ''*Material Damage*'' *and* ''*Material Damage to the Hydrologic Balance Outside the Permit Area*'' *Apply to Underground Mining Operations*

Section 701.5 contains definitions of both ''material damage'' and ''material damage to the hydrologic balance outside the permit area.'' Many commenters asked that we make revisions to better distinguish between the definitions and clarify how they apply to underground mining operations. These commenters correctly note that section 510(b)(3) of SMCRA requires mine operators to prevent ''material damage to the hydrologic balance outside the permit area'' but section 516(b)(1) of SMCRA requires prevention of ''material damage'' caused by subsidence from underground operations to the extent technologically and economically feasible.[65] As specified in its definition, the term ''material damage'' applies only to our subsidence control provisions at §§ 784.30 and 817.121, which are applicable to underground mining operations.

As finalized, the definition of the term ''material damage to the hydrologic balance outside the permit area'' applies generally to ''an adverse impact . . . resulting from surface coal mining and reclamation operations, underground mining activities, or subsidence associated with underground mining activities.'' These two definitions are intended to ensure that all provisions of SMCRA are given effect—material damage to the hydrologic balance outside the permit area is prevented while material damage caused by subsidence is minimized to the extent technologically and economically feasible.

Numerous commenters expressed concern about the potential implications of applying the term ''material damage to the hydrologic balance outside the permit area'' to underground mining activities and subsidence. These commenters objected to application of the definition of ''material damage to the hydrologic balance outside the permit area'' to areas overlying the underground workings, which are part of the ''adjacent area'' as defined in § 701.5. They indicated that subsidence can cause a range of different impacts on water quantity and quality, including loss of flow through surface fracturing of the stream bed, loss of recharge due to a drop in the groundwater table below the stream bed elevation, loss of water supply sources like springs and seeps, and increased pollutant loadings; *e.g.,* iron, aluminum, and sulfate, caused by fracturing of the overburden. They noted that these types of hydrologic impacts are often temporary. According to the commenters, if the rule categorically required the prevention of temporary and permanent hydrologic impacts, some types of underground mining, such as longwall mining or other methods using planned subsidence, could not occur because those hydrologic impacts cannot be completely prevented.

We find that many of the concerns raised in the comments are overstated.

As noted previously, section 510(b)(3) of SMCRA[66] requires mine operators to prevent ''material damage to the hydrologic balance outside the permit area'' but section 516(b)(1) of SMCRA[67] requires prevention of ''material damage'' caused by subsidence from underground operations to the extent technologically and economically feasible. In keeping with these different and distinct provisions of SMCRA we clarified that not all of the impacts that the commenters described would necessarily rise to the level of material damage to the hydrologic balance outside the permit area. The regulatory authority is required to make a determination whether a permittee's proposed operation is designed to prevent material damage to the hydrologic balance outside the permit area. If the regulatory authority determines that it does cause material damage to the hydrologic balance outside the permit area, a permit will not be issued. Such a situation would occur whenever an adverse impact from subsidence permanently diminishes flow (*i.e.,* dewaters) of an intermittent or perennial stream to the extent that applicable water quality standards would not be met, or if no water quality standard has been established, the premining use would not be attained. However, a regulatory authority may determine that proposed subsidence-related material damage to surface water or groundwater can and will be repaired so that it still meets applicable water quality standards, or, if no water quality standard exists or is applicable, it still attains its premining use. Diminished flow within a short section of a stream segment over a longwall panel that recovers within a brief period of time or is repairable may have no discernible impact on attainment of water quality

[65] 30 U.S.C. 1266(b)(1).

[66] 30 U.S.C. 1260(b)(3).

[67] 30 U.S.C. 1266(b)(1).

standards or premining uses and therefore may not constitute material damage to the hydrologic balance outside the permit area. The regulatory authority will make a determination on whether subsidence damage to wetlands, streams, or other water bodies that can be corrected, or that will recover naturally, constitutes material damage to the hydrologic balance outside the permit area; if it does not rise to the level of material damage to the hydrologic balance outside the permit area, it may be allowed.

We have clarified and revised language in the final rule to ensure that longwall mining and other underground mining methods that use planned subsidence would not be prohibited, and that temporary impacts are allowed so long as they do not rise to the level of material damage to the hydrologic impacts outside of the permit area. SMCRA is clear that the regulatory authority may not approve any permit application for a surface coal mining operation, including one that involves underground mining activities, unless the application affirmatively demonstrates, consistent with final rule § 773.15, and the regulatory authority finds, in writing, that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.[68] Any material damage to the hydrologic balance outside the permit area is unacceptable, including damage from subsidence, even if it is temporary. As mentioned above, such a situation could occur, for example, when subsidence causes a stream to dewater to the point that the stream can no longer support its water quality standard, or if no water quality standard exists, its premining use. If it is determined that a proposed operation would have this result, the operational plan would need to be modified to prevent subsidence of the stream. That modification could include the use of underground mining technology that prevents subsidence, such as room-and-pillar mining, for that portion of the operation. In order to clarify the obligation of the permittee to prevent material damage to the hydrologic balance outside the permit area, while recognizing that temporary subsidence-related material damage is almost certain to occur at planned subsidence operations, we have added new language to § 817.34(a)(2). This new language makes it clear that while underground operations must prevent material damage to the hydrologic balance outside the permit area, temporary subsidence related material damage that can be repaired or recover naturally may be allowed under § 817.121(c). As noted previously, however, given the different requirements of section 510(b)(3) and section 516(b)(1) of SMCRA,[69] the obligation to prevent material damage to the hydrologic balance outside the permit area, as required at section 510(b)(3) of SMCRA is not subject to the provision at section 516(b)(1) of SMCRA which requires prevention of material damage from subsidence to the extent technologically and economically feasible. An operator will not be granted an exemption from complying with material damage to the hydrologic balance outside the permit area based upon technological and economic feasibility where subsidence damage will result in material damage to the hydrologic balance outside the permit.

We have also addressed comments about the effects of subsidence on land and waters overlying underground mine workings by revising our proposed definition of ''material damage'' and our subsidence control provisions at § 784.30 (previously located at § 784.20), and § 817.121. In addition to addressing concerns raised by commenters about the magnitude and longevity of subsidence-related impacts to streams, these changes will help reduce the confusion identified by one commenter regarding the application of material damage to certain features in the subsidence context.

The definition of ''material damage'' in § 701.5 of the final rule applies only in the context of the subsidence control provisions of §§ 784.30 and 817.121. Among other things, the definition as adopted in this final rule specifies that material damage includes ''[a]ny functional impairment of surface lands, features (including wetlands, streams, and bodies of water), structures, or facilities.'' Under § 784.30(c), mining may still occur when those features exist or may be materially damaged, provided that the applicant submits a subsidence control plan and the regulatory authority approves that plan. Among other requirements, the subsidence control plan must describe the anticipated effects of planned subsidence on wetlands, streams, and water bodies and the measures to be taken to mitigate or remedy any subsidence-related material damage to those features.[70] In addition, pursuant to § 817.121(c) and (g), the underground mine operator must repair damage to surface land and waters, including wetlands, streams, and water bodies, to a condition capable of maintaining the value and reasonably foreseeable uses that the land was capable of supporting before subsidence damage occurred unless the regulatory authority determines that restoration is not technologically or economically feasible. If those repairs will not be implemented within 90 days, the permittee must bond the area as discussed in the preamble to final § 817.121(g)(3)(i).

These revisions are consistent with our longstanding position about subsidence-related material damage. For instance, in our final rule addressing the subsidence provisions of the Energy Policy Act of 1992,[71] we stated:

> The term material damage, in the context of §§ 784.20 and 817.121 of this chapter, means any functional impairment of surface lands, features, structures or facilities. The material damage threshold includes any physical change that has a significant adverse impact on the affected land's capability to support any current or reasonably foreseeable uses, or that causes significant loss in production or income, or any significant change in the condition, appearance or utility of any structure or facility from its pre-subsidence condition. It would also include any situation in which an imminent danger to a person would be created.[72]

Nothing in this final rule alters the meaning of the term ''functional impairment'' in the context of subsidence-related material damage. In addition, the preamble to the 1995 rules states that ''[t]he definition of 'material damage' covers damage to the surface and to surface features, such as wetlands, streams, and bodies of water, and to structures or facilities.'' [73] Consistent with that preamble description, the addition of the phrase ''wetlands, streams, and water bodies'' to our material damage definition should help clarify the applicability of the definition to hydrologic features in the subsidence context and ensure those damages are corrected in accordance with § 817.121.

The final rule includes language that requires the regulatory authority, when reviewing the determination of the probable hydrologic consequences of the operation in accordance with § 784.20 and the hydrologic reclamation plan in accordance with § 784.22, to (i) make a reasonable effort to assess the potential effects of subsidence from the proposed underground mining activities on streams and (ii) include remedial measures for any predicted diminution of streamflow as a result of subsidence. In summary, the final rule allows

[68] 30 U.S.C. 1260(b)(3).

[69] 30 U.S.C. 1260(b)(3) and 1266(b)(1).

[70] 784.30(c)(2)(vi) and (c)(2)(viii).

[71] Public Law 102–486 (Oct. 24, 1992).

[72] 60 FR 16722 (Mar. 31, 1995).

[73] *Id.*

material damage to wetlands, streams, and water bodies to occur so long as the permittee follows the subsidence control provisions in §§ 784.30 (subsidence control plan), 817.40 (water supply replacement), and 817.121 (subsidence prevention and control and correction of damage resulting from subsidence). Following these regulations means that water supplies will be replaced and that, to the extent technologically and economically feasible, wetlands, streams, and water bodies will be restored. In addition, we added § 817.121(c)(2), which requires that the permittee implement fish and wildlife enhancement measures, as approved by the regulatory authority in a permit revision, to offset subsidence-related material damage to wetlands or a perennial or intermittent stream when correction of that damage is technologically and economically infeasible. As long as these regulations are followed, subsidence damage from an underground mining operation that does not rise to the level of material damage to the hydrologic balance outside the permit area is allowed.

L. We Should Specify the Location Where an Operation Must Prevent Material Damage to the Hydrologic Balance Outside the Permit Area

A commenter suggested that we provide guidance on the location of the point of compliance for determining material damage to the hydrologic balance. Section 510(b)(3) of SMCRA [74] prohibits the approval of a permit application unless the application demonstrates and the regulatory authority finds in writing that the proposed operation has been designed to prevent material damage to hydrologic balance outside the permit area. Our existing definition of ''permit area'' in § 701.5 of our regulations provides that the permit area means ''the area of land, indicated on the approved map submitted by the operator with his or her application, required to be covered by the operator's performance bond under subchapter J of this chapter and which shall include the area of land upon which the operator proposes to conduct surface coal mining and reclamation operations under the permit, including all disturbed areas; provided that areas adequately bonded under another valid permit may be excluded from the permit area.'' [75] Our existing regulations in § 701.5 define ''disturbed area'' to mean ''an area where vegetation, topsoil, or overburden is removed or upon which topsoil, spoil, coal processing waste, underground development waste, or noncoal waste is placed by surface coal mining operations.'' [76] When the definition of ''material damage to the hydrologic balance outside the permit area'' that we are finalizing today is read in conjunction with the existing definitions of ''permit area'' and ''disturbed area,'' it is clear that the point of compliance for preventing material damage to the hydrologic balance outside the permit area is any point outside those areas of the permit boundary as indicated on the approved permit application map. The area inside the permit boundary where overburden is removed or where other mining activities occur that are required to be bonded for reclamation comprise the limits of the disturbed area. Any discharge, including those inside the permit area, must be in compliance with applicable Clean Water Act provisions as provided in § 816.42 of our final regulations; in addition, such discharges must not be comprised of toxic mine drainage and cannot result in material damage to the hydrologic balance outside the permit area.

The areas outside the permit area that may be impacted by mining activities are within the ''adjacent area'' as that term is defined in § 701.5. Generally, paragraph (1) of the definition of ''adjacent area'' includes the area outside the proposed or actual permit area within which there is a reasonable probability of adverse impacts from surface coal mining operations or underground mining activities. Moreover, the area comprised within this term will vary with the context in which a regulation uses this term. For example, the nature of the resource or resources addressed by a regulation in which the term ''adjacent area'' appears will determine the size and other dimensions of the adjacent area for purposes of that regulation.

For underground mines, paragraph (2) of the definition specifies that the adjacent area includes, ''at a minimum, the area overlying the underground workings plus the area within a reasonable angle of dewatering from the perimeter of the underground workings.'' Thus, surface water and groundwater outside the permit area, but within the adjacent area, must be protected from material damage to the hydrologic balance outside the permit area. We discuss other issues pertaining to the term ''material damage to the hydrologic balance outside the permit area'' in the preamble to the definition of that term.

M. What is the relationship among material damage thresholds, evaluation thresholds, and water monitoring requirements?

Material Damage Thresholds

Section 510(b)(3) of SMCRA [77] provides that the regulatory authority may not approve a permit application unless the application affirmatively demonstrates and the regulatory authority finds in writing that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The regulatory authority must base this finding on an ''assessment of the probable cumulative impact of all anticipated mining in the area on the hydrologic balance.'' Our rules refer to that assessment as the cumulative hydrologic impact assessment (CHIA). *See, e.g.,* 30 CFR 780.21. Our rules also designate the area for which the CHIA is prepared as the ''cumulative impact area,'' which section 701.5 of this final rule defines generally as any area within which impacts resulting from a surface or underground coal mining operation may interact with the impacts of all existing and anticipated surface and underground coal mining on surface-water and groundwater systems, including the impacts that existing and anticipated mining will have during mining and reclamation until final bond release.

The regulatory authority prepares the CHIA after technical review of the permit application is complete, using both the information in the application and other available data about the cumulative impact area. The application components most critical to preparation of the CHIA are the baseline data on surface water and groundwater; the ''determination of the probable hydrologic consequences of the mining and reclamation operations, both on and off the mine site,'' required by section 507(b)(11) of SMCRA; [78] which we generally refer to as the PHC determination, and the hydrologic reclamation plan required by section 508(a)(13) of SMCRA.[79] Section 780.20 of this final rule includes requirements for the PHC determination, while § 780.22 contains requirements for the hydrologic reclamation plan.

Section 780.21(b)(6) of this final rule provides that the regulatory authority must identify site-specific numeric or narrative material damage thresholds for each permit as part of the CHIA and include those thresholds as a condition

[74] 30 U.S.C. 1260(b)(3).

[75] 30 CFR 701.5.

[76] *Id.*

[77] 30 U.S.C. 1260(b)(3).

[78] 30 U.S.C. 1257(b)(11).

[79] 30 U.S.C. 1258(a)(13).

of the permit. These material damage thresholds will become the basis for the regulatory authority to objectively determine if a mining operation has prevented material damage to the hydrologic balance outside the permit area.

In developing thresholds to define when material damage to the hydrologic balance outside the permit area would occur in connection with a particular permit, final § 780.21(b)(6)(i) specifies that the regulatory authority will, in consultation with the Clean Water Act authority, as appropriate, undertake a comprehensive evaluation that considers the baseline data collected under § 780.19 of the final rule, the probable hydrologic consequences determination prepared under § 780.20 of the final rule, applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act,[80] applicable state or tribal standards for surface water or groundwater, ambient water quality criteria developed under section 304(a) of the Clean Water Act,[81] the biological requirements of any species listed as threatened or endangered under the Endangered Species Act of 1973,[82] and other pertinent information and considerations to identify the parameters for which thresholds are necessary and what numeric or narrative thresholds to use. Final § 780.21(b)(6)(ii) specifies that the regulatory authority must, after consulting with the Clean Water Act authority, use numeric material damage thresholds when possible for contaminants that have water quality criteria set by the Clean Water Act.[83] For contaminants, that do not have water quality criteria set, the material damage thresholds can be either numeric or narrative.

Final § 780.21(b)(6)(iii) requires that the regulatory authority identify the portion of the cumulative impact area to which each material damage threshold applies. This provision recognizes that the parameters selected and material damage threshold levels may vary within the cumulative impact area when appropriate, based upon differences in watershed characteristics and variations in the geology, hydrology, and biology of the cumulative impact area. For instance, if the operation would create point-source or nonpoint-source discharges to more than one receiving stream, material damage thresholds for surface water may vary from one watershed within the cumulative impact area to another, taking into consideration differences in watershed characteristics. Similarly, material damage thresholds for groundwater may vary from one part of the cumulative impact area to another to reflect variations in the geology or subsurface hydrology of the cumulative impact area. Regulatory authorities should closely coordinate with the relevant state agencies in identifying appropriate material damage thresholds for groundwater.

Material damage thresholds apply at all points outside the permit area. Final § 780.21(b)(6)(iv), therefore, provides that in the CHIA, the regulatory authority, must identify the points within the cumulative impact area at which the permittee will monitor the impacts of the operation on surface water and groundwater outside the permit area and explain how those locations will facilitate timely detection of the impacts of the operation on surface water and groundwater outside the permit area.

Evaluation Thresholds

In the preamble to the proposed rule,[84] we invited comment on whether the final rule should require that the regulatory authority establish corrective action thresholds. We explained that corrective action thresholds would consist of values for water quality or quantity that, while not constituting material damage to the hydrologic balance outside the permit area, provide reason for concern that such damage may occur in the future if no corrective action is taken. We received comments both supporting and opposing the development of corrective action thresholds. After considering the comments received, we decided to include a requirement in this final rule for thresholds of this nature, for the reasons discussed in the preamble to § 780.21(b)(7).

However, the final rule uses the term ''evaluation thresholds'' rather than ''corrective action thresholds'' because exceedance of this type of threshold does not necessarily require initiation of corrective action. Instead, an evaluation threshold identifies the point at which the regulatory authority must investigate the cause of an adverse trend in water quality or quantity outside the permit area. If the investigation finds that the mining operation is responsible for the adverse trend and that the adverse trend is likely to continue in the absence of corrective action, § 780.21(b)(7)(ii) of the final rule requires that the regulatory authority issue a permit revision order under § 774.10. That order must require that the permittee reassess the adequacy of the PHC determination prepared under § 780.20 and the hydrologic reclamation plan approved under § 780.20 and develop appropriate measures to minimize the possibility that the operation could cause material damage to the hydrologic balance outside the permit area in the future. The purpose of setting evaluation thresholds and establishing monitoring points is to detect impacts and provide an early warning system to alert both the permittee and the regulatory authority of adverse trends that, left uncorrected, would result in material damage to the hydrologic balance outside the permit area if the trajectory of the trend remains unaltered. Early detection of adverse trends and timely implementation of corrective measures benefits both the environment and the permittee by preventing the development of water quality or quantity problems that may be difficult, expensive, or impossible to correct. Use of evaluation thresholds also may assist in avoiding SMCRA permit violations.

Section 780.21(b)(7) of the final rule requires that the regulatory authority identify evaluation thresholds for critical water quality and quantity parameters. These critical parameters are characterized as those that could rise to the level of material damage. We expect that the regulatory authority will use best professional judgment in determining which parameters are critical. The final rule does not dictate how the regulatory authority must identify appropriate evaluation thresholds for critical parameters, which means that the regulatory authority has considerable flexibility. For example, the regulatory authority may decide to apply an across-the-board percentage reduction from the corresponding material damage thresholds or it may decide to determine evaluation thresholds on a case-by-case basis.

An exceedance of an evaluation threshold is not itself a violation under SMCRA or the SMCRA permit because evaluation thresholds are not incorporated as a condition of the permit and do not constitute enforceable standards. Moreover, exceedances of evaluation thresholds may not necessarily be the result of the mining operation. For that reason, an exceedance of an evaluation threshold only triggers a requirement under final § 780.21(b)(7) that the regulatory authority determine the cause of the exceedance in consultation with the Clean Water Act authority, as appropriate. If the mining operation is

[80] 33 U.S.C. 1313(c).

[81] 33 U.S.C. 1314(a).

[82] 16 U.S.C. 1531 *et seq.*

[83] 33 U.S.C. 1251 *et seq.*

[84] 80 FR 44436, 44502 (Jul. 27, 2015).

responsible for the exceedance and if the adverse trend is likely to continue in the absence of corrective action, final § 780.21(b)(7) provides that the regulatory authority must issue a permit revision order under § 774.10. The order must require that the permittee reassess the adequacy of the PHC determination prepared under § 780.20 and the hydrologic reclamation plan approved under § 780.22 and develop measures to prevent material damage to the hydrologic balance outside the permit area. Section 780.21(c)(1) of the final rule provides that, upon receipt of an application for a significant permit revision, the regulatory authority must determine whether there is a need for a new or updated CHIA.

We encourage the permittee to identify any exceedance of an evaluation threshold as part of its review of water monitoring records and notify the regulatory authority, which will then determine how to proceed with determining the cause of the exceedance. Additionally, the SMCRA inspector will, as part of each complete inspection conducted on a quarterly basis, review water monitoring records to determine if an evaluation threshold has been exceeded. If the inspector identifies an exceedance, the regulatory authority, in consultation with the Clean Water Act authority, as appropriate, will then determine the cause of the exceedance and, if necessary, issue an order requiring that the permittee submit a permit revision application, as discussed above. In addition, § 780.21(c)(2) of the final rule provides that the regulatory authority must reevaluate the CHIA at intervals not to exceed three years to determine whether the CHIA remains accurate and whether the material damage and evaluation thresholds in the CHIA and the permit are adequate to ensure that material damage to the hydrologic balance outside the permit area will not occur. This review must consider all biological and water monitoring data from all surface coal mining and reclamation operations within the cumulative impact area.

We are the regulatory authority in Tennessee. We have used evaluation thresholds successfully in our Knoxville Field Office (KFO) for many years, resulting in cost-effective and practical improvements to water quality. For example, KFO routinely uses an evaluation threshold of 1.0 mg/l for iron in a receiving stream. Water monitoring data for a site subsequently documented an exceedance of that threshold after the surface mining operation disturbed flooded abandoned underground mine workings. The permittee had attempted to divert the flow from those workings to a pond for treatment. However, the diversion was not fully successful, and some of the water entered the receiving stream without treatment. KFO required the permittee to construct a three-cell wetland treatment system and divert all water from the underground workings to that system, which is successfully treating the water. This corrective action prevented material damage to the hydrologic balance from occurring. KFO conducted the investigation jointly with the Tennessee Clean Water Act permitting authority.

Monitoring

Final rule § 780.23(a) and (b) require that each permit application include plans to monitor both surface water and groundwater. Those paragraphs also provide that the plans must be adequate to evaluate the impacts of the mining operation on surface water and groundwater in the proposed permit and adjacent areas and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area. Among other things, the final rule requires that the plans include monitoring points at the locations specified in the CHIA prepared by the regulatory authority under § 780.21(b)(6)(iv) of the final rule.

Paragraphs (a)(1)(iii) and (b)(1)(iv) of final § 780.23 require that the permittee establish a sufficient number of appropriate monitoring locations to evaluate the accuracy of the findings in the PHC determination, to identify adverse trends, and to determine, in a timely fashion, whether corrective action is needed to prevent material damage to the hydrologic balance outside the permit area. Under final § 780.23(b)(1)(iv)(B), the surface water monitoring plan must include upgradient and downgradient monitoring locations in each perennial and intermittent stream within the proposed permit and adjacent areas, with the exception that no upgradient monitoring location is needed for a stream when the operation will mine through the headwaters of that stream. Similarly, under final § 780.23(a)(1)(iii)(A), the groundwater monitoring plan must include monitoring wells or equivalent monitoring points located upgradient and downgradient of the proposed operation. That requirement applies to each aquifer above or immediately below the lowest coal seam to be mined.

Paragraphs (a)(2)(i) and (b)(2)(i) of final § 780.23 specify that, at a minimum, the surface water and groundwater monitoring plans must provide for the monitoring of those parameters for which evaluation thresholds exist under § 780.21(b)(7). In addition, paragraphs (a)(2)(ii) and (b)(2)(ii) of final § 780.23 require analysis of each sample for the baseline parameters listed in § 780.19(a)(2) and for all parameters for which evaluation thresholds exist under § 780.21(b)(7).

Final § 816.35(a)(2) requires that the permittee conduct groundwater monitoring through mining, reclamation, and the applicable revegetation responsibility period under § 816.115 of the final rule for the monitored area. The permittee must continue to monitor groundwater beyond that date for any additional time needed for monitoring results to demonstrate that the criteria of § 816.35(d)(1) and (2) have been met, as determined by the regulatory authority. Paragraphs (d)(1) and (2) of § 816.35 establish the conditions under which the regulatory authority may approve modification of the groundwater monitoring requirements, including the parameters monitored and the sampling frequency. For example, the regulatory authority may reduce the frequency of groundwater monitoring from quarterly to annual if it determines that the reduced frequency will be adequate to detect adverse trends in a timely manner, based on the rate of groundwater movement.

Specifically, paragraphs (d)(1) and (2) of final § 816.35 provide that the permittee may request, and the regulatory authority may approve, modification of the groundwater monitoring plan based on a demonstration that, with respect to the parameter or parameters affected by the proposed modification, future adverse changes in groundwater quantity or quality are unlikely to occur and the operation has—

- Minimized disturbance to the hydrologic balance in the permit and adjacent areas;
- Prevented material damage to the hydrologic balance outside the permit area;
- Preserved or restored the biological condition of perennial and intermittent streams within the permit and adjacent areas for which baseline biological condition data was collected under § 780.19(c)(6)(vi) when groundwater from the permit area provides all or part of the base flow of those streams;
- Maintained or restored the availability and quality of groundwater to the extent necessary to support the approved postmining land uses within the permit area; and

• Protected or replaced the water rights of other users.

Nothing in § 816.35(d)(1) and (2) authorize complete discontinuance of monitoring at any monitoring location (except as approved under § 784.40 for certain underground mines) or discontinuance of monitoring of all parameters for the entire operation before expiration of the applicable revegetation responsibility period under § 816.115 for the monitored area. Given the typically slow rate of groundwater movement and the length of time needed to reestablish the water table in the backfilled area, discontinuance of monitoring before expiration of the applicable revegetation responsibility period under § 816.115 likely would result in discontinuance of groundwater monitoring before groundwater within the reclaimed permit area has reached equilibrium with groundwater in the adjacent area. That result would negate the purposes of the monitoring program, one of which is to evaluate whether the operation has caused material damage to the hydrologic balance outside the permit area.

Final § 816.36 contains identical requirements for surface water monitoring, with the exception that paragraph (a)(2) requires that surface water monitoring continue through mining and during reclamation until the regulatory authority releases the entire bond amount for the monitored area under §§ 800.40 through 800.43. This difference reflects the fact that surface water monitoring, unlike groundwater monitoring, does not involve wells that the permittee must seal or transfer under § 816.13 of the final rule before applying for final bond release. In addition, final § 816.36(d)(2) contains one additional requirement for modification of the surface water monitoring plan for a permit: The permittee must demonstrate that the operation has not precluded attainment of any designated use of surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

Paragraph (c) of final section 780.23 further requires that the permit application include a plan for monitoring the biological condition of each perennial and intermittent stream within the proposed permit and adjacent areas for which baseline biological condition data was collected under § 780.19(c)(6)(vi). The plan must be adequate to evaluate the impacts of the mining operation on the biological condition of those streams and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area.

N. What effect will the final rule have on proposed operations in impaired watersheds?

Each Clean Water Act authority is required to conduct an assessment of each stream within state borders to determine if the water is meeting all state and federal water quality criteria. If a stream is not meeting all state and federal water quality criteria, it is considered to be impaired. Under section 303(d) of the Clean Water Act, each state is required to submit a list of these impaired waters to the Environmental Protection Agency ''from time to time'' (but at least every three years). Section 303(d) of the Clean Water Act also requires each state to prioritize the waters on the impaired waters list and develop a plan to rehabilitate the stream so that it is able to meet all state and federal water quality criteria. This plan involves estimating the total maximum daily load (TMDL) of various water quality parameters from all known and reasonably foreseeable sources (point and non-point sources) that an impaired stream is expected to contain while moving along its flow path. The plan's objective is to decrease the pollutant load and enable the stream to meet all state and federal water quality standards. These TMDLs serve as a blueprint to ensure that an impaired stream meets all state and federal water quality criteria and achieves its highest designated use.

TMDLs can be calculated to implement a narrative stream condition or to focus on a specific parameter.[85] Once the TMDL is calculated, each new individual point-source discharge is assigned a waste load allocation based on its estimated discharge flow rate and parameter concentration. The Clean Water Act authority may adjust effluent limitations in existing NPDES permits to reflect the waste load allocation for each parameter under consideration in the TMDL. When the waste load allocations are implemented as concentration-based limits in NPDES permits, the limits are derived from the calculated waste load allocation for the outfall and an assumed flow rate. This concentration limit is expressed in concentration units applicable to each specific parameter and is normally given as a mass/volume (*e.g.,* mg/L). Waste load allocations are often implemented in NPDES permits as mass-based limits and expressed as pounds per day.

Both the applicant and the regulatory authority need to carefully consider the impact of a proposed operation on the impaired hydrologic conditions in a watershed with a 303(d)-listed water. Under section 510(b)(3) of SMCRA and § 773.15(e) of this final rule, the SMCRA regulatory authority may not approve a permit application unless the applicant demonstrates, and the regulatory authority finds, that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Before making this finding, the SMCRA regulatory authority must prepare a cumulative hydrologic impact analysis (CHIA) that identifies and analyzes the cumulative impacts of all anticipated mining, including the proposed operation, on the hydrologic balance in the cumulative impact area, including impacts on the water quality and biology of the receiving stream. *See* final paragraphs (a) and (b) of § 780.21. Both the definition of ''material damage to the hydrologic balance outside the permit area'' in § 701.5 of this final rule and the CHIA regulations that we are adopting in § 780.21(b)(6) of this final rule provide that the regulatory authority must consult with the Clean Water Act authority, as appropriate, in determining whether the proposed operation would cause material damage to the hydrologic balance outside the permit area.

O. Should ephemeral streams receive the same protections as intermittent and perennial streams?

Scientific studies completed since the enactment of SMCRA and the adoption of our existing rules have documented the importance of headwater streams in maintaining the ecological health and function of streams down gradient of headwater streams. Headwater streams include all first-order and second-order streams without regard to whether those streams are perennial, intermittent, or ephemeral. In 2015, U.S. Environmental Protection Agency published a report summarizing the findings of peer-reviewed studies of headwater streams and wetlands and the impact they have on the physical, chemical, and biological integrity of downstream

[85] For example, if the Clean Water Act authority determined that a stream was impaired because of excess sediment, it would calculate the sediment load the stream could assimilate from all point and non-point sources while maintaining its designated use. That TMDL for sediment would be expressed numerically (*e.g.,* 1000 pounds of suspended sediment per day). The Clean Water Act authority would then allocate a portion of that TMDL amount among all known and reasonably foreseeable NPDES permits and non-point sources that do not have an NPDES permit.

waters.[86] The studies and the report generally do not differentiate among perennial, intermittent, and ephemeral streams, but the report emphasizes that ephemeral streams are an important component of headwater streams and that they have an effect on the form and function of downstream channels and aquatic life. The report states that the evidence unequivocally demonstrates that the stream channels, riparian wetlands, floodplain wetlands, and open waters that together form river networks are clearly connected to downstream waters in ways that profoundly influence downstream water integrity.[87] According to the report, the body of literature documenting connectivity and downstream effects is most abundant for perennial and intermittent streams and for riparian and floodplain wetlands.[88] The report further states that, although less abundant, the evidence for connectivity and downstream effects of ephemeral streams is strong and compelling, particularly in context with the large body of evidence supporting the physical connectivity and cumulative effects of channelized flows that form and maintain stream networks.[89]

The report identifies five principal contributions of ephemeral streams: (1) Providing streamflow to larger streams; (2) conveying water into local storage compartments such as ponds, shallow aquifers, or streambanks that are important sources of water for maintenance of the baseflow in larger streams; (3) transporting sediment, woody debris, and nutrients; (4) providing the biological connectivity that is necessary either to support the life cycle of some invertebrates or to facilitate the transport of terrestrial invertebrates that serve as food resources in downstream communities; and (5) influencing fundamental biogeochemical processes such as the assimilation and transformation of nitrogen that may otherwise have detrimental impacts on downstream communities. In addition, headwater streams, including ephemeral and intermittent streams, shape downstream channels by accumulating and gradually or episodically releasing stored materials such as sediment and large woody debris.[90] These materials help structure stream and river channels by slowing the flow of water through channels and providing substrate and habitat for aquatic organisms.[91]

Our previous rules included no protections for ephemeral streams. Consistent with the findings of the U.S. Environmental Protection Agency report and other studies, our proposed rule included some protections for ephemeral streams, tailored to their hydrologic and ecological functions. We also invited comment on whether we should extend equal protection to all streams, without regard to whether the stream is perennial, intermittent, or ephemeral. *See* 80 FR 44451 (Jul. 27, 2015).

We received numerous comments from environmental groups advocating that ephemeral streams be protected in the same manner as perennial and intermittent streams. One commenter stated: ''OSMRE's analysis should start from a presumptive rule of equal protection for all streams, and any assertion of countervailing business impacts should be considered only if it is backed by evidence included in the administrative record.'' Many environmental commenters asserted that a strong stream protection rule must include protection of ephemeral streams because they are an essential element of the hydrologic balance.

In contrast, industry commenters opposed affording ephemeral streams the same protections as intermittent and perennial streams. This paragraph summarizes some of those arguments:

- The U.S. Army Corps of Engineers, an agency with considerable expertise on the subject of streams, rarely requires returning all ephemeral features to the postmining landscape.
- Some ephemeral streams are the result of anthropogenic activities and may be undesirable.
- Many ephemeral streams will find their own way back onto the landscape, depending on many factors including the final configuration of the reclamation. Restoring these lesser drainages is a waste of effort when nature will do it better.
- Disallowing the placement of sediment ponds in ephemeral drainages would result in logistically difficult or impossible situations or at least a greatly increased disturbance from additional ditching and a larger number of ponds.
- It makes no sense and is counterproductive to reconstruct erosional features when reclamation provides the opportunity to reshape the landscape to reduce erosion.
- Ephemeral streams have minimal if any biological components.
- In Wyoming's Powder River Basin, extending protection to ephemeral streams could result in 2,800 tons of coal per foot of channel being left unmined. This equates to 15 million tons of coal sterilized for every mile of channel that could not be mined. Surface coal mines in Wyoming can have upwards of 100 miles of ephemeral channels within the permit boundary. If all of the channels were to become unmineable, approximately 1.5 billion tons of coal for each mine would be sterilized.
- Typical mining techniques in the Powder River Basin utilize draglines and truck shovels. Efficient dragline operations require long linear pits. If ephemeral streams become unmineable, these types of operations will no longer be economic or efficient because of the number of ephemeral channels that bisect these pits.
- The Bureau of Land Management requires that a bonus bid be paid at the time a federal coal lease is awarded. To date, coal underlying ephemeral stream channels has been considered recoverable, which means that companies have paid bonus bids ranging from $0.85 to $1.35 per ton for coal underlying ephemeral streams in leases awarded during the past 5 years. If ephemeral channels are considered unmineable, this will create a significant economic hardship for the mining companies. Federal and state governments also will experience a loss of revenue.

Many commenters thought that the term ''ephemeral stream'' included all conveyances that were not either perennial or intermittent streams. However, the definition of ''ephemeral stream'' that we are adopting in § 701.5 as part of this final rule addresses this issue by providing that ephemeral streams include only those conveyances with channels that display both a bed-and-bank configuration and an ordinary high water mark.

After evaluating the comments, reviewing the scientific literature, and weighing potential costs and benefits, we decided not to extend the same protections to ephemeral streams that we do to intermittent and perennial streams.

However, as part of this final rule, we adopted most of the added protections for ephemeral streams that we included in our proposed rule. The final rule will protect the important role that ephemeral streams perform within watersheds including providing

[86] U.S. Environmental Protection Agency. *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report).* U.S. Environmental Protection Agency, Washington, DC. EPA/600/R–14/47F, 2015. Available at *https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=296414&CFID=62302143&CFTOKEN=44785139* (last accessed October 26, 2016).

[87] *Id.* at ES–7.

[88] *Id.*

[89] *Id.*

[90] *Id.* at ES–8.

[91] *Id.*

protection and maintenance of downstream uses, ecological services, and the hydrologic balance of larger streams because of the impact ephemeral streams have on the form and function of downstream channels and aquatic life. Adopting these protections should ensure that ephemeral streams on reclaimed mine sites continue to provide the ecological services identified in the U.S. Environmental Protection Agency report while not unduly restricting mining through those streams. This approach is consistent with the purposes of SMCRA, as enumerated in section 102 of the Act.[92] In particular, it will protect society and the environment from the adverse effects of surface coal mining operations, as provided in paragraph (a); assure that surface coal mining operations are conducted so as to protect the environment, as provided in paragraph (d); and strike a balance between environmental protection and the Nation's energy needs, as provided in paragraph (f). Although only certain requirements apply to ephemeral streams, as discussed in final rule § 780.27, these requirements minimize impacts to ephemeral streams.

Proposed §§ 780.19(c)(6) and 784.19(c)(6) required that the permit applicant identify and map all ephemeral streams within the proposed permit and adjacent areas. Those proposed rules also required that the applicant describe the physical and hydrologic characteristics of those streams in detail, as well as any associated vegetation in the riparian zone if one exists. In addition, they required that the applicant assess the biological condition of a representative sample of those ephemeral streams. The final rule applies these proposed requirements only to ephemeral streams within the proposed permit area because those are the only ephemeral streams that the proposed operation would disturb and for which the operation would incur reclamation requirements. Requiring this information for ephemeral streams within the adjacent area would be costly and time-consuming and would not assist the regulatory authority in reviewing the permit application because no performance standards apply to ephemeral streams in the adjacent area. In addition, the final rule does not include the proposed requirement for baseline information on the biological condition of ephemeral streams because no scientifically defensible protocol currently exists for use in ephemeral streams for that purpose.

Proposed §§ 780.20, 780.21, 784.20, and 784.21 required that the determination of the probable hydrologic consequences of mining (PHC determination) and the cumulative hydrologic impact assessment (CHIA) include consideration of impacts on the biological condition of ephemeral streams. Those sections of the final rule do not include this proposed requirement because established and scientifically defensible protocols do not currently exist for use in determining the biological condition of ephemeral streams.

Proposed §§ 780.19(c)(3), 780.20(a)(5)(iv), 784.19(c)(3), and 784.20(a)(5)(iv) included peak flow baseline data collection and analysis requirements for ephemeral streams within the proposed permit and adjacent areas. The final rule does not include these requirements because this information is unnecessary for the analysis of the proposed operation's impacts on flooding that the PHC determination must contain. The baseline precipitation data required by final §§ 780.19(c)(5) and 784.19(c)(5) in combination with the description of the general stream-channel configuration of ephemeral streams within the proposed permit area required by final §§ 780.19(c)(6) and 784.19(c)(6) will provide all necessary information needed for that analysis, given that ephemeral streams flow only in direct response to precipitation events.

Proposed §§ 780.12(d)(1) and 784.12(d)(1) required that the backfilling and grading plan in the reclamation plan include contour maps, cross-sections, or models that show in detail the anticipated final surface configuration, including drainage patterns, of the proposed permit area. The final rule adopts those provisions as proposed. Final §§ 780.12(b)(3) and 784.12(b)(3) also provide that the reclamation timetable must include establishment of the surface drainage pattern and stream-channel configuration approved in the permit, including construction of appropriately-designed perennial, intermittent, and ephemeral stream channels to replace those removed by mining. Proposed §§ 780.28(c)(1) and 784.28(c)(1) required that the postmining drainage pattern, including ephemeral streams, be similar to the premining drainage pattern, with limited exceptions. Sections 780.27(b) and 784.27(b) of the final rule adopt these provisions in revised form for ephemeral streams. They allow variances from the premining drainage pattern when the regulatory authority finds that a different pattern or configuration is necessary or appropriate to ensure stability; prevent or minimize downcutting or widening of reconstructed stream channels and control meander migration; promote enhancement of fish and wildlife habitat; accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation; accommodate the construction of excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures; replace a stream that was channelized or otherwise severely altered prior to submittal of the permit application with a more natural, relatively stable, and ecologically sound drainage pattern or stream-channel configuration; or reclaim a previously mined area.

Proposed §§ 780.28(b)(3) and 784.28(b)(3) provided that, after mining through an ephemeral stream, the permittee must plant native species within a 100-foot corridor on both sides of the reconstructed stream. Sections 780.27(c), 784.27(c), 816.57(d), and 817.57(d) of the final rule adopt this requirement with some revisions. The streamside vegetative corridor must be consistent with natural vegetation patterns. The streamside vegetative corridor requirement would not apply to prime farmland or when establishment of a corridor comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release. Establishment of a streamside vegetative corridor is critical to ensuring restoration of the nutrient and organic matter transport functions of ephemeral streams.

P. The Rule Should Not Require the Use of Multimetric Bioassessment Protocols To Establish Baseline Ecological Stream Function and Stream Restoration Criteria

Proposed §§ 780.19(e)(2) and 784.19(e)(2) would have required the use of multimetric bioassessment protocols to assess the baseline ecological function of perennial, intermittent, and ephemeral streams and to establish stream restoration criteria (*i.e.,* the point at which ecological function will be considered restored) for perennial and intermittent streams. Proposed §§ 780.23(c) and 784.23(c) also would have required use of these protocols to monitor the biological condition of intermittent and perennial streams during mining and reclamation.

We received comments both in support of and in opposition to the use of macroinvertebrate sampling and associated indexes for those purposes.

[92] 30 U.S.C.1202.

Some comments were general, while others singled out the use of an index of biological integrity (IBI) for baseline stream assessment and monitoring during mining and reclamation when discussing support or opposition to this requirement. The proposed rule required IBIs to include macroinvertebrate sampling. The IBIs would be used to develop a value that would provide an objective measure to describe various ecological characteristics found during the field surveys. This value would then be compared to an index that is established for designated uses under the Clean Water Act to assess the quality of the stream before, during, and after mining. This IBI system is a well-tested and robust tool to identify impacts on the health of perennial streams. IBIs and other scientifically defensible protocols are becoming more widely established for intermittent streams, but are not yet widely used across the nation. IBIs and other scientifically defensible protocols for assessing ephemeral streams have not been widely used to date, and when they have been, they have been most often used to characterize biological differences among ephemeral, intermittent, and perennial streams or biological changes with varying hydrological conditions. The proposed rule would have required the establishment of separate IBI protocols for all three types of streams: Perennial, intermittent, and ephemeral.

As discussed in Part IV, section O of this preamble, several commenters criticized our proposal to treat ephemeral streams in the same manner as intermittent and perennial streams. These commenters strongly encouraged us to remove requirements to assess the baseline condition of ephemeral streams using bioassessment protocols that sample macroinvertebrate populations within ephemeral streams. They claimed it would yield no valid data for assessing the baseline condition of SMCRA-related activities and would be unduly costly. We agree. The final rule does not include assessment of biological condition requirements related to ephemeral streams.

In addition, commenters suggested that there are other scientifically valid protocols that should be included as options for baseline stream assessment and monitoring. According to these commenters, these other protocols are also robust, scientifically defensible methods developed and applied by states, territories, and tribes. They include predictive and discriminant modeling approaches. We agree and have added these as acceptable methods in the final rule.

In light of the comments received, we identified and analyzed other options that commenters suggested for assessing the baseline condition of and monitoring streams: The Rapid Bioassessment Protocol III (RBPIII), which is set out in the 1989 EPA Publication, ''Rapid Bioassessment Protocols for Use in Streams and Rivers;'' the Before-After-Control-Impact design (BACI); and hydrogeomorphic sampling protocols. We also considered using IBIs that were designed for perennial streams to assess the baseline condition of and monitor intermittent and ephemeral streams (as is occasionally done by Clean Water Act authorities).

Our analysis identified some positive attributes of the RBPIII protocol. It would provide a more thorough baseline assessment of the ecological function and biological condition of the premining site than some other methods. It would demonstrate with greater certainty whether or not the permittee had minimized the adverse effects of coal mining on upstream and downstream waters. It is based on sound scientific principles (quantitative or semi-quantitative designs that can be analyzed statistically). Finally the RBPIII is relatively easy to use and can be rapidly deployed. However, the RBPIII also has significant drawbacks. It would require the regulatory authority or the permittee to establish, assess, and monitor a set of reference streams on a permit-by-permit basis. This in turn would pose an issue of statistical validity: The variability between the relatively small number of reference streams and the streams potentially affected by the permitted operation could be great enough to mask significant impacts that mining might have on the affected streams. Differences in methodology (*e.g.,* sample collection protocols, data analysis, etc.) mean that the RPBIII may not be comparable with the scientifically defensible protocols such as the IBI that we proposed to evaluate perennial streams. Using two different protocols, moreover, would significantly increase time and costs associated with assessing the baseline condition of and monitoring the effects of mining on streams. Finally, the RBPIII protocol is over 20 years old. This in and of itself is not a reason to eliminate this protocol; however, since its first publication, it has been updated twice to reflect a focus on national standardization, not to small-scale projects as originally designed and its suggested use by the commenters.

Our analysis also showed positive and negative aspects to using the BACI protocols. On the positive side, BACI analysis would be specific to each permit area or even each particular stream and would allow the regulatory authority to tailor monitoring and baseline assessment to each permit. This could allow for variances from the kind of state or regional standard that an IBI or other larger-scale protocols might impose. BACI analysis could be less costly than some other approaches because the regulatory authority can perform one analysis that evaluates multiple streams, including every stream in the permit area. Under this kind of analysis one premining sampling event and additional postmining samplings would result in a statistically valid analysis. On the negative side, the BACI analysis requires use of control sites. This could create a number of problems in the context of SMCRA permits. First, if the control site is not selected correctly, it could result in a skewed analysis or a situation in which an analysis may not be possible after mining is complete. Second, under this kind of analysis, the control sites must remain in their original condition for the duration of the mining operation. This may not be practicable because those sites might be beyond the permittee's control. They also could be affected by activities other than mining, such as industrialization, logging, or urbanization within the watershed. Third, while the BACI protocol may be cheaper than some alternatives, permittees still would incur additional costs for sampling not only baseline and impacted streams but the control streams. Fourth, additional control streams might have to be incorporated into the permit area if enough suitable control streams are not present in the initially designed permit area. This could lead to additional costs and permitting delays. Fifth, control sites would have to be identified and monitored for each individual permit. This would increase costs and might lead to permitting delays. Finally, one of the greatest drawbacks of the BACI analysis is that, although it can assess large changes to biological condition and ecological function, it may miss smaller changes. Indeed, this kind of analysis might not be any more protective than the previous regulations.

We found no benefit to using hydrogeomorphic protocols. Although they are easy to implement, they do not require macroinvertebrate sampling. In general, they provide no greater benefit than the types of analysis that have been used in connection with our previous regulations.

Finally we determined that it is not currently appropriate to use protocols

developed for perennial streams to assess the baseline condition of and to monitor intermittent streams. As commenters pointed out, some Clean Water Act authorities, in the exercise of their professional judgment, have occasionally done this. We have concluded, however, that this approach has not been used enough to justify requiring it in our rule.

In sum, after consideration of these other methods, as provided in final §§ 780.19(c)(6)(vii) and 784.19(c)(6)(vii), we determined that the best technology currently available for baseline assessment and monitoring purposes for perennial streams is the use of IBIs or other equally scientifically defensible stream assessment protocols developed and applied by states, territories, and tribes. These other scientifically defensible stream assessment protocols would include predictive and discriminant modeling approaches, such as those in place in many western states. The final rule requires use of these methods and protocols for all perennial streams within and adjacent to the proposed permit area. Some states and regions have developed indices of biotic integrity or bioassessment protocols for intermittent streams. In those instances, final §§ 780.28(g)(3)(iii) and 780.19(c)(6)(vii) and their counterparts in §§ 784.28 and 784.19 require use of those protocols to assess the baseline condition of and to monitor intermittent streams. Requiring these types of baseline assessments and monitoring protocols instead of the RBPIII, BACI, hydrogeomorphic protocols, and instead of using perennial stream indices for intermittent and ephemeral streams will encourage the further development of scientifically defensible methods and protocols.

We realize, however, that at present few scientifically defensible protocols have been established for bioassessments of intermittent streams. In the final rule, we do not require that SMCRA regulatory authorities develop new protocols for this purpose, but we do require them to reevaluate the best technology currently available for intermittent streams every 5 years and make any appropriate adjustments to account for new protocols that may have been developed. *See* § 780.28(g)(3)(iv)(B). Until scientifically defensible protocols are developed for intermittent streams, we are requiring baseline assessment and monitoring of these streams using a description of the water quality, water quantity, stream channel configuration, a quantitative assessment of the streamside vegetation, and an initial cataloging of the stream biota. For further detail, please see our discussions of §§ 780.19, 780.27, 780.28, 816.56, and 816.57 in this preamble.

Q. Restoration of the Ecological Function of Perennial and Intermittent Streams Is Not Possible or Feasible

Many commenters argued that there is no scientific support, in the form of published peer-reviewed studies, for the proposition that reconstructed streams can effectively replace streams that existed before mining, especially in regard to ecological function and premining biology. In a similar vein, some commenters urged us to prohibit mining activities within areas in which streams occur because stream restoration is unattainable. For example, one commenter stated: ''[T]he unproven ability to fully restore the functions and uses of streams damaged by subsidence necessitates that the rule require avoidance of such damage as a primary consideration.'' According to commenters, we did not provide sufficient evidence that the ecological condition of streams could be restored with the available technology and science. They alleged that our rule created an impossible standard of reclamation, a standard that had not been demonstrated to be achievable by operators or enforceable by regulatory authorities.

Some industry commenters agreed that full restoration of perennial and intermittent streams is not attainable. According to those commenters, we should not adopt a rule that establishes an unattainable standard.

We agree that full restoration of the biology and ecological function of mined-through streams is not always possible and that restoration of those streams has often fallen short of goals. However, our experience indicates that restoration of impaired streams is possible after mining. Streams that were not attaining their designated aquatic life use have been shown to improve enough, through restoration techniques, to be removed from the section 303(d) [93] list of impaired waters.[94]

In addition, standards to assess and monitor ecological function are both established and currently in use to regulate activities within streams and reclamation projects across the United States. When consistent with SMCRA, we incorporated those standards into the final rule. In addition, we analyzed the shortcomings of past efforts to restore streams to determine how this rule could improve the results. Recent literature advocates a watershed approach to determining the restoration capacity of degraded, or potentially degraded, streams.[95] This includes assessing the various resources that have been identified as determining success or failure of previous restoration projects. These include the condition of upstream habitats and water resources, the potential change in the quality and quantity of water present in the stream or the watershed, the amount and type of vegetation along the banks and buffer zones of streams, the reestablishment potential of appropriate stream channel habitat within the reconstructed stream to recolonize the stream via emigration, the potential for the adjacent streams and upstream habitats to serve as a source for emigration into the reconstructed stream (*i.e.,* the species pool for successful recolonization), and the return of naturally occurring leaf litter and other organic matter to the area.

This final rule improves our stream assessment and restoration requirements and analyzes these resources listed in the above paragraph, beginning at the application process. Upstream habitat and water quantity and quality will be assessed as part of the baseline data required in a permit application. Under the final rule, streambank and buffer zone vegetation will receive greater protection or restoration, including using native species (*i.e.*, naturally occurring leaf litter and other organic matter). The implementation of the final

[93] 33 U.S.C. 1313(d).

[94] *See generally,* U.S. Environmental Protection Agency. *Nonpoint Source Success Stories,* U.S. Environmental Protection Agency Web page found at *https://www.epa.gov/polluted-runoff-nonpoint-source-pollution/nonpoint-source-success-stories.* (last accessed October 5, 2016). U.S. Environmental Protection Agency. 2011. Document #EPA841-R-11-003. FY2010 *Assessment of Improving and Recovered Waters with Total Maximum Daily Loads (TMDLs).* Office of Water, U.S. Environmental Protection Agency, Washington DC. Available online at *http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/results_index.cfm* 4 pp.

[95] Barbara Doll, et al., *Identifying Watershed, Landscape, and Engineering Design Factors that Influence the Biotic Condition of Restored Streams.* Water, 8(4), p.151 (2016).

Derek B. Booth, et al., *Integrating Limiting-Factors Analysis with Process-Based Restoration to Improve Recovery of Endangered Salmonids in the Pacific Northwest,* USA. Water, 8(5), p.174 (2016).

Eric R. Merriam & J. Todd Petty, *Under siege: Isolated tributaries are threatened by regionally impaired metacommunities.* 560 Science of The Total Environment, 170–178 (2016).

Moritz Leps et al., 2016. *Time is no healer: Increasing restoration age does not lead to improved benthic invertebrate communities in restored river reaches.* 557 Science of The Total Environment, 722–732 (2016).

Jennifer J. Follstad Shah et al., 2007. *River and riparian restoration in the Southwest: Results of the National River Restoration Science Synthesis Project.* 15 (3) Restoration Ecology, 550–562 (2007).

S.W. Miller et al., 2010. *Quantifying Macroinvertebrate Responses to In-Stream Habitat Restoration: Applications of Meta-Analysis to River Restoration.* 18(1) Restoration Ecology, 8–19 (2010).

rule will also increase the amount of reforested habitat, which should improve watershed quality. Baseline data will contain information on streams potentially affected by the proposed operation, including bioassessments of perennial and some intermittent streams that regulatory authorities can use to determine the potential of these streams to provide biological emigrants (plants, animals, fungi, etc.) to reconstructed segments of connected streams. This is not to say that the reclamation of all streams is now possible or will now become a timely and precise exercise; careful consideration will need to be taken to understand the potential for restoration of each stream, and the economic and biological cost associated with these determinations.

This final rule is intended to increase protection or restoration of perennial and intermittent streams and related environmental resources, as well as to ensure that permittees and regulatory authorities make use of advances in science and technology. The final rule provides that restoration of ecological function does not mean that the restored stream must precisely mirror the premining condition. For example, as section 780.28(g)(3)(ii)(A) of our final rule states, a demonstration of ecological function does not require that the reconstructed stream have precisely the same biological condition or biota as the stream segment did before mining. This is consistent with current, scientifically defensible bioassessment protocols used throughout a wide range of regulatory arenas, which allow for a natural range in variation of reference sites to which the assessments are compared.[96] These bioassessment protocols use genus-level identification counts of macroinvertebrates to determine biological condition, where available, and to calculate values derived from measures such as species richness, composition, tolerance, feeding, and habitat measures that determine stream quality. Assessment of the biological condition of these streams is based on these values, not directly on the species that were first sampled. This change allows for some variation from the initial stream compared to the reconstructed stream as long as the reconstructed stream is within a suitable range according to the results of the bioassessment protocol used.

[96] For example: Michael T. Barbour et al. *Rapid bioassessment protocols for use in wadeable streams and rivers. Periphyton, Benthic Macroinvertebrates, and Fish* (2nd edn.). U.S. Environmental Protection Agency, Office of Water, Washington, DC EPA (1999).

We recognize that stream restoration and creation is an emerging area of scientific study and that in some cases the reconstruction of functional stream channels on mined land can be difficult. It may be impossible in some cases to precisely mirror the ecological function that was there before mining. However, as we have just discussed, that is not what our rule requires. We also note, however, that one of the purposes of SMCRA is to ensure that ''surface mining operations are not conducted where reclamation as required by this Act is not feasible'' and that SMCRA therefore requires a permit applicant to demonstrate that ''reclamation as required [by SMCRA] and the State or Federal program can be accomplished under the reclamation plan contained in the permit application[.]'' If analysis of the baseline data and other information in the application indicates restoration of a stream cannot be accomplished through use of conventional mining and reclamation technology, the applicant will need to adjust the proposed operation and reclamation plan to either avoid that stream or take other measures (*e.g.*, the construction of aquitards in the backfill) to ensure restoration of a stream's water quality and quantity and aquatic life after the completion of mining.

R. We Should Apply the 1983 Stream Buffer Zone Rule To Effectively Prohibit Mining Activities Within 100 Feet of Streams

Numerous commenters urged us to promulgate a rule consistent with their interpretation of the 1983 stream buffer zone rule as prohibiting all mining activities in or within 100 feet of a perennial or intermittent stream. They argued that the proposed rule weakens this interpretation of the 1983 rule by ''placing more emphases on mitigation of impacts on streams than on protection and prevention.'' They claim that the lack of science on successful restoration of stream form and function renders the proposed rule less protective than their interpretation of the 1983 rule and allows for the continued destruction of streams. Other commenters maintain that the proposed rule is inconsistent with section 515(b)(24) of SMCRA,[97] which requires, in relevant part, that, to the extent possible, surface coal mining and reclamation operations use the best technology currently available to minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values. According to the commenters, the best technology currently available to protect fish, wildlife, and related environmental values from the adverse impacts of coal mining is a prohibition on mining in or within 100 feet of a perennial or intermittent stream. The commenters recognize that such a prohibition would reduce minable acres, but they contend it is reasonable and practicable, given the decline in the demand for coal resources.

[97] 30 U.S.C. 1265(b)(24).

The preamble to our proposed rule discusses the history of the 1983 stream buffer zone rule in significant detail (*see* 80 FR 44447–44451, Jul. 27, 2015). It includes the following statement: ''Historically, we and some state regulatory authorities applied the 1983 stream buffer zone rule in a manner that allowed the placement of excess spoil fills, refuse piles, slurry impoundments, and sedimentation ponds in intermittent and perennial streams within the permit area.'' The specific language of the 1983 rule allowed the regulatory authority to authorize mining activities within the stream buffer zone upon finding that ''[s]urface mining activities will not cause or contribute to the violation of applicable State or Federal water quality standards, and will not adversely affect the water quantity and quality or other environmental resources of the stream.'' As discussed in the preamble, that provision has been subject to numerous court challenges and was substantially revised by the now-vacated 2008 stream buffer zone rule. The 1983 rule will remain the standard applied by state regulatory authorities until the provisions of our final rule have been adopted by those individual regulatory programs.

While we have not adopted a strict prohibition standard for mining activities within the stream buffer zone, we have in our final rule required that certain conditions be met in order for the regulatory authority to authorize such activities. The final rule allows mining activities in or within 100 feet of an intermittent or perennial stream only if the permit applicant makes certain demonstrations and the regulatory authority makes certain findings. When the applicant proposes to mine through a perennial or an intermittent stream, these required findings include the ability of the permittee to actually restore the form, hydrologic function, and ecological function of the stream as part of the reclamation process. We intend these requirements to ensure that the reconstructed stream will actually have sufficient base flow, water quality, and an aquatic community similar to that which existed prior to mining. As discussed more comprehensively in

final rule § 780.28, in general, mining activities in, through, or adjacent to perennial or intermittent streams must not: cause or contribute to a violation of water quality standards; cause material damage to the hydrologic balance outside the permit area; result in conversion of a stream segment from perennial to intermittent, perennial to ephemeral, or intermittent to ephemeral; and must be designed to minimize adverse impacts on fish, wildlife and related environmental values to the extent possible using the best technology currently available.

The final rule allows burial of intermittent or perennial streams with excess spoil or coal mine waste only if the permit applicant demonstrates and the regulatory authority finds that the loss of resources associated with the burial of a stream will be offset through fish and wildlife enhancement measures commensurate with the magnitude of the adverse impacts from burial of the stream. In addition, the area where proposed enhancement activities are to occur must be incorporated into the permit and bonded for reclamation. In approving a plan that provides for the appropriate level of enhancement, the regulatory authority also must establish standards for determining when reclamation bonds can be released for such areas. This regulatory approach ensures that the desired results are actually achieved, and, if they are not, the regulatory authority will be in a position to use the proceeds from forfeiture of the reclamation bonds to accomplish the desired objective of the approved reclamation plan.

V. Explanation of Organizational Changes and Plain Language Principles

The final rule includes organizational changes for clarity. Those changes serve several purposes, including—

- Breaking up overly long sections and paragraphs into multiple shorter sections and paragraphs for ease of reference and improved comprehension.
- Renumbering sections in the underground mining rules to align their numbering with the corresponding sections in the surface mining rules. This change improves ease of reference and the user-friendliness of our rules.
- Moving permitting requirements from subchapter K (performance standards) to subchapter G to consolidate permitting requirements in subchapter G.
- Restructuring subchapter G to better distinguish between baseline information requirements and reclamation plan requirements.
- Removing redundant, suspended, and obsolete provisions.

In general, we drafted the final rule using plain language principles, consistent with section 501(b) of SMCRA, 30 U.S.C. 1251(a), which provides that regulations must be ''concise and written in plain, understandable language,'' and Executive Order 13563, which provides that our regulatory system ''must ensure that regulations are accessible, consistent, written in plain language, and easy to understand.'' [98] In addition, a June 1, 1998, Executive Memorandum on Plain Language in Government Writing [99] requires the use of plain language in all proposed and final rulemaking documents published after January 1, 1999. The Office of the Federal Register also encourages the use of plain language in writing regulations, as set forth in detail at *www.plainlanguage.gov* and associated links.

Plain language requirements vary from one document to another, depending on the intended audience. Plain language documents have logical organization and easy-to-read design features like short sections, short sentences, tables, and lots of white space. They use common everyday words (except for necessary technical terms), pronouns, the active voice, and a question-and-answer format when feasible.

The final rule text and preamble use the pronouns ''we,'' ''us,'' and ''our'' to refer to OSMRE, and the pronouns ''I,'' ''you,'' and ''your'' to refer to a permit applicant or permittee. We avoid use of the word ''shall'' in the rule text and preamble, except in quoted material. Instead, we use ''must'' to indicate an obligation, ''will'' to identify a future event, and ''may not'' to convey a prohibition.

VI. How do our final regulations differ from our proposed regulations?

Except as otherwise discussed in the preamble to this final rule, we are adopting the regulations as proposed on July 27, 2015, for the reasons set forth in the preamble to the proposed rule. In this portion of the preamble to the final rule, we explain our responses to the comments that we received on the text of the proposed regulations. We also discuss how we revised the proposed regulations in response to those comments and other considerations. However, in general, we do not discuss syntax improvements, plain language changes, and other revisions of a minor nature.

[98] 76 FR 3821 (Jan. 21, 2011).

[99] 63 FR 31883–31886 (Jun. 10, 1998).

This discussion refers to previous, existing, proposed, and final rules and regulations. In general, we use ''previous'' when we refer to regulations that will no longer exist once this final rule is effective. We use ''existing'' to describe regulations that are unaffected by this rulemaking. ''Proposed'' regulations are the regulations set forth in our July 27, 2015, proposed rule. The term ''final'' refers to the regulations that we are adopting today, including existing regulations that are redesignated in this rulemaking.

A. Part 700—General

Section 700.11: What coal exploration and coal mining operations are subject to our rules?

Final Paragraph (d): Termination and Reassertion of Jurisdiction

We proposed to revise § 700.11(d) to add clarity to the regulations, to conform them with proposed revisions to 30 CFR part 800 concerning financial assurances for treatment of long-term discharges, and to add provisions consistent with a court decision that resulted from a previous rulemaking. The rationale for the proposed revisions is set forth at 80 FR 44436, 44466–44467 (Jul. 27, 2015). We received no comments specific to proposed paragraphs (d)(1) and (4), so they are not discussed below.

Final Paragraph (d)(2): Termination of Jurisdiction for Permanent Regulatory Program Sites

One commenter expressed concern that replacement of the term ''increment'' with ''portion'' in the introductory language of paragraph (d)(2) implies that a permittee may apply for bond release on a portion of a permit that has not been separately bonded as an increment. According to the commenter, bonds and jurisdiction apply to the entire permit or to the permit increment for which bond is posted. The commenter stated that our permitting, bonding, and termination of jurisdiction regulations need to use the same terminology so that regulators and the public can easily discern which sections of a mine are active or in reclamation and which sections are eligible for release and eventual termination of jurisdiction.

Our regulations restrict termination of jurisdiction to those areas for which bond has been fully released, but otherwise, we do not agree that our permitting, bonding, and termination of jurisdiction regulations must use the same terminology or that the boundaries of each original permit increment must remain inviolate. Under § 800.13(b),

with the approval of the regulatory authority, we have always allowed clearly defined portions of the permit area requiring extended liability to be separated from the original area and bonded separately. The change in terminology from ''increment'' to ''portion'' in our termination of jurisdiction regulations as part of this final rule is consistent with both the language and approach outlined in § 800.13(b). The public should have no difficulty identifying the portions of the permit area for which bond has been released and jurisdiction has been terminated because § 800.13(b) requires that the boundaries of each portion be clearly defined.

One commenter opposed the proposed revisions to this paragraph because, in the commenter's opinion, they would require that, even in primacy states, bond release and termination of jurisdiction be based upon 30 CFR part 800 rather than the provisions of the applicable regulatory program. That was not the intent of our proposed revisions. To avoid this misinterpretation, final paragraph (d)(2)(ii) provides for termination of jurisdiction whenever the regulatory authority has made a final decision to fully release the performance bond or financial assurance in accordance with the applicable regulatory program. The revised language is similar to the language of paragraph (d)(2)(i) in this respect.

The commenter also alleged that proposed paragraph (d)(2)(ii)(B), which concerns sites with postmining discharges requiring long-term treatment, provided confirmation that we intend to retain jurisdiction in perpetuity. That was not the intent of the proposed provision, but we understand how it could be misinterpreted. We have determined that proposed paragraph (d)(2)(ii)(B) is unnecessary because it essentially duplicates § 800.18(i) and because proposed paragraph (d)(2)(ii)(A) refers to financial assurances as well as performance bonds. Therefore, we are not adopting proposed paragraph (d)(2)(ii)(B). Final paragraph (d)(2)(ii) includes only proposed paragraph (d)(2)(ii)(A) and is renumbered to accommodate the removal of proposed paragraph (d)(2)(ii)(A).

Final Paragraph (d)(3): Reassertion of Jurisdiction

Several commenters opposed this paragraph as unreasonable. Others alleged that it was illegal because it would apply retroactively. Others alleged that it would be inconsistent with SMCRA because it would result in the permittee having an eternal possibility of reassertion of jurisdiction. Several commenters asserted that SMCRA provides no authority for the assertion of jurisdiction over mining operations that have obtained bond release.

These comments reflect a perspective on the principle of reassertion of jurisdiction under SMCRA, which is now a matter of settled law. In 1991, the U.S. Court of Appeals for the District of Columbia Circuit upheld the 1988 termination of jurisdiction rules at 30 CFR 700.11(d), which include a similar provision requiring reassertion of jurisdiction under specified circumstances. *See Nat'l Wildlife Fed'n v Lujan,* 950 F.2d 765, 770 (D.C. Cir. 1991). Specifically, with respect to the reassertion of jurisdiction under SMCRA, the court held that:

> The question is whether the effect of the regulation comports with the statutory scheme. We believe that it does in light of the language of the regulation and the interpretation provided in both the preamble and the Secretary's brief here.
>
> The preamble adopts an objective standard, stating that jurisdiction must be re-asserted whenever ''any reasonable person could determine'' that fraud, collusion or misrepresentation had occurred. [53 FR 44359] (1988). The Secretary's brief not only adopts this standard but also clarifies its scope:
>
> It is important to note in this connection that the filing of an application for bond release is in itself a representation that the operator has satisfied his reclamation obligations since an operator is not entitled to release from the bond unless he has met those obligations. . . . If an operator applies for release but has not fulfilled his obligations, he is guilty of misrepresentation by the very fact of making an application.
>
> Brief for the Secretary at 27 n.11. This is a reasonable way of implementing the Act's condition ''[t]hat no bond shall be fully released until all reclamation requirements of this chapter are fully met.'' 30 U.S.C.[] 1269(c)(3). The condition implies that after reclamation requirements are met, the bond may be ''fully released.'' *Id.* When it turns out that the operator had in fact not fulfilled its reclamation obligations at the time of release, the Secretary's interpretation of ''misrepresentation'' ensures that jurisdiction ''shall'' be reasserted. 30 [CFR] 700.11(d)(2).[100]

Therefore, we made no changes in response to these comments.

However, final paragraph (d)(3) differs somewhat from the proposed rule in that we added paragraphs (d)(3)(i) and (ii) and placed most of proposed paragraph (d)(3) in paragraph (d)(3)(iii). Under the final rule, reassertion of jurisdiction is required only if all three factual situations identified in paragraphs (d)(3)(i) through (iii) exist. Paragraph (d)(3)(i) specifies that the conditions that develop after termination of jurisdiction must constitute a violation of the reclamation requirements of the applicable regulatory program. Paragraph (d)(3)(ii) specifies that the conditions that develop after termination of jurisdiction must be the result of surface coal mining operations for which jurisdiction was terminated. The addition of paragraphs (d)(3)(i) and (ii) is consistent with the preamble to the 1988 rules, which provides that ''it would not be appropriate for the regulatory authority to reassert jurisdiction under the approved program'' if ''the problem was not caused by the permittee's violation of the regulatory program.'' [101]

Several commenters asserted that paragraph (d)(3) would require reassertion of jurisdiction on sites where third-party disturbances created the conditions resulting in the need for reassertion of jurisdiction. The rule does not require reassertion of jurisdiction when the impact is a result of a third-party disturbance. Instead, the rule applies only to impacts resulting from the mining operation. We have added language at paragraph (d)(3)(ii) that clarifies this point.

One commenter opposed the rule because it provides no discretion to the regulatory authority in deciding whether to reassert jurisdiction and does not provide an endpoint for reassertion of jurisdiction. The final rule that we are adopting today, like the proposed rule and the 1988 rule, does not provide discretion to the regulatory authority or an endpoint (equivalent to a statute of limitations) because neither is appropriate if bond release and termination of jurisdiction were based upon fraud, collusion, or misrepresentation of a material fact.

One commenter alleged that adding ''intentional or unintentional'' as an adjective modifying ''material misrepresentation of a material fact'' would increase long-term liability and result in additional litigation by nongovernmental organizations, as would the provision requiring reassertion of jurisdiction for postmining discharges requiring treatment. Neither of the added provisions represents a substantive change in policy or regulation. Therefore, we find no basis for the commenter's allegation. Another commenter opposed adding ''intentional or unintentional'' as a modifier for

[100] *Nat'l Wildlife Fed'n* v. *Lujan,* 950 F.2d 765, 770 (D.C. Cir. 1991).

[101] 53 FR 44356, 44359 (Nov. 2, 1988).

''misrepresentation of a material fact,'' alleging that it was unnecessary. This phrase is helpful to clarify circumstances to which it can be applied and better informs the reader of how the rule is to be interpreted and applied. No changes have been made as in response to these comments.

Several commenters alleged that adoption of the provisions discussed in the preceding paragraph would mean that a permittee would never have the certainty that it has fulfilled all obligations for a permitted site. According to the commenters, this result would infringe upon the permittee's ability to conduct business and could adversely impact the availability of surety bonds. As discussed in the preceding paragraph, neither of the added provisions represents a substantive change in policy or regulation. Therefore, we have no reason to anticipate that the outcome feared by the commenter will develop. Even if it did, that outcome would not justify allowing a termination of jurisdiction based on fraud, collusion, or misrepresentation of a material fact to stand if the mining operation has resulted in a situation that constitutes a violation of SMCRA or the applicable regulatory program.

One commenter opined that the rule would penalize successful operators because operators exiting the coal business would not be subject to this rule. Both the 1988 rule and this final rule apply to the permittee in existence at the time of termination of jurisdiction. If reassertion of jurisdiction is necessary, the regulatory authority must require that the permittee implement corrective measures regardless of whether the permittee has exited the coal business.

Similarly, another commenter expressed concern that the regulatory authority might be held responsible if the permittee could not be located or was no longer a viable business entity. Nothing in the proposed or final rules would support this outcome.

One commenter asserted that the proposed rule is unworkable because it is not clear how it will be enforced. The final rule will be implemented in the same manner as the 1988 rules. The preamble to the 1988 rules provides the following explanation of how the regulatory authority may become aware of a situation involving fraud, collusion, or the intentional or unintentional misrepresentation of a material fact:

> Liability under the approved program for a failure of reclamation, however, may be the subject of a Secretarial or regulatory authority inquiry or a civil suit in the courts pursuant to section 520 of the Act. Such liability would depend upon whether the reclamation failure was caused by a violation by the operator of the regulatory program.[102]

The regulatory authority inquiry to which this paragraph refers may be the result of information supplied by the public, information gleaned from the news media, or observations by regulatory authority personnel in the course of inspecting nearby mine sites.

One commenter asked whether the permittee or the regulatory authority would be required to conduct water sampling on sites for which bond has been fully released. The answer is no. There is no authority under SMCRA to impose such a requirement. In addition, it would defeat one of the purposes of termination of jurisdiction; *i.e.,* to determine when monitoring and inspection under SMCRA are no longer necessary.

One commenter implied that the rule should specify that the need for reassertion of jurisdiction will be determined using only the bond release standards in effect at the time of termination of jurisdiction. We find that no such provision is necessary because the rule already provides that reassertion of jurisdiction is required only if the regulatory authority becomes aware that the bond release was based upon fraud, collusion, or the intentional or unintentional misrepresentation of a material fact. This sentence refers to decisions in which the regulatory authority released bond fully but would not have done so if the information provided by the permittee had not been tainted by the fraud, collusion, or misrepresentation of a material fact at that time. Paragraph (d)(3) neither mentions nor provides a basis for reasserting jurisdiction whenever the regulatory authority adopts revised bond release criteria. Unless otherwise specified in the rulemaking adopting those criteria, the revised criteria would apply only prospectively. In any event, they could not be used to reassert jurisdiction over permits with bond released before the effective date of the revised criteria because the adoption of revised bond release criteria would not be considered fraud, collusion, or misrepresentation of a material fact.

Several commenters opposed paragraph (d)(3) because, in their view, it would require reassertion of jurisdiction for any error or mistake in a document submitted as part of the bond release process, no matter how minor the error or mistake. We disagree. Both the 1988 rule and final paragraph (d)(3) require reassertion of jurisdiction only for fraud, collusion, or misrepresentation of a material fact. Clerical errors and other minor mistakes would not meet this threshold because they would not be considered misrepresentation of a material fact. The adjective ''material'' means the fact must be critical to the decision to release bond. In other words, misrepresentation of a material fact refers to a situation in which, in the absence of the misrepresentation, the regulatory authority would not have released the bond. However, in response to these and other comments, we have added paragraphs (d)(3)(i) and (ii) to specify that reassertion of jurisdiction is required only when conditions exist that would constitute a violation of the reclamation requirements of the applicable regulatory program and those conditions are the result of surface coal mining operations for which jurisdiction was terminated. This limitation is consistent with the preamble to the 1988 rules, which provides that ''it would not be appropriate for the regulatory authority to reassert jurisdiction under the approved program'' if ''the problem was not caused by the permittee's violation of the regulatory program.'' [103]

Two commenters asserted that the rule is unnecessary because some states have a fund to address post-bond release problems. We find that this comment is not germane because, in 1988, we determined that there was a need for a rule providing for both termination of jurisdiction and reassertion of jurisdiction. The proposed rule did not propose to alter that determination nor did we request comment on that possibility.

One commenter suggested that, in lieu of adopting this rule, we establish a fund similar to the Abandoned Mine Reclamation Fund that would cover problems that arise after termination of jurisdiction. We have no authority to establish such a fund or assess the fees that would be required to operate it.

One commenter took issue with the statement in the preamble to the proposed rule at 80 FR 44436, 44467 that the intentional or unintentional misrepresentation of a material fact includes the ''subsequent discovery of a discharge requiring treatment.'' The commenter noted that this language differs slightly from the proposed text of the regulation, which did not use the term ''subsequent''. According to the commenter, reassertion of jurisdiction for a discharge that was undiscoverable at the time of the application for bond release would be inconsistent with

[102] 53 FR 44356, 44358 (Nov. 2, 1988).

[103] *Id.* at 44359.

language and reasoning in *NWF* v. *Lujan.*

We do not agree. Nothing in the court decision says that the discharge must be discoverable at the time of bond release to be considered a misrepresentation of a material fact. Instead, the court decision focuses on section 519(c)(3) of SMCRA,[104] which, in relevant part, provides that ''no bond shall be fully released until all reclamation requirements of the Act are fully met.'' We anticipate that there would be very few cases in which a discharge was not discoverable at the time of bond release. However, should an unanticipated mining-related discharge requiring treatment develop after bond release, the final rule would require reassertion of jurisdiction because the conditions resulting in formation of the discharge were present at the time of bond release. Therefore, development of a discharge requiring treatment after bond release means that the permittee's certification that all reclamation requirements were met ultimately proved to be a misrepresentation of a material fact.

One commenter opposed our proposed addition of the sentence establishing discovery of a discharge requiring treatment of parameters of concern after termination of jurisdiction as a misrepresentation of material fact. According to the commenter, addition of this sentence would be inconsistent with the preamble to the 1988 rule, which states that the discovery of an acid seep subsequent to bond release would not automatically require reassertion of jurisdiction:

> [T]he occurrence of an acid seep subsequent to bond release does not, by itself, establish the cause of the seep, whether reclamation had been completed, whether intervening events occurred, or the circumstances surrounding bond release.[105]

There is a distinct difference between the situation described in the 1988 preamble and the sentence that we proposed to add to our rules and that we are adopting in revised form as part of this final rule. The sentence in our proposed and final rules applies to a discharge for which a treatment need has already been established, while the seep cited in the 1988 preamble is a newly discovered seep for which there has been no determination whether the seep is a discharge that will require treatment or whether it is the result of the surface coal mining operations for which jurisdiction was terminated. As noted in the preamble, these factual questions need to be answered before a determination can be made on reassertion of jurisdiction. Although not expressly stated in the preamble, we would anticipate that reassertion of jurisdiction would be required under the 1988 rule if the questions are answered in the affirmative. Therefore, we find no inconsistency between the 1988 preamble and our final rule. For added clarity, as discussed below, we have revised the pertinent sentence in the proposed rule by adding a proviso that reassertion of jurisdiction is required only if the conditions creating the need for treatment of the discharge are the result of the mining operation.

In final paragraph (d)(3)(iii), we removed the phrase ''if it is demonstrated that'' found in (d)(3) in the proposed rule. The language in the proposed rule is somewhat confusing because it did not address what a demonstration must include or who must make the demonstration. The preamble to the proposed rule describes proposed paragraph (d)(3) as meaning that ''the regulatory authority must reassert jurisdiction if the termination was based upon fraud, collusion, or misrepresentation of a material fact.'' [106] The language of the final paragraph (d)(3)(iii) more effectively conveys this meaning. In addition, it is consistent with the preamble to the 1988 rule, which states that the regulatory authority would have to reassert jurisdiction ''[i]f following final bond release, any reasonable person could determine that the bond release was based upon fraud, collusion, or a misrepresentation of a material fact at the time of release. . . .'' [107]

In paragraph (d)(3)(iii), we also revised the language in proposed paragraph (d)(3) pertaining to the discovery of discharges requiring treatment by deleting the reference to mining-related parameters of concern and by adding a proviso that the conditions creating the need for treatment must be the result of the mining operation. The revised language focuses simply on whether the discharge requires treatment and whether the need for treatment is a result of the mining operation. There is no need for use of the new term ''parameters of concern'' in this context.

Coal Exploration

We received a few comments in response to our statement in the preamble to the proposed rule that we intended to correct an oversight in the 1988 final rule text by applying the termination of jurisdiction provisions to coal exploration and surface coal mining and reclamation operations, not just surface coal mining and reclamation operations. The comments that we did receive generally opposed this extension. One commenter alleged that including coal exploration in the termination of jurisdiction rules would impose an undue burden on operators and regulatory authorities and would discourage future exploration. Another commenter noted that SMCRA provides only minimal requirements for coal exploration and that it neither mandates inspections nor notification of citizens or opportunity for citizens to comment upon or appeal critical regulatory decisions on coal exploration. According to the commenter, the issue of when SMCRA jurisdiction terminates in the context of coal exploration rarely arises. The commenter suggested that it might be appropriate to leave this issue to the discretion of individual regulatory programs.

After evaluating the comments, we have decided not to proceed with our proposal to revise § 700.11(d) to apply to coal exploration. Our regulations at Part 772 do not require a permit or regulatory authority approval for coal exploration unless the exploration involves the removal of more than 250 tons of coal or will take place on lands designated as unsuitable for surface coal mining operations. Therefore, there are no permit boundaries or defined endpoints. In the absence of a permit, there is no bond, so bond release cannot be used as a determinant for termination of jurisdiction. As one commenter suggested, we will rely upon the discretion of each regulatory authority to determine when termination of jurisdiction is appropriate for coal exploration.

B. Part 701—Permanent Regulatory Program

Section 701.5: Definitions

Acid Drainage or Acid Mine Drainage

A commenter asserted that normal rainfall can have a pH of less than 6.0 as a result of the presence of carbon dioxide in the atmosphere. In addition, the commenter claimed that, historically, some of the lowest pH in rainfall occurs over the Appalachian Region, where, in 2012, pH reported in proximity to the intersection of West Virginia, Pennsylvania, and Ohio, was approximately 4.5 based on National Trends Network trend maps between 1986 and 2012. The commenter also opined that assigning a pH level of less than 6.0 was arbitrary and could result in a situation where acid rainfall in some regions could cause an operator to be in violation of the rule. We reject the

[104] 30 U.S.C. 1269(c)(3).

[105] 53 FR 44356, 44361 (Nov. 2, 1988).

[106] 80 FR 44436, 44467 (Jul. 27, 2015).

[107] 53 FR 44356, 44359 (Nov. 2, 1988).

commenter's arguments for a number of reasons. First, we did not arbitrarily select the pH value used in our definition of acid drainage or acid mine drainage, and it is not a new specification in this rule. The definition for acid drainage was codified in our regulation in March, 1979. In the preamble to that regulation, we explained that we selected a pH of less than 6.0 for the definition because the U.S. Environmental Protection Agency set that level as the minimum for its effluent limitations and because pH values outside the range of 6.0–8.5 in natural waters are indicative of stress.[108] Second, our definition contains another condition that must be met before we consider water draining from a mining area with a pH of less than 6.0 to be acid drainage or acid mine drainage: total acidity must exceed total alkalinity. Sometimes a stream under natural conditions can have pH values of less than 6.0, but its acidity will not exceed its alkalinity. In addition, an applicant reports baseline data, including pH level, for both groundwater and surface water as part of the permit application required by final rule § 780.19. This baseline data provides site specific information to the regulatory authority so that rainfall impacts or other existing conditions affecting the pH of water at the site are known prior to mining. Thus, we decline to make changes to the definition based on this comment and are adopting the proposed rule definition without modification.

Adjacent Area

As discussed in the preamble to the proposed rule, we proposed to modify our existing definition of ''adjacent area''.[109] *See* 80 FR 44467–44468 (Jul. 27, 2015). After evaluating the comments we received, we are adopting the definition as proposed, with exceptions.

First, we proposed to revise the basic definition of ''adjacent area'' to encompass the area outside the proposed or actual permit area when there is a reasonable ''possibility'' of adverse impacts from surface coal mining operations or underground mining activities, as determined by the regulatory authority. This portion of the proposed definition was substantively identical to the existing definition except that the existing definition included only the area in which impacts are reasonably ''probable'' rather than the area in which impacts are reasonably possible. Several commenters objected to the proposed change as overly expansive. After evaluating those comments, we have decided not to make the proposed change. We agree that collection of baseline data from the area in which impacts are reasonably probable will provide sufficient basis for evaluation of the permit application and design of the proposed operation. Similarly, we agree with the commenters that limiting monitoring outside the permit area to the area in which impacts are reasonably probable will provide sufficient data to detect and evaluate the impacts of mining and reclamation in a timely manner. Expanding baseline data collection and monitoring to areas in which impacts are reasonably possible, but not reasonably probable, would increase cost with little benefit.

As we explained in the preamble to the proposed rule, the definition of ''adjacent area'' depends on the nature of the resource and the context in which the regulations use the term.[110] In response to a comment from another federal agency, we modified final paragraph (1) to clarify that, in the context of the Endangered Species Act, ''adjacent area'' includes areas outside of the proposed or actual permit area where surface coal mining operations or underground mining activities may affect a species listed or proposed for listing as endangered or threatened, or having designated or proposed critical habitat under the Endangered Species Act. This modification, found at final rule paragraph (1)(ii), is to ensure protection is extended to proposed or listed species under the Endangered Species Act, as well as proposed or designated critical habitats listed under the Endangered Species Act that may be impacted by the proposed mining activity. Any impact to a proposed or listed species or proposed or designated critical habitat, whether adverse or beneficial, should be included within the definition of adjacent area.

We have also made a change to paragraph (b) of the proposed definition of ''adjacent area,'' now final paragraph (2). This paragraph clarifies the previous definition by specifying that the adjacent area includes the area of probable impacts from underground workings. We proposed to revise the definition to state that the adjacent area includes the area overlying the underground workings plus the area encompassed by a reasonable angle of draw from the perimeter of the underground workings. Several commenters questioned the application of the phrase ''reasonable angle of draw'' in paragraph (b) of the proposed rule, and noted that it should instead be based on the hydrologic regime. As pointed out by several commenters, the angle of draw is a term more appropriate for defining the limits of surface subsidence impacts that could occur adjacent to an area of high extraction mining. Commenters pointed out that hydrologic impacts to surface water and groundwater related to dewatering caused by high extraction mining may extend significantly beyond the limits of direct subsidence impacts as measured by the angle of draw. Therefore, these commenters suggested we adopt a term that more accurately addresses the potential limits of dewatering. We acknowledge that dewatering impacts may extend beyond the limits defined by the angle of draw; therefore, we are replacing the term ''angle of draw'' with the term ''angle of dewatering''. As the commenters recognized, the actual zone of hydrologic impacts to surface water and groundwater caused by subsidence induced dewatering will be highly site specific depending of lithology, depth of coal seam, aquifer characteristics and the extent to which groundwater contributes to surface flow of streams. Due to the variability of these impacts and the site specific nature of the data needed to accurately determine the angle of dewatering we are not placing a specific limits on this area; instead, we are defining the term ''angle of dewatering'' to mean, ''the angle created from a vertical line drawn from the outer edge or boundary of high-extraction underground mining workings and an oblique line drawn from terminus of the vertical line at the mine floor to the farthest expected extent that the mining will cause dewatering of groundwater or surface water.'' This definition,[111] or similar variations, has been in use for many years, and is commonly used in defining the potential impact area for stream dewatering and other adverse impacts to surface water and groundwater.

We also received several comments on this proposed definition that we are not adopting. A couple of commenters expressed concern regarding the potential inability to access the ''adjacent area'' because of a lack of landowner consent. We acknowledge that lack of landowner consent may restrict data collection. However, the regulatory authority needs sufficient data about the adjacent area to properly evaluate the permit application and

[108] 44 FR 14919 (Mar 13, 1979).

[109] 80 FR 44436, 44467–44468 (Jul. 27, 2015).

[110] 80 FR 44436, 44467 (Jul. 27, 2015).

[111] D.Y. Dixon and H.W. Rauch, *The Impact of Three Longwall Coal Mines on Streamflow in the Appalachian Coalfield,* In the Proceedings of the 9th International Conference on Ground Control in Mining, Morgantown, W.V.,169–182 (1990).

prepare the cumulative hydrologic impact assessment. If one landowner refuses access, one solution could be to expand the initial ''adjacent area'' to include land further away for which access can be obtained. We encourage permit applicants to work with the regulatory authority to determine an appropriately-sized ''adjacent area'' with sufficient sampling points to satisfy all planning and regulatory needs.

Additionally, several commenters opined that the proposed definition of ''adjacent area'' would result in an expanded permit area to secure access and result in increased costs. In some cases the permit area may coincide with the extent of probable impacts; however, that is the exception. Most of the time the permit area is smaller than the ''adjacent area''; therefore, we do not believe this definition will impact the size of the permit area.

One commenter proposed adoption of the adjacent area definition used by the Wyoming Department of Land Quality. That definition provides that ''[a]djacent area means land located outside the permit area upon which air, surface water, groundwater, fish, wildlife, or other resources protected by the Act may reasonably be expected to be adversely impacted by mining or reclamation operations. Unless otherwise specified by the Administrator, this area shall be presumptively limited to lands within (one-half mile) of the proposed permit area.'' This suggestion was not accepted because of the one-size-fits-all minimum application of ''one-half mile.'' We have no indication that this size limitation would ensure the inclusion of all areas where there is the reasonable probability of adverse impacts.

One commenter alleged that the proposed rule inappropriately assumes that adjacent waters are inextricably linked to, what the commenter referred to as, ''the core/jurisdictional waters.'' This commenter explains that adjacent waters may have little, if any, biological connection to ''the core/jurisdictional waters;'' they may contain two distinct, functionally independent communities that may only interact slightly. We disagree that the rule assumes a biological connection between two adjacent water bodies. The rule at section 780.19 requires the operator to collect geologic, hydrologic, and biologic data in the permit area and adjacent area. To the extent that distinct, functionally independent communities exist in adjacent areas, the baseline data collection will document that fact. This information will then assist the operator and the regulatory authority to better understand the potential cumulative impact on the hydrologic and biologic environment in the permit and adjacent areas from the proposed operation.

Paragraph (c) [112] of the proposed definition established what the term ''adjacent area'' means with respect to underground mine pools. Two commenters questioned the need for including paragraph (c) within the definition of adjacent area. One of the two commenters asserted that the requirements in the existing paragraph (c) are adequately addressed and there is no need for revision and the other commenter asserted that the requirements are sufficiently discussed in paragraph (a), now final paragraph (1). Final paragraph (c), now final paragraph (3), is retained because it highlights the importance of ensuring that areas that might be affected physically or hydrologically by the dewatering of a mine pool or areas that may develop mine pools will be included in the adjacent area because of the long-term cost associated with remediation and treatment of discharges that could continue in perpetuity. Inclusion of these areas ensures that sufficient groundwater data will be collected to assist the regulatory authority to determine what, if any, impacts the mine operation will have on areas that mine pools could adversely impact.

In conjunction with the comments listed above, both commenters recommended, that if proposed paragraph (c), now final paragraph (3), is retained, that we replace the words ''might be affected'' in the final rule language. One commenter suggested replacing the words ''might be affected'' with ''may realize physical or hydrological adverse impacts.'' This phrase does not afford the regulatory authority sufficient flexibility in making determinations about areas that may be affected by dewatering. The other commenter suggested we replace ''might be affected'' with ''could reasonably be significantly affected, based on the professional judgment of a professional hydrologist within the regulatory authority.'' This phrase is too vague and subjective, particularly since the commenter does not explain what the term ''reasonably be significantly affected'' means. Therefore, we are retaining the words ''might be affected'' in the final rule text within final paragraph (3) and adopting paragraph (c), as proposed, with the exception of renumbering it as final paragraph (3).

In the preamble to the proposed rule, we invited comment on whether the definition of ''adjacent area'' should prescribe the Hydrologic Unit Code (HUC) 12 watershed or a more appropriate minimum watershed size for the adjacent area for surface water resources. Several commenters supported inclusion of at least the next higher order drainage area for baseline surface water characterization where dewatering of streams by longwall or other high-extraction mining may occur as a mechanism to define adjacent area. In contrast, another commenter strongly opposed an approach of using the next higher order drainage area to determine ''adjacent area''. That commenter stated that using the definition of ''adjacent area'' as the drainage area of the operation and at least the next higher order drainage area could result in several thousand acres and associated stream lengths being added to the stream mapping and monitoring requirements. We agree with this commenter and have not changed the definition for two reasons. Changing the definition to include a specific watershed would create fixed boundaries for the ''adjacent area'' and may not be adequate to capture all areas with probable impacts on resources. In addition, the fixed area may be larger than necessary, which may result in collection of data with little or no value for evaluation of the impacts of mining and reclamation.

Angle of Dewatering

In response to numerous comments, we are adding the definition of ''angle of dewatering'' to the final rule. As we discussed in the definition of ''adjacent area'' we are defining the term ''angle of dewatering'' to mean, ''the angle created from a vertical line drawn from the outer edge or boundary of high-extraction underground mining workings and an oblique line drawn from the terminus of the vertical line at the mine floor to the farthest expected extent that the mining will cause dewatering of groundwater or surface water.'' This definition,[113] or similar variations, has been in use for many years, and is commonly used in defining the potential impact area for stream dewatering and other adverse impacts to surface water and groundwater as a result of underground mining. As the commenters recognized, the actual zone of hydrologic impacts to surface water and groundwater caused by subsidence induced dewatering will be highly site specific; depending of lithology, depth of coal seam, aquifer characteristics, and

[112] 80 FR 44436, 44467–68 (Jul. 27, 2015).

[113] Dixon, supra at 169–182.

the extent to which groundwater contributes to surface flow of streams. Due to the variability of these impacts and the site specific nature of the data needed to accurately determine the angle of dewatering it is not possible to define one all-inclusive ''angle'' of dewatering. Therefore, we are identifying impacts to be expected within the ''angle of dewatering''. The permittee will be responsible for performing the necessary onsite investigation to estimate the ''angle of dewatering'', and to define the potentially affected surface area and groundwater resources.

Approximate Original Contour

We proposed to revise the definition of ''approximate original contour'' to clarify that the term refers to the general land configuration within the permit area as it existed before any mining and not to a configuration immediately prior to the current mining. As the preamble explained,[114] this approach is consistent with section 515(b)(2) of SMCRA,[115] which requires that surface coal mining and reclamation operations be conducted so as to ''restore the land affected to a condition capable of supporting the uses which it was capable of supporting prior to any mining . . . .''. As the preamble also explained,[116] the U.S. District Court for the District of Columbia held that the word ''any'' used in this SMCRA section ''indicates that Congress intended the operator to restore the land to the condition that existed before it was ever mined.'' [117]

Numerous commenters took exception to the addition of the word ''any'' in front of the word ''mining'' in the definition of approximate original contour. One commenter contended that the current definition is clear and should not be changed and that the proposed change would conflict with the statutory definition at section 701(2) of SMCRA.[118] As stated above, and in the preamble to the proposed rule, the changes to this definition only clarify our longstanding policy that ''approximate original contour'' refers to the general land configuration within the permit area as it existed before any mining and not to a configuration immediately prior to the current mining. The use of the term ''original'' within the definition of approximate original contour supports the contention that restoration is based on the land's original or natural configuration, before any mining, and not on its altered contour as impacted by pre-SMCRA mining. The addition of the word ''any'' simply clarifies this point. Clearly, SMCRA did not intend previously mined landscapes with dangerous highwalls and ungraded spoil piles and ridges as an acceptable postmining topography when they are remined under SMCRA. The added language is intended to assure these lands will be reclaimed to eliminate as many of these adverse features and contours to the extent possible. During a nationwide evaluation of approximate original contour in 2010, we learned that certain state regulatory authorities were allowing pre-SMCRA abandoned mine land features, such as dangerous highwalls and ungraded spoil piles and ridges, to form the basis of postmining topography when they are remined under SMCRA. This practice is not allowed under SMCRA and the changes to this definition provide clarification but do not depart from, nor conflict with, the statutory definition, as suggested by the commenter.

Other commenters stated that it was not appropriate to require current mining operations to repair the damage caused by pre-law mine operations. Another commenter asked us to clarify when the new definition might be applied on previously mined areas permitted before or after the effective date of the new rule, as it could have major impact on staff resources to re-review previously approved plans. As mentioned above, the clarification that pre-SMCRA abandoned mine land features may not provide the basis for approximate original contour is not a new requirement. Therefore, all SMCRA permits should already contain reclamation plans that ensure that the land will be reclaimed to the general surface configuration of the land prior to mining, regardless of this rulemaking. Furthermore, as discussed below, it is common practice for remining operations to repair the damage caused by pre-law mine operations. While SMCRA does not limit operations to only remining operations, and does not require operators to reclaim abandoned mine land features outside of a permit disturbance boundary, any previously mined areas that are re-disturbed during the course of remining must be reclaimed according to all of the requirements of SMCRA. No changes were made as a result of these comments.

Other commenters not only objected to the addition of the word ''any'' before the word ''mining'' in the definition of approximate original contour at § 701.5, the commenters questioned our legal authority to make this modification to our regulations. These commenters contend that requiring operations to ensure that the reclaimed area closely resembles the general surface configuration prior to any mining, instead of the general surface configuration just prior to permit issuance, would impose an unachievable standard. However, the requirement that operations ensure that the reclaimed area closely resemble the general surface configuration prior to any mining is not a new requirement. In fact, SMCRA's legislative history shows that, except in limited circumstances, it was commonly understood that previously mined areas could and should be remined and reclaimed to achieve original contours. When testifying about Pennsylvania's surface coal mining law, the basis for SMCRA, Pennsylvania's Governor Milton J. Shapp testified that:

> Since our strip mining laws have been in effect, many coal operators have come back in the same area and are now digging the second seam; and, of course, as they do that, they are restoring the original contour, so that a large percentage of the scars of western Pennsylvania, where we has [sic] this double seam, have already been corrected . . . .

H.R. 2 Hearing Part II at 46. The addition of the word ''any'' is merely a clarification. Furthermore, commenters did not provide an explanation or an example to illustrate why this requirement is unachievable.

In support of their contention that we lack the legal authority to insert the word ''any'' into the definition of approximate original contour, commenters made three main arguments. First, commenters rely on two recent decisions from the Departmental Cases Hearings Division in the Department's Office of Hearings and Appeals, in which an administrative law judge allowed a mining company to model postmining surface configurations on pre-SMCRA abandoned mine land features. However, decisions of administrative law judges are not Departmental precedents and are not binding on the Interior Board of Land Appeals, other administrative law judges, the Office of Surface Mining, or Article III Courts. *West Cow Creek Permittees* v. *BLM,* 142 IBLA 224, 235 n.16 (1998). In fact, administrative decisions of this type are only binding on the parties if the decision is not appealed or if the decision is upheld upon appeal to the Interior Board of Land Appeal. In this case, both decisions have been appealed to the Interior Board of Land Appeals

[114] 80 FR 44436, 44468 (Jul. 27, 2015).

[115] 30 U.S.C. 1265(b)(2).

[116] *Id.*

[117] *In re Permanent Surface Mining Regulation Litigation. I, Round I (PSMRL I, Round I),* 1980 U.S. Dist. LEXIS 17722 at *95 (D.D.C. 1980).

[118] 30 U.S.C. 1291(2).

and are awaiting a decision. Finally, these decisions did not address our authority under SMCRA but were based on a state regulatory authority's interpretation of its regulations.

Second, commenters stated that it was incorrect for us to reference the postmining land use and backfilling and grading performance standards at Sections 515(b)(2) and (b)(3) of SMCRA in support of its clarification that postmining surface configuration should be based on contours prior to any mining. These commenters instead insist that we should only consider the statutory definition of approximate original contour at section 701(2) [119] in its analysis of whether approximate original contour should be based on the contours prior to any mining or whether it is appropriate to base postmining contours on pre-SMCRA abandoned mine land features present at the proposed mining site at permit issuance. We do not agree. Postmining land use and approximate original contour are closely linked and should not be artificially separated. The requirements at sections 515(b)(2) and (b)(3) [120] that land be backfilled and graded to ''restore the approximate original contour'' with all highwalls, spoil piles, and depressions eliminated and ''restore'' the land to the uses that ''it was capable of supporting *prior to any mining*'' complement each other, ensuring that the standard for reclamation is the condition of the land in its natural, or ''original'' condition, prior to any mining activities. Our longstanding understanding of this connectedness is evidenced in the fact that approximate original contour and postmining land use are listed together at 816.102(a) as requirements for backfilling and grading.

Third, a few commenters questioned whether requiring that approximate original contour be based on the condition of the land prior to any mining would preclude the beneficial practice of remining. We agree that section 102(h) of SMCRA [121] promotes the reclamation of pre-law sites that have been left in an environmentally degraded condition. However, these commenters may not be aware that our regulations already provide an approximate original contour exemption for previously mined areas ''where the volume of all reasonably available spoil is demonstrated in writing to the regulatory authority to be insufficient to completely backfill the reaffected or enlarged highwall.'' 30 CFR 816.106(b). In promulgating our regulation at § 816.106, we determined that no approximate original contour exception was necessary where a previously mined area has sufficient spoil to completely backfill the reaffected area or enlarged highwall. In those instances, there is no reason to treat the site any differently and the operator must follow the general backfilling and grading requirements at § 816.102. If approximate original contour were based on the surface configuration at permit issuance, instead of our longstanding policy of using the surface configuration prior to any mining, the exemption for previously mined areas would not be necessary because an applicant would always be able to base reclamation on any pre-SMCRA abandoned mine land features within a permit, such as orphan spoil piles, pits, and highwalls. This outcome would not result in the reclamation of previously mined areas. While encouraging remining is important, we have already provided an exemption for certain remining activities and do not believe that a greater exemption is necessary to encourage reclamation of pre-SMCRA abandoned coal mine sites through remining. For the preceding reasons, we find the arguments challenging our legal authority to make these changes unsupported and have not revised our definition.

One commenter expressed concern that the proposed changes could be interpreted to alter the core elements of approximate original contour. While this comment did not request a change to the definition, we can confirm that the changes do not alter the requirement that the reclaimed area must closely resemble the general surface configuration prior to any mining, must blend into and complement the drainage pattern of the surrounding terrains, and must contain no highwalls or spoil piles. These requirements apply, regardless of the presence or absence of abandoned mine land features, unless a separate exception applies.

Another commenter expressed concern that returning land to its approximate original contour would limit certain types of postmining land uses. Commenters did not provide any examples of situations where removal of pre-SMCRA abandoned mine land features would preclude any postmining land uses. We do not share the concern expressed by this commenter. In our experience, ensuring the elimination of pre-SMCRA abandoned mine land features only enhances the land's capability to support a wider variety of postmining land uses. Therefore, we do not believe that there is any need to make changes to the definition of approximate original contour based on these comments.

Several commenters stated that approximate original contour conditions before any mining might be difficult to determine because some sites may have been mined before the publication of United States Geological Survey quadrangle maps or were mined centuries ago. We do not believe that the lack of detailed USGS topographic maps or other information for very old pre-SMCRA mined areas should inhibit the ability to comply with this requirement. Considering the remining of previously mined sites requires an approximate restoration and not an exact restoration of contours, before any mining, general knowledge of the natural topography typical of the local area should be sufficient. We made no changes as a result of this comment.

Similarly, one commenter expressed concern that the changes in the language of the definition somehow altered the standard for requiring the restoration of land configuration from ''approximate'' to ''exact'' original contours. It is not our intent to require reclamation to achieve the ''exact'' original contour. The final rule reflects that changes in the surface configuration after mining compared to the land's configuration before any mining are allowed as long as the premining configuration closely resembles the post-mine configuration. Another commenter requested that we explain the meaning of the term ''approximate'' or ''closely resembles'' as it relates to the definition of approximate original contour. Such a discussion is not necessary as the use of these terms within the definition have not been proposed for change and maintain the same meaning as they had before this revised definition.

Some commenters expressed concern that the revised definition implies that soil resources from previously mined areas must be restored, and argued that soil resources at many pre-law sites were not protected and it would be unreasonable to impose such a requirement to fully reclaim them. We disagree that the revised definition of approximate original contour implies, or could reasonably require, permittees and mine operators to recreate soil resources that have been permanently lost. We fully recognize that previously mined areas commonly have significant limitations. At the same time, these limitations should not be used as an excuse to not make improvements, such as elimination of highwalls and spoil piles, and remediation of hazardous and environmentally degraded conditions. We also reject the comment that grading

[119] 30 U.S.C. 1291(a)(2).

[120] 30 U.S.C. 1265(b)(2) and (b)(3).

[121] 30 U.S.C. 1202(f).

of remined spoil piles to meet approximate original contour is technically and economically impossible. Most on-going remining operations currently comply with the requirement of § 816.102 and are already achieving approximate original contour. Where they have insufficient spoil to fully reclaim the highwall, § 816.106 provides an alternative option for reclamation. We therefore decline to make changes in this definition based on these comments.

Others commented that the changes to the approximate original contour definition appear to focus mainly on problems in Appalachia, where remining, thick overburden, and mountaintop removal are prevalent. While we agree that these conditions may be prevalent in Appalachia, sites with previously mined areas exist throughout the coal regions. For example, we noted problems with achieving approximate original contour in Oklahoma in a 2010 National Priority Review of approximate original contour. The clarifications provided in this final rule are applicable nationwide and will ensure that, unless an operation qualifies for an exemption from the requirement to achieve approximate original contour, such as the exemption for previously mined areas with insufficient spoil to completely reclaim the highwall under § 816.106, the reclamation will be based on contours present prior to any mining.

Several commenters advocated expanding the definition of approximate original contour to include the restoration of topography damaged by surface subsidence from underground mining, specifically longwall mining. Other commenters expressed opposition to the inclusion of such language and instead urged that subsidence from underground mining be specifically excluded from the definition of approximate original contour. After consideration of both positions, we have determined that these changes are not necessary because approximate original contour is not applicable to surface subsidence for underground mining. Pursuant to section 701(2) of SMCRA, the requirement to achieve approximate original contour is applicable to ''reclaimed areas, including any terracing or access roads,'' that are subject to ''backfilling and grading of the mined area.'' [122] As the area above underground mine works are not part of the mined area that are backfilled and graded, they are not subject to requirements of approximate original contour. Therefore, expanding the definition of approximate original contour to include the restoration of topography caused by settlement due to underground mine subsidence would be inappropriate. Furthermore, following the same logic, explicitly excluding underground mining subsidence impacts is unnecessary because approximate original contour already does not apply to these impacts.

One commenter alleged that the post mining configuration should only have to resemble the areas surrounding the permits and that the proposed addition of the phrase ''within the permit area'' to the definition of approximate original contour is unlawful and contrary to SMCRA. The commenter based this contention on one portion of the statutory definition of approximate original contour that references ''the surrounding terrain''. We did not adopt this comment as it does not fully reflect the definition as it appears in SMCRA. The full statutory definition reads '' 'approximate original contour' means that surface configuration achieved by backfilling and grading of the mined area so that the reclaimed area . . . closely resembles the general surface configuration of the land prior to mining and blends into and complements the drainage pattern of the surrounding terrain. . . .'' [123] The interpretation urged by the commenter fails to give force to the beginning of the definition, which requires that the reclaimed area closely resemble the general surface configuration of the land prior to mining and misses the distinction between resembling the surface configuration and blending into the surrounding area. The purpose of blending the reclaimed mined area with surrounding terrain is to ensure that there is a topographic connection that avoids dangerous and abrupt topographic changes, often due to swell and bulking factors. Complementing the drainage patterns of the surrounding area is also necessary to ensure that surface water flows similarly to how it did before mining and that it does not cause pooling above the mine site or downstream off-site damage. Approximate original contour has never been based on restoring the configuration of the mined area to resemble the surrounding terrain, especially because, in some situations, the topographic differences can be significant. As an example, if the mined area were flat to gently rolling topographically before any mining and the surrounding area were naturally a much steeper topography, it would be inappropriate to reclaim the mined area with the intention of using the surrounding terrain as the approximate original contour model. In this example, to achieve the requirements of approximate original contour, the mined area that was topographically flat to gently rolling before any mining should be reclaimed to a flat to gently rolling topography.

Commenters alleged that our proposed change does not adequately consider the effects of swell or bulking factors on grading and that an unintended consequence of our proposed change might be the construction of more excess spoil fills. While the commenters did not clearly explain why they believed that changes to the approximate original contour definition would have this result, other commenters mistakenly believed that our changes were intended to require the sites to be returned to the ''exact'' premining contours, which would limit the amount of spoil that could be returned to the mined out area and increase the need for excess spoil fills. However, as we explained above, our rule change does not require a return to the exact premining contours and therefore we do not anticipate an increased demand for excess spoil fills. Therefore, we have not made any change to this definition in response to these commenters.

One commenter asserted that the proposed definition deletes the reference in the statutory definition to permanent water impoundments. That is not the case. The final definition, like the proposed definition, provides that the requirement to eliminate all highwalls and spoil piles does not prohibit ''the approval of permanent water impoundments that comply with §§ 816.49, 816.55, and 780.24(b) or §§ 817.49, 817.55, and 784.24(b) of this chapter.'' That provision is substantively identical to the previous definition in § 701.5.

Other commenters stated they were unclear as to whether the rule would allow the creation and approval of the type of impoundments frequently referred to as final-cut impoundments or final-cut lakes. Some of these commenters pointed out that impoundments can serve as an aquatic resource for fish and wildlife habitat and are often requested by landowners. We agree that permanent water impoundments, including properly constructed final-cut lakes, can provide valuable fish and wildlife habitat, recreational facilities, or water resource features. For that reason, our definition of ''land use'' in section 701.5 includes ''developed water resources'' as a specific land use category. As previously noted, the final definition of

[122] 30 U.S.C. 1291(2).

[123] 30 U.S.C. 1291(2).

''approximate original contour'' specifically allows permanent water impoundments that comply with §§ 816.49, 816.55, and 780.24(b) or § 817.49, 817.55, and 784.24(b). Sections 816.49(b) and 817.49(b) of our rules establish criteria for the approval of permanent impoundments, including final-cut impoundments. Paragraphs (b)(7) and (8) of those rules are particularly pertinent to final-cut impoundments. They require a demonstration that approval of the impoundment would not result in retention of spoil piles or ridges that are inconsistent with the definition of approximate original contour or the creation of an excess spoil fill elsewhere within the permit area.

A commenter approved of the clarification in the proposed rule [124] that coal refuse piles should be evaluated separately from the analysis of approximate original contour. As the commenter noted, requirements for the construction of permanent coal mine refuse piles are addressed separately from approximate original contour at 515(b)(11) and 516(b)(4) of SMCRA.[125] The regulations for coal waste are available at §§ 816.81, 816.83, 816.84, 816.87, 817.81, 817.83, 817.84, and 817.87. However, if coal refuse material is placed in the mined out area, the mined out area must still be returned to approximate original contour unless the regulatory authority has approved a coal refuse disposal area in that location. We have not made any changes to the proposed rule in response to this comment.

Backfill

We received no comments on this proposed definition, which we are adopting as proposed.

Bankfull Stage

We proposed to define ''Bankfull'' as the ''water level, or stage, at which a stream, river, or lake is at the top of its banks and any further rise would result in water moving into the flood plain.'' [126] We explained in the preamble to the proposed rule that the proposed definition paralleled the definition in the National Weather Service glossary and clarified the technical and scientific term that we use ''to more precisely fix the boundaries of stream buffer zones and riparian corridors in our proposed stream restoration requirements.'' [127] As explained below, we modified this definition in response to comments.

One commenter argued that the definition of ''bankfull'' should include a storm frequency interval to make the definition applicable to altered watersheds or systems that have experienced downcutting and are disconnected from floodplains. It was never our intent to except altered watersheds or systems that are disconnected from floodplains from this definition. We agree that streams, such as those with steep-sloped areas, that may be entrenched and lack a floodplain should be addressed by the definition because entrenched streams are commonly found within all of the coal regions of the United States. In consideration of this comment, we are adding the term ''stage'' to the term ''bankfull'' and revising the definition to include entrenched streams, rivers and lakes. The term ''bankfull stage'' is appropriate because experts generally use the term ''bankfull stage'' when describing high water events in streams, rivers, or lakes that have active flood plains or are entrenched. For entrenched streams, rivers, or lakes, experts define ''bankfull stage'' as the highest scour line, bench, or top of the point bar.[128]

Another commenter alleged that the proposed definition of ''bankfull'' is inconsistent with the definitions of leading experts such as Rosgen, the United States Geological Survey, and North Carolina University. The commenter argued that multiple other factors in the proposed rule—such as bankfull width, depth, and flood prone area—rely on a properly assessed ''bankfull stage'' and that an incorrect definition would lead to inaccurate data, which in turn would lead to improperly designed projects. In place of the ''bankfull'' definition, the commenter argued for consistent and clear terminology, such as the definition relied on by leading experts, to ensure that appropriate and accurate data are collected. Additionally, the commenter argued that the definition and proposed rule increased confusion because the agency did not provide guidance for the calculation of flood prone areas or include references to methods such as hydrologic modeling, Federal Emergency Management Agency flood maps, a standard distance from top of banks, or Rosgen's 2X maximum bankfull depth method. Calculation of flood prone areas is not germane to the definition of ''bankfull stage''; however we would expect that standard engineering practices would be used to calculate the flood prone areas. Our rule uses ''bankfull stage'' only for the purpose of determining the point from which the stream buffer zone must be measured and describing stream channel profiles. As we discuss above, we have revised the term from ''bankfull'' to ''bankfull stage'' and have more consistently aligned our proposed definition to the definition relied on by leading experts.

One commenter argued that a definition of ''bankfull'' is not necessary because most ephemeral streams do not have banks. We disagree. For the reasons explained later in this preamble, we modified the definition of ''ephemeral stream'' in the final rule to ''include[ ] only those conveyances with channels that display both a bed-and-bank configuration and an ordinary high water mark, and that have streambeds located above the water table year-round.'' Thus, if a conveyance lacks a bank, we would not classify the conveyance as a stream. As such, a definition of ''bankfull stage'' remains necessary to establish the boundaries of the streamside vegetative corridor for all stream types.

In the final rule, ''bankfull stage'' means the water level at which a stream, river, or lake begins to overflow its natural banks and enter the active floodplain or if the stream, river, or lake is entrenched, bankfull stage is identified as the highest scour line, bench, or top of the point bar. This term and definition applies to all streams, rivers, and lakes.

Biological Condition

We proposed to define ''biological condition'' as a measure of the ecological health of a stream or segment of a stream as determined by the type, diversity, distribution, abundance, and physiological state of aquatic organisms and communities found in the stream or stream segment. Some commenters expressed support for the proposed definition. Some commenters questioned how this term differed from another new term that we proposed to define, ''ecological function''. In response, we revised the definition of ''biological condition'' by deleting the statement that biological condition is a measure of the ecological health of a stream or segment of a stream. The final

[124] 80 FR 44436, 44468 (Jul. 27, 2015).

[125] 30 U.S.C. 1265(b)(11) and 1266(b)(4).

[126] 80 FR 44436, 44587 (July 27, 2015).

[127] *Id.* at 44469.

[128] *See, e.g.,* Dave Rosgen, *Applied river morphology,* Wildland Hydrology, Pagosa Springs, Colorado (1996); Cheryl Harrelson et al., *Stream channel reference sites: an illustrated guide to field techniques.* Gen Tech. Rep. RM–245, Fort Collins, Colorado (1994); U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.; William A. Harmon, *Finding Bankfull Stage in North Carolina Streams,* Volume 590, Issue 3 of AG (Series) River course, North Carolina Cooperative Service Extension Service (2000).

definition clarifies that biological condition refers to the characteristics of the biota found in surface water bodies, including streams.

Several commenters requested we remove the term ''physiological state'' from the definition of biological condition because it refers to a condition that is difficult to measure and also implies that any change in this condition would prevent mining. We agree with this assessment. ''Physiological state'' may be unmeasurable and our concerns are effectively addressed by the rest of the definition of ''biological condition'' when it refers to the type, diversity, distribution, and abundance of aquatic organisms and communities found in a stream, stream segment, or other waters. Therefore, we have deleted ''physiological state'' in the definition of ''biological condition'' within the final draft rule.

One commenter expressed concern that the definition of ''biological condition'' coupled with the definition of ''parameters of concern'' would impose new and burdensome requirements. We disagree. We define ''parameters of concern'' as those chemical or physical characteristics and properties of surface water or groundwater that could be altered by surface or underground coal mining activities, including discharges associated with those activities, in a manner that would adversely impact the quality of groundwater or surface water, including adverse impacts on aquatic life. The definition of ''parameters of concern'' clarifies that these parameters may be of import because of potential impacts on biological conditions. Neither the definition of ''parameters of concern'' nor ''biological condition'' prescribe additional biological data collection beyond the requirements expressly defined elsewhere in the final rule.

Some commenters noted that gathering data on ''biological condition'' of streams would increase permitting and monitoring costs on the part of the operator and the burden of the regulatory authority to review the resulting data. We agree with the commenters and have made several changes to these requirements in relationship to ephemeral and intermittent streams. These changes can be found within final rule §§ 780.19(c)(6) and 784.19(c)(6), related to underground mining, formerly §§ 780.19(e) and 784.19(e) of the proposed rule. These changes will reduce the cost and time commitment of the operator and regulatory authority. However, as further described in the preamble discussion of final rule §§ 780.19(c)(6) and 784.19(c)(6), below, some of this information is necessary to adequately determine the condition of the stream premining, during mining, and after mining because these inventories and assessments provide crucial information on the function of these streams.

One commenter requested that we exclude ephemeral streams from the definition of ''biological condition'' because assessment of the biological condition of ephemeral streams is impractical and unreasonable due to inconsistent flows. We agree with the commenter's statement about the impracticality of assessing the biological condition of ephemeral streams. However, instead of revising the definition of biological condition, as explained above, we have revised our baseline data requirements. This revision to final § 780.19(c)(6)(vi), includes the elimination of the requirement that permit applications include baseline data on the biological condition of ephemeral streams.

We also revised the definition of ''biological condition'' by adding the phrase ''found in surface water bodies, including streams'' because biological condition assessments are not inherently limited to streams. This change was made to better tailor the definition to the manner in which the term is explained and used in a final report from the U.S. Environmental Protection Agency Practitioners Guide [129] stating, ''[a]s a practical matter, our rules use this term only in connection with perennial and intermittent streams, but there is no scientific basis for limiting the definition itself in that manner.''

Cumulative Impact Area

We are adopting the definition of ''cumulative impact area'' as proposed with the following exceptions. We have altered the nomenclature of this definition by modifying the paragraphs to conform to the rest of the rule. Instead of using (a) through (c) to designate paragraphs, as we did in the proposed rule, we use (1) through (3) to designate paragraphs in the final rule.

One commenter requested that, at a minimum, the eight or six digit hydrologic unit code be used to delineate the cumulative impact area to ensure the inclusion of all impacts from active, closed, and expired mines on downstream water quality. We are not modifying the final rule to accommodate this request. Regulatory authorities are required to assess the probable cumulative impacts of all anticipated mining in a given area, regardless of a specified hydrologic unit code (HUC), to assure the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Therefore, the region that needs to be included in an area may be larger or smaller than a HUC 6 or 8.

Numerous commenters asked us to consider deleting the requirement within the proposed rule of using a HUC–12 watershed size in delineating the ''cumulative impact area''. The commenters stressed that a HUC–12 watershed may be appropriate in some cases but would result in areas that are too broad or too restrictive in others. The commenters requested the proposed rule be revised to allow the regulatory authority flexibility in requiring a more suitably-sized watershed approach based on the permit area under consideration, existing and anticipated coal mining operations, and site and regional characteristics. We agree with the commenters and have revised the proposed definition to allow the use of a HUC–12 or a different-sized watershed deemed appropriate for purposes of preparation of the cumulative hydrologic impact assessment. This change will allow the regulatory authority to use a watershed size that is more appropriate to the area under evaluation.

In addition to this change we altered the definition of ''cumulative impact area'' within the final rule by renumbering the paragraphs and removing proposed paragraph (c)(6). Proposed paragraph (c)(6) specified that anticipated underground mining includes all areas of contiguous coal reserves adjacent to an existing or proposed underground mine that are owned or controlled by the applicant. This proposal was included because, barring significant changes in economic or regulatory conditions, the mine would reasonably be expected to extend into those reserves in the future. We received numerous comments requesting that we not adopt the proposed requirement that the cumulative impact area include all areas of contiguous coal reserves adjacent to an existing or proposed underground mine when the applicant owns or controls those reserves. Commenters stated that the requirement was too broad and unworkable and could result in an increased burden on industry and the regulatory authority. Commenters also stated that the information related

[129] U.S. Envtl. Prot. Agency, *A Practitioner's Guide to the Biological Condition Gradient: A Framework to Describe Incremental Change in Aquatic Ecosystems.* EPA–842–R–16–001. U.S. Envtl. Prot. Agency, Washington, DC (2016).

to coal reserves may be proprietary, and that the cumulative impact area should be defined based on potential impacts from approved operations and operations that are in some stage of the permit application process instead of resource control or ownership. For the reasons presented by the commenters, we agree that the inclusion of all continuous coal reserves adjacent to an existing or proposed underground mine in proposed paragraph (c)(6) is too speculative. Therefore, we have removed it from the final definition.

When neither baseline data nor analyses have been supplied by the applicant or permittee, a commenter claimed that it may not be technically feasible to assess the impacts of anticipated mining upon water resources during mining and reclamation and after final bond release. We agree that evaluation of potential impacts from areas of existing or anticipated mining on surface water and groundwater resources are not technically feasible in the absence of baseline or other data. This rule sets forth requirements for the collection and analysis of premining data about the site of the proposed mining operation and adjacent areas adequate to establish a comprehensive baseline that will facilitate evaluation of the effects of the proposed operation. If sufficient data is not available on areas of anticipated mining to allow for a meaningful analysis of potential impacts, the regulatory authority cannot approve the permit application in accordance with § 780.21 of this rule. In addition, the commenter continued that we should provide guidance on incorporating anticipated mining areas into the cumulative hydrologic impact assessment. We disagree. The concept of including anticipated mining as part of the cumulative impact area is not new and has been an integral component of the cumulative impact area since the early 1980s. Sections 507(b)(11) and 510(b)(3) of SMCRA [130] require that the regulatory authority prepare an assessment of the probable cumulative impact of all anticipated mining in the area upon the hydrology of the general area. In 1983, we adopted a definition of cumulative impact area to identify both the extent of the area that must be included in this evaluation and the scope of the term ''anticipated mining.'' Paragraphs (c)(1) through (3) of the proposed definition, now paragraphs (3)(i) through (iii) are substantively identical to paragraphs (a) through (c) of the previous definition. In addition, over the years, we have published several technical reference documents for the development of cumulative hydrologic impact assessments, including information on anticipated mining activities that provides guidance as requested by the commenter. Those documents are available on our home page on the internet (*www.osmre.gov*) or upon request.

Several commenters stated there was no justification for a requirement to analyze the anticipated impacts after final bond release and that any requirement to do so was beyond SMCRA authority. In response, we have decided that it is neither feasible nor practical to attempt to predict anticipated cumulative impacts following final bond release. The final definition that we are adopting does not require this analysis of potential impacts after final bond release.

One commenter disagreed with the inclusion of any proposed surface or underground coal mining operation for which a request for an authorization, certification, or permit has been submitted under the Clean Water Act as anticipated mining. We disagree with this comment. Inclusion of proposed operations in situations where the Clean Water Act authorization process has begun will result in preparation of a more comprehensive analysis by the permit applicant or permittee and the regulatory authority. Those operations are within the realm of anticipated mining because the permitting process for those mines has begun, albeit under the Clean Water Act rather than SMCRA. Nothing in section 507(b)(11) of SMCRA [131] limits ''anticipated mining'' to operations that have begun the SMCRA permitting process. Further, § 780.27(a), about permitting requirements that apply to proposed activities in or through ephemeral streams and § 780.28(a), about additional permitting requirements that apply to proposed activities in, through, or adjacent to a perennial or intermittent stream specifies that if the proposed permit area includes waters subject to the Clean Water Act, the regulatory authority must condition the permit to prohibit initiation of surface mining activities in or affecting those waters before the permittee obtains all necessary authorizations, certifications, and permits under the Clean Water Act.

Ecological Function

We proposed to define the ''ecological function'' of a stream as the role that the stream plays in dissipating energy and transporting water, sediment, organic matter, and nutrients downstream. The proposed definition included the ability of the stream ecosystem to retain and transform inorganic materials needed for biological processes into organic forms and to oxidize organic molecules back into elemental forms through respiration and decomposition. It further stated that the term includes the role that the stream plays in the life cycles of plants, insects, amphibians, reptiles, fish, birds, and mammals that either reside in the stream or depend upon it for habitat, reproduction, food, water, or protection from predators. Finally, the proposed definition stated that the biological condition of a stream can be used as one measure to infer the status of the stream's ecological function.

Various commenters found the definition to be overly broad, too vague, unclear, or lacking the specificity needed to establish standards for the restoration of ecological function. Other commenters opposed the definition based on the opinion that the definition relied too heavily on research in Appalachia and upon the U.S. Army Corps of Engineers guidance [132] referenced in the preamble to the proposed rule. Other commenters expressed concern that we are mandating specific metrics that may not be applicable to all regions of the country or that may be unreasonably expensive. In response to these comments, and others which voiced concern that compliance with this definition is critical to the determination of bond release, we conducted further analyses to determine how to make this definition more applicable to scientifically defensible standards and to be more clearly measurable, and thus capable of implementation in the context of bond release. Therefore, and for the reasons explained further below, we modified the final rule to define ecological function as ''the species richness, diversity, and extent of plants, insects, amphibians, reptiles, fish, birds, mammals and other organisms for which the stream provides habitat, food, water, or shelter. The biological condition of a stream is one way to describe its ecological function.'' This definition includes some characteristics of what is often referred to in scientific literature as ecological structure, which often encompasses the abundance and composition of species as a result of

[130] 30 U.S.C. 1257(b)(11) and 1261(b)(3).

[131] 30 U.S.C. 1257(b)(11).

[132] U.S. Army Corps of Engineers, *Operational Draft Regional Guidebook for the Functional Assessment of High-Gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky*. ERDC/ELTR–10–11, July 2010, U.S. Army Engineer Research and Development Center, Vicksburg, MS., (Jul. 2010).

physical, chemical, and biological forces.[133] Our definition of ecological function includes this abundance and composition of species when it refers to the species richness, diversity, and extent of plants, insects, amphibians, reptiles, fish, birds, mammals and other organisms. We are including this characteristic of ecological structure in the final rule definition of ecological function because this rule at § 800.42(d)(2) requires restoration of ecological function in connection with Phase III bond release, and it is therefore necessary to have a definition that indicates the ways ecological function can be measured. The traditional bioassessment tools we require to assess and monitor perennial streams (and intermittent streams where scientifically defensible protocols exist) are appropriate to measure ecological function according to our definition. The last sentence of the definition of ''ecological function'' specifies that the biological condition of a stream is one way of describing its ecological function. Therefore, unless the regulatory authority determines additional criteria are necessary or appropriate, establishment of a standard based on biological condition (and scientifically defensible bioassessment protocols as described within the final rule within § 780.19(c)(6)) would suffice.

We designed the final definition to better support the various ways in which regulatory authorities throughout the United States will actually have to assess and monitor ecological function in the context of sampling organisms. Some commenters objected to including factors within the definition of ''ecological function'' that have no direct role in demonstrating the success of reclamation under SMCRA. For example, the commenters noted that the ecological role that a stream plays in transporting nutrients downstream, known as nutrient cycling, is included within the definition, but is not a criterion used in determining eligibility for bond release. Another commenter noted that there is no agreement on objective standards for many facets of the definition. In response to these comments, the final definition eliminates references to physical and chemical processes such as dissipating energy; transporting water, sediment, organic matter, and nutrients downstream; transforming inorganic materials needed for biological processes into organic forms; and oxidizing organic molecules back into elemental forms. We also removed the specific reference to salamanders because that reference could be considered regionally biased and is unnecessary, as salamanders are not part of the ecology of all streams.

Because we are requiring the reestablishment of ecological function as a condition for bond release, we have an obligation to both the permittees and the SMCRA regulatory authorities to provide enough information within the definition to allow for the creation of clear standards for purposes of bond release. This necessitates a definition that gives clear guidance to regulatory authorities on the meaning of ecological function but is still broad enough to allow them to assess and monitor organisms that these regulations do not specifically address. The final rule provides the regulatory authority with a practical definition of ''ecological function'' that will enable them to create specific standards for assessing ecological function in their various regions. The final definition does not mandate specific metrics, although it does specify that the biological condition of a stream is one way to describe its ecological function. Under this definition, regulatory authorities are free to develop specific standards related to various types of organisms or populations including the use of indirect ways to measure those organisms or populations, such as through leaf litter breakdown.[134] It also recognizes that the presence of various types of populations, such as periphyton, fish, soil microbes, and mammals, could provide support to a finding that ecological function has been restored. The final definition also is designed to allow for future innovations in measuring ecological function as they become available.

Some commenters opposed the proposed definition because of a fear that we (or a third party, pursuant to the citizen suit provisions of section 520 of SMCRA) [135] could initiate action against a state regulatory authority for failure to analyze each facet of the definition during review of the permit application. While the final rule cannot prevent citizen suit litigation, the final rule, when followed, provides sufficient flexibility to defend against this type of challenge.

Finally, some commenters found our proposed definition to be overreaching and academic in nature and noted that methodology for measuring ecological function is still a matter of scientific debate. While we agree that science will continue to evolve on this topic, we disagree that this continued evolution precludes us from defining ecological function as we have done in the final rule. The final definition of ''ecological function'' merely clarifies our intended meaning of the term. It is not a metric in and of itself and standards for implementing this definition can be adapted, updated, and adjusted as the methodology evolves.

Ephemeral Stream

As discussed in the preamble to the proposed rule, we proposed to redefine ''ephemeral stream'' in a manner that is substantively identical to the manner in which the U.S. Army Corps of Engineers defines that term in Part F of the 2012 reissuance of the nationwide permits under section 404 of the Clean Water Act. *See* 80 FR 44436, 44470 (Jul. 27, 2015). Our existing definition classifies streamflow in response to the melting of snow and ice as an ephemeral stream, whereas the Corps' definition is silent on this point. The preamble to the Corps' definition states that the definition appropriately focuses on the duration of flow and provides that melting snow should not be considered a precipitation event because the development of snowpack over the winter season is not a particular event. *See* 77 FR 10184, 10262 (Feb. 21, 2012). An industry commenter supported the Corps' treatment of snowmelt as appropriate because in areas where there is an ephemeral channel, snow depth can cause extended runoff which should not be considered in the determination of the channel classification. In a similar vein, a regulatory authority noted that small rills created by rainfall events and snowmelt in the arid and semi-arid landscape should not be considered ephemeral streams; other regulatory authority commenters, however, recognized snowmelt is an important source of streamflow in ephemeral streams and asserted that it should be considered as part of the definition. After reviewing the comments, we are revising the definition of ephemeral streams to include those conveyances receiving runoff from snowmelt events and that have both a bed-and-bank configuration and an ordinary high water mark. Including snowmelt events, in addition to rainfall events, as a primary source of flow is appropriate, as long as groundwater is not a source of surface water flow. The additional requirements that only those conveyances with channels that display

[133] Eric Stokstad, *On the Origin of Ecological Structure,* 326 (5949), Science, 33–35.

[134] Mark O. Gessner & Eric Chauvet, *A Case for Using Litter Breakdown to Assess Functional Stream Integrity.* 12(2) Ecological Applications, 498–510 (2002).

[134] 30 U.S.C. 1270.

[135] 30 U.S.C. 1270.

both a bed-and-bank configuration and an ordinary high water mark will ensure that rills created by rainfall or snowmelt events would not be classified as an ephemeral stream.

One commenter strongly advised us to make no reference to the term ''swale'' as a stream. The commenter stated that in the western United States the term ''swale'' is commonly used to describe topographic features that are often not waters of the United States under the Clean Water Act because these features lack an ordinary high water mark. The term ''swale'' was not used in the proposed rule or the final rule. To minimize any confusion concerning what is or what is not a stream, we have revised the stream definitions for ''ephemeral stream'', intermittent stream'', and ''perennial stream'' to include a requirement that any topographic feature to be considered a stream must have both a bed-and-bank and an ordinary high water mark, in addition to the other requirements outlined in the specific definitions.

Excess Spoil

One commenter stated that the proposed definition of ''excess spoil'' was awkwardly worded. The commenter explained that the concept of ''excess spoil'' is complicated by the goal of minimizing ''excess spoil'' to reduce burial of streams. To address this and related comments expressing confusion regarding the term, we added to the definition of ''excess spoil'' a list of the types of spoil that do not constitute ''excess spoil''. This list excludes from the definition of ''excess spoil'': Spoil required to restore the approximate original contour of the mined-out area; spoil used to blend the final configuration of the mined-out area with the surrounding terrain in non-steep slope areas; spoil placed outside the mined-out area as part of a remining operation; spoil placed within the mined-out area in accordance with the thick overburden provisions of § 816.105(b)(1) of the final rule, except spoil material placed on the mined-out area as part of an excess spoil fill with a toe located outside the mined-out area; and any temporary stockpile of material that will be subsequently transported to another location.

Other commenters stated that the proposed definition might be misinterpreted to apply to topsoil or to temporary spoil piles. We agree and have revised the final rule to specify that ''excess spoil'' means spoil material *permanently* disposed of within the permit area. We further specified that temporary stockpiles of material that will be subsequently transported to another location are not included in the definition. The addition of the word ''permanent'' and the list explaining what is not considered ''excess spoil'' should preclude any misinterpretation that excess soil includes spoil or topsoil piles that are recognized as temporary in nature.

Another commenter noted that the proposed definition of ''excess spoil'' could, perhaps, inadvertently, designate material placed in an existing bench to be classified as ''excess spoil''. This commenter explained that spoil material placed on an existing bench above the approximate original contour would be subject to the more stringent proposed requirements for excess spoil disposal. According to the commenter, this would result in an increased burden to both industry and regulatory authorities while not providing additional stability or stream protection. Interpretation of the commenter's term ''existing bench'' could be viewed in two ways. One interpretation is that the ''existing bench'' is actually a previously mined bench. The other interpretation is that the ''existing bench'' is new construction as part of an active operation. If the first interpretation of the commenter's term is accepted—considering a bench on a previously mined area—we note that spoil placement on previously mined benches is preferable to construction of ''excess spoil'' on unmined land because it is more environmentally sound. In response, we revised the definition to exclude spoil material placed outside the mined-out area as part of a remining operation as explained within § 816.106 or § 817.106 of the final rule. Next, we considered the second potential interpretation—that the commenter's term ''existing bench'' pertains to construction as part of a current operation. The commenter is concerned that the classification of ''excess spoil'' includes spoil material placed in a manner that the lower portion of that spoil extends onto an open bench, most likely a bench developed along a lower coal seam mined, and the spoil material is placed at an elevation that is above the original elevation line. For the purposes of responding to this comment, we consider the commenter's reference to ''original elevation line'' to mean the approved approximate original contour surface. In the scenario that the commenter describes, the spoil material is placed on a newly created bench that is within the mined area and is therefore not considered ''excess spoil''. To further address the commenter's concern, we direct the commenter to § 780.35(b)(3) of the final rule that discusses the minimization and disposal of excess spoil. This section of the rule allows the placement of what would otherwise be ''excess spoil'' on the mined-out area to heights in excess of the approved approximate original contour surface. The purpose of § 780.35(b)(3) is to avoid or minimize construction of excess spoil fills on undisturbed lands. When considering the definition of excess spoil and the provisions of § 780.35(b)(3), spoil placed above the approved approximate original contour as described in the commenter's scenario is not considered ''excess spoil.''

One commenter stated that the proposed changes to the ''excess spoil'' definition are primarily focused on mountaintop removal and thick overburden mines and have little relevance outside Appalachia, and that they should therefore be limited to Appalachia. We acknowledge that ''excess spoil'' is primarily generated in central and southern Appalachia where both thick overburden and steep slopes are prevalent. However, mines in other regions also generate ''excess spoil''. For example, Alaska has a permit that generates excess spoil. Further, by definition, excess spoil is only applicable to those areas where it is generated, so, by default, if an area does not generate excess spoil then the rule provisions that pertain to excess spoil would not apply on that location.

One commenter indicated that the proposed preamble discussion implies that box cut spoil placed outside of the pit is not excess spoil for non-steep slope mining. We agree, noting that, by definition, the creation of box cut spoil on non-steep sloped areas does not automatically qualify this material as excess spoil, as this spoil is available for placement within the mined area and outside of the mined area when used to blend with the surrounding terrain.

Fill

We received no comments on this proposed definition, which we are adopting as proposed.

Form

Within §§ 780.28, 784.28, 800.42, 816.57, and 817.57 of the proposed rule, relating to activities in through, or adjacent to perennial and intermittent streams, we made reference to the restoration of the ''form'' of a stream. Specifically, the proposed rule required applicants desiring to mine through or divert a perennial or intermittent stream to ''demonstrate that [they could] restore the form . . . of the affected stream.

. . .'' [136] Additionally, in §§ 816.57 and 817.57 [137] we proposed that ''form'' of a stream segment must be restored. We explained in the preamble to the proposed rule that:

> a restored stream channel or a stream-channel diversion need not exactly replicate the channel morphology that existed before mining . . . it must have a channel morphology comparable to the premining form of the affected stream segment in terms of baseline stream pattern, profile, and dimensions, including channel slope, sinuosity, water depth, bankfull depth, bankfull width, width of the flood-prone area, and dominant in-stream substrate particle size.[138]

Despite this explanation in the preamble, several commenters questioned the meaning of the term ''form'' and how this term related to the term ''function'' that was also discussed in the proposed rule. Similarly, many commenters questioned the application of and relationship to the term ''form'' to the bond release provisions of § 800.42(b)(1) of the proposed rule and references to bond release within proposed §§ 780.28, 784.28, 800.42, 816.57, and 817.57. After consideration of these comments, we agree that the use of the term ''form'' and the similar term ''hydrological form'' within the proposed rule could be confusing. Therefore, we have eliminated any reference to ''hydrological form'' and included in § 701.5 a definition of the term ''form''. The term ''form'' as used in the proposed rule in § 816.57(b)(2)(i) and in the final rule definition was drafted based on the criteria established in ''Applied River Morphology'' by Rosgen.[139]

The addition of the definition of ''form'' will also provide clarity regarding the requirements for achieving Phase I bond release when mining through or permanently diverting a perennial or intermittent stream as discussed and explained more thoroughly throughout the applicable sections of the final rule preamble discussion.

The term ''form,'' as used in §§ 780.28(e)(1)(viii), 784.28(e)(1)(viii), 800.42(b)(1), 816.57(e), and 817.57(e), means the physical characteristics, pattern, profile, and dimensions of a stream channel. It is necessary to define the ''form'' of a stream because it greatly influences a stream's ''hydrologic function,'' which is also a term we are incorporating into the final rule for clarity. As contained in the final rule, the term ''form'' includes, but is not limited to, the flood-prone area to bankfull width ratio (entrenchment), channel width to depth ratio, channel slope, sinuosity, bankfull depth, dominant in-stream substrate particle size, and capacity for riffles and pools.

Specific to the definition of ''form,'' entrenchment defines the extent of flood prone area relative to channel size and, therefore, the areas in which hydrophilic and hydrophytic plant species are most adaptable. Channel width-to-depth ratio, in conjunction with channel slope, determines the discharge that, over time, transports most sediment downstream. Sinuosity directly influences channel slope. The dominant in-stream substrate particle size is dependent on discharge at bankfull stage and channel slope, and determines the nature of in-stream habitat and the types of biota that will dominate given appropriate water quality and nutrient availability. Additionally, in a natural or properly restored stream these components of ''form'' reach equilibrium such that they all remain relatively constant, even as the dynamic stream exists in a constant state of flux, with meanders migrating downstream, and the stream channel at any given location moving back and forth across the flood prone area. All of these features are integral to restoring ''form'' and ultimately to achieving successful stream restoration. Establishment of ''form'' is a prerequisite to achieving ''hydrologic function.''

Fugitive Dust

We proposed to remove this definition because it defines a term that we no longer use in our regulations. *See* 80 FR 44436, 44471 (Jul. 27, 2015).[140] We received no comments on the deletion of this term, so we are adopting our proposed action of deletion.

Groundwater

We proposed to revise the definition of groundwater to provide clarity and to replace the words ''ground water'' with the single word ''groundwater'' throughout our regulations for internal consistency. Specifically, our proposed definition was adapted from a publication entitled ''The ABCs of Aquifers'' [141] and Freeze and Cherry's ''Groundwater.'' [142] Under the proposed rule, we defined ''groundwater'' to mean subsurface water located in those portions of soils and geologic formations that are fully saturated with water; that is, those zones where all the pore spaces and rock fractures are completely filled with water. In conformity with plain language principles it is important to avoid redundancy. Therefore, in the final rule we have removed the phrase, ''*i.e.,* those zones where all the pore spaces and rack fractures are completely filled with rock'' as this is inherent in the meaning of the phrase ''saturated with water'', rendering the former phrase redundant.

We received comments from a regulatory authority that suggested that we define groundwater as ''any water that is beneath the ground surface.'' We do not concur. It would not be appropriate to define groundwater in those terms because the definition proposed by the commenter is not used by the scientific community. Another commenter said that the term ''fully'' was not necessary in our definition. Although we agree with the commenter that the term ''fully'' may be superfluous in some instances, we retained the definition based upon our review of scientific literature including Freeze and Cherry.[143]

Another commenter concerned about restoring perched aquifers within the permit area opined that perched aquifers are often difficult to differentiate from temporary saturation of the soil horizon as a result of precipitation events. We disagree. A perched aquifer has distinct properties, such as saturated permeable sediments overlying discontinuous impermeable sediments that are not found in soil horizons. The geologic information the permittee is required to collect as part of the permit application process under final rule § 780.19(f) will provide the information needed to differentiate a perched aquifer from a temporarily saturated soil horizon within the permit area.

Another commenter asserted that the proposed definition for ''groundwater'' included water in regional and perched aquifers. The same commenter was also concerned with the inclusion of ''perched aquifers'' in the definition of groundwater. The commenter was concerned that mining through a perched aquifer within the permit area would no longer be allowed because it would be considered impacts to groundwater, constituting material

[136] 80 FR 44436, 44610 and 44632 (Jul. 27, 2015).

[137] 80 FR 44436, 44656 and 44681 (Jul. 27, 2015).

[138] *Id.*

[139] Dave Rosgen, *Applied River Morphology,* Chapter 2, *Fundamental Principles of River Systems* and Chapter 5, *The Morphological Description.* (1996).

[140] 80 FR 44436 (Jul. 27, 2015).

[141] Andrew Stone.''The ABCs of Aquifers,'' (May 30, 2010); available at *http://www.nationaldriller.com/articles/85773-the-abcs-of-aquifers* (last accessed Nov. 8, 2016).

[142] Allen Freeze & John A. Cherry, *Groundwater,* Prentice-Hall, Englewood Cliffs, N.J., at pg. 2 (1979).

[143] *Id.* at 2.

damage of the hydrologic balance outside the permit area. We disagree with both of the commenter's assertions. First, under our previous definition of groundwater,[144] perched aquifers, local aquifers, and regional aquifers are all included in the definition. Therefore, there is no change in this respect to the definition of groundwater in the final rule; we merely listed specific aquifer types for the sake of clarity. In the proposed rule, we inadvertently excluded ''local aquifer'' from the list of types of aquifers. This was an oversight; therefore, we added ''local aquifer'' to the final rule definition of ''groundwater''. Secondly, the commenter's assertion that mining through a perched aquifer within the permit area would no longer be permissible is not accurate. As stated in the preamble,[145] perched aquifers could be mined through within the permit area and need not be restored unless restoration is needed to prevent material to the hydrologic balance outside the permit area.

Another commenter suggested that we mention in the definition of groundwater that the terms ''aquifer'' and ''water table'' are sometimes used to mean the same thing in our regulations. The terms do not mean the same thing and we have used the terms consistently and correctly throughout the preamble and final rule. Aquifer means a zone, stratum, or group of strata that can store and transmit water in specific quantities for a specific use.[146] Water table is the level (elevation) in the saturated zone at which the hydraulic pressure is equal to atmospheric pressure.[147] We use both of these terms, consistently in the final rule and not as implied by the commenter. The same commenter also asserted that we should include in the final definition the fact that groundwater water levels may vary seasonally. Although we agree with the commenter that groundwater levels may vary seasonally, it is not necessary to include this fact in the definition of groundwater. However, a requirement exists in final rule § 780.19(b) that the permit application must include information sufficient to document seasonal variations in the quality, quantity, and usage of groundwater, including all surface discharges within the proposed permit area and adjacent area.

We received another comment stating that the definition of groundwater did not need to be changed from the existing regulations. However, as stated in the preamble to the proposed rule,[148] these revisions are necessary to provide clarity and consistency.

Highwall Remnant

We received no comments on our proposed removal of this definition, which we are removing as proposed.

Hydrologic Balance

We proposed to revise our definition of ''hydrologic balance'' in § 701.5 to include more emphasis on water quality by specifying that the definition encompasses ''interactions that result in changes in the chemical composition or physical characteristics of groundwater and surface water, which may in turn affect the biological condition of streams and other water bodies.'' Several commenters either questioned the rationale for inclusion of the latter phrase or erroneously interpreted it as incorporating biological condition into the definition. The commenters opposed the proposed addition, asserting that the definition of ''hydrologic balance'' should focus on water quality and quantity and not the aquatic community.

We never intended for biological condition to be part of the definition of ''hydrologic balance'' which we agree should be limited to water quality, quantity, movement, and storage. Therefore, the definition that we are adopting as part of this final rule does not include the phrase ''which may in turn affect the biological condition of streams and other water bodies.'' However, that phrase is an accurate statement in that interactions that result in changes in the chemical composition or physical characteristics of groundwater and surface water may indeed affect the biological condition of streams and other water bodies, which is one of the reasons that the impact of mining and reclamation on the hydrologic balance is a primary focus of SMCRA and the permitting process.

One commenter stated that the definition should be limited to the flow, quantity, and physical form of water. According to the commenter, the definition should not include any mention of water quality. We disagree. SMCRA quite clearly includes water quality as a component of the hydrologic balance. For example, section 515(b)(10) [149] requires that surface coal mining operations minimize disturbances to the prevailing hydrologic balance at the mine site and in associated offsite areas by various methods, including avoiding acid or other toxic mine drainage and preventing, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow. Both of these methods address water quality issues.

Hydrologic Function

Within §§ 780.28, 784.28, 800.42, 816.57, and 817.57 of the proposed rule, relating to activities in through, or adjacent to perennial or intermittent streams, we made reference to the restoration of the ''form'' of a stream. Specifically, the proposed rule required applicants desiring to mine through or divert a perennial or intermittent stream to ''demonstrate that [they could] restore the form . . . of the affected stream . . . .'' [150] Additionally, in §§ 816.57 and 817.57,[151] we proposed that ''form'' of a stream segment must be restored. We explained in the preamble to the proposed rule that:

> a restored stream channel or a stream-channel diversion need not exactly replicate the channel morphology that existed before mining. . . it must have a channel morphology comparable to the premining form of the affected stream segment in terms of baseline stream pattern, profile, and dimensions, including channel slope, sinuosity, water depth, bankfull depth, bankfull width of the flood-prone area, and dominant in-stream substrate.[152]

Despite this explanation in the preamble, several commenters questioned the meaning of the term ''form'' and how this term related to the term ''function'' that was also discussed in the proposed rule. Similarly, many commenters questioned the application of and relationship to the term ''form'' to the bond release provisions of § 800.42(b)(1) of the proposed rule and references to bond release within §§ 780.28, 784.28, 800.42, 816.57, and 817.57. After consideration of these comments, we agree that the use of the term ''form'' and the similar term ''hydrological form'' within the proposed rule could be confusing. Therefore, we have eliminated any reference to ''hydrological form'' and have included a definition of the term ''hydrologic function'' in § 701.5. The term ''hydrologic function,'' is a term we are incorporating into the final rule for clarity.

The addition of the definition of ''hydrologic function'' will also provide clarity regarding the requirements for achieving Phase II bond release when mining through or permanently

[144] 44 FR 15318 (Mar. 13, 1979).

[145] 80 FR 44436, 44471 (Jul. 27, 2015).

[146] 44 FR 15317 (Mar. 13, 1979).

[147] Freeze and Cherry, *Groundwater* at 39.

[148] 80 FR 44436, 44587 (July 27, 2015).

[149] 30 U.S.C. 1265(b)(10).

[150] 80 FR 44436, 44610 and 44632 (Jul. 27, 2015).

[151] 80 FR 44436, 44656 and 44681 (Jul. 27, 2015).

[152] *Id.*

diverting a segment of a perennial or intermittent stream as discussed and explained more thoroughly throughout the applicable sections of the final rule preamble discussion.

The term ''hydrologic function'', as used in §§ 780.28(e), 784.28(e), 800.42(b)(2), 816.57(f), and 817.57(f), refers to the role that streams play in transport of water and flow of water within the stream channel and floodplain. As contained in the final rule, the term ''hydrologic function'' includes total flow volume, seasonal variations in streamflow and base flow, and provisions of the water needed to maintain floodplains and wetlands associated with the stream. Establishment of ''hydrologic function'' occurs after achieving ''form.'' The ''form'' of the stream has a significant impact on hydrologic function.

Intermittent Stream

As discussed in the preamble to the proposed rule,[153] we proposed to redefine ''intermittent stream'' in a manner that is substantively identical to the manner in which the U.S. Army Corps of Engineers defines that term in Part F of the 2012 reissuance of the nationwide permits [154] under section 404 of the Clean Water Act.[155] Additionally, we proposed to remove paragraph (a) of our former definition of ''intermittent stream.'' *See* 80 FR 44436, 44472 (Jul. 27, 2015). We received differing opinions on this invitation for comment. One regulatory authority and other commenters supported the proposed deletion while others urged the retention of paragraph (a), which provided that an intermittent stream means ''a stream or reach of a stream that drains a watershed of at least one square mile. . . .'' This former definition functioned to automatically designate any stream or reach of stream that drains a watershed of at least one square mile as an intermittent stream. We agree with the commenters supporting the deletion of paragraph (a) because the former definition is inconsistent with generally accepted stream classification systems because it is based on watershed size rather than streambed characteristics, duration, and source of streamflow. Therefore, we are not including paragraph (a) as it existed in the former regulation within the definition of ''intermittent stream'' in the final rule.

We received comments requesting that we add runoff from snowmelt events to the definition. For the same reasons explained in the preamble to the ''ephemeral stream'' definition, we are adding reference to ''snowmelt'' within the definition of ''intermittent stream.''

One commenter suggested the definition should be tied to the number of months in each year that snowmelt normally contributes to the baseflow in the stream. This comment was not accepted because the ''intermittent stream'' definition recognizes that snowmelt provides supplemental flow and that supplemental flow may only occur during certain times of the year.

Another commenter pointed out that the proposed definition of ''intermittent stream'' did not explicitly mention the relationship the stream has to the water table. The commenter thought this was problematic because we included the relationship in the proposed definition of ''perennial stream''. For the purposes of consistency and clarity we added a statement in the final rule definition that describes the relationship between the water table and an intermittent stream.

One commenter opined that the definition of ''intermittent stream'' should address whether a stream's function is impaired by change in flow and potential change in frequency, duration, magnitude, rate of change, and timing of flows. We did not accept this comment because functional impairment from water quantity changes is more appropriately addressed by the definition of ''material damage to the hydrologic balance outside the permit area'' found at § 701.5, and explained in this preamble.

Although we specified within the proposed definition that an ''intermittent stream'' means ''a stream or part of a stream that has flowing water during certain times of the year when groundwater provides water for streamflow'' several commenters questioned the extent to which groundwater should be considered in the definition of ''intermittent stream.'' Some commenters requested that the definition of ''intermittent stream'' specify that the groundwater contribution is from an aquifer and not a result of man-made features such as upstream reservoirs, groundwater pumped to the surface, or irrigation return flows. In addition, several commenters recommended the definition require that there be a contribution from groundwater and not strictly surface water runoff. Another commenter requested clarification that the mere occurrence of snowmelt in spring would not automatically make a stream ''intermittent'' rather than ''ephemeral.'' In consideration of these comments, we clarified the definition of ''intermittent stream.'' Within the final rule the definition of ''intermittent stream'' now includes the clarifying statement: ''[t]he water table is located above the streambed for only part of the year, which means that intermittent streams may not have flowing water during dry periods.'' Additionally, we agree with commenters that snowmelt should be considered a supplemental source of water for streamflow. Therefore, we have incorporated ''snowmelt'' into the final rule definition.

A commenter asserted that based on the proposed definition of ''intermittent stream'' and the prohibition of the placement of sedimentation control structures in a perennial or intermittent stream, coal mining would be severely and negatively impacted in the western region. The commenter implies that because intermittent streams with nominally, low-yield base flow from spring discharges are common in the western region, the proposed definition would change the stream classification. We disagree. Neither the proposed definition nor the definition within the final rule has any effect on the steam designation because both definitions require contribution of groundwater flow to the stream during parts of the year. In addition, the commenter opined that there should be an allowance for sediment control systems for other mining areas in relationship to intermittent streams similar to the exceptions allowed for excess spoil fills and steep-slope areas as provided in proposed paragraph (c) of § 816.57 and discussed within the preamble to the proposed rule.[156] The exceptions outlined in the proposed rule are incorporated into the final rule because in some steep-slope areas the only place to install a sedimentation control structure is in the stream. This is discussed in more detail in the preamble discussion of paragraph (h) of § 816.57.

Similar to the explanations within the definitions of ''ephemeral'' and ''perennial'' streams and to address commenters' confusion concerning what is or what is not a stream, we have revised the definition of ''intermittent stream'' to clarify that an ''intermittent stream'' only includes those conveyances with channels that display both a bed-and-bank configuration and an ordinary high water mark. The addition is consistent with the preamble discussions of the ''ephemeral stream'' and ''perennial stream'' definitions.

One commenter opined that linking the SMCRA definitions of ephemeral

[153] 80 FR 44436, 44472 (Jul. 27, 2015).

[154] 77 FR 10184,10288 (Feb. 21, 2012).

[155] 33 U.S.C. 1344.

[156] 80 FR 44436, 44554–44555 (Jul. 27, 2015).

and intermittent streams to the definitions of those terms in the U.S. Army Corps of Engineers 2012 Nationwide Permit may result in our definitions becoming obsolete when the nationwide permits are re-evaluated. After considering the comments, we are not adopting the U.S. Army Corps of Engineers' definition verbatim.

Invasive Species

Some commenters requested the final rule include definitions of ''invasive species,'' ''non-invasive species,'' and ''native species.'' Other commenters requested that we allow the regulatory authority to have latitude to define these terms. In response, we are adding two definitions to the final rule. We are defining ''invasive species'' and ''native species'' in the final rule. In the preamble to the proposed rule at § 780.12(g) [157] we referenced Executive Order 13112,[158] which focused on ''invasive species.'' This 1999 Executive Order included definitions of both ''invasive species'' and ''native species.'' On December 5, 2016, the 1999 Executive Order was amended by Executive Order 13751.[159] Executive Order 13751, entitled ''Safeguarding the Nation from the Impacts of Invasive Species,'' includes a slightly modified definition of invasive species as compared to the 1999 Executive Order. Because the 1999 Executive Order language more closely tracks the language of SMCRA related to protection of the human health and the environment, with one minor change for grammatical improvements, we are incorporating the definitions from the 1999 Executive Order into the final rule:

In response to the commenters that suggested that we allow the regulatory authority latitude to define these terms, we do not agree. It is important to have uniform definitions of these terms, and these definitions, adapted from the 1999 and 2016 Executive Orders, accomplish that objective. These final definitions of ''invasive species'' and ''native species'' satisfy the purposes of SMCRA, are appropriate, will provide sufficient guidance to regulatory authorities, and are generally consistent with the applicable Executive Orders. For example, although our definition of ''invasive species'' contains the term ''alien species'' and the definition in Executive Order 13751 does not, our use of that term is consistent with that Executive Order's new definition of ''alien species.'' In response to the request to define ''non-invasive species,'' we decline because those species that are not defined as invasive species will be classified as non-invasive species.

Land Use

One commenter stated that we should use or recognize international definitions of ''land use'' such as the definitions from the Organisation for Economic Co-operation and Development because these definitions are more practical when recognizing economic and cultural activities associated with human use of the land. The commenter further stated that we should explain the meaning of ''support facilities'' and ''integral part of the use'' included within the definition of ''land use.'' The existing definition of ''land use'' is sufficient. Moreover, as these terms were included in the previous version of the definition of ''land use'' and not otherwise proposed for change, we see no need to further explain their meaning or to use other definitions as suggested by the commenter. Our reason for changing this definition to include the sentence, ''[e]ach land use category includes land used for facilities that support the land use'' is to ensure the definition is aligned with our corresponding changes to §§ 780.24 and 784.24. The alterations of this section allow for modification of postmining land uses from premining without requiring approval of higher and better use if the land that existed before mining was already capable of supporting that use in its existing condition. We did not receive any comments on this aspect of definition change.

Material Damage

This definition discusses ''material damage'' in the context of the subsidence control provisions of §§ 784.30 and 817.121, which we have clarified in this final rule. Several commenters raised concerns about the effects of subsidence on the land and waters overlying the underground mining activities. Commenters also raised concerns about the applicability of the definition of ''material damage'' (in the context of underground mine subsidence) to hydrologic features and recommended that subsidence damage to surface waters be more specifically regulated. Many of these concerns are discussed in Part IV.K. of the preamble which discusses material damage from subsidence and in the preamble discussion to our definition of material damage to the hydrologic balance outside the permit areas in § 701.5 of this preamble. Other comments are discussed in the sections of the preamble that address the changes we have made to our subsidence control plan provisions at § 784.30 (previously § 784.20), or that explain the measures to prevent, control, or correct damage resulting from subsidence at § 817.121. Notably, as explained more fully in our preamble discussion at Part IV.K., we are revising the definition of ''material damage'' in the context of the subsidence control provisions of §§ 784.30 and 817.121 to specifically include wetlands, streams, and bodies of water. Adding these features to the definition clarifies that not only subsidence damage to surface lands but also subsidence damage resulting in functional impairment of wetlands, streams, and bodies of water, must be repaired pursuant to the subsidence repair provisions of § 817.121(c). As previously explained, we have required operators to address impacts and correct subsidence damages to land and water features since 1995 when we published the final rule addressing the subsidence provisions of the Energy Policy Act of 1992. Thus, by adding ''wetlands, streams, and bodies of water'' to the definition of ''material damage'' in the subsidence context, we are merely reinforcing our longstanding position.

Some commenters requested that the final rule specifically address material damage to the hydrologic balance outside the permit area from longwall mining that adversely impacts the productivity of prime farmland. Longwall mining is a method of underground mining that results in planned subsidence. The commenters suggested revisions to several provisions of our regulations, including the definition of ''material damage'' in the context of subsidence in § 701.5, our subsidence control regulations in § 784.30 (previously § 784.20), and our prime farmland restoration regulations in § 785.17.

We decline to adopt the recommended revisions. We do not interpret SMCRA as authorizing protection of prime farmland from the impacts of subsidence from longwall mining operations beyond the degree of protection afforded by § 817.121(c) of our final rule. Section 516(b)(1) of SMCRA [160] does not require that operations using mining technology that requires planned subsidence in a predictable and controlled manner (primarily longwall mining) adopt measures to prevent subsidence from causing material damage to the extent technologically and economically

[157] 80 FR 44436, 44491 (Jul. 27, 2015).

[158] Exec. Order No. 13112 of February 3, 1999, 64 FR 6184 (Feb. 8, 1999).

[159] Executive Order 13751 was published in the **Federal Register** on December 8, 2016, and can be found at 81 FR 88609.

[160] 30 U.S.C. 1266(b)(1).

feasible. However, our regulations at § 817.121(c) provide that, to the extent technologically and economically feasible, the permittee of any type of underground mine, including longwall mines, must correct any material damage resulting from subsidence caused to surface lands, wetlands, streams, or water bodies by restoring the land and water features to a condition capable of maintaining the value and reasonably foreseeable uses that the land was capable of supporting before subsidence damage occurred. Our definition of ''material damage'' in final § 701.5 in the context of subsidence includes any functional impairment of surface lands, features, including wetlands, streams, and bodies of water, structures or facilities, and any physical change that has a significant adverse impact on the affected land's capability to support any current or reasonably foreseeable uses or that causes a significant loss in production or income. Therefore, under final § 817.121(c), to the extent technologically and economically feasible, the permittee must repair any surface lands, including prime farmland, whenever subsidence resulting from underground mining causes significant loss in production or income or has a significant adverse impact on the capability of the land to support the uses that it supported before subsidence damage occurred. In addition, we added § 817.121(c)(2), which requires that the permittee implement fish and wildlife enhancement measures, as approved by the regulatory authority in a permit revision, to offset subsidence-related material damage to wetlands or a perennial or intermittent stream when correction of that damage is technologically and economically infeasible.

Material Damage to the Hydrologic Balance Outside the Permit Area

We received numerous general and specific comments on various aspects of our proposed definition for ''material damage to the hydrologic balance outside the permit area.'' Several commenters requested that we refrain from finalizing a definition and continue to allow regulatory authorities the flexibility to define the term for their jurisdictions in order to best reflect local conditions. These commenters often focused on the diversity of the country and objected to the perceived ''one-size-fits-all'' approach of the proposed definition. Some commenters noted that some states, such as West Virginia and Montana, already have definitions of the term. Other states define ''material damage to the hydrologic balance outside the permit area'' on a case-by-case basis. Similarly, some commenters suggested that, instead of a uniform federal definition of ''material damage to the hydrologic balance outside the permit area'', we could better address the concerns that we raised in the preamble to the proposed rule by providing technical support to the regulatory authorities so that they could be equipped to define ''material damage to the hydrologic balance outside the permit area'' in their own states.

We agree with these commenters in part—states do need the flexibility to define ''material damage to the hydrologic balance outside the permit area'' to account for local and regional differences in geology, hydrology, mining, and reclamation. However, a federal definition is necessary to provide guidance and clarity to the regulatory authorities as they define the term for their own jurisdictions. As discussed in more detail in the preamble to the proposed rule, our previous rules did not contain a definition of ''material damage to the hydrologic balance outside the permit area,'' and, in the more than 30 years since SMCRA's enactment, very few states have adopted a definition.[161] As a result of the lack of a definition, what constitutes ''material damage to the hydrologic balance outside the permit area'' varies greatly. This has led to differences in enforcement across the country. These differences have also resulted in coal field water quality data that shows significant coal mining impacts in many streams across the country.[162] For these reasons, we are adopting a definition of ''material damage to the hydrologic balance outside the permit area'' that provides minimum nationwide standards while also providing each regulatory authority with the flexibility to tailor the definition to meet the needs of its jurisdiction while ensuring minimal standards are met.

To help clarify the regulation and to comply with the requirements of the Office of the Federal Register, we have revised and re-designated proposed paragraphs (a) and (b) of the definition into three paragraphs (1), (2), and (3).

The basic definition now provides that ''material damage to the hydrologic balance outside the permit area'' is an adverse impact, from surface coal mining and reclamation operations, underground mining activities, or subsidence associated with underground mining activities, on the quality or quantity of surface water or groundwater, or on the biological condition of a perennial or intermittent stream.'' What constitutes an adverse impact for determining material damage to the hydrologic balance outside the permit area is now based on consideration of certain types of reasonably anticipated or actual effects of the operation, such as effects that (1) cause or contribute to a violation of applicable state or tribal water quality standards or a state or federal water quality standard established for a surface water outside the permit area under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, for a surface water for which no water quality standard has been established, effects that cause or contribute to non-attainment of any premining use of surface water outside the permit area; (2) preclude a premining use of groundwater outside the permit area; or (3) result in a violation of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.*

The combination of the basic definition and procedures for considering the types of effects that constitute material damage to the hydrologic balance outside the permit area in paragraphs (1) through (3) is substantively similar to the proposed definition, with several exceptions. First, we deleted the references in the proposed definition to reasonably foreseeable uses based on comments from the public, state regulatory authorities, and other federal agencies. Among other things, the term ''reasonably foreseeable uses'' is too speculative for purposes of this definition. Second, we also deleted references to ''existing use,'' because, as some commenters noted, it could create confusion because the regulations implementing the Clean Water Act define that term in the context of that law. To avoid any possible confusion, as some commenters suggested, we replaced ''existing'' with ''premining'' in paragraph (2) and added a definition of that term in § 701.5. That definition provides that ''premining'' refers to the conditions and features that exist on a site at the time of application for a permit to conduct surface coal mining operations.

This revised definition also removes the proposed definition's direct reference to designated uses. We made this change for two reasons. First, the concept of water quality standards under the Clean Water Act, includes, but is ultimately broader than using just designated use. Designated uses are part of the water quality standards, along with water quality criteria, antidegradation provisions, and other

[161] 80 FR 44436, 44473–44476 (Jul. 27, 2015).

[162] *See, e.g.,* 80 FR at 44440–44441 (Jul. 27, 2015).

policies each respective state develops to help implement the Clean Water Act. Consideration of all of these components of water quality standards provides a more complete evaluation of what constitutes material damage to the hydrologic balance outside the permit area.

Second, we wanted to emphasize the relationship between the requirements of SMCRA and Clean Water Act as it relates to surface water affected by coal mining operations. Thus, the final definition of material damage to the hydrologic balance outside the permit area better reconciles the requirement of SMCRA to perform a cumulative hydrologic impact assessment with the jurisdiction given to the Clean Water Act authority for the Nation's waters. It also highlights the need for coordination between the regulatory authority and the appropriate Clean Water Act authorities to develop the CHIA and to make the appropriate findings that the operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

In order to effectively implement this definition, the regulatory authority and appropriate Clean Water Act authorities should coordinate during the permit application process consistent with the requirements of the final rule. After permit issuance, they should also jointly investigate potential water quality violations related to coal mining operations, as appropriate. At both of these stages, this coordination focuses on exchanging project specific information to provide the regulatory authority with information to better assess the effects of the operation on the cumulative impact area. This process should focus on the pertinent water quality standards in force for the specific site and any applicable state or tribal polices governing low flow, mixing zones, and/or any variances in play to ensure an appropriate evaluation of what constitutes material damage to the hydrologic balance outside the permit area, where it should be measured, and what material damage and evaluation thresholds are applicable for each situation. This process should enhance regulatory certainty for permit applicants and operators because it will minimize or eliminate conflicts between the agencies concerning impacts to receiving water bodies and identify measures that should be adopted to comply with the requirements of both statutes.

A commenter expressed concern that the proposed definition was impossible to interpret and evaluate in regard to compliance with SMCRA. We disagree; interpretation and compliance with this definition is possible for several reasons. For the first time since SMCRA was enacted, a federal definition of material damage to the hydrologic balance outside the permit area describes levels of unacceptable changes to the hydrologic balance that result from a SMCRA operation. These unacceptable impacts include precluding the attainment of Clean Water Act water quality standards, not maintaining premining use for groundwater, and effects that result in a violation of the Endangered Species Act. As previously stated, post-SMCRA mining has impaired receiving streams, which is an unacceptable effect of current mining practices under the Act. If the concept of material damage to the hydrologic balance outside the permit area had been more clearly understood or defined, these impacts should have been prevented.

Commenters have generally cited two situations in which it will be impossible for regulatory authorities to apply the proposed definition. First, they claim that a one-time or temporary occurrence should not constitute material damage to the hydrologic balance outside the permit area. As discussed in more detail below, we generally agree, as long as the temporary occurrence does not affect the stream to the extent that, for example, the stream fails to satisfy applicable water quality standards or violate the SMCRA material damage thresholds set for the site. However, over the years, regulatory authorities, including us, have witnessed single or temporary events of large magnitude that have risen to the level of ''material damage to the hydrologic balance outside the permit area''. These events clearly violated the Clean Water Act water quality standards of the streams affected. Second, these commenters contend that the definition does not allow natural and non-mining conditions to be factored into whether a stream maintains its applicable water quality standards. As discussed below, we disagree. The definition allows natural, non-mining, and mining-caused stream variations as long as the stream maintains its applicable water quality standards. The definition simply provides a common framework from which to assess impacts to receiving bodies of water. Latitude exists within this definition for regulatory authorities to tailor the specific meaning of ''material damage to the hydrologic balance outside the permit area'' to suit their particular state and situations encountered at specific mines. In addition, if the designated use is inaccurate or unattainable for natural or other reasons, the Clean Water Act authority has the flexibility under the Clean Water Act and the implementing regulations at 40 CFR part 131 to revise the designated use to more accurately reflect the highest attainable designated use.

A commenter also asserted that the definition, as proposed would result in denial of all future permit applications. We disagree. As previously stated, material damage to the hydrologic balance outside the permit area only occurs when a mining operation causes a stream not to satisfy its applicable Clean Water Act water quality standards or an aquifer to not meet its premining use. Variations in water quality, quantity, biological condition, and/or aquatic habitat can occur as long as the stream satisfies is applicable Clean Water Act water quality standards or an aquifer meets its premining use. A mining operation can have an adverse effect on a receiving stream as long as the stream still satisfies its applicable water quality standards, an aquifer meets its premining use as determined by the SMCRA regulatory authority, and no violations of the Endangered Species Act are occurring. For example, a reduction in a stream's index of biotic integrity score would not constitute ''material damage to the hydrologic balance outside the permit area'' if the stream is satisfying its applicable Clean Water Act water quality standards and not in violation of the Endangered Species Act. Similarly, a reduction in an aquifer's water quality parameter concentrations is not ''material damage to the hydrologic balance outside the permit area'' as long as the aquifer is meeting its premining use and it is not preventing an adjacent receiving stream from satisfying its applicable Clean Water Act water quality standards or if no designated use is defined, its premining use outside the permit area. The concept of Clean Water Act water quality standards has always existed in both the Clean Water Act and has been relevant in SMCRA analyses since the inception of both statutes, *see, e.g.,* section 508(a)(13) of SMCRA. This approach taken in our definition, consequently, is not a new one; the definition simply codifies a system that has existed for more than thirty years and under which many permits have been issued.

A commenter objected to our statement in the proposed rule that because the Clean Water Act does not apply to groundwater, the regulatory authority would need to use ''best judgment'' to establish ''material damage to the hydrologic balance'' criteria to protect existing and

foreseeable uses of groundwater. The commenter asserted that the use of term ''best judgment'' was not sufficiently clear and would negatively impact the operator and, thus, it should be eliminated. First, ''best judgment'' does not appear in the regulation. Instead, it is in recognition of the many decisions the regulatory authority must make about a specific coal mining operation. The regulatory authority makes these decisions using their ''best judgment'' based on the information and data gleaned during the decision making process. This is wholly appropriate, and we are not making any changes to the final rule in response to this comment.

Several commenters implied that material damage to the hydrologic balance outside the permit area should arise any time a partial degradation to surface water or groundwater occurred. Specifically, they suggested that as part of the definition, we should require that material damage to the hydrologic balance outside the permit area include impacts that ''partially or significantly degrade'' or ''partially, completely eliminate, or significantly degrade'' any designated use under sections 101(a) or 303(c) of the Clean Water Act or any existing or reasonably foreseeable use of surface water or groundwater outside the permit area. We disagree that material damage to the hydrologic balance outside the permit area occurs every time a stream or groundwater is partially degraded, or in some circumstances significantly degraded, because the terms ''partially'' and ''significantly'' are subjective, do not convey a sense of magnitude, and are open to interpretation and abuse. Both the Clean Water Act and SMCRA allow some variation in water quality. For instance, the Clean Water Act recognizes that in some situations water quality may vary while still being protective of the designated use. However, if the ambient quality is on the verge of the ambient water quality criterion level, then any amount of degradation could impair the designated use. In addition, section 515(b)(10) of SMCRA [163] requires operations to minimize material damage to the hydrologic balance inside the permit boundary and section 510(b)(3) of SMCRA requires that the proposed operation be ''designed to prevent material damage to hydrologic balance outside [the] permit area.'' [164] SMCRA, therefore, allows damage to the hydrologic balance as long as that damage does not rise to the level of material damage outside the permit area. Therefore, adoption of a standard that does not allow any variation in water quality or quantity within a designated use category is not consistent with SMCRA.

Some commenters expressed concern that the definition as proposed would prohibit any adverse impacts at all and would, for example, consider temporary or minor impacts to be ''material damage to the hydrologic balance outside the permit area.'' As explained above, we disagree that the definition prohibits ''any impact'' outside the permit area. The concept of water quality standards has inherent flexibility within the standards that allow temporary and minor impacts outside the permit area as long as the magnitude of those impacts does not violate applicable Clean Water Act water quality standards for the surface water under review. This change, when read in context of the entire definition, supports the intent of SMCRA, which allows some change in baseline conditions provided that those changes are not of such magnitude that a stream is incapable of attaining its applicable Clean Water Act water quality standards.[165] For example, if the impact from a mining operation causes a measurable decrease in a stream's index of biotic integrity value, but the stream is still attaining its water quality standards under the Clean Water Act, this would not be considered material damage to the hydrologic balance outside the permit area under the definition we are finalizing today. Similarly, temporary impacts would be allowed unless those impacts violate applicable Clean Water Act water quality standards or results in a violation of the Endangered Species Act. Some temporary impacts—such as dewatering a stream for all but a de minimis amount of time or discharges containing parameters of concern in sufficient quantities—may, however, rise to the level of material damage to the hydrologic balance outside the permit area if those impacts violate applicable Clean Water Act water quality standards. Therefore, incorporating the concept of the Clean Water Act water quality standards into this definition as a benchmark to determine material damage to the hydrologic balance outside the permit area accommodates the seasonal and natural fluctuation inherent in natural systems and allows some level of impact to the hydrologic balance consistent with SMCRA while also providing a point of reference for determining when the level of impact becomes detrimental to the hydrologic balance outside the permit area.

In the underground mining context, one commenter opined that the rule should specifically mention that a regulatory authority cannot approve a permit application unless it determines that the proposed operation is not predicted to cause subsidence that would result in the dewatering of any perennial or intermittent stream. Our final rule defines material damage to the hydrologic balance outside the permit area to encompass an adverse impact from subsidence that would dewater or impair an intermittent or perennial stream to the extent that applicable Clean Water Act water quality standards are or would not be met or, if no designated use is assigned, the actual premining use would be precluded, or the Endangered Species Act violated. However, as discussed above, material damage to the hydrologic balance outside the permit area will not occur if the surface water or groundwater can be repaired so that it still attains applicable Clean Water Act water quality standards, or, if no designated use exists, its actual premining use. As discussed in more depth above, in Part IV.K., as long as these regulations are followed, subsidence damage from an underground mining operation that does not rise to the level of material damage to the hydrologic balance outside the permit area may be allowed.

Similarly, several commenters suggested a single exceedance of a water quality standard should not be considered material damage to the hydrologic balance outside the permit area as it may not impact the stream hydrology to the degree that the designated uses are impaired. We agree with this comment. Similar to what we said in our discussion of temporary impacts, under our definition, a simple exceedance of a water quality standard would not necessarily constitute material damage to the hydrologic balance outside the permit area. If stream metrics indicate the stream is maintaining its applicable Clean Water Act water quality standards after exceedance events, then material damage to the hydrologic balance outside the permit area has not occurred. However, there could be situations where the SMCRA regulatory authority determines a single exceedance does constitute material damage to the hydrologic balance outside the permit area: if the stream metrics indicate that the exceedance would violate applicable Clean Water Act water quality standards or one of the other criteria listed in paragraphs (2) through (3). As we explained above, the

[163] 30 U.S.C. 1265(b)(10).

[164] 30 U.S.C. 1260(b)(3).

[165] 30 U.S.C. 1265(b)(10).

SMCRA regulatory authority should consult with the Clean Water Act authority to make this determination.

It is also possible to cause material damage to the hydrologic balance outside the permit area while satisfying all effluent limitations established in the NPDES permit. SMCRA permits require in-stream monitoring for parameters that are not limited or required to be monitored by the corresponding NPDES permits. Therefore, required monitoring under the SMCRA permit may indicate that a parameter that was not expected to have the potential to exceed a numeric or narrative water quality criteria in the receiving stream but does in fact exceed the established criteria. This situation could also occur if numerous individually compliant discharges cumulatively create a situation that violates a stream's applicable Clean Water Act water quality standards or would cause a violation of the Endangered Species Act.

One commenter asserted that the definition of material damage to the hydrologic balance outside the permit area should apply to all streams and stream segments, and that the assessment of material damage to the hydrologic balance outside the permit area must not be restricted to only those streams for which the U.S. Army Corps of Engineers, during the Clean Water Act section 404 process, makes jurisdictional determinations. We agree that material damage to the hydrologic balance outside the permit area is not restricted to only those streams for which there is a Clean Water Act jurisdictional determination issued by the U.S. Army Corps of Engineers.

In addition, final rule § 780.19(c)(6)(i)(C) simplifies the process of delineating stream transitions by requiring that the SMCRA regulatory authority default to any jurisdictional stream determinations made by the U.S. Army Corps of Engineers to delineate stream transitions. If the U.S. Army Corps of Engineers has not determined the location of a transition point, the regulatory authority must set one. There are a number of available resources that may be helpful including the state Clean Water Act authority. The regulatory authority is encouraged to coordinate with the U.S. Army Corps of Engineers and other partners in identification of stream transition points.

Several commenters suggested that linking the definition of material damage to the hydrologic balance outside the permit area with designated use could be problematic in situations where designated uses have not been identified or are not instructive, not accurate, and/or not attainable. The Clean Water Act provides a variety of policies to allow sufficient time to attain the designated uses, such as water quality standards variances, permit compliance schedules, or designated use changes. Several commenters noted that a use attainability analysis may be required to establish or change a designated use and that the use attainability analysis may be time-consuming and expensive. In such cases, the regional U.S. Environmental Protection Agency offices and relevant state Clean Water Act agencies can provide support and may suggest other approaches appropriate for the situation. As noted above, we are retaining the link to attainment of designated uses in the broader water quality standards approach; however, we are also making a clarifying change to address some of these concerns. As proposed, the definition accounts for situations where no designated use has been identified for a particular stream. In those situations, the proposed rule would have required that the ''existing use'' be maintained in a receiving stream. In the final rule, to prevent confusion with the Clean Water Act definition of existing uses and prevent abuses related to impaired streams, we have made revisions to further clarify this concept. Our intent is to maintain the actual use of surface water prior to the proposed mining operation. We are also concerned that the baseline standard for material damage to the hydrologic balance outside the permit area and/or stream restoration standards for an impaired stream, with or without a designated use, may be mistakenly considered as an existing, impaired condition rather than its actual or potential designated use. To remove any confusion and add clarity, we removed the phrase ''existing use'' from the definition and added ''actual use'' to signify uses that existed prior to submission of a coal mine permit application. Thus, paragraph (1) now specifically states that if no designated use has been established under the Clean Water Act, a mining operation cannot preclude attainment of any actual premining use of surface water outside the permit area.

One commenter suggested we only consider ''existing uses'' and that we define ''existing uses'' as any uses in existence as of August 3, 1977, which is the date SMCRA was enacted. We have not adopted this suggestion because we removed the phrase ''existing uses'' from the definition as it relates to surface waters and replaced it with ''any premining use.'' We did not replace it with ''any actual use as of the enactment of SMCRA'' because that change could raise potential conflicts with the Clean Water Act if the stream's designated uses have changed since the enactment of SMCRA.

Another commenter suggested we revise the regulation to provide a hierarchy of stream use categories that would provide consistency in determining material damage to the hydrologic balance outside the permit area (*i.e.,* first designated uses, then existing uses, and finally reasonably foreseeable uses). We agree that the regulation needs to specify the priority of stream use categories and have made changes as a result. As discussed above, we added clarifying language to paragraph (1) that specifies that adverse impacts that violate applicable Clean Water Act water quality standards and, if no water quality standards have been established, then the adverse impacts may not preclude any actual premining use. The proposed rule would have also required operators to ensure that ''reasonably foreseeable uses'' of surface water were maintained. However, many commenters raised concerns about the difficulty in interpreting or assigning reasonably foreseeable use to streams. We agree and have removed the language concerning reasonably foreseeable uses. The final rule no longer includes the term ''reasonably foreseeable uses'' in contexts other than protection of reasonably foreseeable surface land uses from the adverse impacts of subsidence. As explained in other areas of the preamble, we removed the term from the definition of material damage to the hydrologic balance outside the permit area for two reasons. First, the term appears in SMCRA only in section 516(b)(1), which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. Sections 717(b) and 720(a)(2) of SMCRA separately protect certain water uses. Second, numerous commenters opposed inclusion of the term ''reasonably foreseeable uses'' on the basis that it is too subjective, difficult to determine, and open to widely varying interpretations, which could result in inconsistent application throughout the coalfields.

Proposed paragraph (a) defined material damage to the hydrologic balance outside the permit area as any adverse impact that would preclude any reasonably foreseeable use of surface water or groundwater outside the permit area. Several commenters objected to the use of the term ''reasonably foreseeable uses''. Several commenters suggested using alternate terms such as

''protected use,'' ''existing uses'', and ''future probable use''. As explained above, we deleted references to ''reasonably foreseeable uses'' in paragraph (1) of the final definition and elsewhere in our rules. The term was confusing and could have led to possibly conflicting interpretations.

Another commenter suggested that linking material damage to the hydrologic balance outside the permit area with the concept of reasonably foreseeable uses will create conflicts between the Clean Water Act and SMCRA agencies about what is a foreseeable use. For the reasons explained above, we did not accept this comment.

A commenter expressed concern about how the Clean Water Act concept of anti-degradation would relate to variability in a stream designated use caused by SMCRA mining impacts. We clarified the definition by directly linking to the concept of Clean Water Act water quality standards, which includes provisions for impaired streams and antidegradation. To establish material damage in situations involving impaired streams, the SMCRA regulatory authority should consult with the Clean Water Act authority to ensure a thorough understanding of the water quality standards applicable to the stream and specific situation under review.

In the proposed rule, groundwater was included with paragraph (a). One commenter specifically suggested we define material damage to the hydrologic balance outside the permit area so that it applies to groundwater. Although groundwater was included in the proposed definition, we have decided to include paragraph (2) in the final rule to specifically state that operators must maintain premining uses associated with groundwater. This change clarifies that material damage to the hydrologic balance outside the permit area protects groundwater resources that may not have uses assigned to them. In particular, this paragraph states that ''material damage to the hydrologic balance outside the permit area'' would include those adverse impacts that preclude attainment of any premining use of groundwater outside the permit area. In addition, paragraphs (1) and (2) of the definition would preclude the discharge of contaminated groundwater into a receiving stream if that discharge caused the stream to not satisfy its applicable Clean Water Act water quality standards. Thus, groundwater protections are included in this final definition.

A commenter suggested we revise the definition to ensure it adequately protects listed species or designated critical habitats. The commenter further elaborated that the definition should not be linked to the Endangered Species Act's jeopardy analysis. We agree that the definition of material damage to the hydrologic balance outside the permit area should adequately protect listed species and designated critical habitat, whether aquatic or terrestrial. Paragraph (b) of the proposed rule was included to prevent impacts to threatened or endangered species or adverse effects on designated critical habitat outside the permit area in violation of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.* As proposed, it did not specifically link this definition with a jeopardy analysis under the Endangered Species Act, and we are not doing so in the final rule. In the final rule, this paragraph has been redesignated as (3) and simplified to bring attention to the prohibitions found in the Endangered Species Act of 1973, which also includes the unauthorized ''taking'' of listed species (a criminal prohibition). This provision, in conjunction with the other provisions of this final rule related to fish and wildlife resources discussed in the preamble at §§ 780.16(b) and 783.20, should provide adequate protections for threatened and endangered species, aquatic and/or terrestrial, in accordance with the Endangered Species Act.

One commenter, citing section 702,[166] of SMCRA, requested that the definition of material damage to the hydrologic balance outside the permit area be expanded to encompass any violations of other applicable statutes or regulations in addition to those stated in the proposed rule text. The term ''material damage to the hydrologic balance outside the permit area'' is a term unique to SMCRA and there is no need to refer to other statutes or regulations within this definition. Section 702 of SMCRA [167] will continue to fully apply independent of this definition. We singled out the Endangered Species Act in paragraph (3) because the statutory language is unique in its prohibitions against jeopardizing the continued existence of species and adverse changes to their designated critical habitat (if in the context of Section 7 of the Endangered Species Act), and its prohibition against unauthorized ''taking'' of listed species generally. In summary, we agree that SMCRA operations cannot materially damage streams outside the permit area under any circumstance; other statutes notwithstanding.

Many commenters raised concerns with a statement in the preamble to the proposed rule that stated: A ''SMCRA regulatory authority may need to establish numerical material damage criteria for parameters of concern for which there are no numerical water quality standards or water quality criteria under the Clean Water Act.'' [168] For support, these commenters also cited section 702 of SMCRA [169] because, to their understanding of the regulation, the development of numeric standards to determine material damage to the hydrologic balance outside the permit area would create a conflict with the Clean Water Act. In response, we note that nothing in the definition requires the creation of numeric standards. In the proposed rule, the requirement for numeric standards was included in § 773.15(e)(3), which stated that a regulatory authority needed to include a permit condition specifying criteria for material damage to the hydrologic balance outside the permit area on a site-specific basis, expressed in numerical terms for each parameter of concern. As discussed in the preamble to final § 773.15(e)(3), we are not adopting the proposed requirement for numeric criteria unless numeric water quality criteria exist.

One commenter also suggested that inclusion of the term biological condition and ecological function into this definition is a duplication of the Clean Water Act sections 401 and 404 processes. We disagree. First, the term ''ecological function'' is not found in the definition of material damage to the hydrologic balance outside the permit area nor is it a required element to be assessed when setting criteria to asses if material damage to the hydrologic balance outside the permit has occurred (section 780.21). Second, to the extent that any Clean Water Act section 401 or 404 processes also apply, the final rule allows any information obtained in these processes to be used to inform and support analyses conducted under SMCRA. It is vital to link water quality changes with aquatic impacts that may result from SMCRA sites in order to determine whether material damage to the hydrologic balance outside the permit area has been prevented. This linkage is necessary to evaluate the overall impact of the mining operation on the receiving stream and its aquatic community and to assess unacceptable changes in either designated use, actual, or premining use when a designated use

[166] *Id.*

[167] *Id.*

[168] 80 FR 44436, 44475 (Jul. 27, 2015).

[169] 30 U.S.C. 1292.

is not assigned. For these reasons we are retaining the term biological condition within the definition of material damage to the hydrologic balance.

Many commenters speculated as to how coal mining impacts to receiving streams would be assessed in light of the proposed definition. Several commenters questioned the use of the phrase ''adverse impacts'' and were concerned that the phrase could be interpreted to mean any impact to a receiving stream. We disagree with this interpretation. The definition of ''material damage to the hydrologic balance outside the permit area'' needs to be read, understood, and applied in its entirety. As discussed above, an adverse impact does not necessarily constitute material damage to the hydrologic balance outside the permit area. The definition includes only those adverse impacts that, either individually or cumulatively, would preclude a receiving stream from attaining its applicable Clean Water Act water quality standards, or if no designated use exists, the premining use.

Several commenters proposed their own definitions of material damage to the hydrologic balance outside the permit area. Most of these suggested definitions tied material damage to the hydrologic balance outside the permit area to permanent impacts after mitigation attempts have failed. We decline to adopt the term ''permanent'' because impacts can materially damage the hydrologic balance outside the permit area yet not be considered permanent. There are many examples over the last 30 years of impacts that were not permanent but that clearly rose to the level of material damage to the hydrologic balance outside the permit area. Some examples include the Martin County, Kentucky slurry breach, impacts to Tug Fork River that killed all aquatic life in Coldwater Fork and Wolf Creeks, and a mine release of very high conductivity water released from the Blacksville No. 2 Mine into Dunkard Fork in Greene County, Pennsylvania that created a golden algae bloom that caused a massive fish kill in 40 miles of stream. These events have all been mitigated and would not be considered permanent even though they clearly constituted material damage to the hydrologic balance outside the permit area which should have been prevented. Thus, singular, nonpermanent events can rise to the magnitude of material damage to the hydrologic balance outside the permit area.

A commenter recommended that the rule specify that a SMCRA regulatory authority should not consider noncompliant discharges other than those that rise to the level of precluding designated or existing uses because those noncompliant discharges, according to the commenter, remain solely within the purview of the Clean Water Act authority. We disagree. SMCRA gives jurisdictional authority to its regulatory authorities over aspects of water quality resulting from coal mining [170] and requires the evaluation of water quality from SMCRA sites and modification of the SMCRA permit any time a SMCRA site is causing, or leading to, material damage to the hydrologic balance outside the permit area.

Several commenters expressed concern that extraneous, non-mining related impacts, including natural conditions, would be included in assessment of material damage to the hydrologic balance outside the permit area and urged us to limit the scope of assessment to only those impacts directly attributable to the surface coal mining and reclamation operation. We agree with the commenters that many surface coal mining and reclamation operations are located in areas with multiple land uses and that water quality can be impacted from these other non-coal mining sources and natural conditions. The regulations require permit applicants to acquire water samples to help assess the baseline water quality in all streams overlying and adjacent to the proposed operation and for groundwater. Impacts to the water from other existing upstream land uses, including non-coal mining sources, will be reflected in the baseline data. The baseline data will form the basis of the cumulative hydrologic impact assessment developed by the regulatory authority. That assessment evaluates the capacity of the receiving stream to assimilate the expected water quality emanating from the proposed mining operation, and from all other mining-related activities, known and anticipated, within an area known as the cumulative impact area. The cumulative hydrologic impact assessment, therefore, provides the regulatory authority with sufficient information to assess whether the proposed mining operation, in combination with other existing and reasonably anticipated mining activities, will materially damage the hydrologic balance outside the permit area. For example, if a stream's assimilative capacity for a certain parameter is already consumed by other activities or if the proposed operation would exacerbate natural conditions to the point where the stream might fail to attain its applicable Clean Water Act water quality standards, the regulatory authority would either need to modify the permit so that material damage to the hydrologic balance outside the permit area does not occur or disapprove the permit.

Several commenters suggested mining operations should not be required to improve a stream's biological condition beyond the premining condition. We do not agree with this assertion for previously impaired streams. We agree that if a stream is attaining its applicable Clean Water Act water quality standards, there is no requirement under SMCRA for the operation to implement measures, for example, to attain higher designated use categories. That is not the case for mining operations affecting previously degraded streams. Section 515(b)(24) of SMCRA specifically requires the enhancement of fish, wildlife, and related environmental values where practicable and section 508(a)(9) of SMCRA [171] requires steps be taken to comply with all air and water quality laws. Returning a degraded stream to a degraded state neither enhances fish, wildlife, and related environmental values nor takes steps to comply with the Clean Water Act's goal of maintaining a stream's designated use or instituting measures to help it attain its water quality standards.[172] Thus, the Clean Water Act regulatory authorities must develop water quality standards that help streams achieve their designated uses. Allowing a mining operation to return a stream to a degraded state without some form of enhancement would, thus, conflict with the Clean Water Act section 303(d). As a result, in instances where a stream is not meeting its designated use, it is vital that the regulatory authority work closely with the Clean Water Act authority to determine the level of impairment, evaluate the potential impacts from the proposed operation, and thoroughly assess the anticipated effects of the proposed operation over the anticipated life-of-the-mine. This coordination is critical because the state Clean Water Act authorities must implement measures to ensure that all streams achieve their assigned designated use(s) in conformity with section 303(d) of the Clean Water Act.[173]

One commenter also suggested the rule should grant discretion to the regulatory authority when applying bioassessment standards for material damage to the hydrologic balance

[170] *See, e.g.,* 30 U.S.C. 1260(b)(3) and 1265(b)(10).

[171] 30 U.S.C. 1258(a)(9).

[172] 33 U.S.C. 1251 *et seq.*

[173] 33 U.S.C. 1313(d).

evaluation. We agree, and as discussed in more detail in the preamble discussion of material damage to the hydrologic balance outside the permit area in the proposed rule, we stated that the regulatory authorities would have discretion to set criteria, including bioassessment criteria, to determine, on a case-by-case basis, whether there has been material damage to the hydrologic balance outside the permit area.[174] We are adopting that approach today. Thus, the definition contained in this section provides regulatory authorities with the framework to set their own criteria. This framework consists of factors that the regulatory authority must consider in developing and applying their unique bioassessment criteria for material damage to the hydrologic balance outside the permit area.

One commenter indicated that the definition of material damage to the hydrologic balance outside the permit area has been expanded to include quality and quantity impacts to surface water and ground water but also includes adverse impacts to the biological condition of a stream. They further stated that the definition expanded the hydrologic impact review to the adjacent area and/or shadow area of underground mines. In addition, the commenter suggested that inclusion of subsidence damage within the definition of material damage to the hydrologic balance outside the permit area contradicted the Energy Policy Act.[175] We disagree with the commenter's classification of an expanded area of review. In accordance with sections 508(a)(13)(A) and (C) and 515(b)(10) of SMCRA, we have always considered adjacent areas and shadow areas to be part of the evaluation of material damage to the hydrologic balance outside the permit area. Specifically, these areas are clearly contemplated by section 508(a)(13)(A) and (C) of SMCRA, which requires measures to be taken to ensure protection of quality and quantity of surface and ground waters *both on- and off-site* from adverse effects of mining and reclamation.[176] Similarly, section 515(b)(10) requires the operation to ''minimize the disturbances to the prevailing hydrologic balance at the mine-site and in *associated offsite areas* and to the quality and quantity of water in surface and ground water systems both during and after surface coal mining operations . . . .'' [177] These statutory provisions that specifically concern impacts to waters outside of the permitted area are applicable to both surface and underground mining operations. Although this has been our longstanding position and is clearly mandated by SMCRA, the definition of material damage to the hydrologic balance outside the permit area that we are finalizing today removes any of the ambiguity that may have resulted in this comment.

Moreover, our definition does not conflict with the Energy Policy Act. Section 2504 of Energy Policy Act requires operators to repair or compensate for subsidence impacts they cause to surface structures and requires replacement of water supplies adversely impacted by coal mine subsidence. The water replacement provisions of the Energy Policy Act are incorporated into our regulations at section 817.40 and are still in effect. These regulations provide additional protections for individual well owners. A change to an individual well that would trigger the replacement provision of section 817.40 would not necessarily constitute material damage to the hydrologic balance outside the permit area unless that damage was the result of wholesale adverse changes to an aquifer that the regulatory authority determines rose to the level of material damage to the hydrologic balance outside the permit area.

The commenter further suggested that inclusion of the term biological condition in the introductory text of the definition would result in a ''massive'' amount of new information for the regulatory agency to review. We agree that new information will be received on biological condition, but this information is not anticipated to be ''massive'' or otherwise overburden the regulatory authority. Experience in the Tennessee federal program indicates collection and submission of permit specific biological condition information does not substantially increase the volume of information submitted for a coal mine permit application. Biological condition is a critical component of determining the impact from the mining operation not only on water quality and quantity of the receiving stream but on impact to the aquatic environment. This information needs to be evaluated to ensure mining and reclamation operations do not cause material damage to the hydrologic balance outside the permit area.

Mountaintop Removal Mining

Some commenters expressed concern that the proposed definition of ''mountaintop removal mining'' conflicts with section 515(c)(2) of SMCRA [178] and is a significant change from the existing regulations that could cause confusion for regulatory authorities and the regulated community. Specifically, one commenter alleged that the change from ''removing substantially all overburden off the bench'' to ''removing substantially all overburden above the coal seam'' and the clarification that the overburden be used to create the postmining contours would be a source of misunderstanding. For the reasons discussed below, we disagree and are adopting the definition as proposed.

As we explained in the preamble to the proposed rule, we added a definition of ''mountaintop removal mining'' to § 701.5 by consolidating the descriptions of mountaintop removal mining operations in previous §§ 785.14(b) and 824.11(a)(2) and (3).[179] Previous § 824.11(a)(2) is nearly identical to section 515(c)(2) [180] of SMCRA, which explains that approximate original contour does not need to be achieved where an operation will mine ''an entire coal seam or seams running through the upper fraction of a mountain, ridge, or hill (except as provided in subsection (c)(4)(A) hereof) by removing all of the overburden and creating a level plateau or a gently rolling contour with no highwalls remaining.'' *Id.* Previous § 785.14(b) uses the same language except that it qualifies the amount of overburden with the word ''substantially'' and clarifies that the overburden is removed ''off the bench.'' In our definition of ''mountaintop removal mining,'' we have retained the word ''substantially'' and clarified that ''substantially all of the overburden above the coal seam'' must be removed and used to create approved postmining contours. Overburden is commonly understood to be the strata overlying the coal seam. If one ''removes all of the overburden'' then they are removing the material ''above the coal seam'' to uncover and then extract the entire coal seam. Therefore, we view this change as merely a clarification. Furthermore, the addition of the phrase ''and using that overburden'' actually makes the definition more consistent with SMCRA as it fully implements section 515(c)(4)(E),[181] which requires that ''spoil [] be placed on the mountaintop bench as is necessary to achieve the planned postmining land use.'' Therefore, contrary to the assertions of

[174] 80 FR 44436, 44475 (Jul. 27, 2015).

[175] 42 U.S.C. 6201 *et seq.*

[176] 30 U.S.C. 1258(a)(13)(A) and (C) (emphasis added).

[177] 30 U.S.C. 1265(b)(10) (emphasis added).

[178] 30 U.S.C. 1265(c)(2).

[179] 80 FR 44436, 44476 (Jul. 27, 2015).

[180] 30 U.S.C. 1265(c)(2).

[181] 30 U.S.C. 1265(c)(4)(E).

the commenters, adding ''above the coal seam'' and ''using that material to create'' to the definition of mountaintop removal mining does not create a conflict with the language of SMCRA and does not create confusion. No change has been made to the proposed definition in our final rule.

Native Species

As discussed within the explanation of the definition of ''invasive species'', some commenters requested that the final rule include definitions of ''invasive species,'' ''non-invasive species,'' and ''native species.'' Other commenters requested that we allow the regulatory authority to have latitude to define these terms. In response, we are adding two definitions to the final rule. We are defining ''invasive species'' and ''native species'' in the final rule. In the preamble to the proposed rule at section 780.12(g) [182] we referenced Executive Order 13112 [183] that focused on ''invasive species.'' As discussed above with respect to ''invasive species,'' the 1999 Executive Order includes definitions of both ''invasive species'' and ''native species.'' We are incorporating a definition of ''native species'' into the final rule that does not conflict with either the 1999 or 2016 Executive Orders.

In response to the commenters that suggested that we allow the regulatory authority latitude to define the terms ''invasive species'' and ''native species'', we do not agree because it is important to have uniform definitions of these terms and the definitions, adapted from the 1999 and 2016 Executive Orders in a manner that focuses on the specific goals of SMCRA, are appropriate.

Occupied Residential Dwelling and Structures Related Thereto

We received no comments on our proposed revisions to this definition, which we are adopting as proposed.

Ordinary High Water Mark

One commenter stated that we should use the ordinary high water mark (OHWM) instead of the bankfull elevation when measuring distances from streambanks because the OHWM is both more common for that purpose and more easily determined. We adopted the commenter's suggestion, which meant that we needed a definition of OHWM. To promote consistency between SMCRA and the Clean Water Act, we settled on the definition in regulation 33 CFR 328.3(e).

We made only one change—replacing ''shore'' with ''bank'' in our definition because ''bank'' is more commonly understood and used in the context of the streams affected by coal mining.

Measuring from the OHWM as opposed to the bankfull elevation, which is the point at which the streambanks can hold no more water before spilling flow onto the floodplain, could result in a slightly narrower buffer zone or streamside vegetated corridor, but, in most cases, the difference would be minimal.

Parameters of Concern

We proposed to add the definition of ''parameters of concern'' because we used the term extensively in the proposed rule. Under the proposed definition, ''parameters of concern'' consists of those chemical or physical characteristics or properties of surface water or groundwater that could be altered by mining activities in a manner that would adversely impact the quality of surface water or groundwater or the biological condition of a stream. We continue to use the definition of ''parameters of concern'' within the final rule and adopt it as proposed, with one exception. Within the definition, we have replaced ''biological condition of a stream'' with ''including adverse impacts on aquatic life.''

One commenter expressed concern that the definition of ''biological condition'' coupled with the definition of ''parameters of concern'' would impose new and burdensome requirements. The definition of ''parameters of concern'' was used to clarify that these parameters may be of concern because of potential impacts on aquatic life. Including ''biological condition'' in the context of this definition does not, in and of itself, require additional biological data beyond the requirements expressly defined elsewhere in the regulation; however, we agree that the use of term did not provide sufficient clarity and have replaced ''biological condition of a stream'' with ''including adverse impacts on aquatic life''.

We also received a variety of comments on the definition of ''parameters of concern.'' A few commenters asked us to delete this proposed definition altogether. These commenters alleged that the definition conflicts with the Clean Water Act and exceeds our authority. We disagree. The Clean Water Act established a national goal to restore or maintain the chemical, physical, and biological integrity of the Nation's water.[184] The final rule definition, like the proposed rule definition, complements these Clean Water Act requirements. None of the elements of this final rule affect a mine operator's responsibility to comply with effluent limitations or other requirements of the Clean Water Act. The requirements of the Clean Water Act have independent force and effect regardless of the terms of the SMCRA permit. The independent effect of the Clean Water Act is recognized in section 702(a) of SMCRA, which provides that—

> Nothing in this Act shall be construed as superseding, amending, modifying, or repealing the * * * [t]he Federal Water Pollution Control Act [Clean Water Act] [*citations omitted*], the State laws enacted pursuant thereto, or other Federal laws relating to the preservation of water quality.[185]

Another commenter requested the definition be revised to state that the ''parameters of concern'' will be determined by the approved regulatory authority. While we agree that the regulatory authority should identify local ''parameters of concern,'' if applicable, and include them in the required baseline monitoring data, we are not modifying the definition. Instead, we have clarified §§ 780.19, 784.19, and 780.23 of the rule to state that groundwater and surface water quality descriptions include all ''parameters of concern'' as identified by the regulatory authority. With these clarifications, any ''parameters of concern'' identified by the regulatory authority will more accurately reflect those constituents that could potentially impact water resources during coal mining and reclamation activities in their specific region of the country.

One commenter requested we adopt the term ''pollutants'' instead of ''parameters of concern.'' We disagree because the term ''pollutant'' is narrower than ''parameters of concern.'' We intend the term ''parameters of concern'' to cover all of the chemical or physical characteristics that are currently present in surface water or groundwater, or that could be released as a result of coal mining and reclamation activities or from the natural environment during such activities, and that could be present in sufficient concentrations to result in material damage to the hydrologic balance outside the permit area. In addition, using ''parameters of concern'' instead of ''pollutant'' in our regulations avoids confusion with the term ''pollutant'' as defined in section 502(6) of the Clean Water Act.

In consideration of these comments, we are not making any additional modifications to the final rule. As

[182] 80 FR 44436, 44491 (Jul. 27, 2015).

[183] Exec. Order No. 13112 of February 3, 1999, 64 FR 6184 (Feb. 8, 1999).

[184] 33 U.S.C. 1251(a).

[185] 30 U.S.C. 1292(a).

discussed above, the final rule will be adopted as proposed with the exception of the removal of the reference to ''biological condition of a stream.''

Perennial Stream

As discussed in the preamble to the proposed rule,[186] we proposed to redefine ''perennial stream'' in a manner that is substantively identical to the manner in which the U.S. Army Corps of Engineers defines that term in Part F of the 2012 nationwide permits [187] under section 404 of the Clean Water Act.[188] We are adopting the proposed definition with a few changes. First, in response to commenters requesting that we include runoff from snowmelt to our definition, ''runoff from rainfall events and snowmelt'' is now included within the definition of ''perennial stream.'' This is consistent with the ephemeral and intermittent stream definitions and discussed in more detail within those sections of this preamble. Second, we are adding the statement that ''perennial streams include only those conveyances with channels that display both a bed-and-bank configuration and an ordinary high water mark.'' This addition is also consistent with the ephemeral and intermittent stream definitions discussed herein.

In our revised definition, ''perennial stream'' means a stream or part of a stream that has flowing water year-round during a typical year. One commenter stated that the term ''typical year'' is too vague. Another commenter requested clarification on the length of time meant by ''most of the year.'' Our final definition of ''perennial stream'' is substantively identical to the corresponding U.S. Army Corps of Engineers' definition. Both definitions recognize that perennial streams or segments of those streams may cease flowing during periods of sustained, below-normal precipitation. Thus, a cessation in flow during those periods would not result in the reclassification of the stream as intermittent. To the extent a SMCRA regulatory authority needs additional clarification of the terms ''typical year'' and ''most of the year,'' we recommend that they coordinate with the Clean Water Act authority.

One commenter asserted that the regulations pertaining to a ''perennial stream'' should allow regulatory authorities to adopt and apply regulations that could better protect perennial streams. Similarly, another commenter requested the addition of language recognizing that state protections for all stream types may exceed the U.S. Army Corps of Engineers' requirements and compel regulatory authorities to adopt more stringent protections within the permit conditions. States have the ability to adopt more stringent rules when they are revising their regulations governing surface coal mines and underground mines to satisfy the requirements set forth in the final rule. States can adopt more stringent rules that afford greater protections to ephemeral, intermittent, and perennial streams. Because states already have the authority under section 505(b) of SMCRA [189] to provide for more stringent land use and environmental controls and regulations of surface coal mining and reclamation operations than the provisions of SMCRA, it is not necessary to add additional language to the final rule.

Premining

In response to requests from several commenters, we are adding a definition of ''premining'' to § 701.5 of the final rule. The definition provides that ''premining'' refers to the conditions and features that exist on a site at the time of application for a permit to conduct surface coal mining operations. Some of our regulations refer to conditions or features in existence before any mining occurred on the site, not the conditions or features in existence at the time of preparation of the permit application. In those instances, we typically use the terms ''prior to any mining'' or ''before any mining'' instead of ''premining.''

Reclamation

As we explained in the preamble, we proposed to revise the definition of ''reclamation'' to fully implement SMCRA by expanding the definition to include the entire disturbed area, to encompass all actions taken to restore land and water to the conditions required by SMCRA, and to clarify that the reclaimed land must be capable of supporting the uses it was capable of supporting prior to any mining or, subject to certain restrictions, higher or better uses.[190]

Several commenters requested explanation of the terms ''capable of'' and ''higher or better'' as referenced in the proposed definition. We did not propose to revise the definition of ''higher or better uses'' in this rulemaking. Section 701.5 defines this term as meaning the ''postmining land uses that have a higher economic value or nonmonetary benefit to the landowner to the community than the premining land uses.'' The phrase ''capable of'' was added to the definition of ''reclamation'' because the previous definition could have been misconstrued to require the implementation of the postmining land use, exceeding section 515(b)(2)'s requirement that the disturbed land be restored ''to a condition capable of supporting the uses which it was capable of supporting prior to any mining, or higher or better uses. . . .'' [191] Requiring reclamation of disturbed areas to a condition in which the site is ''capable of'' supporting the uses it was ''capable of'' supporting before any mining is the functional equivalent of requiring that disturbed areas be ''able to'' support the same land uses the land was ''able to'' support prior to mining. This is consistent with the common meaning of the word and nothing in SMCRA indicates that ''capable of'' should be given anything other than the ordinary meaning of the word. For example, the Merriam-Webster Dictionary defines ''capable'' as meaning ''able to achieve efficiently whatever one has to do; competent'' and ''having the ability, fitness, or quality necessary to do or achieve a specified thing.'' [192] Although previous § 816.133 may have been misconstrued to only require that a site be reclaimed for one postmining land use, the revised definition of ''reclamation'' clarifies that the land itself must be reclaimed to support the same variety of land uses it was able to support prior to any mining. Where the land was capable of supporting a wide variety of uses, the reclaimed land must also be able to support those land uses. For example, even if the proposed postmining land use for a formerly forested area is grassland, and grassland is established after mining, the soil must be restored to a condition that could also support forests. In this regard, the ability to successfully support a type of vegetation indicative of a single land use may not alone prove the land's capability has been restored to the requirements of section 515(b)(2) of SMCRA.[193] Finally, previous § 780.23(a)(2)(i), which we adopted in the final rule as § 779.22(b)(1), specifies that capability must be determined on the basis of soil and foundation characteristics,

[186] 80 FR 44436, 44476–44477 (Jul. 27, 2015).

[187] 77 FR 10184, 10288 (Feb. 21, 2012).

[188] 33 U.S.C. 1344.

[189] 30 U.S.C. 1255.

[190] 80 FR 44436, 44477 (Jul. 27, 2015).

[191] 30 U.S.C. 1265(b)(2).

[192] capable. 2016. *In Merriam-Webster.com.* Retrieved Nov.1, 2016, from *http://www.merriam-webster.com/dictionary/capable.* Oxford University Press.

[193] 30 U.S.C. 1265(b)(2).

topography, vegetative cover, and the hydrology of the proposed permit area.

One commenter urged us to include within the definition of ''reclamation'' a reference to the restoration of streams damaged by subsidence. We are not incorporating this recommendation into the final rule because we have specifically addressed this issue within § 784.30, relating to preparation of a ''subsidence control plan and what information must that plan include'' and § 817.121, relating to what measures must be taken to ''prevent, control, or correct damage resulting from subsidence'' within the final rule and discussed more thoroughly within those sections.

Reclamation Plan

Several commenters combined their comments on this definition within their discussion of the definition of ''reclamation.'' Therefore, we addressed the comments regarding ''reclamation plan'' in the same manner as explained in the definition of ''reclamation.'' We received no additional comments on our proposed revisions to this definition; therefore, we are adopting the definition as proposed.

Renewable Resource Lands

We proposed to define ''renewable resource lands'' as ''aquifers, aquifer recharge areas, recharge areas for other subsurface and surface water, areas of agricultural or silvicultural production of food and fiber, and grazing lands.'' The only substantive difference from the previous definition, which we adopted on March 13, 1979, was the addition of recharge areas for surface water.

One commenter expressed concern that the inclusion of recharge areas for surface water could have the effect of classifying all lands within watersheds that drain to a stream or reservoir used for a public drinking water supply as renewable resource lands and thus open the door to challenges seeking to ban all coal mining in those watersheds. According to the commenter, this outcome would be inconsistent with the statement in the DRIA that the proposed rule would not strand or sterilize any reserves; *i.e.,* that the proposed rule would not make any coal reserves that are technically and economically feasible to mine under baseline conditions unavailable for extraction. The commenter further opined that, if we decide to proceed with adoption of the revised definition, we should conduct a detailed socioeconomic impact analysis to fully assess the repercussions of expanding the scope of the definition.

We do not agree with the commenter that the outcome described above represents a change from the status quo. The outcome described by the commenter is consistent with the baseline conditions upon which the DRIA was based. Section 522(a)(3)(C) of SMCRA [194] provides that a regulatory authority may, pursuant to a petition, designate a surface area as unsuitable for certain types of surface coal mining operations if those operations will ''affect renewable resource lands in which such operations could result in a substantial loss or reduction of long-range productivity of water supply or of food or fiber products, and such lands to include aquifers and aquifer recharge areas.'' This language clearly includes watersheds of reservoirs and natural water bodies that function as water supplies. We have always interpreted the definition of ''renewable resource lands'' as including those watersheds.[195] Therefore, there is no need for a socioeconomic analysis of the proposed definition because the revisions are intended to reconcile the definition to both the underlying statutory provision and historical practice.

However, we agree that the scope of the proposed definition is too broad in that it would include the watersheds of all surface waters, not just surface water bodies that serve as water supplies. Therefore, we decided not to adopt the proposed revision to the definition to the extent that it would include ''recharge areas for other subsurface and surface water.'' Instead, we revised the definition to include ''recharge areas for other subsurface water,'' which is consistent with the previous definition's inclusion of areas for the recharge of other underground waters. We also revised the definition to include ''surface water bodies that function as a water supply.'' The latter revision more closely tracks the language of section 522(a)(3)(C) of SMCRA.

One commenter supported the proposed modification of the definition to include recharge areas for surface waters. The commenter recommended that we revise the proposed definition to explicitly identify examples of surface waters by adding ''(such as lakes, ponds, and wetlands)'' after ''surface water.'' We decline to adopt this recommendation because our revision of the definition to include ''watersheds for surface water bodies that function as a water supply'' provides sufficient specificity without being under inclusive or over inclusive.

A commenter noted that the preamble to the proposed definition stated that the definition would include recharge areas for wetlands. *See* 80 FR 44436, 44588 (Jul. 27, 2015). The commenter further noted that the definition itself does not mention wetlands, which means that, in practice, recharge areas for wetlands are unlikely to be protected as renewable resource lands. The commenter recommended that we revise the definition to explicitly include recharge areas for wetlands. We acknowledge the inconsistency cited by the commenter. However, nothing in section 522(a)(3)(C) of SMCRA mentions wetlands as being renewable resource lands. Therefore, we decline to revise the definition as recommended. Wetlands will be considered renewable resource lands only to the extent they are integral features of watersheds of surface water bodies that function as water supplies.

Replacement of Water Supply

We received no comments on our proposed revisions to this definition, which we are adopting as proposed.

Temporary Diversion

One commenter expressed concern that the proposed definition of ''temporary diversion'' includes no specific time for ''temporary.'' The commenter noted that, under the proposed definition, a temporary diversion could remain in place until the end of mining and reclamation activities, which may be measured in decades, and therefore is not consistent with the common usage of the word ''temporary.'' The commenter recommended that, with respect to stream diversions, the word ''temporary'' be subdivided into a ''short-term temporary'' period no more than two years in duration and a ''long-term temporary'' period two years or longer in duration that can extend until the end of mining and reclamation activities.

The commenter correctly points out that proposed §§ 780.28 and 784.28 would establish different standards for a temporary stream channel diversion in place for more than two years as compared to one in place for less than two years. However, we do not agree that the revision suggested by the commenter is necessary or would improve clarity. We define a ''temporary diversion'' as a ''channel constructed to convey streamflow or overland flow'' and specify that the term ''includes only those channels not approved by the

[194] 30 U.S.C. 1272(a)(3)(C).

[195] *See* 48 FR 41327 (Sept. 14, 1983) (''these types of lands [watershed lands] may, on a case-by-case basis, be determined to be renewable resource lands'').

regulatory authority to remain after reclamation as part of the approved postmining land use.'' Thus, a temporary diversion is in place only until its intended purpose has been fulfilled, after which time it is removed. A temporary diversion may be in place through the reclamation phase and bond release, which, as the commenter notes, could be decades. While the term ''permanent diversion'' is not specifically defined, it includes anything that is not a ''temporary diversion.'' We do not define the term ''temporary'' relative to the time a diversion is in place, but rather according to whether it will be removed at some point in the reclamation process.

Relative to the commenter's assertion that the definition should be clarified, we did make changes to § 816.43 in the final rule to establish three categories of diversions (diversion ditches, stream diversions, and conveyances or channels within the disturbed area) and we specify the requirements that apply to each category.

Another commenter stated that the word ''conveyance'' in the definition of a temporary diversion should be removed or, at a minimum, modified so that if the conveyances fail, they will be limited to discharges ''out of the pit.'' The commenter further asserted that ''in pit'' conveyance structures that fail do not pose a risk to the public or the environment. Therefore, according to the commenter, they should not be regulated under SMCRA or the Clean Water Act. We did not alter the final rule in response to this comment because many of these conveyances may be quite lengthy, often thousands of feet in length, and a failure along such a conveyance may result in water flowing away for the pit, not always into the pit as suggested by the commenter, which may potentially result in discharges off site. We did however add language to the final definition to include channels that convey flows to a siltation structure or other treatment facility. Thus, diversions can be constructed within the permit area to convey water to a siltation structure or, as the commenter suggested, to the mine pit.

Waters of the United States

We proposed to define the term ''waters of the United States'' in the same manner it is defined within 40 CFR 230.3(s), which is part of the section 404(b)(1) guidelines under the Clean Water Act.[196] We received comments both supporting and opposing our proposed addition of a definition of this term. After evaluating the comments, we agree that adoption of the definition is unnecessary for implementation of the final rule. In response to comments, we have revised the final rule by replacing the term ''waters of the United States'' with ''waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.*''

Wetlands

We did not propose to add a definition of ''wetlands.'' However, a few commenters requested that we define ''wetlands'' or, preferably, clarify that the term ''wetlands'' as used in our final rule corresponds to the existing definition within the regulations promulgated pursuant to the Clean Water Act. We find that a unique definition in the final rule is unnecessary. Instead, we will defer to the definition of ''wetlands'' as promulgated by the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. Additionally, these commenters stated that we should specify in the final rule that wetlands must be delineated using field techniques according to the most recent requirements from the Clean Water Act regulatory authority. One commenter suggested that the U.S. Army Corps of Engineers should delineate, document, map, and field confirm wetlands. This commenter also suggested that we adopt a definition of ''wetlands'' that includes an explanation that ''wetlands are one subset of the Waters of the United States and are subject to the requirements of the Clean Water Act, just as are streams and other regulated bodies.''

We decline to adopt the commenters' recommendations. We are not aware of any instances in which the lack of a definition of ''wetlands'' under SMCRA has created a problem. For regulatory purposes, the term ''wetlands'' is commonly understood to mean wetlands as determined using the diagnostic techniques in the U.S. Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y–87–1, as published in January 1987 and subsequently modified. Paragraph 26 in Part II of that manual summarizes the fundamental characteristics of wetlands. Section 702(a) of SMCRA[197] provides that ''[n]othing in this Act shall be construed as superseding, amending, modifying, or repealing'' the Clean Water Act or ''any rule or regulation promulgated thereunder.'' Therefore, SMCRA regulatory authorities must define and identify wetlands in a manner that is no less inclusive than any definition used under the Clean Water Act. However, section 505(b) of SMCRA[198] specifies that any state law or regulation that provides for ''more stringent land use and environmental controls of surface coal mining and reclamation operations than do the provisions of this Act or any regulation issued pursuant thereto shall not be construed to be inconsistent with this Act.'' Therefore, SMCRA regulatory authorities may use wetlands definitions and delineation techniques that differ from those in the U.S. Army Corps of Engineers' Manual so long as those definitions and techniques do not exclude any areas that qualify as wetlands under the Wetlands Delineation Manual. With respect to the comment that the rule should require that the U.S. Army Corps of Engineers delineate, document, map, and field confirm wetlands, we do not have the authority under SMCRA to impose obligations on the U.S. Army Corps of Engineers. We encourage the SMCRA regulatory authority to coordinate review of permit applications with the U.S. Army Corps of Engineers, but we find no reason to expressly restrict wetland delineation to the U.S. Army Corps of Engineers as part of this final rule.

Section 701.16: How will the stream protection rule apply to existing and future permits and permit applications?

Our proposed rule did not include regulatory text clarifying how the rule would affect existing permits and permit applications. A number of commenters emphasized that the final rule needed to include such a provision, both for clarity and to ensure preservation of the rights of existing permit holders. Some commenters noted that many of the requirements of the stream protection rule, such as expanded baseline data collection and permit application requirements and related performance standards and bond release requirements, would be impossible for existing operations to meet because the site has already been disturbed. According to the commenters, the final rule should apply only to new operations or to additions to existing operations, not to existing permitted lands and reclaimed areas. Others emphasized the general legal principle that regulations should be prospective in nature, not retroactive.

One commenter observed that it is not clear which parts of the proposed rule would apply to existing permits. The commenter noted that the DRIA stated that, for purposes of that analysis, §§ 774.15, 800.18, 800.40, 816.35,

[196] 80 FR 44436, 44478 (Jul. 27, 2015).

[197] 30 U.S.C. 1292(a).

[198] 30 U.S.C. 1255(b).

816.36, 816.41, 817.35, 817.36, and 817.41 would be considered as applying to existing permits. The commenter further stated that the final rule should include interim requirements or a schedule for existing permits and permit applications under review to comply with the final rule.

We agree that, in general, the final rule that we are publishing today should be prospective, not retroactive. Therefore, we have added § 701.16 to clarify the applicability of the rule. Section 701.16 applies only to the revisions to Parts 701 through 827, which paragraph (a) characterizes as the ''stream protection rule.'' Section 701.16 does not affect the revisions to our termination of jurisdiction rules in § 700.11(d) because those revisions merely codify longstanding court decisions and legal representations concerning the applicability of the rules governing the termination and reassertion of jurisdiction. Paragraphs (a)(1) through (5) of § 701.16 establish minimum applicability standards for those stream protection rule provisions that do not contain their own specific applicability provisions.

Section 701.16 supersedes the statement in the DRIA that identifies §§ 774.15, 800.18, 800.40, 816.35, 816.36, 816.41, 817.35, 817.36, and 817.41 as applying to existing permits. Under § 701.16, the stream protection rule would not apply to existing permits unless the permittee applies for certain types of permit revisions. Therefore, there is no need for this rule to establish interim requirements or a compliance schedule for existing permits. Of course, it would not be inconsistent with SMCRA for a regulatory authority to, in its discretion, apply some or all provisions of the stream protection rule to part or all of a permit or application not listed in paragraph (a) of this section.

Paragraph (a)(1) of § 701.16 provides that the stream protection rule applies to any application for a new permit submitted to the regulatory authority after the effective date of the stream protection rule under the applicable regulatory program. One commenter argued that the final rule should apply only to new leases or lands acquired after the effective date of the rule because adoption of the proposed rule would significantly increase the cost of mining large tracts of lands and coal reserves in which companies have already made significant investments. We do not agree. Persons who acquire leases, lands, or interests in land do so subject to future regulatory restrictions on use of those leases, lands, or interests in land. To the extent a property right exists to mine coal in a particular location using a particular method that right does not vest until issuance of a SMCRA permit. Even then, the regulatory authority has the right to require reasonable revision of the permit to ensure compliance with the Act and applicable regulatory program. *See* section 511(c) of SMCRA [199] and the implementing regulations at 30 CFR 774.10(b).

Paragraph (a)(2) of § 701.16 provides that the stream protection rule applies to any application for a new permit pending a decision by the regulatory authority as of the effective date of the stream protection rule under the applicable regulatory program, unless the regulatory authority has determined the application to be administratively complete under § 777.15 or its state program counterpart before the effective date of the stream protection rule under the applicable regulatory program. Exempting administratively complete applications would protect permit applicants who invested time and money in developing a good-faith application under the existing rules.

Paragraph (a)(3) of § 701.16 provides that the stream protection rule applies to any application for the addition of acreage to an existing permit submitted to the regulatory authority after the effective date of the stream protection rule under the applicable regulatory program, with the exception of applications for incidental boundary revisions that do not propose to add acreage for coal removal. Under section 511(a)(3) of SMCRA [200] and 30 CFR 774.13(d), any extensions to the area covered by a permit, except incidental boundary revisions, must be made by application for a new permit. However, some state regulatory programs authorize addition of acreage to an existing permit via the permit revision process, provided that the revision meets the application information requirements for a new permit and the regulatory authority processes the application like an application for a new permit. Paragraph (a)(3) would apply to these situations. We added the provision excluding incidental boundary revisions that add acreage for coal removal as a safeguard against abuse of the exception for incidental boundary revisions.

Paragraph (a)(4) of § 701.16 provides that the stream protection rule applies to any application for the addition of acreage to an existing permit pending a decision by the regulatory authority as of the effective date of the stream protection rule under the applicable regulatory program, with two exceptions. First, the stream protection rule would not apply to applications for incidental boundary revisions that do not propose to add acreage for coal removal. Second, the stream protection rule would not apply to applications that the regulatory authority has determined to be administratively complete before the effective date of the stream protection rule under the applicable regulatory program. The rationale for this paragraph is consistent with the rationale contained in paragraphs (a)(2) and (3).

Paragraph (a)(5) of section 701.16 provides that the stream protection rule applies to any application for a permit revision submitted on or after the effective date of the stream protection rule under the applicable regulatory program, or pending a decision by the regulatory authority as of that date, that proposes a new excess spoil fill, coal mine waste refuse pile, or coal mine waste slurry impoundment or that proposes to move or expand the location of an approved excess spoil fill or coal mine waste facility. Many of the studies cited in Part II of the preamble mention that excess spoil fills are especially detrimental to streams, both because they often cover stream segments and because of the adverse impacts of drainage from and through the fill on aquatic life in streams downstream of the fill. Coal mine waste refuse piles and slurry impoundments have similar characteristics in that they sometimes cover stream segments and because drainage from and through the refuse pile or slurry impoundment could adversely impact aquatic life in receiving streams.

Paragraph (a)(5) protects the rights and investment of existing permittees and persons with administratively complete applications, while limiting that protection to the locations and dimensions approved in the permit or contained in an administratively complete permit revision. Allowing a permittee to revise the permit to add new excess spoil fills or coal mine waste facilities, or to alter the location or size of those fills or coal mine waste facilities, without complying with the provisions of this final rule would be inconsistent with the principal purpose of the stream protection rule; *i.e.,* preventing the loss or degradation of streams.

[199] 30 U.S.C. 1261(c).

[200] 30 U.S.C. 1261(a)(3).

C. Part 773—Requirements for Permits and Permit Processing

Section 773.5: How must the regulatory authority coordinate the permitting process with requirements under other laws?

We are finalizing § 773.5 as proposed. We received no comments on this section.

Section 773.7: How and when will the regulatory authority review and make a decision on a permit application?

We are finalizing § 773.7 as proposed. We received no comments on this section.

Section 773.15: What findings must the regulatory authority make before approving a permit application?

We are adopting § 773.15 as proposed with the exception of paragraphs (e), (j), and (n). One commenter urged us to revise paragraph (e)(2) to provide that a regulatory authority may not approve a permit application unless it determines that the proposed operation is not predicted to cause subsidence that would result in the dewatering of any perennial or intermittent stream. Proposed paragraph (e)(2), like section 510(b)(3) of SMCRA,[201] provides that the regulatory authority may not approve a permit application unless the regulatory authority finds in writing that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Therefore, we decline to make the change that the commenter recommends. Instead, the definition of ''material damage to the hydrologic balance outside the permit area'' in § 701.5 of the final rule will govern when dewatering of a perennial or intermittent stream will constitute material damage to the hydrologic balance outside the permit area and thus prevent approval of the permit application.

Proposed paragraph (e)(3) would have required that the regulatory authority include in the permit site-specific criteria for material damage to the hydrologic balance outside the permit area. Proposed paragraph (e)(3) would have required that the criteria be expressed in numerical terms for each parameter of concern. Several commenters opposed this proposed provision, alleging that requiring the regulatory authority to set numerical criteria would supersede the Clean Water Act, which would violate section 702 of SMCRA.[202] Some commenters also cited *In re Surface Mining Regulation Litigation,* 627 F.2d 1346 (D.C. Cir. 1980) as support for their assertions. As discussed further in Part IV.I. of this preamble, neither the proposed rule nor this final rule exceed our authority but instead fills a regulatory gap. This final rule better accomplishes statutory directives in SMCRA, including those that require the prevention of material damage to the hydrologic balance outside the permit area and those that require a minimization of disturbances to the prevailing hydrologic balance at the mine site and in associated offsite areas. *See, e.g.,* 30 U.S.C. 1260(b)(3), 1260(b)(10). However, we did not adopt proposed paragraph (e)(3) as part of the final rule because we determined that we did not need this paragraph to in order to implement the statutory directives. Furthermore, we modified proposed §§ 780.21(b) and 784.21(b) to allow regulatory authorities to select narrative as well as numeric thresholds for material damage to the hydrologic balance outside the permit area for the reasons discussed in the preamble to those sections. In determining the appropriate numeric or narrative thresholds, the regulatory authority will consult with the Clean Water Act authority, as appropriate, and undertake a comprehensive evaluation of the factors set forth in § 780.21(b)(6).

Proposed § 773.15(j) would have required that the regulatory authority find that the operation is not likely to jeopardize the continued existence of species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or result in destruction or adverse modification of designated critical habitat under that law. We revised proposed § 773.15(j) in response to comments from the public and other federal agencies and as a result of our consultation with the U.S. Fish and Wildlife Service under sections 7(a)(1) and (a)(2) of the Endangered Species Act of 1973.[203] Referring to species listed as threatened or endangered, the Endangered Species Act provides that ''it is unlawful for any person subject to the jurisdiction of the United States to . . . (C) take any such species within the United States.'' [204] ''Take'' is defined in the statute to mean ''to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.'' [205] The U.S. Fish and Wildlife Services' regulations implementing these provisions further define ''harm'' to ''include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.'' [206] Take that is incidental to lawful activity is allowed, but only if the person obtains an authorization for that ''incidental take'' from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as appropriate, before engaging in the activity.[207] If a person ''takes'' a threatened or endangered species without obtaining authorization from the appropriate agency, that person could be subject to civil or criminal penalties.[208]

Our final § 773.15(j) provides applicants and regulatory authorities with four pathways to demonstrate that the operation will be conducted in compliance with the Endangered Species Act.[209] Paragraphs (j)(1) through (4) set forth those pathways.

Section 773.15(j)(1) applies when the applicant provides documentation that the proposed surface coal mining and reclamation operations would have no effect on species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or on designated or proposed critical habitat under that law. This finding requires a demonstration that no impact on a proposed or listed species, or on designated or proposed critical habitat, will occur, regardless of the severity of the impact or whether the impact is positive or negative. An applicant might demonstrate this by showing that surveys have not revealed the presence of any listed or proposed species or designated or proposed critical habitat within the proposed permit or adjacent areas or that the operation has been designed to avoid areas where a species is known to occur. However, the permit applicant and the regulatory authority should communicate early in the process with the relevant office of the U.S. Fish and Wildlife Service or National Marine Fisheries Service to ensure that any necessary surveys have been completed and any avoidance measures are sufficient to ensure that there will be no effect on relevant species or habitat.

Paragraph (j)(2) applies when the applicant and the regulatory authority document compliance with a valid

[201] 30 U.S.C. 1260(b)(3).

[202] 30 U.S.C. 1292(a)(3).

[203] 16 U.S.C. 1536(a)(1)–(2).

[204] 16 U.S.C. 1538(a)(1)(C).

[205] 16 U.S.C. 1532(19).

[206] 50 CFR 222.102.

[207] 16 U.S.C. 1539(a)(1).

[208] 16 U.S.C. 1540.

[209] 16 U.S.C. 1531, *et seq.*

biological opinion that covers the issuance of permits for surface coal mining operations and the conduct of those operations under the applicable regulatory program. Paragraph (j)(2) would apply to the biological opinion associated with this rulemaking, or to a biological opinion covering the issuance of permits for surface coal mining operations and the conduct of those operations. Compliance with the pertinent biological opinion is an ongoing obligation that extends for the duration of the surface coal mining and reclamation operations.

Paragraph (j)(3) is an option when we are the regulatory authority or there is another federal nexus to the proposed operation. Under this option, the applicant must provide documentation that interagency consultation under section 7 of the Endangered Species Act of 1973, 16 U.S.C. 1536, has been completed for the proposed operation. Paragraph (j)(4) is an option when a state regulatory authority is responsible for permitting actions, and another option under this paragraph is either unavailable or is not utilized. Under this option, the applicant must provide documentation that the proposed operation is covered under a permit issued pursuant to section 10 of the Endangered Species Act of 1973, 16 U.S.C. 1539.

Some commenters requested that we revise proposed § 773.15(j) because, as initially proposed, they believed this section required the regulatory authority to make a finding that the operation was ''not likely to jeopardize the continued existence of species listed or proposed for listing'' under the Endangered Species Act. The commenters alleged that it was the responsibility of the Service(s) to make a ''jeopardy'' determination and that the regulatory authorities do not have the expertise to make this type of finding. We agree and have clarified the final regulation. As explained above, we revised this section to require the that the regulatory authority make a finding that the permit will comply with the Endangered Species Act, either because the proposed operation will have no effect upon any species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, or on designated or proposed critical habitat under that law or because the applicant and the regulatory authority have documented compliance with one of the mechanisms described in paragraphs (j)(2) through (4).

Many commenters also alleged that imposing a requirement that an operation must not jeopardize the continued existence of species proposed for listing as threatened or endangered under the Endangered Species Act is beyond our authority under SMCRA. Some commenters alleged that we do not have authority to enforce the requirements of the Endangered Species Act. We do not agree with either comment. As we noted in the preamble to the proposed rule, both SMCRA and the Endangered Species Act provide authority to protect species that have been proposed for listing.[210] SMCRA sections 515(b)(24) and 516(b)(11)[211] require that, at a minimum, mining operations must ''to the extent possible using the best technology currently available, minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable.'' The requirement to minimize impacts to ''fish, wildlife, and related environmental values'' is not in any way limited to species that have already been listed under the Endangered Species Act.

Moreover, three different provisions of the Endangered Species Act apply to the Department of the Interior in connection with the implementation of SMCRA. First, section 7(a)(1) of the Endangered Species Act[212] provides that ''[t]he Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act.'' That would necessarily include utilizing SMCRA to protect ecosystems and conserve endangered and threatened species as provided for in the Endangered Species Act.[213] Second, section 7(a)(2) of the Endangered Species Act[214] requires us to consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service to ''insure that any action authorized, funded, or carried out'' by us will not jeopardize the continued existence of any species listed as threatened or endangered under the Endangered Species Act or result in the destruction or adverse modification of designated critical habitat. Third, section 7(a)(4) of the Endangered Species Act[215] requires that we ''confer with the Secretary on any action which is likely to jeopardize the continued existence of any species *proposed to be listed* under section 4 [of the Endangered Species Act] . . .'' (Emphasis added). Thus, section 7(a)(2) requires us to consult with the appropriate Service(s) on any actions that may impact species listed under the Endangered Species Act or designated critical habitat for those species, while section 7(a)(4) requires us to confer with the appropriate Service(s) on any actions that may jeopardize the continued existence of any species proposed to be listed under the Endangered Species Act (and any critical habitat proposed to be designated for such species). Seizing on this difference, commenters criticize our inclusion of species proposed for listing in certain provisions of this rulemaking, claiming that we have incorrectly conflated the two different requirements. The commenters are wrong. The existence of a consultation requirement under section 7(a)(2) for listed species does not diminish our separate obligation under section 7(a)(4) to address the impact of coal mining operations on species proposed for listing. Section 7(a)(4) (in addition to our SMCRA authorities) provides us with the authority to protect both species proposed for listing and proposed critical habitat.

Regarding paragraph (k), a commenter requested that we include language within paragraph (k) and in other provisions of the rule that relate to the National Historic Preservation Act[216] to explicitly state that those provisions only apply to ''undertakings'' and that our requirements only apply to federal regulatory programs. Similarly, another commenter asked that we clarify that the National Historic Preservation Act is not applicable to state programs and suggested that reference to the National Historic Preservation Act be removed. We did not propose any substantive changes to paragraph (k) and we are not making any changes in that paragraph in response to these comments. The suggestions made by the commenters are contrary to our longstanding position related to this topic as reflected in our 1987 rulemaking, ''Protecting Historic Properties from Surface Coal Mining Operations.'' This final rule amended our regulations with respect to how historic properties are considered during surface coal mining operations. Within that rulemaking, we stated:

> Under section 522(e) of SMCRA, the regulatory authority (and OSMRE for permits it issues) must protect publicly and privately owned properties listed on the National Register of Historic Places. There is no obligation under section 522(e)(3) to protect properties that are eligible for, but not listed on, the National Register. However, this finding requires the regulatory authority to consider such resources when making

[210] 80 FR 44436, 44565 (Jul. 27, 2015).

[211] 30 U.S.C. 1265(b)(24), 1266(b)(11).

[212] 16 U.S.C. 1536(a)(1).

[213] 16 U.S.C. 1531(b).

[214] 16. U.S.C. 1536(a)(2).

[215] 16 U.S.C. 1536(a)(4).

[216] 54 U.S.C. 300101–307108.

permitting decisions in order to assure that the regulatory authority can assist the Secretary in implementing his responsibilities under section 106 of the National Historic Preservation Act.[217]

We continue to adhere to this position. Moreover, our proposed rule did not include any substantive changes to paragraph (k). If we determine it is appropriate to change our position on protecting historic places from surface coal mining operations, this determination would be better addressed in a future rulemaking.

Proposed paragraph (n)(1) would have required that the applicant demonstrate that the proposed operation has been designed to prevent the formation of discharges with levels of parameters of concern that would require long-term treatment after mining has been completed. Proposed paragraph (n)(2) would have required that the applicant demonstrate that there is no credible evidence that the design of the proposed operation will not work as intended to prevent the formation of discharges with levels of parameters of concern that would require long-term treatment after mining has been completed.

A commenter supported proposed paragraph (n), noting that it ensures advances in predicting the formation of mine drainage will be employed to prevent water pollution. However, other commenters expressed concern that the ''no credible evidence'' standard would create uncertainty and result in unjustified permit denials by regulators fearful of approving any permit application in areas where acid-forming or toxic-forming materials are present. In response, we modified paragraph (n)(2) to delete the ''no credible evidence'' standard and replace it with a requirement that the demonstration and finding be based on a thorough analysis of all available evidence. Final paragraph (n)(2) also requires that the applicant explain why a study or other evidence that supports a contrary conclusion is not credible or applicable to the proposed operation.

Final paragraph (n) requires not only a demonstration by the applicant, but also concurrence by the regulatory authority. The requirement for concurrence by the regulatory authority provides an additional safeguard against the approval of applications that ultimately create long-term discharges in need of treatment.

Unlike the proposed rule, final paragraphs (n)(1) and (2) do not refer to ''parameters of concern'' because the purpose of this finding is to prevent the formation of any long-term discharges that require treatment, regardless of whether the parameter that creates the need for treatment is a parameter of concern. In final paragraph (n)(1), we replaced ''parameters of concern'' with the term ''toxic mine drainage,'' which is both more appropriate and more encompassing. There is no need for a replacement term in final paragraph (n)(2).

Several commenters suggested that proposed paragraph (n) should be revised to explain what the term ''long-term treatment'' means, how a determination of a need for long-term treatment is made, and the ramifications if the findings incorrectly determine the need for long-term treatment. We do not agree that there is a need for additional specificity in the text of the rule. ''Long-term'' refers to a discharge that continues to require treatment for more than a short time after the completion of land reclamation. The ramifications of making a demonstration and finding that ultimately prove inaccurate will vary with the circumstances resulting in the discharge, the nature of the discharge, and the timing of the discovery. Possible outcomes include issuance of a permit revision order, enforcement action, or initiation of action to rescind the permit under section 773.20 of this rule. In all cases, the permittee will need to treat the discharge and post appropriate final assurance or bond to cover treatment costs.

A commenter expressed concern that proposed paragraph (n) would shift the burden of monitoring and accountability for everything that happens to water quality in the watershed to the coal industry. We disagree with the commenter. Final paragraph (n)(1) requires that the applicant demonstrate, and the regulatory authority concur, that the proposed operation has been designed to prevent toxic mine drainage that would require long-term treatment after mining has been completed. Final paragraph (n)(2) requires that the applicant demonstrate, and the regulatory authority concur, that a thorough analysis of all available evidence supports a conclusion that the design of the proposed operation will work as intended to prevent the formation of discharges that would require long-term treatment after mining has been completed. Final paragraph (n)(2) also provides that, if a study or other evidence supports a contrary conclusion, the applicant must explain why that study or other evidence is not credible or applicable to the proposed operation. Nothing in final paragraph (n) assigns accountability for all water quality issues in the watershed to the permittee and the monitoring requirements of this final rule are directed toward identifying mining-related impacts on water quality and quantity so that those impacts can be distinguished from nonmining-related impacts.

One commenter asserted that by incorporating paragraph (n) we were improperly attempting to adopt and incorporate by reference a flawed policy document entitled, ''Hydrologic Balance Protection: Policy Goals and Objectives on Correcting, Preventing, and Controlling Acid/Toxic Mine Drainage'' that we issued on March 31, 1997. In that policy and accompanying documents, we explain that approval of a permit that would result in the creation of a discharge requiring long-term treatment would be inconsistent with SMCRA. We do not agree that the policy is flawed because it is fully justified by SMCRA.[218] Therefore, we made no changes to paragraph (n) based on this comment.

We received many comments supporting proposed section (o), which required that the regulatory authority find that, to the extent possible using the best technology currently available, the proposed operation has been designed to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values, as identified in §§ 779.20 or 783.20, and to enhance those resources where practicable, as required under § 780.16 or § 784.16. This language is similar to sections 515(b)(24) and 516(b)(11) of SMCRA [219] and is intended to reinforce compliance with those statutory provisions. We are adopting § 773.15(o) as proposed, with the exception that the final rule does not include the phrase ''as identified in § 779.20 or 783.20'' because those sections do not require identification of all related environmental values.

Section 773.17: What conditions must the regulatory authority place on each permit issued?

We proposed to revise paragraph (e) of this section by adding paragraph (e)(4) to require that the permittee notify the regulatory authority and other appropriate state and federal regulatory agencies of any noncompliance with a term or condition of the permit. Notification would allow those agencies to take any necessary action to minimize the impacts of the noncompliance on the environment or public health or safety, consistent with the purpose

[217] 52 FR 4244 (Feb. 10, 1987).

[218] *See, e.g.,* 30 U.S.C. 1258(a)(13), 1260(b)(3), 1265(b)(10), 1266(b)(9).

[219] 30 U.S.C. 1265(b)(24) and 1266(b)(11).

stated in section 102(a) of SMCRA.[220] We have also added final paragraph (i) that requires compliance with all effluent limitations and conditions in any National Pollutant Discharge Elimination System permit for consistency with §§ 816.41, 816.42, and 817.42.

One commenter generally supported proposed § 773.17(e) but expressed concern that the provision would unnecessarily limit the notification requirement to situations caused by the operator's noncompliance with terms and conditions of the permit. The commenter recommended broadening the requirement in proposed paragraph (e)(4) to include notification to the appropriate regulatory authorities anytime the operator's monitoring reveals the potential for environmental harm, regardless of whether it is caused by the operator's noncompliance. We decline to revise this section as the commenter suggests. As required in final rule § 780.23, an operator must monitor water resources located both within the proposed permit area, as well as adjacent areas. This monitoring must include locations that are situated upgradient and downgradient for groundwater and upstream and downstream for surface water of the mining operations. Samples obtained from the upgradient and upstream monitoring sites are representative of conditions existing in the waters prior to any potential influence of the mining and reclamation activities. Those samples collected from the downgradient and downstream sites are used to evaluate the effect of the operations on water resources once compared to the upgradient/upstream samples. Therefore, any condition detected in the samples, even in those collected in waters prior to entering the mine site indicating an off-site source, that could result in an imminent danger to the health or safety of the public or that could cause or reasonably be expected to cause significant, imminent, environmental harm will be reported as part of the ongoing monitoring requirements regardless of whether or not a noncompliance exists.

Another commenter alleged that the proposed rule language lacked clarity on when the notification was required, what information needed to be included in the notice, and the timing required for the notification. In response to these comments, the language of the final rule has been modified. We have added language in paragraph (e)(4) specifying that the operator must notify the regulatory authority and other appropriate state and federal regulatory agencies whenever conditions within the permit area result in an imminent danger to the health or safety of the public or cause or could be reasonable expected to cause significant, imminent environmental harm to land, air, or water resources, regardless of whether a noncompliance exists. We note, however, that this requirement for immediate notification is only applicable to situations that could result in an imminent danger to public health or safety or significant, imminent environmental harm. For all other situations, as required by § 840.11(a) and (b), the regulatory authority will be at the site for inspections at least monthly and, as required by §§ 816.35(b)(1) and 816.36(b)(1), will review all monitoring data quarterly. Thus, the regulatory authority will have the tools to detect changes that do not rise to the level of imminent harm.

Another commenter objected to the provision in paragraph (e)(4) that would require notice be provided to ''other appropriate state and federal regulatory agencies.'' According to the commenter, the SMCRA regulatory authority is the only agency with jurisdiction over compliance with SMCRA permits. We agree with commenter that the SMCRA regulatory authority has jurisdiction concerning SMCRA permit issues; however, coal mine operations are subject to other state and federal permitting actions. We have, however, limited the scope of paragraph (e)(4) only to those situations that would require the issuance of a cessation order for imminent danger or environmental harm under § 843.11(a). That approach should minimize the reporting burden on the permittee, while ensuring that the regulatory authority and other appropriate agencies receive notice of situations that require immediate attention to protect the public or prevent significant environmental harm from occurring.

We also proposed to add a new permit condition in paragraph (h) of this section, which would require the permittee obtain all necessary authorizations, certifications, and permits in accordance with Clean Water Act requirements before conducting any activities that require approval or authorization under the Clean Water Act. Several commenters objected to this proposed addition. A couple of commenters stated that requiring Clean Water Act permits before mining contradicted section 702 of SMCRA.[221] Others interpreted proposed paragraph (h) as allowing SMCRA to supersede the authority of Clean Water Act agencies in determining when permits are required. We do not agree with those commenters who stated that it violated section 702(a) of SMCRA or otherwise superseded the authority of Clean Water Act agencies. Nothing in the language of this condition authorizes the SMCRA regulatory authority to determine when a Clean Water Act permit is needed—that is exclusively the jurisdiction of the agencies responsible for implementing and administering the Clean Water Act. Instead, the condition merely underscores that the permittee must obtain any required permits, authorizations, or certifications before initiating mining activities for which those permits, authorizations, and certifications are needed. The condition will allow the SMCRA regulatory authority to take enforcement action if another agency determines that a non-SMCRA permit is needed, but the SMCRA permittee does not obtain the necessary permit before beginning the pertinent mining operations.

These same commenters also questioned why we would single out the Clean Water Act as opposed to other state and federal permits for inclusion as permit conditions. After evaluating these comments, we have decided to expand the scope of paragraph (h) to require that the permittee obtain all necessary authorizations, certifications, and permits in accordance with ''other applicable federal, state, and tribal laws before conducting any activities that require authorization, certification, or a permit under those laws.'' Within the proposed rule, we limited the scope of this provision to the Clean Water Act because that is the primary federal statute applicable to water quality and given the focus of this rule it satisfied our purpose to highlight the need for compliance with the Clean Water Act and to enhance coordination with the Clean Water Act authorities. *See* 80 FR 44436, 44480 (Jul. 27, 2015). Upon further review, we find no reason to limit the scope of this provision to the Clean Water Act as it is equally important that the permittee comply with all applicable laws.

As discussed in Part IV, above, in response to general comments about direct enforcement of water quality standards we have added paragraph (i) to final rule *§* 773.17. This paragraph adds a condition whereby the permittee must comply with all effluent limitations and conditions in any National Pollutant Discharge Elimination System permit issued for their operation by the appropriate authority under the Clean Water Act. As we explained in Part IV of the preamble,

[220] 30 U.S.C. 1202(a).

[221] 30 U.S.C. 1292.

the addition of this required permit condition and the revised rule text at 30 CFR 816.42 supports our longstanding regulatory requirement that coal mining operations must comply with the effluent limitations prescribed by Clean Water Act authorities in NPDES permits under section 402 of the Clean Water Act.[222] In combination, these revisions are intended to ensure that violations of effluent limitations are violations of the SMCRA permit, and therefore are enforceable by the SMCRA regulatory authority.

Section 773.20: What actions must the regulatory authority take when a permit is issued on the basis of inaccurate information?

Under proposed § 780.19(k), a permit issued on the basis of what the regulatory authority later determines to be substantially inaccurate baseline information would be void from the date of issuance and have no legal effect. Proposed paragraph (k) also would have required that the permittee cease mining-related activities and immediately begin to reclaim the disturbed area upon notification by the regulatory authority that the permit is void.

Some commenters opposed proposed § 780.19(k) on the basis that it deprived permittees of their rights without due process and that the phrase ''substantially inaccurate'' was too subjective, vague, poorly defined, essentially unlimited in scope, and difficult to enforce. One commenter alleged that proposed paragraph (k) was unreasonable because it did not consider whether the inaccuracy was intentional or had any material impact. Another commenter characterized the proposed paragraph as an unauthorized punitive provision that lacks any statutory support. According to that commenter, section 521(a)(4) of SMCRA [223] provides the sole circumstances under which a SMCRA permit may be revoked—and then only for a pattern of violations.

The commenter further alleged that the explanation in the preamble that proposed § 780.19(k) is necessary to avoid or minimize the environmental harm that could result from initiation or continuation of an operation approved on the basis of inaccurate baseline information constitutes flawed reasoning because proposed paragraph (k) does not require any connection between the inaccurate baseline information and environmental harm—it merely presumes harm without a sufficient foundation. According to the commenter, the sanction (permit nullification) is disproportionately harsh compared to the lesser sanctions and penalties that section 521 of SMCRA [224] authorizes for violations that are causing actual harm on the ground. The commenter noted that, unlike proposed paragraph (k), section 521 affords the permittee due process with respect to the sanctions and penalties that it authorizes. Finally, the commenter urged that we rely upon the regulatory authority's power to order revision of a permit under section 511 of SMCRA [225] to address legitimate concerns with permits that have been issued.

Several commenters expressed concern that adoption of proposed § 780.19(k) would create uncertainty as to the validity of the bond posted for the permit. One commenter suggested that the rule should be revised to specify that the permit would be revoked rather than voided, a change that the commenter indicated would resolve uncertainty about the status of the bond. Several commenters also expressed concern that because the permit would be considered null and void from the date of issuance, the former permittee theoretically could be subject to enforcement action for mining without a permit during the time between permit issuance and permit nullification.

One commenter thought that we had already addressed this issue in the regulations at §§ 773.21 through 773.23 governing improvidently issued permits. That is not the case, however, because those regulations apply only to the permit eligibility criteria of the applicable regulations implementing section 510(c) of SMCRA; [226] *i.e.,* an improvidently issued permit is a permit that should not have been issued because, at the time of permit issuance, the permittee or operator owned or controlled a surface coal mining and reclamation operation with an unabated or uncorrected violation. *See* 30 CFR 773.21(a). Another commenter suggested that we replace proposed paragraph (k) with regulations analogous to those that apply to improvidently issued permits. However, this commenter, like several other commenters urged us to limit their applicability to situations in which information has been falsified or the applicant intentionally submits inaccurate or incomplete data.

After evaluating the comments received, we have decided not to adopt proposed § 780.19(k). Instead, as suggested by one commenter, we are replacing the permit nullification provisions of that paragraph with procedures and requirements analogous to those that apply to improvidently issued permits under §§ 773.21 through 773.23. This approach will afford the permittee ample due process, as urged by numerous commenters. Consistent with the new approach, we are codifying the replacement provisions in section 773.20 rather than section 780.19 because Part 773 contains the requirements for permit processing. However, we do not agree with those commenters who suggested that these regulations should apply only when information has been falsified or when the applicant intentionally submits inaccurate or incomplete data. The purpose of final § 773.20 is to minimize both the possibility that mining conducted under permits approved on the basis of inaccurate information could result in environmental harm and the extent of that harm. The reason for the inaccuracy of the information is not relevant to attainment of this purpose. Thus, limiting § 773.20 to situations in which permit application information was intentionally falsified would be counterproductive and inconsistent with the purpose of this section.

We also disagree with the comment that section 521(a)(4) of SMCRA provides the sole circumstances under which a SMCRA permit may be revoked. As discussed in the preamble to the rule concerning improvidently issued permits,[227] the U.S. Court of Appeals for the D.C. Circuit has held that SMCRA provides both express and implied authority for the suspension or rescission of improvidently issued permits:

> While it is true that section 510(c) does not expressly provide for suspension or rescission of existing permits, the IFR [interim final rule] rescission and suspension provisions reflect a permissible exercise of OSM's statutory duty, pursuant to section 201(c)(1) of SMCRA, to ''order the suspension, revocation, or withholding of any permit for failure to comply with any of the provisions of this chapter or any rules and regulations adopted pursuant thereto.'' 30 U.S.C.[ ] 1211(c). The IIP [improvidently issued permit] provisions simply implement the Congress's general directive to authorize suspension and rescission of a permit ''for failure to comply with'' a specific provision of SMCRA—namely, section 510(c)'s permit eligibility condition. In addition, apart from the express authorization in section 1211(c), OSM retains ''implied'' authority to suspend or rescind improvidently provided permits

[222] 33 U.S.C. 1342.

[223] 30 U.S.C. 1271(a)(4).

[224] 30 U.S.C. 1271.

[225] 30 U.S.C. 1261.

[226] 30 U.S.C. 1260(c).

[227] 65 FR 79583–79584 and 79628 (Dec. 19, 2000).

because of its express authority to deny permits in the first instance.[228]

The same rationale applies to final § 773.20 because it authorizes suspension or rescission of a permit for failure to comply with a specific provision of SMCRA; *i.e.,* the prohibition in section 510(b)(1) [229] against approval of a permit application unless the regulatory authority finds in writing that ''the permit application is accurate and complete and that all the requirements of this Act and the State or Federal program have been complied with.'' Similarly, under the rationale set forth by the court, the regulatory authority has implied authority under SMCRA to suspend or rescind permits issued on the basis of inaccurate information because the regulatory authority has the authority to deny the permit in the first instance.

We further disagree with the comment that described the proposed paragraph as duplicative and unnecessary because states already have effective administrative processes in place to scrutinize data and address issues. We applaud the administrative processes that states have put in place as safeguards against the approval of permit applications with inaccurate baseline information. However, no process is perfect. Final § 773.20 provides a mechanism to address defective permits that slip through those safeguards.

Paragraph (a) of § 773.20 provides that the regulatory authority must initiate action that could lead to suspension or rescission of the permit whenever the regulatory authority discovers that the permit was issued on the basis of what later turns out to be inaccurate baseline information. In response to commenters' concerns that the ''substantially inaccurate'' threshold in proposed § 780.19(k) was too subjective and too broad in scope, we added a proviso that § 773.20(a) applies only if the information is inaccurate to the extent that it would invalidate one or more of the findings required for permit application approval under § 773.15 or other provisions of the regulatory program.

Paragraphs (b) through (d) of § 773.20 are a streamlined version of the requirements and procedures in 30 CFR 773.21 through 773.23 pertaining to improvidently issued permits. We have adapted those requirements and procedures as appropriate, discarding provisions that are unique to improvidently issued permits. We have replaced the references to the administrative review procedures of 43 CFR 4.1370 through 4.1377, which apply only to improvidently issued permits, with references to 30 CFR part 775, which contains administrative and judicial review provisions pertinent to decisions on permits. In addition, we established a uniform 60-day notice period for proposed suspensions and rescissions, rather than adopting the 60-day notice period for proposed suspensions and 120-day notice period for proposed rescissions set forth in § 773.22(b) and (c). We find that there is no purpose or need for the longer notice period for proposed rescissions, particularly when the purpose of § 773.20 is to minimize any environmental harm that may result from the issuance of permits on the basis of inaccurate information. Finally, in 30 CFR 773.20 (c) and (d), we provide a mechanism through which the permittee can avoid permit suspension or rescission by providing updated information and submitting an application to revise the permit as needed to correct the deficiency. We are adopting this mechanism in part because of comments urging us to allow the permittee to take corrective action instead of requiring nullification of the permit. As the commenters noted, permit nullification would be disproportionately harsh compared to the sanctions and penalties that SMCRA and the regulations impose for performance standard violations. Providing an alternative to permit suspension or rescission also is responsive to a comment that we should allow use of the permit revision procedures of section 511 of SMCRA to remedy the deficiency.

Paragraph (e) of § 773.20 sets forth the actions that the permittee must take if a permit is suspended or rescinded. Paragraph (e) is similar to, and based upon 30 CFR 843.13(c), which specifies the actions that the permittee must take if a permit is suspended or revoked for a pattern of violations. Paragraph (e)(1) provides that, if the permit is suspended, the permittee must cease all surface coal mining operations under the permit and complete all affirmative obligations specified in the suspension order within the time established in that order. It also specifies that the regulatory authority must rescind the permit if the permittee does not complete those obligations within the time specified. Paragraph (e)(2) provides that, if the permit is rescinded, the permittee must cease all surface coal mining operations under the permit and complete reclamation within the time specified in the rescission order.

Paragraph (f) of § 773.20 addresses commenter concerns about the impact on bond coverage. Paragraph (f)(1) provides that, if the regulatory authority suspends or rescinds a permit, the bond posted for the permit will remain in effect until the permittee completes all reclamation obligations under the reclamation plan approved in the permit and obtains bond release under §§ 800.40 through 800.44. Paragraph (f)(2) provides that the regulatory authority must initiate bond forfeiture proceedings under § 800.50 if the permittee does not complete all reclamation obligations within the time specified in the permit rescission order.

D. Part 774—Revision; Renewal; Transfer; Assignment, or Sale of Permit Rights; Post-Permit Issuance Requirements

Section 774.9: Information Collection

Section 774.9 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 774.

Section 774.10: When must the regulatory authority review a permit after issuance?

We are adopting § 774.10 as proposed, with the exception that we are reorganizing paragraph (a) and adding a new paragraph (a)(2), which replaces proposed § 780.16(c)(5). In the final rule, we are re-designating the introductory text of proposed § 774.10(a) as paragraph (a)(1). In concert with this change, we are re-designating proposed paragraphs (a)(1) through (4) as paragraphs (a)(3) through (6).

Proposed § 780.16(c)(5) required that the permittee periodically evaluate the impacts of the operation on fish, wildlife, and related environmental values in the permit and adjacent areas and then use that information to modify the operations to avoid or minimize adverse effects. Several commenters requested that we provide guidance or specify the frequency and rigor of the mandated periodic evaluation of an operation's impact on fish and wildlife. Additionally, commenters requested clarification as to whose responsibility it would be to complete this evaluation. Some commenters opposed this paragraph because it could be interpreted as requiring that the permittee modify operations even when the adverse effects on wildlife are beyond the control of the permittee.

[228] *Nat'l Mining Ass'n* v. *Dep't of the Interior,* 177 F.3d 1,9 (D.C. Cir. 1999) (''*NMA* v. *DOI II*'').

[229] 30 U.S.C. 1260(b)(1).

Other commenters found this paragraph to be unnecessarily disruptive in that it would undermine the certainty provided by approval of the permit application. In response to these comments, we are not adopting proposed § 780.16(c)(5). Instead, we are including a modified version of that paragraph within the final rule as § 774.10(a)(2). Under the final rule, evaluation of the impacts of the operation on fish, wildlife, and related environmental values will be part of the midterm permit review conducted by the regulatory authority and thus will be the responsibility of the regulatory authority. This timing and the shift in responsibility from the permittee to the regulatory authority is appropriate because the purpose of the midterm permit review is to determine whether the assumptions and predictions upon which permit application approval was based have proven reasonably accurate. If the assumptions and predictions are not accurate, the regulatory authority will issue an order to the permittee to revise the permit to ensure compliance with the regulatory program. In this case, if the regulatory authority determines, as a result of the midterm permit review, that the fish and wildlife protection and enhancement plan approved in the permit is not effectively minimizing disturbances and adverse impacts on fish, wildlife, and related environmental values to the extent possible using the best technology currently available, as required by section 515(b)(24) of SMCRA,[230] the regulatory authority will issue an order to the permittee to revise the permit to update the technology required or make other changes necessary to comply with this provision of the Act. The regulatory authority has the discretion to determine the extent of the evaluation conducted as part of the midterm permit review.

Section 774.15: How may I renew a permit?

We proposed within paragraph (b)(2)(vii), relative to application requirements and procedures, to require an analysis of the monitoring results under §§ 816.35 through 816.37 or §§ 817.35 through 817.37, relating to groundwater, surface water, and biological condition of streams and an evaluation of the accuracy and adequacy of the determination of the probable hydrologic consequences of mining prepared under § 780.20 or § 784.20 of this chapter. We also proposed at paragraph (b)(2)(viii) to require an update of the determination of the probable hydrologic consequences of mining prepared under § 780.20 or § 784.20, if needed, or documentation that the findings in the existing determination are still valid.

In addition, proposed paragraph (c)(1), relating to the approval process, provided that a complete and accurate renewal application will be approved unless certain findings are made. We proposed one such finding at (c)(1)(viii), which would allow a regulatory authority to disapprove an application for renewal if the regulatory authority determined, based on an analysis of the monitoring results or the updated determination of the probable hydrologic consequences of mining, that the finding it originally made under § 773.15(e)—the operation is designed to prevent material damage to the hydrologic balance outside the permit area—is no longer accurate.

Several commenters objected to proposed requirements at (b)(2)(vii), (b)(2)(viii), and (c)(1)(viii). These commenters expressed concern that the proposed requirements would compromise the right of successive renewal and recommended the deletion of these regulations. The commenters also stated that there are existing opportunities to review data as it relates to the probable hydrologic consequences, and it is unnecessary to couple a data review requirement with permit renewal. After reviewing the comments, we agree with the commenters and have deleted the proposed requirements at (b)(2)(vii), (b)(2)(viii), and (c)(1)(viii) from the final rule.

E. Part 777—General Content Requirements for Permit Applications

Section 777.1: What does this part cover?

We are finalizing § 777.1 as proposed. We received no comments on this section.

Section 777.11: What are the format and content requirements for permit applications?

Proposed paragraph (a)(3) of this section would have required that all permit applications be filed in an electronic format prescribed by the regulatory authority unless the regulatory authority grants an exception for good cause. One commenter supported this proposal because it would facilitate the acquisition and transfer of permit files by coalfield residents via the internet and avoid the need for those residents to make a lengthy trip to the office of the regulatory authority and copy sometimes unwieldy documents. However, other commenters alleged that adoption of this provision would require major changes in state regulatory programs at great expense for both the regulatory authority and the applicant. Several commenters characterized the proposed requirement as an unfunded mandate on the states unless we are prepared to award grants to states to fully fund the infrastructure needed for electronic permitting. One commenter acknowledged that a fully implemented electronic permitting system may facilitate transfer of application documents, thus avoiding copying and mailing costs. However, the commenter noted, these savings may be illusory as the regulatory authority likely also would request multiple hard copies. Some commenters argued that decisions on electronic permitting should be left to the state regulatory authorities. Another commenter alleged that SMCRA provides no authority for us to prescribe the format of permit applications.

For the reasons set forth in the preamble to the proposed rule,[231] we continue to support and encourage the use of electronic permitting. However, we recognize that state regulatory authorities differ in their capability to implement electronic permitting and that implementation may not be cost-effective or practicable in all cases. In addition, we cannot guarantee availability of the funding needed to implement electronic permitting. Therefore, we have not adopted § 777.11(a)(3) as proposed and have removed reference to any requirement that permit applications be filed in an electronic format. Therefore, the final rule text is substantially similar to previous regulation § 777.11. As finalized, paragraph (a)(3) is substantively identical to section 507(b) of SMCRA,[232] which provides that ''[t]he permit application shall be submitted in a manner satisfactory to the regulatory authority.''

Several commenters provided suggestions on how large map files, professional certifications, and verification of submittals could be submitted electronically. One commenter recommended that all systems include a common system component, which could allow a company to use a central system that can easily be transferred to a common file type for delivery across multiple states. Another commenter urged that digital permit files be available for download on a document-by-document

[230] 30 U.S.C. 1265(b)(24).

[231] *See* 80 FR 44436, 44481 (Jul. 27, 2015).

[232] 30 U.S.C. 1257(b).

basis because persons with computers that have slow processor speeds may not be able to open permits in large file format without having their computers crash repeatedly. The commenter also recommended that digital permit files be available on both compact disc and flash drive and that digitally submitted maps, plans, and cross-sections be made available in both high-definition and low-definition versions. We recognize the merit of these suggestions and recommendations. However, we are not including them in the final rule because final paragraph (a)(3) does not require use of electronic permitting. Regulatory authorities electing to require the submission of permit applications electronically may wish to consider these recommendations.

Section 777.13: What requirements apply to the collection, analysis, and reporting of technical data and to the use of models?

Final Paragraph (a): Technical Data and Analyses

In paragraph (a)(1), we proposed to add requirements for the submission of certain data, such as metadata and field sampling sheets associated with the technical data submitted in the permit application. Several commenters asserted that requiring materials submitted to the regulatory authority (including technical data, maps, plans and cross sections) to be accompanied by metadata, where appropriate, was a good idea and provided valuable information to the regulatory authority. However, several regulatory authorities opined that the requirements under § 777.13, including providing metadata would create an undue hardship for the regulatory authority by requiring additional funds and personnel to log, track, and review the data. We are aware that we will be requiring the operator to collect additional data and submit that data to the regulatory authority, but the data is necessary to establish quality, comprehensive baseline data, along with mining and post-mining data that will help ensure there are no adverse impacts from coal mining operation that would cause material damage to the hydrologic balance outside the permit area. As explained further in the proposed rule, metadata, which consists of data describing the contents and context of data files, greatly increases the usefulness of the original data by providing information about how, where, when, and by whom the data were collected and analyzed.[233]

Several commenters opined that the requirement within proposed paragraph (a) about submitting the results of the laboratory quality assurance and quality control procedures to the regulatory authority was vague and did not include the relevant information necessary to determine the level of quality assurance and quality control (level I, II, III, or IV). In addition, the commenters claimed the requirement for electronically submitted data including the identification of any data transformations would require significant effort by the laboratories that perform this work. The commenters opined the transformed data are typically identified by the laboratory through the use of flags within the final laboratory report and because these flags are generated by the laboratory the flags are likely to differ from lab to lab. Our intent with this requirement is to ensure the quality assurance and quality control data, regardless of the level, is submitted to the regulatory authority so that they can review the data. Furthermore, transformed data should be noted by the laboratory. However, we are not requiring the codes used to denote the transformed data to be the same for all laboratories. Therefore, based on these comments, we did not make any changes to proposed paragraph (a), pertaining to the submission of laboratory quality assurance and quality control data, in the final rule.

However, for the purpose of clarification, we added additional language to the final rule about water quality field sampling sheets that are required to be submitted to the regulatory authority. In the proposed rule, we required field sheets for water quality samples from wells.[234] It was our intent that a permittee submit to the regulatory authority sample field sheets for all water quality samples collected from surface water and groundwater monitoring. Our intent is supported by proposed paragraph (b) where we reference sampling and analysis of surface water and groundwater. To clarify this we added language to final paragraph (a) expressly requiring submission of the field sampling sheets for each surface-water sample collected and for each groundwater sample collected from wells, seeps, and springs. We added ''seeps and springs'' to the list of sample field sheets we require a permittee to submit to the regulatory authority because seeps and springs are commonly monitored to assess water quality of groundwater,

Final Paragraph (b): Sampling and Analyses of Groundwater and Surface Water

In paragraph (b) we proposed to add a requirement that sampling and analyses of surface water and groundwater be conducted according to the methodology in 40 CFR parts 136 and 434. Several commenters asserted that some of the methodology in 40 CFR parts 136 and 434 is not applicable to the type of sampling and analysis conducted at coal mines and the operator should be allowed to use a scientifically-valid methodology acceptable to the regulatory authority. We agree. To address this comment, we revised paragraph (b) to clarify that all sampling and analyses of groundwater and surface water be performed to satisfy all the requirements of this subchapter and that they are conducted according to the methodology in 40 CFR parts 136 and 434; or scientifically-defensible methodology acceptable to the regulatory authority, in coordination with any agency responsible for administering or implementing a program under the Clean Water Act that requires water sampling and analysis. The addition of (b)(2) takes a reasonable approach to sampling and analyses of surface water and groundwater requirements of this subchapter.

Additionally, we received several comments from industry and regulatory authorities recommending that we remove the requirements to provide surface water and groundwater sampling field sheets to the regulatory authority. Instead, these commenters suggested that the regulatory authorities should be able to use their discretion to request them as needed. We disagree. Surface water and groundwater sampling field sheets contain the metadata regarding field parameter measurements and methods used in the collection of water quality samples of both surface water and groundwater. Meta data contained on sampling field sheets, such as, calibration information for instruments used to measure field parameters and information concerning the sampling methods used to collect water quality samples are necessary to accurately assess the water quality data. Further, several commenters suggested that sending groundwater sampling field sheets to the regulatory authority does not enhance the review process because applicants already provide boring logs and well construction diagrams which include information concerning the depth of the well screens for all monitoring wells included as a part of the permit application. In addition, the commenters asserted that descriptions

[233] 80 FR 44436, 44481 (Jul. 27, 2015).

[234] 80 FR 44436, 44592 (Jul. 27, 2015).

of the sampling methodology for all groundwater samples are included in detail within the hydrogeology sections of the SMCRA permit application and that the static water level collected prior to any purging should be considered sufficient for understanding whether the well screen was or was not fully saturated on the sample date. We disagree with the commenters' assertions about the lack of importance of groundwater field sheets when reviewing hydrologic data from the well. We are requiring groundwater sampling sheets be submitted to the regulatory authority because the groundwater sampling sheets contain information about instrument calibration, well purging, and sample collection that are necessary to thoroughly review water-quality data and are not included in the information referenced in the comment. Therefore, no changes were made to the final rule in response to this comment.

Final Paragraph (c): Geological Sampling and Analysis

We received one comment about proposed paragraph (c). The commenter opined that by requiring all geologic sampling and analysis to be conducted using a scientifically valid mythology, it would result in increases in costs and time for permit preparation and approval. We agree that increases in costs and time for permit preparation and approval may occur; however any cost increase is outweighed by the added benefit of better permitting decisions using comprehensive and high quality geologic data. Therefore, we made no changes to paragraph (c) in response to this comment. However, in response to a federal agency comment, in the final rule we use the term ''scientifically-defensible methodology,'' instead of the term ''scientifically-valid methodology,'' as proposed.

Final Paragraph (d): Use of Models

A few commenters requested an explanation for our alleged aversion to the use of models to characterize baseline hydrologic condition within § 777.13(d) when elsewhere in the rule we allow models to evaluate ecological function of streams through the use of bioassessment protocols. These commenters assert that this alleged disparity creates regulatory inconsistency and should be addressed for clarity. These commenters mischaracterize our position. In final paragraph (d), we allow for the use of models as long as they incorporate site specific data to calibrate each model. Contrary to commenters' assertions, we also require site specific data for our evaluation of ecological function; therefore our regulations are consistent.

We also proposed to modify the existing provisions by adding paragraph (d)(2), which would require that all models be calibrated using actual, site-specific data and that they be validated for the region and ecosystem in which they will be used. By adding these additional requirements we intend to improve the accuracy and validity of models and promote better data collection and analysis procedures to ensure more informed permitting decisions. Several commenters from industry and regulatory authorities recommended that we provide regulatory authorities sufficient discretion to allow for professional judgment concerning the necessity for site-specific data and the data requirements to process models. Also, several commenters opined that using site-specific data for calibration may not be possible because it may be costly and the regulatory authority does not have control of activities outside of coal mining permit, thus making it difficult to include that site specific data. We disagree because it is important to use actual site-specific data to calibrate the models. A model that is calibrated using site-specific data is more likely to provide better modeling results.

Therefore, the final rule adopts § 777.13 as proposed, with minor changes as explained herein to paragraphs (a), (b), and (d).

Section 777.14: What general requirements apply to maps and plans?

We revised § 777.14 from the proposed section by making editorial revisions to clearly distinguish between requirements that apply to maps and plans for all operations and those that apply only to maps and plans for operations in existence before the effective date of a permanent regulatory program for the state in which the operation is located. Specifically, paragraph (a) applies to maps and plans for all operations, while paragraph (b) applies only to maps and plans for operations in existence before the effective date of a permanent regulatory program for the state in which the operation is located. This distinction is consistent with the preamble to this rule as originally promulgated, which states that ''[t]he concept of delineation of phases of mining on application maps relates to key dates in the interim [initial] and permanent regulatory programs establishing different periods and levels of regulation under the Act.'' *See* 44 FR 15017 (Mar. 13, 1979).[235]

In the final rule, we removed the first sentence of previous paragraph (b) because it is poorly worded, unnecessary, duplicative of the remainder of paragraph (b), and could erroneously be interpreted as applying to maps and plans for all operations, not just maps and plans for operations in existence before the effective date of a permanent regulatory program for the state in which the operation is located. We also revised paragraph (b) to clarify that its provisions apply only when applicable; *i.e.,* that there is no need to provide maps and plans showing each period listed in paragraphs (b)(1) through (3) if the operations was not in existence during one or more of those periods.

Previous paragraph (b)(4) required that maps and plans show those portions of the operation where surface coal mining operations occurred after the estimated date of issuance of a permit under the approved regulatory program. This paragraph is unnecessary because the map of the proposed permit area identifies the lands upon which surface coal mining and reclamation operations will take place after issuance of the permit. Furthermore, previous paragraph (b)(4) inappropriately refers to surface coal mining operations that occurred after the estimated date of permit issuance. This language is inconsistent with section 506(a) of SMCRA,[236] which specifies that ''no person shall engage in or carry out on lands within a State any surface coal mining operations unless such person has first obtained a permit. . . .'' Therefore, final section 777.14 does not include a counterpart to previous paragraph (b)(4).

Section 777.15: What information must my application include to be administratively complete?

We are finalizing § 777.15 as proposed. We received no comments on this section.

F. Part 779—Surface Mining Permit Applications—Minimum Requirements for Information on Environmental Resources and Conditions

Section 779.1: What does this part do?

With the exception of altering the title of this section for clarity, we are

[235] The contents of 30 CFR 777.14 were originally published on March 13, 1979 as 30 CFR 771.23(e) before their redesignation as 30 CFR 777.14 on Sept. 28, 1983. The 1979 preamble incorrectly refers to 30 CFR 771.23(e) as 30 CFR 771.21(e).

[236] 30 U.S.C. 1256(a).

finalizing section 779.1 as proposed. We received no comments on this section.

Section 779.2: What is the objective of this part?

We are finalizing § 779.2 as proposed. We received no comments on this section.

Section 779.4: What responsibilities do I and government agencies have under this part?

We are finalizing § 779.4 as proposed. We received no comments on this section.

Section 779.10: Information Collection

Section 779.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 779.

Previous § 779.11: General Requirements

We have removed and reserved previous § 779.11 for the reasons discussed in the preamble to the proposed rule.[237]

Previous § 779.12: General Environmental Resources Information

We have removed and reserved previous § 779.11 for the reasons discussed in the preamble to the proposed rule.[238]

Section 779.17: What information on cultural, historic, and archeological resources must I include in my permit application?

We are finalizing § 779.4 as proposed. We received no comments on this section.

Section 779.18: What information on climate must I include in my permit application?

One commenter requested that we add language requiring climate data and analysis to this section. We did not add this requirement because a requirement to include a statement of the climatic factors, including average seasonal precipitation, direction and velocity of winds, and temperature ranges, is already required under final rule §§ 779.18 and 783.18 and additional information under this section would not add meaningful information.

Section 779.19: What information on vegetation must I include in my permit application?

Several commenters, including the U.S. Forest Service and other federal agencies, expressed support for the proposed changes to this section. In particular, these commenters voiced strong support for the use of native species rather than introduced species because the use of native species would minimize adverse effects on fish and wildlife.

Other commenters opposed the proposed revisions to § 779.19 as unnecessary and excessively burdensome. These commenters urged us not to adopt the proposed revisions and instead simply reaffirm the regulatory authority's discretion to require vegetation information as needed. We disagree that the previous regulations were adequate. The previous regulations provided the regulatory authority with complete discretion in deciding whether to require submission of vegetation information as part of the permit application. In view of other changes to our regulations to generally require revegetation with native species and reestablishment of native plant communities (with certain exceptions), discretionary submission of premining vegetation information is no longer appropriate. The vegetation information required by final section 779.19 is essential to fully implement the revegetation requirements of section 515(b)(19) of SMCRA,[239] which provides that surface coal mining operations must establish ''a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area.'' To comply with this requirement, both the applicant and the regulatory authority need to know the vegetative cover native to the area of land to be affected and the extent of cover of the natural vegetation of the area. The information must be in sufficient detail to assist in preparation of the revegetation plan under § 780.12(g) and to provide a baseline for comparison with postmining vegetation, as final paragraph (b)(1) requires. In addition, the information required by § 779.19 will assist in implementation of section 508(a)(2) of SMCRA,[240] which requires that the reclamation plan in each permit application identify both the premining land uses and the capability of the land prior to any mining to support a variety of uses.

In response to comments that the proposed rule was unnecessary and excessively burdensome, we reevaluated each element of the proposed rule and narrowed the requirements down to those that we determined to be necessary to ensure revegetation and reclamation of mine sites in accordance with SMCRA. We also reorganized and restructured the rule to improve clarity.

Proposed paragraph (a)(1) would have required that the applicant identify, describe, and map existing vegetation types and plant communities on the proposed permit and adjacent areas and within any proposed reference areas. Several commenters asserted that we lack the authority under SMCRA to require vegetation information for the adjacent area. While we do not agree with that assertion, we determined that vegetation information for the adjacent area typically would not be useful either to the applicant in preparing the reclamation and revegetation plans for the permit or to the regulatory authority in reviewing and processing the permit application. Therefore, final paragraph (a) does not require vegetation information for the adjacent area. The regulatory authority, however, may use its discretion to require vegetation information for the adjacent area.

Several commenters questioned the value of the vegetation information requirements in situations where reestablishment of native plant communities would be inconsistent with the postmining land use. We did not provide a waiver under these circumstances for several reasons. First, this rule is intended to more fully implement section 508(a)(2) of SMCRA,[241] which requires that the permit application include a statement of ''the capability of the land prior to any mining to support a variety of uses giving consideration to soil and foundation characteristics, topography, and vegetative cover.'' Descriptions of the vegetative communities that exist on the site, as required by final paragraph (a), and of the native vegetation and plant communities typical of that area in the absence of human alterations, as required by final paragraph (c), are an important part of the determination of the capability of the land. Second, there is no guarantee that the approved postmining land use will be implemented before expiration of the revegetation responsibility period or even that it will be implemented at all. Therefore, our final revegetation rules at §§ 780.12(g) and 816.111 through 816.116 require planting and reestablishment of native plant communities on mined lands unless the approved postmining land use is implemented before the entire bond amount for the area has been fully

[237] 80 FR 44436, 44482 (Jul. 27, 2015).

[238] *Id.*

[239] 30 U.S.C. 1265(b)(19).

[240] 30 U.S.C. 1258(a)(2).

[241] 30 U.S.C. 1258(a)(2).

released under §§ 800.40 through 800.43. Third, sites with agricultural, industrial, commercial, residential, or recreational postmining land uses that may be incompatible with restoration of native plant communities overall often contain small areas that can (and, under this final rule, must) be planted with native species to provide some wildlife habitat.

A commenter on proposed paragraph (a) asked that we specify how an applicant should select appropriate reference areas. Other commenters interpreted the proposed rule as always requiring use of reference areas and objected to this alleged requirement. We did not intend to require use of a reference area. We worded final paragraph (a) in a manner that clarifies that an applicant may use a reference area for purposes of determining revegetation success under § 816.116, but that use of a reference area is not required. We find it unnecessary to provide further regulatory instruction on selecting reference areas because selecting reference areas is a common scientific practice. Furthermore, selection of a reference area depends upon site-specific factors and the regulatory authority is the best resource for further guidance on that matter.

Paragraph (b)(2) of the final rule, which we proposed as paragraph (a)(1), requires that the description and map of vegetation types and plant communities be adequate to evaluate whether the vegetation provides important habitat for fish and wildlife and whether the proposed permit area contains native plant communities of local or regional significance. Some commenters requested additional clarification about what would constitute a native plant community of ''local or regional significance,'' while another commenter asked us to define ''plant community.'' We did not revise the rule in the manner that the commenters requested because ''plant community'' is a commonly understood scientific term and because the regulatory authority should have the latitude to determine what constitutes a plant community of local or regional significance. We encourage the regulatory authority to confer with state and federal agencies with responsibilities for fish and wildlife in making this determination. One potential resource for identifying native plant communities of local or regional significance is the Natural Heritage Network, a network of state programs that gather and disseminate biological information on species of conservation concern and natural plant communities.

Several commenters expressed concern that the dominance of non-native species of grasses and forbs and the presence of invasive or noxious species would make reestablishment of native plant communities challenging, if not impossible. As an example, one commenter provided results from the latest Natural Resources Conservation Service's National Resource Inventory survey showing that over 50 percent of the non-federal native grassland in North Dakota is impacted by non-native species and that non-native species cover at least 25 percent of the soil surface. The Natural Resources Conservation Service concluded that it is impossible to return a site to its historic plant community if Kentucky bluegrass comprises more than 30 percent of the vegetation at the site.[242] The Natural Resources Conservation Service's finding supports our requirement to avoid non-native, invasive species in reclamation and illustrates the value of reestablishing the native plant communities unless introduced species are necessary for the postmining land use. The Natural Resource Inventory also concluded that ''[n]on-native invasive plants negatively impact rangeland throughout the western United States by displacing desirable species, altering ecological and hydrological processes, reducing wildlife habitat, degrading systems, altering fire regimes, and decreasing productivity.'' [243]

Commenters requested that we clarify the permissible amount of invasive species after the completion of reclamation, especially when invasive species are present prior to mining. In response, we added paragraph (b)(3) to the final rule. That paragraph requires the applicant to identify areas with significant populations of invasive or noxious species. Final paragraph (b)(3) provides the regulatory authority with the information necessary to determine whether there is a potential problem with non-native or noxious species and to decide on the appropriate steps to take, such as authorizing unique handling of the soil materials as described in § 816.22(f)(1)(ii) of the final rule. Section 780.12(g)(1)(xi) of the final rule requires that the proposed revegetation plan describe measures that will be taken to avoid the establishment of invasive species on reclaimed areas and to control invasive species if they are established. The allowable amount of invasive species at the time of bond release will depend on multiple factors, which we discuss in the performance standards related to revegetation success in §§ 816.111 through 816.116 of the final rule.

In response to a comment from the U.S. Army Corps of Engineers to revise the rule to provide better protection for wetlands, we added paragraph (b)(4) to the final rule. That paragraph requires that the applicant delineate all wetlands and areas bordering streams that support, or are capable of supporting, hydrophytic or hydrophilic vegetation or vegetation typical of floodplains. Hydrophytic vegetation consists of plants that grow either partly or totally submerged in water, while hydrophilic vegetation consists of water-loving plants that grow along the margins and banks of rivers and streams. This vegetation is indicative of wetlands, which means that vegetation information of this nature will proved baseline data to assist in the identification and protection of wetlands. This provision also will facilitate implementation of § 816.97(e) of the final rule, which requires use of the best technology currently available to avoid, restore, or replace wetlands and to enhance wetlands where practicable. Protection or restoration of wetlands is difficult in the absence of information about where those wetlands were originally located and what type of vegetation they supported. The requirement for information about vegetation bordering streams also will facilitate implementation of our stream assessment requirements in § 780.19(c)(6) and our streamside vegetative corridor requirements of § 816.57(d)(2)(iii).

Commenters requested that we specify a timeframe for the requirement in proposed § 779.19(a)(2) that the permit applicant identify the plant communities that would exist on the proposed permit area under conditions of natural succession. Some commenters requested that we specify whether the permit applicant must do this for each of the particular stages of succession or whether the requirement applies only to the climax community. One commenter noted that, given the various intensive land uses over the last 200 years and the presence of many non-native species, it could be very difficult to know what qualifies as ''natural succession'' and urged us to remove this requirement. As an example, the commenter questioned whether tallgrass prairie would be the

[242] U.S. Dep't. of Agric. Natural Res. Conservation Service, Nation Resources Inventory Report on Non-native Invasive Plant Species; available at *http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1254898.pdf.* (last accessed on Nov. 1, 2016).

[243] Roger Shely et al. *Invasive Plant Management on Anticipated Conservation Benefits: A Scientific Assessment,*). 291–336 (2011). *Conservation Benefits of Rangeland Practices: Assessment, Recommendations, and Knowledge Gaps (D.D. Briske, ed.).* U.S. Dep't of Agric., Natural Res. Conservation Serv. (2011).

natural succession community in the Midwest. After evaluating these and other comments, we decided not to adopt proposed paragraph (a)(2). We replaced proposed paragraph (a)(2) with final paragraph (c), which provides that, if the vegetation on the proposed permit area has been altered by human activity, the applicant must describe the native vegetation and plant communities typical of the area in the absence of human alterations. This information should be readily available from historical references and may be inferred from surviving remnants of natural vegetation in the surrounding area, if those remnants are similar to the proposed permit area. The applicant and regulatory authority need this information to prepare and review the revegetation plan, which must be designed to restore native plant communities, as appropriate and consistent with the final rule.

Proposed § 779.19(b) would have required that the vegetation descriptions in the permit application adhere to the National Vegetation Classification Standard, while proposed paragraph (c) would have allowed use of other generally-accepted vegetation classification systems in lieu of the National Vegetation Classification Standard. In the preamble to the proposed rule, we invited comment on what other classification systems may exist. *See* 80 FR 44436, 44483 (Jul. 27, 2015). We received a large number of comments in response to this request. Many commenters proposed to keep the systems already in use. Other commenters expressed support for the National Vegetation Classification Standard and stated that any alternatives should be evaluated based in part, on consistency with the National Vegetation Classification Standard approach.

Some commenters opined that the National Vegetation Classification Standard is not the best method for classifying vegetation and that the decision as to what method to use should be left to the discretion of the regulatory authority. Another commenter opined that the regulation or preamble should provide direction as to what level of hierarchy in the National Vegetation Classification Standard is appropriate for applications for coal mining operations. Other commenters questioned why proposed paragraph (b) required use of the National Vegetation Classification Standard when proposed paragraph (c) allowed the regulatory authority to approve other classification systems. One commenter suggested revising proposed paragraph (c) by adding ''provided that the alternative classification is accepted in the scientific community suitable for that state or region in which the proposed operation is located'' to reduce the potential for abuse of the discretion given here to the regulatory authority. Another commenter noted that some long-term mining operations may have existing, longstanding vegetation data systems and that it would be impractical to substitute a new system when the final rule comes into effect.

After evaluating the comments received, we decided not to adopt proposed paragraphs (b) and (c). Instead, final paragraph (b)(1) provides that the description and map of vegetation types and plant communities required under paragraph (a) must be in sufficient detail to assist in preparation of the revegetation plan under § 780.12(g) and to provide a baseline for comparison with postmining vegetation. The regulatory authority will determine which classification system best meets the requirements of paragraph (b)(1), other provisions of final § 779.19, and the revegetation requirements of §§ 780.12(g) and 816.111 through 816.116. Furthermore, it is not clear that the National Vegetation Classification Standard is readily adaptable to preparation of descriptions of vegetation types and plant communities for purposes of SMCRA. In addition, we agree with those commenters who questioned the value of proposed paragraph (b) when proposed paragraph (c) would have allowed use of other classification systems.

Proposed paragraph (d) would have required that the permit application include a discussion of the potential for reestablishing both the premining plant communities and the plant communities that would exist on the proposed permit area under conditions of natural succession. Some commenters alleged that proposed paragraph (d) would serve no purpose, at least in the Midwest where agricultural postmining land uses predominate. Because this final rule contains numerous requirements for use of native species in revegetation and for reestablishment of native plant communities, we do not agree that proposed paragraph (d) would serve no purpose. However, proposed paragraph (d) is not appropriate for § 779.19, which merely requires baseline information on premining vegetation and historical plant communities. Nor is it necessary because determination of the potential for reestablishment of native plant communities currently or formerly found in the area is an implicit element of the revegetation plan required under § 780.12(g) of this rule. Therefore, we are not adopting proposed paragraph (d) as part of this final rule.

Section 779.20: What information on fish and wildlife resources must I include in my permit application?

Section 779.20 is intended to ensure that the permit applicant has the information needed to design the proposed mining operation in a manner that meets the fish and wildlife protection and enhancement requirements of the regulatory program. The regulatory authority also needs this information to evaluate the probable impacts of the proposed mining operation on fish, wildlife, and related environmental values for the proposed permit and adjacent areas and to determine whether the scope of the proposed fish and wildlife protection and enhancement plan is sufficient. Except as discussed below, we have adopted § 779.20 as proposed, with minor editorial revisions for clarity and consistency.

Several commenters expressed concern that changes to the fish and wildlife resource information requirements might increase the amount of time it takes to review and process permits, resulting in a need for regulatory authorities to hire additional staff. The proposed and final rules are similar to the fish and wildlife resource information requirements in previous § 780.16(a). They require very little additional information. Therefore, we do not anticipate that final § 779.20 will have a significant impact on regulatory authority resource needs.

Final Paragraph (a): General Requirements

Proposed paragraph (a), like previous § 780.16(a), provided that the permit application must include information on fish and wildlife resources for the proposed permit and adjacent areas. The Department of Justice requested that we revise this provision to clarify that the term ''fish and wildlife resources'' includes all species of fish, wildlife, plants and other life forms listed or proposed for listing under the Endangered Species Act of 1973, 30 U.S.C. 1531, *et seq.* Final § 779.20(a) includes the requested revision, which is not substantive.

Final Paragraph (b): Scope and Level of Detail

As proposed, § 779.20(b) provided that the regulatory authority would determine the scope and level of detail for this information in coordination with state and federal agencies that have responsibilities for fish and wildlife. It also specified that the scope and level

of detail of the information must be sufficient to design the fish and wildlife protection and enhancement plan required under § 780.16. We received no comments specific to this provision. Final paragraph (b) adopts the proposed rule without change.

Final Paragraph (c): Site-Specific Resource Information Requirements

Proposed paragraph (c) sets forth requirements for site-specific fish and wildlife resource information. At the request of a federal agency, we revised proposed paragraph (c)(1), which pertains to species listed or proposed for listing under the Endangered Species Act of 1973, by replacing the phrase ''fish and wildlife or plants'' with ''species'' and the phrase ''state or private'' with ''non-federal'' to be consistent with terminology used in connection with the Endangered Species Act. The phrase ''state or private'' might inadvertently exclude activities of local and tribal governments and quasi-governmental agencies.

Some commenters suggested that we revise paragraph (c)(1) to require that the applicant identify cumulative impacts on federally-listed species. Final paragraph (c)(1) provides that ''the site-specific resource information must include a description of the effects of future non-federal activities that are reasonably certain to occur within the proposed permit and adjacent areas.'' That provision is the functional equivalent of an analysis of cumulative impacts. Therefore, no rule change is necessary. Other commenters asserted that we lack authority to require that applicants submit this information to a state regulatory authority or to require that a state regulatory authority conduct a cumulative effects analysis. According to the commenters, the Endangered Species Act only requires such an analysis for federal actions. We disagree. As discussed in the preamble for final § 773.15(j), section 7(a)(1) of the Endangered Species Act provides that ''[t]he Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act.'' [244] That would necessarily include using SMCRA to protect species listed or proposed for listing as threatened or endangered under the Endangered Species Act.[245] Furthermore, the description of the effects of future non-federal activities that final paragraph (c)(1) requires is necessary for the regulatory authority to ascertain compliance with final § 773.15(j).

Another commenter recommended that we delete all of proposed paragraph (c)(1), as the proposed language would place a significant burden on permit applicants, requiring them to know the affairs and plans of all private surface landowners in a given area and convey those plans as part of a permit application. We disagree and decline to delete this paragraph. This requirement to analyze the possible effects of action by private surface landowners is similar in terminology to a portion of the definition of ''Cumulative Impacts'' used in the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regulations implementing the Endangered Species Act [246] and therefore is a warranted and necessary element in this review. Also, because our previous regulations at 30 CFR 780.16(a)(2) included the requirement to provide site-specific resource information in each permit application, there is no additional burden on permit applicants.

Another commenter suggested that we define ''reasonably certain to occur.'' We do not agree. That term, which mirrors the terminology used in the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regulations implementing the Endangered Species Act.[247] The U.S. Fish and Wildlife Service and the National Marine Fisheries Service have published an Endangered Species Consultation Handbook that explains the meaning of this phrase.[248] No additional definition is needed in this rule.

One commenter urged us to require that the application include information on habitat for species listed as threatened or endangered. Another commenter requested that the rule specifically require information about biological communities that do not contain species of special concern. According to the commenter, those communities are still of interest because they may provide habitat to species that are valuable in other ways. Final § 779.19(a)(1) requires that the permit application identify, describe, and map existing vegetation types and plant communities within the proposed permit area in a manner that is adequate to evaluate whether the vegetation provides important habitat for fish and wildlife. In addition, final § 779.20(b) provides that the regulatory authority must determine the scope and level of detail for the fish and wildlife resource information required in coordination with state and agencies with responsibilities for fish and wildlife. Also, final section 780.16 requires additional action if the information required by final § 779.20(b) indicates that the proposed permit area or the adjacent area contains species listed or proposed for listing as threatened or endangered species under the Endangered Species Act or that are designated as critical habitat. As one commenter noted, one potential resource for identifying this information is the Natural Heritage Program, a network of state programs that gather and disseminate biological information on species of conservation concern and on natural plant communities. Each state Natural Heritage Program would also be an appropriate entity to assist the regulatory authority to identify native plant communities of local or regional significance. The combination of these requirements should ensure that the site-specific resource information includes information on habitat under the circumstances described by the first commenter and in all other situations in which information on habitat is important.

A commenter requested that we include specific reference to the Natural Heritage Program throughout the final rule, and specifically within final §§ 779.20 and 783.20, when providing information about threatened, endangered, and rare species of plants and animals at the state and federal level. The commenter also suggested that evidence of any coordination with the Natural Heritage Program or other resource agencies be attached to the permit application. While we agree that coordination with each states' National Heritage Program can be an important step in obtaining information about threatened, endangered, and rare species of plants and animals, we decline to require this and any evidence of coordination with any National Heritage Program be included within the permit application. These requirements are more appropriately

[244] 16 U.S.C. 1536(a)(1).

[245] 16 U.S.C. 1531(b).

[246] 50 CFR 402.02 defines ''cumulative effects'' as ''those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.''

[247] 50 CFR 402.02 defines indirect effects are ''those that are caused by the proposed action and are later in time, but still are reasonably certain to occur'', and ''cumulative effects'' as ''those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.''

[248] U.S. Fish and Wildlife Serv. and National Marine Fisheries Serv., *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act,* 4–32 (March 1998).

addressed on a case-by-case basis at the discretion of the regulatory authority, because each regulatory authority has the appropriate local expertise and network of resources to make these decisions. However, we do agree that the Natural Heritage Program is an excellent resource for information about threatened, endangered, and rare species of plants and animals.

A commenter requested that we define the term ''endemic species'' in proposed paragraph (c)(3). Another commenter recommended that we clarify that habitat for endemic species should be based on actual habitat boundaries rather than state or other jurisdictional boundaries that are less relevant from a biological perspective. Final paragraph (c)(3) does not include a definition of ''endemic species'' both because that term has a commonly understood meaning and because the U.S. Fish and Wildlife Service's published glossary of terms related to endangered species already defines ''endemic species'' as ''[a] species native and confined to a certain region; generally used for species with comparatively restricted distribution.'' [249] The commenter is correct that jurisdictional boundaries should not determine whether a species is endemic to the area. For example, a species with a small distribution within one state but that is widespread throughout the rest of the country would not typically be considered endemic, despite its low numbers within the state boundaries.

Proposed § 779.20(d) contained provisions regarding U.S. Fish and Wildlife Service review of the fish and wildlife resource information in the permit application. Proposed § 780.16(e) contained substantively identical provisions for U.S. Fish and Wildlife Service review of the fish and wildlife protection and enhancement plan in the permit application. This final rule consolidates proposed §§ 779.20(d) and 780.16(e) into final § 780.16(e), both to streamline the regulations and in response to a comment noting that the Service reviews baseline fish and wildlife resource information together with the fish and wildlife protection and enhancement plan, not separately. The preamble to final § 780.16(e) discusses the comments that we received on the provisions of proposed §§ 779.20(d) and 780.16(e) and how we revised the rule in response to those comments and discussions with the U.S. Fish and Wildlife Service.

Proposed § 779.20(d)(2)(iv) provided that the regulatory authority may not approve the permit application until all issues pertaining to threatened and endangered species are resolved and the regulatory authority receives written documentation from the Service that all issues have been resolved. Proposed § 780.16(e)(2)(iv) contained a substantively identical provision. The final rule consolidates both of those proposed rules into final § 780.16(b)(2) in revised form. Many commenters characterized this provision of the proposed rules as a U.S. Fish and Wildlife Service veto over the SMCRA permit. We discuss that comment in Part IV.J., above. The preamble to final § 780.16(b)(2) discusses other comments that we received on proposed §§ 779.20(d)(2)(iv) and 780.16(e)(2)(iv) and the revisions that we made in response to those comments and discussions with the U.S. Fish and Wildlife Service.

Proposed § 779.20(e) would have provided that the regulatory authority, in its discretion, may use the resource information collected under § 779.20 and information gathered from other agencies to determine whether, based on scientific principles and analyses, any stream segments, wildlife habitats, or watersheds in the proposed permit area or the adjacent area are of such exceptional environmental value that any adverse mining-related impacts must be prohibited.

We received comments both opposing and supporting proposed paragraph (e). Many commenters who supported this provision urged us to revise it to categorically prohibit mining in those areas rather than to afford discretion to the regulatory authority to do so. However, section 522 of SMCRA [250] establishes the process and criteria for categorically designating areas unsuitable for all or certain types of mining. Commenters seeking a categorical prohibition should avail themselves of the petition process provided under that section of SMCRA.

Commenters opposing proposed paragraph (e) challenged our authority under SMCRA to adopt such a provision. They also alleged that it could result in a compensable taking of mineral interests, that it provides too much power to state and federal fish and wildlife agencies, and that it could be enormously disruptive and economically costly because potential permit applicants would not have reasonable certainty as to which portions of the proposed permit area they would be allowed to mine. Other commenters noted that section 515(b)(24) of SMCRA,[251] which contains the performance standard for protection of fish and wildlife, does not include an express prohibition on mining. Instead, it provides that ''to the extent possible using the best technology currently available,'' surface coal mining and reclamation operations must ''minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values.''

The counterargument is that section 515(b)(23) of SMCRA provides that surface coal mining and reclamation operations must ''meet such other criteria as are necessary to achieve reclamation in accordance with the purposes of this Act, taking into consideration the physical, climatological, and other characteristics of the site.'' [252] One of the purposes of the Act is to ''assure that surface mining operations are not conducted where reclamation as required by this Act is not feasible.'' [253]

Other commenters wanted us to define or otherwise clarify the terms, ''exceptional environmental value,'' ''coordination between agencies, ''scientific principles and analysis'', and ''consultation'' in proposed paragraph (e). They requested clarification on how this provision would be applied to regulatory decisions made prior to the final rule. They also sought an opportunity for further public comment on the meaning of ''exceptional environmental value'' and on how this provision would be applied. We also received comments criticizing the lack of a definition of ''adverse impacts,'' and inquiring whether this term extended to impacts that were short-term or temporary or that imposed no permanent change on biota or the ecosystem.

After evaluating the comments that we received, we decided not to adopt proposed § 779.20(e) because avoiding disturbances to habitats of unusually high value for fish and wildlife, as described in final § 779.20(c)(3), is one of the options provided in final § 816.97(f). Therefore, there is no need to further discuss or address the comments that we received on proposed § 779.20(e). While we are not adopting proposed paragraph (e), we encourage states to consider doing so under section 505 of SMCRA,[254] which specifies that any state law or regulation that ''provides for more stringent land use and environmental controls and

[249] U.S. Fish and Wildlife Serv. *Endangered Species Glossary. http://www.fws.gov/endangered/about/glossary.html* (last accessed Nov. 1, 2016).

[250] 30 U.S.C. 1272.

[251] 30 U.S.C. 1265(b)(24).

[252] 30 U.S.C. 1265(b)(23).

[253] 30 U.S.C. 1202(c).

[254] 30 U.S.C. 1255(b).

regulations of surface coal mining and reclamation operations than do the provisions of this Act or any regulation issued pursuant thereto shall not be construed to be inconsistent with this Act.''

Section 779.21: What information on soils must I include in my permit application?

In the proposed rule,[255] we explained the August 4, 1980 suspension of the rules in relationship to lands other than prime farmlands, why we proposed to lift the suspension of previous § 779.21, and why we replaced those provisions with language consistent with the holding in *In Re Permanent Surface Mining Regulation Litigation I, Round I.*[256] One commenter questioned our logic in lifting the suspension and the consistency of the proposed rule with the court's holding. As explained in the preamble to our proposed rule, this is consistent with the court's decision that section 507(b)(16) of SMCRA is a clear expression of congressional intent to require soil surveys only for prime farmlands identified by a reconnaissance inspection.[257] Consistent with that decision the final rule clarifies that soil surveys are only required when a reconnaissance inspection suggests that the land may be prime farmland. In those circumstances the permit application must include the results of the reconnaissance inspection and, when prime farmland is found to be present, the soil survey information required by § 785.17(b)(3). If prime farmlands are not identified, the court held that § 508(a)(3) did not constitute authority for our regulations to require an applicant to provide soil survey information for lands not qualifying as prime farmland. Our final rule is consistent with the decision. To begin, we rely on section 508(a)(2) of SMCRA.[258] This section of SMCRA requires that each reclamation plan submitted as part of a permit application pursuant to any approved State program or a Federal program under the provisions of SMCRA shall include necessary details to demonstrate that reclamation required by the State or Federal program can be accomplished, a statement of the capability of the land prior to any mining to support a variety of uses giving consideration to soil and foundation characteristics, topography, and vegetative cover, and, if applicable, a soil survey. This statutory provision requires the applicant to include information about soil and foundation characteristics in each permit application, not just in those applications that contain prime farmland.[259] This information, detailed in final paragraphs (b) through (d), does not need to take the form of a requirement to conduct a soil survey unless prime farmland may be present. While it is true that the regulations do not require that soil surveys be conducted for lands that may not be prime farmland, it is also true that some soil surveys for these lands may already exist and these already-existing soil surveys would be useful to the regulatory authority in fulfilling its responsibilities under section 508(a)(2) of SMCRA. Therefore, for lands that may not be prime farmland, our final rule does not require a soil survey to be conducted, but it does require the submittal of soil survey information if it already exists.

Regarding paragraph (a), other commenters indicated that, given the predominant land use in some areas of prime farmland and the Natural Resources Conservation Service's extensive mapping, a ''reconnaissance inspection'' is not necessary to make a determination regarding whether prime farmland exists in the permit area. Similarly, other commenters expressed concern about the requirement for ''a soils reconnaissance inspection'' to determine the presence of prime farmland without further guidance regarding what the reconnaissance inspection would entail. However, paragraph (a) does not contain any new requirements regarding these issues; it merely includes and cross-references existing prime farmland regulations within § 785.17 and reiterated at § 779.21(e) of the final rule.

In paragraph (b), we require the permit applicant to include soil surveys completed by the Natural Resources Conservation Service. A commenter suggested that this information is frequently unavailable on federal, state, or tribal lands, and, in situations where such soil survey information is available, it is frequently provided as an Order 4 soil survey and is not sufficiently detailed to be useful without substantial interpolation. The commenter recommended that we allow Order 2 soil surveys to address reclamation plan needs. For non-prime farmland an applicant need only submit soil survey information that exists; therefore, if, as the commenter suggests, this soil survey information does not exist it would not be required. In the event Order 4 soil surveys are the only data set available those should be submitted; conducting an Order 2 soil survey would not be required if such a survey for the proposed permit area does not exist. The purpose of this section, and others related to establishing soil condition, is to ascertain as much information as possible about the capability and productivity of the land prior to mining in order to develop a reclamation plan that restores the premining land use capabilities.

Some commenters opined that proposed paragraph (c) is problematic. The commenter stated that relying on descriptions of soil depths taken from soil mapping completed by the Natural Resources Conservation Service is not reliable because these maps may not accurately reflect on-site conditions. Final § 816.22(a)(1)(i) requires mine operators to remove and salvage all topsoil and other soil materials. Therefore, regardless of whether or not the Natural Resources Conservation Service maps are exactly accurate is of secondary consequence because the mine operator must remove and salvage these materials as they exist at the permit site. For example, if the map indicates that a certain soil type contains eight inches of topsoil, but the on-site conditions reveal twelve inches of topsoil exist, the mine operator is required to remove and salvage all twelve inches of topsoil, not merely the eight inches indicated on the map.

Some commenters also questioned proposed paragraph (f), which affords the regulatory authority the opportunity to require whatever information it may need to determine land use capability. These commenters opined that this paragraph requires applicants to prepare the reclamation plan with no guidance regarding what is necessary to satisfy this requirement. The commenters misinterpret this regulation; it merely states the inherent authority of the regulatory authority to determine, on a case-by-case basis, what additional information is necessary to assess the land use capability. This provision is discretionary with the regulatory authority and provides a regulatory authority with the ability to use its best professional judgment to require information that may be needed for local conditions or circumstances. However, we have modified final rule § 779.21(f) to clarify that any other information ''on soils'' that the regulatory authority finds necessary to

[255] 80 FR 44436, 44484–44485 (Jul. 27, 2015).

[256] *In re Permanent Surface Mining Regulation Litig.* I, Round I (PSMRL I, Round I), 1980 U.S. Dist. LEXIS 17722 at *62 (D.D.C., February 26, 1980).

[257] 80 FR 44436, 44485 (Jul. 27, 2015) (citing 30 U.S.C. 1258(a)(2) and 1257(b)(16) and *In re Permanent Surface Mining Regulation Litig.* I, Round I (PSMRL I, Round I), 1980 U.S. Dist. LEXIS 17722 at *62 (D.D.C., February 26, 1980)).

[258] 30 U.S.C. 1258(a)(2).

[259] 30 U.S.C. 1257(b)(16).

determine land use capability may be collected. Moreover, we removed the phrase ''and to prepare the reclamation plan'' because the regulatory authority does not prepare the reclamation plan.

A commenter requested that we require more detailed soil descriptions because, in the commenter's opinion, more detailed soil descriptions are needed to differentiate between the soil horizons (O, A, E, B, C, and R) so that they can be properly characterized and segregated. Other commenters suggested that we require the retention of physical soil core samples and photographs because mischaracterization of soil horizons could allow improper mixing of higher quality soils with poor soils. We disagree with these comments because the minimum requirements as established in our final rule are sufficient to develop adequate reclamation plans for the salvage and storage of topsoil and other soil horizons as needed to reconstruct a soil medium that will support the approved postmining land use. As discussed previously, § 779.21(f) allows the regulatory authority to require a greater level of detail, if deemed necessary, which could include the information suggested by the commenters.

Another commenter questioned the rationale of expanding the requirements for soil information, stating that the proposed rule is not supported by science. This commenter did not provide any specific information in support of the assertion that this requirement is not supported by science. Not only do we disagree with the commenter we note that all of the final rule requirements, including soil mapping and available surveys, soil depth and quality, are collectively necessary to effectively determine the premining capability and productivity of the land and to establish the soil salvage, soil substitute, and soil replacement requirements to ensure restoration of these capabilities and successful establishment of native vegetation. Moreover, these requirements are not only consistent with the Act they are essential to fulfilling the requirements of the Act.[260]

Section 779.22: What information on land use and productivity must I include in my permit application?

Commenters expressed concern that proposed paragraph (a)(2), which would require a description of the historic use of the land, contains no time limitation, is unfair and impractical, and creates an impossible standard. Similarly, commenters also noted that it was sometimes difficult to determine with precision all of the land uses within the five-year standard included in the existing regulations at 30 CFR 780.23(a) and that the longer timeframe detailed in paragraph (a)(2) would make it even more difficult. We do not intend this requirement to be unfair, impractical, or create an impossible standard, and for clarity are adding a statement to the end to (a)(2); ''to the extent that this information is readily available or can be inferred from the uses of other lands in the vicinity.'' In most cases, it would be sufficient for the applicant to provide historical land use information similar to that required for a Phase I Environmental Site Assessment under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).[261] Standards for these assessments have been established by ASTM International.[262] Assessments may include a review of publicly available records, aerial photos, soil surveys, deed searches, and interviews with owners, occupants, neighbors, and local government officials. Various military and government agencies began collecting aerial imagery as far back as the 1940's and 1950's. Advancements in satellite and sensor technology resulted in agencies gathering imagery from space during the 1970s and 1980s. While results will vary depending on one's geographic area of interest, most areas of the continental United States have aerial imagery coverage dating back several decades. A free, open, and commonly used repository of aerial imagery is available online through the U.S. Geological Survey portal called Earth Explorer: *http://earthexplorer.usgs.gov/*. This user-friendly platform hosts a plethora of aerial imagery as well as satellite imagery. Based on the material available for the site and region, the regulatory authority should easily be able to determine whether the statement of the historical uses of the area is reasonable.

A regulatory authority commenter objected to the placement of the phrase ''capability of the land prior to any mining'' in proposed rule § 779.22(b)(1). Although this phrase is taken directly from section 508 of SMCRA,[263] the commenter expressed concern that ''prior to any'' mining is not sufficiently defined. Further, the commenter opines that it will be problematic to determine the capability of land for areas such as Appalachia where coal mining has existed for more than 150 years. This commenter also questioned whether the purpose of the proposed rule is to require that vegetative communities and land uses are restored to what existed prior to any mining—such as the vegetative communities that existed in 1930. The proposed rule at §§ 779.22(b)(2)(i) and 783.22(b)(2)(i) established requirements for a narrative analysis of the productivity of the proposed permit area . . . as determined by actual yield data or yield estimates . . . ''. One commenter on this section expressed concern that we were making a substantive change by adding the word ''actual'' to the requirement for yield data regarding the average yield of food, fiber, forage or wood products obtained on the land before mining. Another commenter objected to proposed paragraph (b)(2) requiring the presentation of productivity data expressed as average yield of food, fiber, forage, or wood products obtained under ''high levels of management'' because this allegedly requires coal mining operators to speculate about industries and commercial enterprises in which they have no expertise. We disagree. Our previous regulations at § 780.23(a)(2)(ii) required the applicant to determine productivity by yield data or estimates for similar sites based on current data from the U.S. Department of Agriculture, state agricultural universities, or appropriate state natural resource or agricultural agencies. Likewise, our previous regulations at §§ 780.23(a)(2)(ii) and 784.15(a)(2)(ii) included a requirement for productivity information to be expressed ''under higher levels of management'', thus, this is not a new requirement. While our previous regulations do not use the word ''actual'', inclusion of the word ''actual'' in the revised regulations merely emphasizes the distinction between actual data and estimated data and imposes no new requirements. In response to commenters' concerns about potential land uses and determining premining capability, we included a more thorough discussion of these issues in the preamble to final § 780.24.

We received many comments regarding the proposed requirement at § 779.22(b)(3), which would have required the permit applicant to provide a narrative analysis of productivity of the proposed permit area for fish and wildlife before mining. Many commenters supported this requirement, expressing that productivity information was essential to establishing a baseline on which impacts to fish and wildlife can be

[260] *See, e.g.,* 30 U.S.C. 1257(b)(16); 30 U.S.C. 1258(a)(2) and (3); 30 U.S.C. 1265(b)(2), (5), (6) and (7).

[261] 42 U.S.C. 9601 *et seq.; see also* 40 CFR part 312.

[262] *See* ASTM 1527–05 and 1527–13.

[263] 30 U.S.C. 1258(a)(2)(B).

evaluated and for establishing a reference for reclamation of the area to premining conditions. Other commenters alleged that the requirement was unclear on the level and scope the analysis must entail and what metrics and historical documentation would be necessary. After consideration of the comments both supportive and critical of this provision, we have determined that this requirement is overly burdensome due to the survey effort that would be required to document productivity. As expressed in the preamble for the proposed rule, the fish and wildlife information required by proposed paragraph (b)(3) would have assisted the regulatory authority in evaluating the environmental impacts of the proposed operation and in determining the fish and wildlife protection and enhancement measures that may be appropriate. However, these productivity needs can be adequately met by the requirements at §§ 779.20(a)–(c) and 783.20(a) through (c) to include general and site-specific resource information on fish and wildlife resources in the permit application to a level of detail determined by the regulatory authority in coordination with state and federal agencies with responsibilities for fish and wildlife. Therefore, we have eliminated this fish and wildlife productivity narrative from the final rule.

Paragraph (c) allows the regulatory authority the flexibility to require other information deemed necessary to determine the condition, capability, and productivity of the land within the proposed permit area. In the preamble, we noted that this additional information may include data about a site's carbon absorption and storage capability. Commenters claimed that it is not within the purview of SMCRA authority to evaluate the carbon footprint of the proposed operation. We disagree. SMCRA clearly allows regulatory authorities to consider the effects of the proposed operation on the condition of the land, which includes the land's capability prior to any mining.[264] The capability of the land within the proposed permit area could include the land's ability to absorb and store greenhouse gases. As indicated in our Draft and final EIS, greenhouse gases are sequestered and stored in soils and vegetative biomass, which reduces the total amount of carbon present in the atmosphere and mitigates the adverse effects of climate change. Mining may remove significant amounts of forest cover, which would reduce the capability of the land to sequester and store carbon. The regulatory authority may want to factor this information into decisions concerning an applicants proposed changes in land use, or revegetation, including the provisions at final 780.16(d)(3) regarding mandatory enhancement measures to address losses of mature native forests.

Section 779.24: What maps, plans, and cross-sections must I submit with my permit application?

We proposed to consolidate existing §§ 779.24 and 779.25 into § 779.24 and add a new paragraph (c) to clarify that the regulatory authority may require that the applicant submit all materials in a digital format that includes all necessary metadata.[265] Except as discussed below, we are adopting, as proposed, §§ 779.24 and the counterpart at 783.24, related to underground mining.

Section 779, pertains to the minimum requirements for information on environmental resources and conditions for surface coal mining applications. In § 779.24(a)(2), the text mistakenly referred to underground mining activities when we meant surface mining activities; hence, we replaced the word ''underground'' with the word ''surface'' in the final rule text.

Several commenters requested we revise paragraph (a)(9) to include that streams and wetlands within the jurisdiction of the Clean Water Act be field delineated, documented, mapped, and then field confirmed by the U.S. Army Corps of Engineers. We are not adopting this recommendation because we cannot place responsibilities on the U.S. Army Corps of Engineers through SMCRA rulemaking. However, as revised, our final rule at § 773.5(a) requires that each SMCRA regulatory program provide for coordination of review of permit applications and issuance of permits for surface coal mining operations with the federal and state agencies responsible for permitting and related actions under, among other laws, the Clean Water Act. This provision will ensure that the U.S. Army Corps of Engineers has an opportunity to participate in the SMCRA permitting process to the degree that it deems appropriate.

Commenters expressed concern about the confidentiality of information provided to the regulatory authority within proposed paragraph (a)(11). In response to these comments, we revised § 779.24(a)(11), to ensure that this information is kept confidential when necessary for safety and security reasons and to protect the integrity of the public water supply.

Another commenter requested clarity about the extent of ''water supplies'' that must be mapped as required in this section. As stated in proposed paragraph (a)(11), any public water supply and associated wellhead protection zone located within one-half mile, measured horizontally, of the proposed permit area must be included in maps and, when appropriate, in plans and cross sections included in the permit application. This section of the rule does not intend for the origin of the source waters to be included, but rather the location of the public water supply itself. The scale of the map must be sufficient to include all pertinent features as required in final rule § 779.24.

Proposed paragraph (a)(13) requires that the location of any discharge, including, but not limited to, a mine-water treatment or pumping facility, into or from an active, inactive, or abandoned underground mine that is hydrologically connected to the proposed permit area or that is located within one-half mile, measured horizontally, of the proposed permit area be shown on a map or cross-section and included in the permit application. In the final rule, we have revised the phrase ''hydrologically connected to the proposed permit area'' to ''hydrologically connected to the site of the proposed operation'' for consistency with final rule § 783.24(a)(13), which describes what maps, plans, and cross-sections the operator must submit with a permit application for an underground mine. The type of information required in this section aids the applicant in preparing the determination of the probable hydrologic consequences of mining required by section 507(b)(11) of SMCRA [266] and the regulatory authority in preparing the cumulative hydrologic impact assessment required by the same provision of the Act and by section 510(b)(3) of SMCRA.[267] Several commenters, including regulatory authorities and industry commenters, opined that paragraph (a)(13) did not provide any benefit and would result in increased costs. We disagree. The locations of any of these types of discharges are necessary for the applicant to prepare the determination of the probable hydrologic consequences of mining required by section 507(b)(11) of SMCRA,[268] and for the regulatory authority to prepare the cumulative hydrologic impact

[264] *See* 30 U.S.C. 1258.

[265] 80 FR 44436, 44486 (Jul. 27, 2015).

[266] 30 U.S.C. 1257(b)(11).

[267] 30 U.S.C. 1260(b)(3).

[268] 30 U.S.C. 1257(b)(11).

assessment required by the same provision of the Act and by section 510(b)(3) of SMCRA.[269] Another commenter was concerned that the requirement in paragraph (a)(13) may present private property access issues for permit applicants. We acknowledge that lack of landowner consent may restrict data collection; however, we anticipate that the applicant will make every effort to obtain necessary access from private property owners. We also anticipate that the applicant will coordinate with the regulatory authority to rectify this issue, and, at the very least, document the inability to access the private property because of a refusal by the property owner to provide permission.

Proposed paragraphs (a)(18) and (20) included a requirement to submit geographic coordinates of test borings, core samplings, and monitoring stations. One commenter stated that these requirements would require field surveying which would add significant costs to the application process and that coordinates derived through the use of appropriate software could provide greater accuracy than hand-held field devices. Proposed paragraphs (a)(18) and (20) do not specify the means that must be used to obtain the geographic coordinates, only that the coordinates need to be included in the permit application. The use of hand-held global positioning system field devices is acceptable, but the use of appropriate geospatial software and publicly available imagery is also acceptable and provides accurate data. We have not modified the final rule in response to this comment.

Proposed paragraph (a)(19) expands upon the requirement in existing section 779.25(a)(6), which requires maps showing the location and extent of subsurface water, if encountered. The expanded application requirements of the proposed rule would also require all mining applications for both surface and underground mines to identify aquifers; this requirement is currently only applicable to underground mines under existing § 783.25(a)(6). We also proposed to require that the application include the areal and vertical distribution of aquifers and a portrayal of seasonal variations in hydraulic head in different aquifers. In addition, proposed paragraph (a)(19) includes a requirement for the estimated elevation of the water table required by section 507(b)(14) of SMCRA.[270] Two commenters stated that the requirement in paragraph (a)(19) to provide the areal and vertical extent of aquifers on a map provided no benefit and would result in increased costs. Maps showing the areal and vertical extent of aquifers are needed to accurately assess the extent of groundwater within the proposed permit and adjacent areas so that the regulatory authority can conduct an adequate assessment of the hydrology so that it can ensure the proposed coal mining operation will minimize disturbance of the hydrologic balance inside the permit area and adjacent areas and prevent material damage to the hydrologic balance outside the permit area. Another commenter stated that it would prefer the option to use maps instead of cross-sections to show the data required by paragraph (a)(19). In consideration of this comment, we agree that it is prudent to allow the applicant the flexibility, in consultation with the regulatory authority, to select the most appropriate means of supplying this information in the permit application. Therefore, paragraph (19) has been revised to allow for the information to be provided on appropriately-scaled cross-sections or maps, in a narrative, or a combination of these methods.

To provide clarity, we further revised paragraph (a)(19) of the final rule to replace ''portrayal of seasonal variations'' with ''maximum and minimum variations.'' The modification clarifies it is the range in variations in hydraulic head that is needed to provide meaningful information relative to individual water level measurements. We also omitted the word ''estimated'' concerning the elevation of the water table in the aquifers to clarify that the elevations must be based on groundwater data collected from the site rather than on an estimation of the levels based on other sources. Finally, we revised ''location and extent of subsurface water, if encountered'' to ''location and extent of any subsurface water encountered'' to clarify that the intent is to record the presence of any subsurface water encountered within the proposed permit and adjacent areas.

In paragraph (a)(21), we proposed to add a requirement that any coal or rider seams located above the coal seam to be mined also be identified in this section. However, this requirement was removed from the final rule due to a redundancy with requirements in § 780.19(e)(3). Likewise, the requirement in paragraph (a)(23) to identify the location and extent of known workings of underground mines underlying the proposed permit and adjacent areas are removed in the final rule due to redundancy with § 783.24(a)(23).

In paragraph (a)(27), we proposed to add a requirement that the application identify all directional or horizontal drilling for hydrocarbon extraction operations, including those using hydraulic fracturing methods, within or underlying, the proposed permit and adjacent areas. A few commenters objected to the addition of this requirement. These commenters pointed to the difficulty in obtaining the information as it is often proprietary information or would otherwise be time consuming to acquire. The commenters also noted that, at least in western states, this type of drilling generally occurs in zones well below the depth of coal mines and potable water aquifers. Some commenters suggested that the regulatory authority should have the flexibility in determining if this information is necessary. We agree to an extent. We have removed any specific references to directional or horizontal drilling as this requirement applies to all oil and gas wells regardless of whether they are conventional or unconventional. In addition, we included a requirement that the lateral extent of the well bores must be provided unless that information is confidential under state law. However, as required in previous § 779.25(a)(10), some information related to oil and gas wells is necessary for both the applicant and the regulatory authority to fully evaluate the impacts of the potential mining and reclamation activities with regard to the existence of these types of wells within the proposed and adjacent areas. Mining and reclamation activities must be planned appropriately to accommodate the presence of these structures; therefore, the locations of the wells, and in many instances the depths, must be known prior to the development of the mining plan. In recognition that the well completion information may be confidential, the final rule includes the qualifier, ''if available,'' relative to the depth information and we have required the lateral extent of the well bores to be provided unless that information is confidential under state law.

With regard to paragraph (c)—the new paragraph we proposed related to digital submittal of information—we invited comment on whether the digital format option should be mandatory to facilitate review by both the public and the regulatory authority instead of allowing the regulatory authority discretion in determining the format that the operator is required to submit their data. One commenter suggested that we require all regulatory authorities to post online all mine permit applications and associated

[269] 30 U.S.C. 1260(b)(3).

[270] 30 U.S.C. 1257(b)(14).

files. Several commenters were in favor of making this requirement mandatory; however, another commenter suggested that the final rule should not require the digital format option for all materials submitted to regulatory authorities because there are instances where published maps are utilized and metadata may not be available. We agree with the commenter's rationale; thus, there were no changes made to paragraph (c) in the final rule.

Previous § 779.25: Cross Sections, Maps, and Plans

We have removed and reserved previous § 779.25 for the reasons discussed in the final rule.[271]

G. Part 780—Surface Mining Permit Applications—Minimum Requirements for Operation and Reclamation Plans

Section 780.1: What does this part do?

With the exception of altering the title of this section for clarity, we are finalizing section 780.1 as proposed. We received no comments on this section.

Section 780.2: What is the objective of this part?

We are finalizing § 780.2 as proposed. We received no comments on this section.

Section 780.4: What responsibilities do I and government agencies have under this part?

We are finalizing § 780.4 as proposed. We received no comments on this section.

Section 780.10: Information Collection

Section 780.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 780.

Section 780.11: What must I include in the description of my proposed operations?

We are finalizing § 780.11 as proposed. We received no comments on this section.

Section 780.12: What must the reclamation plan include?

Section 780.12 sets forth requirements for the reclamation plan which must be included within a permit application. Several commenters stated that the new requirements for describing, in detail and in writing, the plans for all activities, including planned animal husbandry practices, reclamation timetables, and plans for minimizing the establishment and spread of invasive species, were too onerous for the applicant to provide, too difficult to establish with any accuracy before a mining operation begins, and too lengthy for the regulatory authority to analyze and approve. We disagree. These new permit description requirements are necessary to fulfill statutory requirements, particularly the requirement to use ''the best technology currently available'' to ''minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of those resources where practicable'' within section 515(b)(24) of SMCRA.[272] The requirements of this section, including the requirement that an applicant provide a timetable for reclamation and other activities, will also ensure that these activities have been given sufficient consideration before a permit is issued. These additional descriptions and timetables are realistic and achievable and will allow the regulatory authority to fully analyze the permit and the operators' efforts to comply with SMCRA.

One commenter stated that the whole section implies that these programs have not been successful in returning lands to approximate original contour and in repairing lands and waters damaged by pre-SMCRA mining. We disagree. Reclamation has been successfully accomplished in many instances. However, reclamation techniques can be improved as the regulatory authorities, mine operators, and the scientific community learns more about successful reclamation. For instance, the Forestry Reclamation Approach of planting shrubs and trees in soil that is not compacted has thoroughly changed how this industry returns forests to mine sites. Additionally, eliminating or limiting the use of non-native, invasive grasses has improved native reclamation in arid areas. The rule that we are adopting today promotes the use of these and other best practices in the field of reclamation and will benefit native species, communities, and ecosystems both within and beyond the permitted site.

Final Paragraph (b): Reclamation Timetable

Section 780.12(b) contains a requirement that applicants submit a timetable for reclamation activities which constitute major steps in the reclamation process, including, but not limited to: The planting of all vegetation in accordance with the revegetation plan approved in the permit (including establishing appropriate vegetation bordering perennial, intermittent, and ephemeral streams); demonstrating revegetation success and the restoration of the ecological function of all reconstructed perennial and intermittent stream segment; and applying for each phase of bond release under section 800.42.

Several commenters expressed concern that these new requirements will place operators in a position to fail or force them into noncompliance, if, despite their best efforts, they do not meet the proposed timetables for demonstration of revegetation success, restoration of the ecological function of all reconstructed perennial and intermittent stream segments, or application for each phase of bond release. In addition, these commenters claim that establishing a timetable for completion of these activities, including the return of ecological function to streams, is unrealistic and that these new requirements would remove the discretion from regulatory authorities to require items they determine are important on a case-by-case basis. We disagree. The current rules already require ''a detailed timetable for the completion of each major step in the reclamation plan'' within § 780.18(b)(1). This section now lists the major steps that, at a minimum, must be included in the timetable. The rule provides the regulatory authority with flexibility to require additional steps at its discretion. Moreover, these minimum standards help implement various provisions of SMCRA including, but not limited to: section 507(d) of SMCRA, which provides that ''[e]ach applicant for a permit shall be required to submit to the regulatory authority as part of the permit application a reclamation plan which shall meet the requirements of this Act'';[273] section 508(a)(4), which requires ''a detailed description of how the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use'';[274] section 508(a)(7), which requires a detailed, estimated timetable for the accomplishment of each major step in the reclamation plan'';[275] and section 515(b)(16), which requires that mining operations ''insure that all reclamation efforts proceed in an environmentally sound manner and as contemporaneously as practicable with

[271] 80 FR 44436, 44486 (Jul. 27, 2015).

[272] 30 U.S.C. 1265(b)(24).

[273] 30 U.S.C. 1257(d).

[274] 30 U.S.C. 1258(a)(4).

[275] *Id.* at (a)(7).

the surface coal mining operations.[276] Additionally, permit documents, such as reclamation plans, are allowed to be updated, and frequently are. Reclamation schedules can be revised as needed during the course of mining as long as the regulatory authority finds the adjustment acceptable under section 511(a) of SMCRA.[277] This process should protect operators in situations where, despite their best efforts, they cannot meet the original reclamation schedule. No changes were made as a result of these comments.

We made changes to paragraphs (b)(3), (b)(5), and (b)(7) to clarify that establishment of the surface drainage pattern and stream-channel configuration; the planting of appropriate vegetation along the banks of perennial, intermittent, and ephemeral streams; and the restoration of the ''form'' of all perennial and intermittent stream segments are major steps which must be included in the reclamation plan. As proposed, paragraph (b)(3) added to the list of milestones in the reclamation timetable a requirement for establishing ''[r]estoration of the form of all perennial and intermittent stream segments through which you mine, either in their original location or as permanent stream-channel diversions.'' The requirement described at proposed paragraph (b)(5) was, ''planting,'' and proposed paragraph (b)(7) provided for the ''[r]estoration of ecological function of all reconstructed perennial and intermittent stream segments either in their original location or as permanent stream channel diversions.'' As discussed in more detail below, these changes were made in order to clarify the previous regulation at § 780.18(b)(1) by identifying these requirements as ''major steps in the reclamation process'' and to conform § 780.12(b) of the proposed rule to the proposed rule at §§ 780.28 and 816.57, which related to activities, in, through, or adjacent to streams and the restoration of ecological function, and to proposed rule §§ 816.111 and 816.116, which related to revegetation. It is necessary to document these milestones to ensure that successful reclamation is accomplished and to provide the regulatory authority with assurance that these activities have been given sufficient consideration. Moreover, as previously discussed, the inclusion in the reclamation plan of a ''detailed estimated timetable for the accomplishment of each major step in the reclamation plan'' is consistent with section 508(a)(7) of SMCRA.[278]

Several commenters objected to the inclusion of proposed paragraphs (b)(3) and (b)(7), deeming them unnecessary but not providing justification for this assertion. We disagree. As discussed throughout this preamble and specifically within §§ 780.28, 816.56, and 816.57, stream reconstruction is essential to achieving reclamation. Moreover, section 508(a)(13) of SMCRA specifically requires ''a detailed description of the measures to be taken during the mining and reclamation process to assure the protection of . . . the quality of surface and ground water systems. . . .'' [279] Adding the requirements in paragraphs (b)(3) and (b)(7) will ensure that both the regulatory authority and industry are mindful of the importance of these measures and carefully plan for their appropriate implementation. To ensure consistency with final rule §§ 780.28, 816.56, and 816.57, we have revised paragraph (b)(3).

This modification reflects the different requirements for restoration of ''form'' of perennial and intermittent streams that must occur prior to Phase I bond release, discussed in the preamble of §§ 800.42(b) and 816.57(e) and the postmining surface drainage pattern and stream-channel configuration requirements related to ephemeral streams discussed in §§ 800.42(b) and 816.56(b), that also must occur prior to Phase I bond release.

We have also modified paragraph (b)(5). As proposed, this paragraph merely required ''planting.'' Some commenters alleged that this was nebulous. We agree with these commenters and have revised the paragraph to clarify that the establishment of appropriate vegetation includes the establishment of 100-foot wide, streamside, vegetative corridors when required by § 816.56(c), which relates to ephemeral streams, and § 816.57(d), which relates to perennial and intermittent streams and to clarify that the reclamation plan must include a timetable for the planting of all vegetation including vegetation along the banks of streams. Furthermore, this requirement, as revised, complements the requirements of § 800.42(c), which relates to Phase II bond release.

We also modified proposed (b)(7) for clarity and consistency with final rule §§ 816.57(g) and 800.42, which relate to the requirements and timing of achieving restoration of ecological function of all reconstructed perennial and intermittent stream segments. At paragraph § 780.12(b)(7), we have clarified that applicants must include as part of their timetable a ''demonstration'' that restoration of ecological function will be achieved. This is a change from the proposed rule, which required ''restoration of the ecological function,'' and could have been interpreted as referring to the performance of reclamation work rather than to the time when that work must be completed. Actual restoration, as required in the performance standard of § 816.57(g), must occur prior to Phase III bond release. Our intent here is that the timetable establishes a point at which the permittee must demonstrate that ecological function has been restored.

Several commenters requested that we require a qualified biologist or ecologist to provide written attestation to any stream restoration plans and any bond release that includes a restored stream. We did not modify the final rule in response to these comments. Our final rule incorporates sufficient scientific expertise and success standards. For instance, final rule § 780.12(g)(6) now includes the requirement that a qualified, experienced biologist, soil scientist, forester, or agronomist must prepare or approve the revegetation plan, which includes the vegetation found within the streamside vegetative corridor. Similarly, all reclamation plans described within final § 780.13(b) must be prepared by, or under the direction of, and certified by a qualified registered professional engineer, a professional geologist, or, in any state that authorizes land surveyors to prepare and certify maps, plans, and cross-sections, a qualified registered professional land surveyor, with assistance from experts in related fields such as landscape architecture. These requirements ensure the use of experts in establishing the plans for reclamation. Within §§ 816.111(b) and 817.111(b), we require these plans to be followed, and within §§ 816.116(d) and 817.116(d), we require a scientifically derived success standard for all revegetation. In addition, regulatory authorities have the expertise and protocols necessary to analyze permit documents and bond release evidence, including those in place within §§ 780.12(b) and 800.42(b)(4). Therefore, this final rule incorporates sufficient scientific expertise and success standards and requiring a qualified biologist or ecologist to provide written attestation of any stream restoration plans and any bond release is not

[276] 30 U.S.C. 1265(b)(16).

[277] 30 U.S.C. 1261(a).

[278] 30 U.S.C. 1258(a)(7).

[279] *Id.* at 1258(a)(13).

warranted. We have not incorporated this into the final rule.

As proposed, § 780.12(b)(7) added a requirement to demonstrate restoration of ecological function of all reconstructed perennial and intermittent streams to the list of major steps in the reclamation process. This is consistent with final paragraph (b) that requires each permit application to include a detailed timetable for completion of each major step in the reclamation process. Several commenters opposed the addition of proposed paragraph (b)(7) because they thought it was redundant of the permit or other authorization required under section 404 of the Clean Water Act.[280] We disagree and are retaining paragraph (b)(7). The stream restoration requirements in our final rule share elements in common with requirements under section 404 of the Clean Water Act, but they are not substantively identical.

Final Paragraph (c): Reclamation Cost Estimate

Commenters alleged that by only requiring the reclamation to include the standardized construction cost estimation methods and equipment cost guides, the proposed rule did not adequately address all the factors and costs involved in completing reclamation. Many of these commenters use actual cost methods which take in more local factors, conditions, and circumstances. After consideration of this comment, we have added language to the final rule to allow applicants to use ''up-to-date actual contracting costs incurred by the regulatory authority for similar activities'' in lieu of more broad-based standardized construction costs.

A commenter also questioned the lack of definitions of ''direct'' and ''indirect'' costs. We do not believe that ''direct and indirect'' costs need to be defined within the regulatory text because they are relatively common terms. Another commenter stated that indirect costs should not be included as they are irrelevant to the cost of reclamation and the calculation of bonds. Indirect cost amounts are relevant to bond calculations, as those costs are related to administration and overhead. In the event that the regulatory authority must forfeit bonds for the purpose of carrying out reclamation plans in lieu of the mine operator, costs of a third-party contractor to implement the plan, including overhead cost and profit must be included. Therefore, we determine that the inclusion of indirect costs is essential to an adequate bond calculation. We have made no changes based on these comments.

Final Paragraph (d): Backfilling and Grading Plan

This section of the final rule adds greater specificity to the backfilling and grading plan, requiring a description of how the operator will compact spoil to reduce infiltration, minimize leaching and discharges of parameters of concern, limit the compaction of topsoil and soil materials in the root zone to the minimum necessary to achieve stability, and identify measures that will be used to alleviate soil compaction if necessary. The final rule also requires, if acid-forming and toxic-forming materials are present, a description of how the operator will handle these materials to protect groundwater and surface water in accordance with § 816.38 of this chapter.

Some commenters argued that implementation of the Forestry Reclamation Approach by itself would not reduce elevated conductivity levels resulting from mountaintop removal mining operations to the point at which those levels would no longer damage aquatic life. We acknowledge that the comment is correct. However, as discussed in the preamble to the proposed rule, there is evidence that the use of the Forestry Reclamation Approach will reduce levels of conductivity progressively over time.[281] In addition, our final rule includes other measures to address conductivity. The final rule includes a definition of ''material damage to the hydrologic balance outside the permit area'', in § 701.5; requires baseline information on conductivity in § 780.19, requires that the backfilling and grading plan describe in detail how spoil will be compacted to reduce infiltration and minimize leaching in § 780.12(d)(2)(i); requires the elimination of durable rock fills in § 816.71(g); and requires that excess spoil be placed in a manner that will minimize adverse effects of leachate and runoff on groundwater and surface water, including aquatic life in § 816.71(a)(1)).

Proposed paragraph (d)(1) included a sentence stating, ''You must limit compaction to the minimum necessary to achieve stability requirements unless additional compaction is needed to reduce infiltration to minimize leaching and discharges of parameters of concern.'' However, we have concluded that this sentence does not properly reflect our intent, which was to minimize compaction of soil materials in the root zone, while still requiring compaction of spoil in order to minimize conductivity levels in leachate and runoff from the mine. Therefore, the final rule replaces that sentence with paragraphs (d)(2)(i) and (ii). Paragraph (d)(2)(i) requires that the backfilling and grading plan describe in detail how spoil will be compacted in order to reduce infiltration to minimize leaching and discharges of parameters of concern. Paragraph (d)(2)(ii) requires that the backfilling and grading plan limit compaction of topsoil and soil materials in the root zone to the minimum extent necessary to achieve stability. The plan also must identify measures that the permittee will use to alleviate soil compaction if it nonetheless occurs. These changes better reflect our intent to minimize both compaction and conductivity levels.

Some commenters alleged that there was an apparent contradiction between our emphasis on using compaction to ensure stability and reduce leaching and our attempts to limit compaction that impedes revegetation. Moreover, some commenters opined that our requirements related to compaction are impractical as proposed. These commenters stated that our standards for limiting compaction are not supported by scientific evidence and will require a significant engineering analysis by the regulatory authority to determine what the compaction standard should be on various portions of the permit. Additionally, one commenter in particular stated that the language in this paragraph requiring that compaction of backfills be minimized, except as needed to reduce infiltration and minimize leaching and discharges, is inconsistent with the requirements of § 816.38(a), which requires compaction to prevent acid-forming materials from leaching into the soil. In response to these comments, we have made changes to the final rule at § 780.12(d)(1) and (2) to clarify when compaction must be used to minimize infiltration, leaching, and related discharges and when compaction is problematic because it impedes revegetation. However, we disagree with the commenters who stated that the requirement to minimize compaction within the root zone is not supported by scientific evidence. In reclamation projects across the nation, limiting compaction resulted in increased reclamation success (*e.g.,* Forestry

[280] 33 U.S.C. 1344.

[281] Kenton L. Sena, *Influence of Spoil Type on Afforestation Success and Hydrochemical Function on a Surface Coal Mine in Eastern Kentucky* (2014). Theses and Dissertations—Forestry. Paper 16, pp. 39 and 60. *See http://uknowledge.uky.edu/forestry_etds/16/* (last accessed Nov. 1, 2016).

Reclamation Approach,[282] Extreme Surface Roughening),[283] and supporting evidence for this can be found on SMCRA permitted sites as well as within performance reports, annual reports, and other publications authored by us and other SMCRA regulatory authorities.

One commenter alleged that in § 780.12(d) we did not provide a rationale for our proposal to increase requirements for backfilling and grading plans. The commenter alleged that we did not cite specific problems or deficiencies with state regulatory programs under the existing language. Specifically, the commenter alleged that we inappropriately added a performance standard requiring that applicants limit compaction to the minimum necessary to achieve stability. The purpose of these provisions is to address the widespread and well known water quality issues that have been traced to mineralization of infiltrated water, the well-known stream health deficiencies that have been traced to inadequate forest cover of streams in previously forested areas,[284] [285] and the associated leaching of minerals into water that will be discharged offsite. These provisions will ensure that operators make effective plans to minimize compaction of spoil near the surface of the fill and to facilitate the establishment of vegetation in accordance with the reclamation plan. Revegetation contributes to the enhancement of onsite and offsite streams. The commenter is correct that we do not cite specific problems or deficiencies with the implementation of state regulatory programs in order to justify these changes to our regulations. Our inspections and other oversight activities in primacy states, including the annual evaluation reports, focus on the success of state regulatory authorities in achieving compliance with the approved regulatory program for the state. They do not identify or discuss situations in which the existing regulations provide inadequate protection. The provisions of this rule will address adverse impacts that historically have been allowed to occur under the existing regulations and that have not captured by the annual evaluation reports or other oversight activities. We do not agree with the commenter's assumption that this requirement constitutes a performance standard. Rather, it is a permitting requirement that helps in ensuring that the adequacy and effectiveness of proposed backfilling and grading plans.

Another commenter alleged that the requirement to limit compaction to the minimum extent necessary to achieve stability was ambiguous and, as a result, it would be difficult for the regulatory authority to evaluate and monitor compliance in the field due to contradictory compaction requirements. We recognize that permit requirements about under-compaction and over-compaction were combined in the proposed rule, possibly leading to confusion. For clarity, they have been separated into paragraphs (d)(2)(i) and (d)(2)(ii) in the final rule.

Commenters asserted that the submission of contour maps in paragraph (d)(1) as part of the backfilling and grading plan is of limited use and would need to be continually adjusted to reflect changes in market conditions, in geology, or in other on-site factors. These commenters allege that cross-sections are a better tool for making adjustments to the final surface configuration, including drainage patterns, compared to typical cross-sections, which the commenters claim, have worked best. We are not making any changes to the final rule in response to these comments. Compliance with goals of protecting streams and achieving the approximate original contour can best be judged through the use of contour maps, which offer more detail than a two dimensional cross-section alone. While not every change in a reclamation plan would require a new contour map, at a certain point, using only cross sections to document revised reclamation plans could cause both regulatory authorities and operators to miss potentially significant changes in the configuration of the reclaimed land's surface, changes that, cumulatively or individually, could significantly impact the achievement of approximate original contour and the restoration of streams. As an example, poorly located two dimensional cross-sections could mask problems with the location and shape of the streams that are supposed to be restored, a problem that would not occur with a three dimensional contour map. Regulatory authorities need to use the best tool for determining whether streams are being appropriately restored to form and whether approximate original contour is being addressed as changes are made to the approved reclamation plan. Contour maps are essential to making those determinations. However, we do not allege that cross-sections are unnecessary. Contour maps and cross sections are complementary tools and regulators should use both to evaluate changes to reclamation plans and to monitor compliance.

Final Paragraph (e)(1): Soil Handling Plan—General Requirements

We proposed in paragraph (e)(1)(i) to require that the soil handling plan include a schedule for removal, storage, and redistribution of topsoil, subsoil or other materials including the use of organic matter. Numerous commenters weighed in on aspects of this proposed requirement. Several commenters stated that leaving certain organic materials, such as duff and root wads, in replaced topsoil is not beneficial for agricultural lands and may result in difficulty establishing the vegetation and plant crops that are necessary to prove productivity for bond release. Other commenters expressed concern that the use of organic material could elevate total suspended solids and total dissolved solids, slow reclamation and revegetation, and disrupt surface owner priorities and postmining land use plans. Still other commenters claimed that the proposed rule did not allow regulatory authorities the flexibility to waive these requirements. We agree with the commenters that it would be counterproductive to mandate the use of organic materials on land where those materials would interfere with the success of the approved postmining land use. Instead of making changes to this section, however, we have revised § 816.22(f) to incorporate flexibility into the performance standards related to the salvage, storage, and redistribution of organic material. Specifically, the language we added to § 816.22(f)(3) clarifies that the use of organic materials in certain agricultural areas is not required. Because the use of organic materials in reclamation substantially outweighs the disadvantages, however, we have not made revisions to other regulations that govern the use of these materials.

Another commenter alleges that the preamble to the proposed rule contains conflicting statements. The commenter alleges that in the discussion of organic matter we state that these materials are necessary to establish pre-existing plant species to restore land use, but this is in conflict with our statement that vegetative cover has nothing to do with land use capability. The commenter misinterprets the proposed rule preamble discussion because there is no

[282] Jim Burger et al. *The forestry reclamation approach.* Forest Reclamation Advisory 2 (December 2005).

[283] Mary Ann Wright. *The practical guide to reclamation in Utah.* Utah Oil, Gas & Mining Division, Univ. of Utah, (2000).

[284] Margaret Palmer et al., *Mountaintop Mining Consequences.* 327 (5962) Science 148–149.

[285] Margaret Palmer & Emily Bernhardt, *Mountaintop Mining Valley Fills and Aquatic Ecosystems: A Scientific Primer on Impacts and Mitigation Approaches.* Working paper: 24 (2009).

statement that the use of organic material is necessary to restore land use capability, either by itself or to promote the revegetation of pre-existing plant species. We conclude that the commenter erred by incorrectly referencing our proposed preamble discussion at paragraph (e)(1)(ii), where we discussed the salvage and distribution of soil necessary to restore land use capability, with the proposed preamble discussion of organic matter found at paragraph (e)(1)(i). Within the preamble about proposed paragraph (e)(1)(i) we discussed premining land use capability, but did not specifically refer to the use of organic materials as the commenter alleges.

One commenter opined that requiring storage and redistribution of organic matter exceeds our authority because, according to the commenter, SMCRA limits our authority to the removal and replacement of topsoil. We disagree. As we explained in the preamble to our proposed rule,[286] the use of organic matter assists in satisfying the requirement of section 515(b)(19) of SMCRA [287] to establish a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area; therefore, this requirement is fully within our authority. Organic matter contributes to enhancing postmining land use capability, enhances revegetation diversity, and aids in establishing permanent vegetative ground cover of the same seasonal variety native to the area as required for the postmining land use. However, as discussed in more detail throughout this preamble, the distribution of organic matter is not required when it conflicts with certain postmining land uses.

Regarding the proposed requirement to salvage topsoil and organic materials, we received comments asserting that topsoil is often too thin to salvage. Other commenters stated that because thin topsoil is often closely integrated with organic matter, it would be difficult to separate thin topsoil from organic matter. We also received comments alleging that handling of organic materials as prescribed will significantly increase the cost of reclamation due to increased hauling and storage costs. Other commenters supported the salvage of all topsoil and use of organic matter.

Historically, organic matter has almost universally been either burned, which adds to air pollution and the release of greenhouse gases, or buried. In either case, the organic matter is not available to enhance reclamation of mine sites even though postmining soil environments are often highly deficient in organic matter.[288] Moreover, organic matter serves as a seed bank for the reestablishment of native plants that would otherwise be lost if that material burned or buried. While we recognize that requiring the salvage of all soil, topsoil plus subsoil and organic materials, will increase costs over spoiling these materials, we are finalizing this rule because the salvage of topsoil and organic materials is key to revegetation success, the establishment of most postmining land uses, and the restoration of premining capability. However, in recognition of limited circumstances under which it would not be practical to separate organics from topsoil, final rule §§ 780.12(e) and 816.22(f), when read in conjunction, allow organics and topsoil to be salvaged together, when appropriate. This should make the salvage of even thin topsoil more cost effective compared to separating topsoil from organic materials, and it will be more beneficial than spoiling both materials, as frequently has been done.

Some commenters discussed potential unintended consequences of the proposal to require salvage and storage of organic materials. In general, the commenters state these requirements are too prescriptive and create more problems than they resolve. More specifically, several commenters contended that this requirement would lead to additional transportation and storage of organics. Some commenters contended that the need for extra storage acres appeared to be at cross-purposes with one of the purposes of the proposed rule—to minimize surface disturbance when possible. Other commenters expressed concern that saving organic material in steep slope areas is challenging and may be an unsafe practice which may put workers at risk. Commenters also argued that the regulatory authorities should have discretion to determine what is best for these materials, given the terrain.

If it is feasible to mine in steep sloped areas, operators should also be capable of safely excavating and salvaging these materials. While we recognize that the handling of organic matter has some potential for requiring some additional surface disturbance, as previously cited, the benefit gained by utilizing organic matter as part of reclamation far outweighs negative impacts associated with disturbing additional acres. Because of these benefits, we are retaining the requirement to salvage, store, and redistribute the organic material. We added language to the final rule to ensure that the requirements which govern the placement of organic matter do not conflict with certain agricultural or other postmining land uses. Additionally, in locations where significant populations of invasive plant species are documented, those organic materials may be buried, but not burned, as provided for in §§ 816.22(f)(3)(iii) and 816.22(f)(4).

We proposed to require that three soil horizons, topsoil, B horizon, and C horizon, be removed, segregated, stockpiled, and redistributed to achieve the optimal rooting depth as a final growing medium. We received many comments on this proposal. Several commenters argued that this requirement would place an unnecessary burden on state regulatory authorities because the regulatory authorities would expend more time reviewing the soil handling plan and significantly more time inspecting the operation to ensure the proper removal and replacement of all three horizons. One commenter asserted that successful soil restoration has been achieved in instances where soil horizons were mixed. Another commenter referenced circumstances where some soil horizons, including some topsoil, can demonstrate characteristics adverse to soil reconstruction and reestablishing vegetation. Specifically, the commenter referenced soils with unfavorable sodium content and some topsoil that is salt-affected, and advocated that these should not be salvaged or spread again. Another commenter noted that this portion of the proposed rule appeared to be based upon achieving reforestation on Appalachian mines and may not be appropriate in other parts of the country. Some commenters opposed proposed paragraph (e)(1)(ii), which specified that the reclamation plan must require the removal, segregation, stockpiling, and redistribution of the B and C soil horizons and materials other than topsoil in order to achieve the optimal rooting depths required to restore premining land use capability and to comply with revegetation requirements. They alleged that the proposed rule is inconsistent with paragraphs (b)(5) through (7) of section

[286] 80 FR 44436, 44488–4489 (Jul. 27, 2015).

[287] 30 U.S.C.1265(b)(19).

[288] Peter Stahl, *Accumulation of Organic Carbon in Reclaimed Coal Mine Soils of Wyoming; http://asmr.us/Publications/Conference%20Proceedings/2003/1206-Stahl.pdf* (last accessed Nov. 1, 2016) and J.A. Harris, *The Impact of Storage of Soils during Opencast Mining on the Microbial Community: A Strategist Theory Interpretation; http://onlinelibrary.wiley.com/doi/10.1111/j.1526-100X.1993.tb00014.x/abstract* (last accessed Nov.1, 2016).

515 of SMCRA,[289] which require salvage and redistribution soil materials, other than topsoil, only for prime farmland and in situations in which the subsoil or other materials have been approved as a topsoil substitute. They asserted that requiring the salvage of subsoil or other materials for anything other than prime farmland is not supported by SMCRA. As we explained in the preamble to our proposed rule, scientific studies have determined that an adequate root zone is critical to plant growth and survival, and that topsoil alone generally does not provide an adequate root zone. *See* 80 FR 44488–44489 (Jul. 27, 2015). These studies document that salvage and redistribution of topsoil alone will not necessarily restore the mine site to a condition in which it is capable of supporting the uses that it was capable of supporting before any mining, as required by section 515(b)(2) of SMCRA.[290] Therefore, salvage and redistribution of subsoil and other soil materials will be necessary on sites other than prime farmland in order to meet the requirements of section 515(b)(2) [291] of SMCRA. Consistent with this rationale, the final rule differs slightly from the proposed rule in that final 30 CFR 780.12(e)(1)(ii) requires salvage, stockpiling (if necessary), and redistribution of the B and C soil horizons and other underlying strata only ''to the extent and in the manner needed'' to achieve the optimal rooting depths required to restore premining land use capability and to comply with revegetation requirements. Addition of the qualifier ''if necessary'' with respect to stockpiling reflects the fact that stockpiling may not be needed if salvaged materials can be immediately redistributed on backfilled areas.

In addition, paragraph (e)(1)(ii) includes the addition of certain exceptions in recognition of circumstances when the segregation of the B and C soil horizons and other underlying strata is not required. We made this change in response to comments urging us to allow blending of soil horizons when experience has demonstrated that doing so results in a superior growing medium. As a further response to these comments, we added an exception at paragraph (e)(1)(iv, which allows blending of the B horizon, C horizon, and other underlying strata, or portions thereof, to the extent that research or prior experience under similar conditions has demonstrated that blending will not adversely affect site productivity. Finally, we added an exception at paragraph (e)(1)(iii in response to comments objecting to use of the B and C horizons when one or both of those horizons have physical or chemical characteristics that make them inferior to other overburden materials in creating a medium conducive to plant growth. Paragraph (e)(1)(iii) specifies that the soil handling plan need not require salvage of the B and C soil horizons if the applicant demonstrates that those horizons are inferior to other overburden materials as a plant growth medium, provided that the applicant complies with the soil substitute requirements of paragraph (e)(2). We also note that, while several of the reference materials we cite relate to issues of Appalachia reforestation,[292] soils outside Appalachia will likewise benefit from this enhanced recovery of soil resources.[293] In addition, we expect that these requirements will result in greatly improved quality of the growth medium needed to ensure the restoration of premining capability and revegetation. Finally, because the process of reviewing and approving reclamation plans, as well as inspecting sites for compliance is well established, we conclude that these requirements will not place an added burden upon the regulatory authorities.

Additional commenters also asserted that the regulatory authority should have the discretion to make case-by-case determinations about the redistribution of soil materials and the depths at which those materials must be buried. These commenters noted that each state already has an acceptable method to demonstrate compliance with the soil redistribution requirements. These commenters cite the many years of successful bond releases as evidence that the current process for making determinations related to soil materials is adequate. We agree that determinations on the redistribution of soil materials should be based on site-specific information and the experience of local experts, and this rule does not depart from this perspective. Although this rule requires the regulatory authority to make additional determinations, the regulatory authority remains the ultimate decision-maker on the handling and replacement of soils, and its decisions will be based on local, site-specific conditions. This rule is necessary to align our regulations with the specific requirements of SMCRA sections 508(a)(2)(B) [294] and 515(b)(2),[295] which require that we ensure successful revegetation and the restoration of premining land use capability.

Several commenters objected to the proposed requirement to develop, as part of the reclamation plan, a soil handling plan that will restore the land to premining capability. These commenters indicated that it would be better to design a soil handling plan to accommodate the approved postmining land use provided for in § 816.111 of our regulations because the regulatory authority measures the success of the reclamation by achievement of that use. Commenters further alleged that the proposed rule would lead to confusion because, prior to this rule, reclamation success has always been determined by the ability to achieve the approved postmining land use.

We disagree. Section 515(b)(2) of SMCRA [296] requires that mine operators ''restore land affected to a condition capable of supporting the uses which it was capable of supporting prior to any mining. . . .'' Section 508(a)(2) of SMCRA requires that the reclamation plan in the permit application demonstrate that the reclamation can be successfully accomplished.[297] This requires the regulatory authority to assess of the capability of the land to support a variety of uses prior to any mining.[298] This assessment must include an assessment of the premining physical characteristics of the land and a determination regarding the various land uses the site would be able to support. Although revegetation success standards are essential to determining whether the postmining land use has been attained, revegetation alone does not ensure that reclamation has restored the land's capability to support the uses it was determined capable of supporting prior to any mining. If prior to any mining the land had significant physical restrictions or limitations due to, for example, slope or natural soils, the postmining reclamation might be limited. If, however, the land had few physical limitations and was capable of supporting a wide variety of uses prior to any mining, the land must be capable of supporting the same variety of uses after reclamation.

[289] 30 U.S.C. 1265(b)(5) through (7).

[290] 30 U.S.C. 1265(b)(2).

[291] 30 U.S.C. 1265(b)(2).

[292] Carl E. Zipper et al., *Rebuilding Soils on Mined Land for Native Forest in Appalachia,* 77 Soil Sci. Am. J. 337–349 (2012).

[293] Alberta Transp. *Alberta Transportation Guide to Reclaiming Borrow Excavations,* p. 5–6 (December 2013).

[294] 30 U.S.C. 1258(a)(2)(B).

[295] 30 U.S.C. 1265(b)(2).

[296] 30 U.S.C. 1265(b)(2).

[297] 30 U.S.C. 1258(a)(2)(B).

[298] *Id.*

Final Paragraph (e)(2): Soil Handling Plan—Substitutes and Supplements

While existing regulations allow the use of materials as topsoil substitutes and supplements if those materials are ''equal to or better than'' the topsoil, the proposed rule would allow the approval of topsoil and subsoil substitutes and supplements only if those materials would create a better growing medium than the original topsoil or subsoil. Commenters opined that the existing regulations work well, that a change is not needed, and that we have not satisfactorily explained why we proposed to make this change. Other commenters stated that if we intend to require the use of better materials, that requirement should be limited to substitute topsoil and not extended to subsoil as well. We disagree. As explained in the preamble to the proposed rule,[299] these new regulations will better implement section 515(b)(5) of SMCRA,[300] which allows use of other strata'' . . . if topsoil is of insufficient quantity or of poor quality for sustaining vegetation, or if other strata can be shown to be *more suitable* (emphasis added) for vegetation requirements.'' [301] Under this standard subsoil substitutes, like topsoil, must be ''more suitable'' than the existing topsoil in order to satisfy vegetation requirements. Moreover, this provision of our rule is consistent with the requirements of 515(b)(2) [302] in that it will assist in the restoration of premining capability by encouraging development of the root zone required by many plants for physical support, moisture and nutrient uptake.[303] Thus, we are making no changes to the proposed rule with respect to subsoil substitutes.

Commenters further stated that the proposal to require the ''best materials'' available is unnecessarily restrictive, places an unnecessary burden on regulatory authority resources, and requires more monitoring with little benefit. We disagree. The use of the best materials available will ensure better reclamation. Additionally, while we have raised the threshold on what materials may be considered as an acceptable substitute for subsoil, the process for using substitutes is essentially the same and should place no greater burden on regulatory staff. As such, we are not altering the final rule in response to these comments.

Several commenters questioned the criteria permitting the use of soil supplement and substitution materials. These commenters alleged that the proposed regulations are not consistent with section 515(b)(5) of SMCRA,[304] which allows soil substitution and supplements ''if other strata can be shown to be more suitable for vegetation requirements . . . .'' These commenters alleged that the proposed regulations ignore the term ''more suitable''. These commenters suggested that we revise the regulations to use the ''best overburden material available.'' We have declined to make this change. Our final regulations for the use of soil supplements and substitutes are fully consistent with section 515(b)(5) of SMCRA.[305] As noted above, section 515(b)(5) of SMCRA allows for soil substitution and supplements if a demonstration can be made that other strata are ''more suitable for vegetation requirements . . . .'' Paragraph (e)(2)(i)(B) (purposed as (e)(2)(ii)(B), which we are finalizing today with only minor edits for clarity, allows for the use of substitutes and supplements if ''[t]he use of the overburden materials that you have selected . . . will result in a soil medium that is *more suitable* than existing topsoil and subsoil to support and sustain vegetation . . . .'' (Emphasis added.) This language is fully consistent with the language to section 515(b)(5). Likewise, final paragraph (e)(2)(i)(C) [proposed as (e)(2)(ii)(C)] is also consistent with section 515(b)(5) of SMCRA. That paragraph allows for substitutes and supplements if ''[t]he overburden materials that . . . you select for use as a soil substitute or supplement [materials that] are the *best materials* available in the proposed permit area to support . . . vegetation consistent with the postmining land use and the revegetation plan . . .''. (Emphasis added.) Therefore we are not modifying the final rule based on these comments.

Several commenters stated that the inclusion of a number of characteristics for consideration, such as total depth, texture, and pH of soil horizons and overburden material in paragraph (e)(2)(iii)(B), are unnecessary and costly to test and compare. Commenters specifically objected to the inclusion of ''thermal toxicity,'' which they indicated is a term that is generally used relating to water, not soil. These commenters were uncertain about what that parameter required. In response to these comments, we have eliminated the term ''thermal toxicity'' from the final rule. While this term is applicable to soil, the commenter is correct in stating that it is more commonly used in association with water and aquatic organisms' tolerance to temperature. On reconsideration we have decided the added value of including this characteristic as it relates to soil substitute materials is limited and will not be required. However, the other characteristics listed in proposed § 780.12(e)(2)(iii)(B) are all essential to conducting a comprehensive analysis of whether a material is an acceptable substitute. Moreover, with the exception of ''thermal toxicity,'' which we did not include in the final rule, all of the soil characteristics included in final paragraph (e)(2)(iii)(B) were included in previous § 780.18(b)(4). Additionally, any one of these characteristics individually, if sufficiently adverse, could impact the success of revegetation. For example, a potential substitute material may have an excessively low pH. This factor alone could render it unacceptable as a substitute material. The final rule requires the regulatory authority to examine these factors in a thorough and comprehensive fashion.

We received comments alleging that it is unnecessarily duplicative to require the testing of substitute soil materials twice—once to prove they are suitable and then again after they have been placed. We disagree. Testing of substitute materials before placement is necessary because the testing serves as a baseline for the substitution plan, while testing after placement is needed to ensure that the substitution plan has been properly implemented.

A commenter stated that expansion of the soils-related regulations requires soil science expertise that many regulatory authorities lack. Any soil science expertise and costs related to address that need, if currently unavailable within a regulatory program, would certainly be a legitimate program cost, and, subject to appropriation, states would be eligible to receive matching grant funding to assist with these expenses.

Final Paragraph (f): Surface Stabilization Plan

Several commenters considered this paragraph to be a new permitting requirement. They generally contend that there is no value in this addition and claim that it was proposed without justification. In addition, some commenters asserted that proposed paragraph (f) should be removed because it is duplicative of other non-SMCRA related requirements governing the content of a mine's air quality

[299] 80 FR 44436, 44489–44490, (Jul. 27, 2015)).

[300] 30 U.S.C. 1265(b)(5).

[301] 30 CFR 1265(b)(5).

[302] 30 U.S.C. 1265(b)(2).

[303] Alberta Transp. *Alberta Transportation Guide to Reclaiming Borrow Excavations,* p. 5–6, (December 2013).

[304] *Id.*

[305] Id.

permits. Another commenter suggested that the regulation be relocated or revised to better explain the associated permitting requirements. We disagree. As explained in the preamble to the proposed rule,[306] the surface stabilization plan required by paragraph (f) is the permitting counterpart to the performance standards at § 816.95, which requires that all exposed surface areas must be protected and stabilized to effectively control erosion and air pollution attendant to erosion, and 30 CFR 816.150 and 816.151, which require dust control on mine roads. This permitting requirement, which we are adopting as part of the final rule, allows the regulatory authority to evaluate the anticipated adequacy and effectiveness of proposed surface stabilization measures. Additionally, while many facets of air quality are not governed by SMCRA, it is clearly within our SMCRA authority to regulate air pollution attendant to erosion caused by mining activity. Therefore we are not modifying the final rule based on this comment.

Final Paragraph (g): Revegetation Plan

Final paragraph (g) is substantively identical to proposed paragraph (g), except as discussed below.

Proposed paragraph (g)(1)(v) provided that the revegetation plan must include the species to be planted and the seeding and stocking rates and planting arrangements to be used to achieve or complement the postmining land use and to enhance fish and wildlife habitat. Final paragraph (g)(1)(v) adds a requirement that the revegetation plan include the species to be planted and the seeding and stocking rates and planting arrangements to be used to achieve the streamside vegetative corridor provisions of final §§ 816.56(c) and 816.57(d), when applicable. We added this requirement to emphasize the critical nature of streamside vegetative corridors in achieving restoration of streams that are mined through.

One commenter requested that we implement, to the maximum extent practicable, measures to support pollinators with respect to native plants, consistent with the Presidential Memorandum dated June 20, 2014, ''Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators.'' In response to this comment, we added paragraph (g)(1)(v)(B) to the final rule. That paragraph provides that, to the extent practicable and consistent with other revegetation and regulatory program requirements, the species mix must include native pollinator-friendly plants and the planting arrangements must promote the establishment of pollinator-friendly habitat.

In response to a comment, we revised § 780.12(g)(1)(ix), regarding normal husbandry practices, to correctly cross-reference § 816.115(d).

Commenters recommended that we revise paragraph (g) to require that the selection of revegetation material take into account habitats for the wildlife species with the greatest conservation need, as determined by the state wildlife agency, the U.S. Fish and Wildlife Service, and regional or national wildlife conservation initiatives. According to the commenters, species of concern, which include many grassland birds, may benefit by replacing premining forested lands with grassland habitat.

Revisions of the nature advocated by the commenters may exceed our authority under SMCRA. In particular, adoption of a rule promoting the establishment of grasslands in place of the forests that would naturally exist on those sites would be inconsistent with section 515(b)(19) of SMCRA, which requires that the permittee ''establish on the regraded areas, and all other lands affected, a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area.'' [307] However, the final rule does require that permit applications include appropriate fish and wildlife enhancement measures. Specifically, final § 780.16(d)(2)(iv) promotes the reestablishment of native forests or other native plant communities, both within and outside the permit area.

Many commenters supported proposed paragraph (g)(1)(xi), which required that the applicant describe the process for monitoring and controlling invasive species. Other commenters requested an explanation of how the rule would apply to naturalized invasive or non-native species or when invasive or non-native species drift from adjacent lands and establish themselves on the mine site. The final rule does not distinguish between naturalized non-native species and non-native species that are not naturalized. Nor does it differentiate on the basis of how non-native species arrive on the mine site. Instead, it differentiates on the basis of whether the volunteer non-native species are invasive. In all cases, final paragraph (g)(1)(xi) requires that the revegetation plan identify the measures that the permittee will take to avoid the establishment of invasive species on reclaimed areas or to control those species if they do become established. We recognize that it may not be possible to completely avoid the presence of some invasive species. The bottom line is that invasive species must not be present in quantities that would prevent attainment of the revegetation success standards established in accordance with final § 816.116.

At least one commenter suggested that we move proposed paragraphs (g)(2) and (3) to part 816 and make them performance standards. We declined to make this change. The revegetation plan, which is submitted and approved as part of the permit, is a critical component of the planning stage. After the permit, which includes the revegetation plan, is approved, the permittee then is obligated to comply with the terms and conditions of the approved permit. However, in reviewing the structure of proposed paragraphs (g)(2) and (3) in response to this comment, we determined that the requirement in proposed paragraph (g)(2) that the species and planting rates and arrangements selected as part of the revegetation plan meet the requirements of paragraphs (a) and (b) of § 816.116 is not appropriate. Paragraph (a) of § 816.116 requires that the regulatory authority select standards for revegetation success and statistically valid sampling techniques. Paragraph (b) of § 816.116 requires that the revegetation success standards reflect the revegetation plan requirements of § 780.12(g). Nothing in those two paragraphs would impact development of the revegetation plan. Therefore, final paragraph (g)(2) does not include the provision in proposed paragraph (g)(2) that would have required that the revegetation plan meet the requirements of paragraphs (a) and (b) of § 816.116.

Final paragraph (g)(3)(vii) differs from proposed paragraph (g)(3)(vii) in that the final rule does not include mention of state and federal poisonous plant laws. We made this change because we are not aware of any state or federal poisonous plant laws.

Some commenters requested the rule include more specific information on the meaning of native plant communities and the natural succession process. Final paragraph (g)(3)(iv) differs slightly from its counterpart in the proposed rule in that we added a clarification that the species in the revegetation plan must be consistent with the appropriate stage of natural succession in the native plant communities described in § 779.19 of

[306] 80 FR 44436, 44490 (Jul. 27, 2015).

[307] 30 U.S.C. 1265(b)(19).

the final rule. In other words, we do not intend to require planting of species that would not survive on drastically disturbed sites.

Several commenters stated that the standards for revegetation are not clear and asked whether sites are to be returned to the vegetation that existed prior to human influence. If this is the case, the commenters stated, this requirement would be impossible to meet in situations where non-native vegetation constitutes a significant portion of the premining landscape. The final rule does not necessarily require that the site be revegetated with the species that characterized the site before it was altered by human activities. The species selected must be suitable for the postmining land use. Final paragraph (g)(3)(i) requires use of species native to the area, but it also allows use of introduced species as part of the permanent vegetative cover for the site if the introduced species are both non-invasive and necessary to achieve the postmining land use, planting of native species would be inconsistent with the approved postmining land use, and the approved postmining land use is implemented before the entire bond amount for the area has been fully released under §§ 800.40 through 800.43. Final paragraph (g)(3)(i) is consistent with section 515(b)(19) of SMCRA,[308] which requires establishment of ''a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area; except, that introduced species may be used in the revegetation process where desirable and necessary to achieve the approved postmining land use plan.'' Moreover, the default requirement in the final rule for use of native species is consistent with Section 2(a)(2)(i) of Executive Order 13751 stating, ''[i]t is the policy of the United States to prevent the introduction, establishment, and spread of invasive species, as well as to eradicate and control populations of invasive species that are established.'' Moreover, that Executive Order provides that Federal agencies to ''the extent practicable and permitted by law . . . prevent the introduction, establishment, and spread of invasive species.'' [309]

Many commenters supported the requirement to reclaim lands using predominantly native species. Other commenters considered the proposed requirement too stringent; they recommended fewer restrictions on the use of non-native species and more flexibility for the regulatory authority to approve vegetation plans based on local conditions. As previously explained, our final regulations allow for the appropriate use of introduced species for reclamation, as long as they are not invasive. Requirements to use native species (and, where appropriate, introduced, non-invasive species) for reclamation allow the regulatory authority to approve vegetation plans based on local conditions. They also minimize the risk of allowing non-native species to be introduced when they are not the best choice for long-term reclamation.

We also received comments that alleged that the requirement to use native vegetation conflicted with the requirement to achieve a condition in which the site will support a productive postmining land use and the requirement for use of species capable of self-regeneration and natural succession. The commenters alleged that the proposed requirements were neither sufficient nor the most productive way to achieve the postmining land use. These commenters noted that many non-native species might prove better candidates for achieving productivity, self-regeneration, and natural succession. Similarly, some commenters expressed concern that use of native species is not always suitable or best for a particular postmining land use, and that restoring the premining vegetation may conflict with fish and wildlife postmining land uses that involve elk and other game species.

Nothing in our rules prohibits revegetation of sites with a fish and wildlife postmining land use with species appropriate for the wildlife for which the site will be managed. Furthermore, final § 780.12(g)(3)(i), which incorporates the provisions of proposed paragraph (g)(6), allows the applicant to propose, and the regulatory authority to approve, use of introduced species to achieve a particular postmining land use, provided certain conditions are met. Final paragraphs (g)(3)(i) and (g)(4) allow the use of introduced species if (1) the introduced species are needed to achieve a quick-growing, temporary, stabilizing cover on disturbed and regraded areas, and the species selected to achieve this purpose will not impede the establishment of permanent vegetation; (2) the postmining land use requires the use of introduced, non-invasive species, and (3) the postmining land use will be implemented before the entire bond amount for the area has been fully released. These provisions provide the flexibility needed to allow the use of introduced species for agricultural postmining land uses. Therefore, final paragraph (g)(5) does not include the provision in proposed paragraph (g)(5) that would have allowed the regulatory authority to exempt lands with long-term, intensive agricultural postmining land uses from the requirements of paragraph (g)(3)(i).

Some commenters requested that we include a definition of ''resembles'' within § 780.12(g)(3)(ii), which requires ''a permanent vegetative cover that resembles native plant communities in the area.'' We find it unnecessary to define this term. The final rule allows the regulatory authority the flexibility to approve a native, non-invasive vegetative cover that would allow for natural succession specific to that site. To the extent that more explanation is needed, section 515(b)(19) of SMCRA requires that the permittee ''establish on the regraded areas, and all other lands affected, a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area. . . .'' [310]

We updated proposed paragraph (g)(4) in the final rule to more clearly reflect our intent to allow the regulatory authority to approve the use of introduced species when controlling erosion, but only if such use does not impede establishment of the permanent vegetation needed to meet revegetation success standards. We made this change is in response to commenters who asked for clarity about natural succession and the establishment of permanent native vegetation.

We also made a change to paragraph (g)(6) of the final rule. The proposed rule required that a professional forester or ecologist develop and certify any revegetation plan that includes trees or shrubs. Many commenters expressed concern over this requirement and noted that many other experienced professionals have the expertise to design and certify these plans. Some commenters observed that states may not professionally recognize or certify ecologists, and in those states that do certify ecologists, it may be rare to find an ecologist with sufficient experience to develop and certify revegetation plans for coal mining operations. We agree and have modified the final rule to address these concerns. Under the

[308] 30 U.S.C. 1265(b)(19).

[309] Sec. 1 Policy and Sec. 2 Federal Agency Duties. 81 FR 88609 (Dec. 8, 2016).

[310] 30 U.S.C. 1265(b)(19).

final rule, any qualified and experienced biologist, soil scientist, forester, or agronomist can now prepare or approve all revegetation plans. This change allows a wide variety of qualified and experienced professionals to approve these plans. We trust that a qualified and experienced professional in one subject area may consult with other appropriate individuals as necessary to prepare or approve the revegetation plan.

Another commenter suggested that we replace all references to ''introduced'' species with ''invasive'' species. We did not make this change. These terms are not synonyms (*i.e.,* there are introduced species that are not invasive), and there are instances where ''introduced'' is more appropriate. The final rule at § 701.5 defines invasive species as ''an alien species (a species that is not native to the region or area), the introduction of which has caused or is likely to cause economic or environmental harm or harm to human health''. The final rule prohibits use of these species for revegetation under SMCRA. However, introduced species that are non-invasive may be used in reclamation, as provided in final § 780.12(g)(3).

Other commenters expressed opposition to the proposed rule because they considered the previous regulations sufficient and not in need of any updates. We disagree. While it is true that under SMCRA, voluntary best practices have advanced to minimize the effect of introduced, invasive species on the natural processes and capability of reclaimed land, (as examples: the elimination in most instances of using crested wheatgrass, *Agropyron cristatum,*[311] Kentucky 31 tall fescue, *Lolium arundinaceum,*[312] and smooth brome, *Bromus inermis;*[313] using the Forestry Reclamation Approach;[314] and extreme surface roughening[315]), the previous regulations were insufficient because they did not require use of these best practices.

Commenters also opined that these new regulations may not accommodate landowner desires. We agree that this statement may sometimes be true, but section 515(b)(19) of SMCRA requires the establishment of ''a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area.'' Landowners may replant the site with other species if they wish after final bond release, which terminates jurisdiction under SMCRA.

Other commenters claimed that the proposed rule's emphasis on native species is flawed due to concerns about the availability and survivability of native species, as well as their additional cost. We agree that these native species requirements could increase short-term reclamation costs, but they are not cost-prohibitive. The use of native species is the best technology currently available, and in the long-term, this requirement could also lower maintenance costs. We disagree that the availability and survivability of native species should prohibit our requirement to use them to reclaim SMCRA permitted disturbances. Native species are currently in wide use as best practices in SMCRA and non-SMCRA reclamation across the United States, and substantial progress continues to be made in the availability and diversity of native species. Best practices include contracting with growers to produce seed from the premining vegetation or from adjacent (and appropriate) areas for use in reclamation. This enhances the establishment and the survivability of the native species that are used.

Commenters also expressed concern that the proposed regulations would effectively eliminate postmining land use options other than forest. We disagree. As explained in the preamble discussion at section 701.5 within the ''land use'' definition, there are several acceptable postmining land uses, and forest is only one potential postmining land use. In addition, the revegetation plan set forth in this paragraph only requires the proposed vegetative cover to be consistent with both the approved postmining land use and the establishment of the plant communities described in the permit application, as required by § 779.19. Only those portions of the proposed permit area that are forested at the time of permit application or that would revert to forest under conditions of natural succession must be revegetated using native tree and understory species. This requirement would not apply when a postmining land use other than forestry has been approved, provided reforestation is inconsistent with the land use and provided that the approved postmining land use is implemented before final bond release.

Final Paragraph (h): Stream Protection and Reconstruction Plan

A commenter expressed concern that the steps in this plan would be inflexible and result in inappropriate enforcement actions that do not take into account the time required for restoration and recovery of natural stream functions. The commenter stated that § 780.12(h) implies that it is possible to predict when biological stream functions might be restored, a characterization with which the commenter disagrees. We do not agree that the regulation is inflexible or that it would result in inappropriate enforcement actions. We recognize that once a permittee completes construction of the stream channel and plants of the streamside vegetative corridor, there are few, if any, measures that may be taken to speed ecological restoration. The rule does not anticipate any enforcement action for failure to achieve restoration of ecological function within any specific time. However, it requires that final bond release be delayed until that requirement is accomplished.

A commenter stated that the use of the term ''restoration'' relating to streams should be changed to ''reclamation'' because the term ''restoration'' is not included in the definitions section of SMCRA. We have not made this change. The absence of the term in SMCRA does not prohibit its use, where appropriate, in our regulations. Moreover, section 508(a)(9) of SMCRA requires the permittee to include in the reclamation plan a statement of ''the steps to be taken to comply with the . . . water quality laws and regulations.''[316] As discussed further in §§ 780.27, 780.28, 816.56, and 816.57, the establishment of standards for restoration of ecological function must be in coordination with the appropriate Clean Water Act authority to ensure compliance with all Clean Water Act requirements, where applicable. Further, the term ''restoration'' is appropriate in the context of ecological function restoration requirements for streams, whereas the term ''reclamation'' would be far less clear.

A commenter opined that because the Clean Water Act requires stream restoration plans, there is no need for a SMCRA review and approval of proposals to mine through a perennial or intermittent stream. Therefore, according to the commenter, we should simply reference the Clean Water Act

[311] Gerald E. Schuman, *Mined land reclamation in the Northern Great Plains: Have we been successful* ?, Proceedings 19th Annual Meeting, American Society of Mining and Reclamation. 2002.

[312] U.S. Dep't. of Agric., NRCS, (2002). Tall Fescue, *Lolium arundinaceum* Plant Fact Sheet.

[313] U.S. Dep't. of Agric., NRCS, (2006). Smooth brome, *Bromus inermis* Plant Fact Sheet.

[314] Jim Burger, et al. *The forestry reclamation approach*. Forest Reclamation Advisory 2 (2005).

[315] M.A. Wright, *The practical guide to reclamation in Utah*. Univ. of Utah, Utah Oil, Gas & Mining Division, (2000).

[316] 30 U.S.C. 1258(a)(9).

permit. The commenter further suggests that this requirement be modified or removed as it is duplicative of requirements of other agencies, supersedes the Clean Water Act, and is in violation of section 702 of SMCRA.[317]

We disagree with the commenter's assertion that this requirement supersedes the Clean Water Act. In Part IV.I., above, we further discuss the relationship between SMCRA and Clean Water Act. While Clean Water Act stream restoration plans may serve as the basis for the restoration plan required by our final rule, (which is further justification for coordination with the Clean Water Act authority in the development of such plans), the regulations referenced in our final rule address the need for a plan that restores stream form, hydrologic function and ecological function. The completion of these various phases of a stream restoration plan are all tied to bond release; therefore it is critical that any plan utilized be incorporated into the SMCRA permit. In addition, the Clean Water Act authority may not always require a stream restoration plan, but may instead require mitigation in accordance with Clean Water Act provisions. It is not uncommon for mitigation to consist of in-lieu fee payments to a ''mitigation bank'' which negates the obligation to actually restore the lost stream functions required by the final rule. Our regulations require a demonstration that intermittent and perennial streams can be restored hydrologically and ecologically, otherwise the regulatory authority may not approve of a request to mine through such steams. Therefore we cannot rely on provisions within the Clean Water Act to satisfy this requirement.

Final Paragraph (l): Compliance With the Clean Air Act and the Clean Water Act

This section requires that the reclamation plan describe the steps to comply with the requirements of the Clean Air Act,[318] the Clean Water Act,[319] and other applicable air and water quality laws and regulations and health and safety standards. A commenter asserted that there is no rational basis for this requirement and recommends that we remove it because it is unnecessary for an applicant to describe the steps taken or that are to be taken in association with laws other than SMCRA. In support of this assertion, the commenter states that the permittee must comply with all applicable applications, regulations, and permit approval documents of other applicable laws or face enforcement mechanisms by the pertinent agencies to compel compliance. We disagree with the commenter because section 508(a)(9) of SMCRA [320] specifically requires that the applicant demonstrate in the reclamation plan ''the steps to be taken to comply with applicable air and water quality laws and regulations and any applicable health and safety standards.'' [321] Because this is a statutory requirement, it cannot be removed as the commenter suggests: It is important that the applicant describe how compliance will be attained, especially considering complex mining scenarios and requirements.

Final Paragraph (m): Consistency With Land Use Plans and Surface Owner Plans

One commenter urged us to not to adopt the requirements under paragraph (m) because a mine operator already must comply with any state and local land use plans and programs and these requirements are beyond the authority of the SMCRA agency. The commenter adds that neither the regulatory authority nor the mine operator can know what future plans a landowner may implement that may alter a formerly approved permit following termination of jurisdiction. As we explained in the preamble to the proposed rule,[322] the requirements of this paragraph are now consistent with the requirements of section 508(a)(8) of SMCRA [323] which requires that each reclamation plan submitted as part of permit application include a statement of the ''consideration which has been given to making the surface mining and reclamation operations consistent with surface owner plans, and applicable State and local land use plans and programs.'' Mine operators must consider making operations consistent with surface owner plans, in addition to considering post-mining land use. Contrary to the commenters' opinion that this requirement is beyond our authority, final paragraph (m) specifically mirrors the requirements of section 508(a)(8) of SMCRA; therefore, we are adopting paragraph (m) as proposed.

Final Paragraph (n): Handling and Acid-Forming and Toxic-Forming Materials

We have added final paragraph (n) to the final rule because we determined that it was more appropriate to place the permitting requirements about how a permittee must develop an acid-forming and toxic-forming handling plan in the performance standards of proposed § 816.38. Specifically, we have moved proposed § 816.38(a) through (d), which prescribe handling of acid-forming and toxic-forming materials, to final paragraph (n) because these handling requirements must be included in the reclamation plan.

As discussed in the preamble,[324] we proposed to modify section 816.38 to implement more completely section 515(b)(14) of SMCRA,[325] which requires that all acid-forming materials and toxic materials be ''treated or buried and compacted or otherwise disposed of in a manner designed to prevent contamination of ground or surface waters.'' Our revisions to proposed § 816.38, now paragraph (n) of § 780.12, are also consistent with section 515(b)(10)(A) of SMCRA,[326] which requires the permittee to ''minimize the disturbances to the prevailing hydrologic balance . . . by avoiding acid or toxic mine drainage. . . .'' In proposed § 816.38(a), now § 780.12(n)(1), we discuss how handling of acid-forming or toxic-forming materials identified during collection of baseline information under final § 780.19(e)(3) will be prescribed in the reclamation plan. In particular, paragraph (n)(1) pertains to handling acid-forming and toxic-forming materials when they are identified in the overburden above the lowest coal seam mined. One commenter suggested that we should allow the practice of blending acid-forming materials with spoil that exhibits sufficient alkalinity to prevent acid drainage. Because of the neutralization effects of this practice, we agree with the commenter and have added text to paragraph (n)(1)(ii)(A) that expressly allows this practice. Several commenters asserted that we should limit the scope of proposed § 816.38(c), now final § 780.12(n)(1)(ii), to areas where surface water and groundwater problems could occur. We made no revisions in response to this comment. Adverse impacts to surface water or groundwater may occur anywhere acid-forming or toxic-forming materials are present. Thus, final paragraph (n)(1)(ii) properly applies whenever acid-forming

[317] 30 U.S.C. 1292.

[318] 42 U.S.C. 7401 *et seq.*

[319] 33 U.S.C. 1251 *et seq.*

[320] 30 U.S.C. 1258(a)(9).

[321] *Id.*

[322] 80 FR 44436, 44492 (Jul. 27, 2015).

[323] 30 U.S.C. 1258(a)(8).

[324] 80 FR 44436, 44547–44548 (Jul. 27, 2015).

[325] 30 U.S.C. 1265(b)(14).

[326] 30 U.S.C. 1265(b)(10).

or toxic-forming materials are present; therefore, no revisions are necessary or appropriate. The same commenters also asserted that proposed § 816.38(c), now § 780.12(n)(1)(ii), was overly restrictive and should allow techniques other than those set forth in the proposed rule. We disagree with the characterization that final paragraph (n)(1)(ii) is overly restrictive; this provision allows the operator to either demonstrate that acid or toxic drainage will not be generated or choose from proven methods of handling acid-forming and toxic-forming materials to prevent material damage to the hydrologic balance outside the permit area. The commenters suggested, for example, that it may be possible to effectively prevent pollution resulting from acid-forming or toxic-forming materials by placing the materials in a position that is ''high and dry.'' We agree that, in common with other placement methods, placing acid-forming or toxic-forming materials permanently above the groundwater table can be effective. Final paragraph (n)(1)(ii), describes several methods of addressing acid-forming or toxic-forming materials, including treatment with neutralizing materials and placement of the materials so that they will remain permanently above, or below, the groundwater table. However, we must point out that paragraph (n)(1)(ii)(B) only allows placement of acid-forming or toxic-forming materials below the water table, without surrounding them with compacted low permeability material, if you can demonstrate and the regulatory authority finds in writing that complete saturation will prevent the formation of acid or toxic mine drainage. If you, the permittee cannot make this demonstration, you must either treat the acid-forming or toxic-forming material in accordance with paragraph (n)(1)(ii)(A) or completely surround the acid-forming or toxic-forming materials with compacted low permeability material in accordance with paragraph (n)(1)(ii)(C). If you surround the material with compacted low permeability material, you may place the material either permanently below the groundwater table in accordance with paragraph (n)(1)(ii)(C)(*1*), or permanently above the groundwater table in accordance with paragraph (n)(1)(ii)(C)(*2*). Surrounding the material with compacted low permeability material is necessary regardless of placement location because spoil is known to be highly variable in terms of hydraulic conductivity. Therefore, unless these materials are surrounded by compacted low permeability material, acid-forming or toxic-forming elements or compounds may be leached from the materials by infiltrating precipitation (above the groundwater table) or by flowing groundwater (below the groundwater table). As one commenter noted, these requirements are consistent with the holding in *Rith Energy, Inc.* v. *OSM,* 111 IBLA 239 (IBLA 1989) that requires that acid-forming and toxic-forming materials be handled in a manner that will avoid the creation of acid or toxic mine drainage so as to minimize disturbance to the prevailing hydrologic balance.

In § 816.38(d), now § 780.12(n)(2), we have provided for placement of acid-forming or toxic-forming materials in an excess spoil fill or coal mine waste refuse pile using the methods outlined in paragraph (1) to prevent contamination of ground or surface waters. Although we did not receive comments on proposed paragraph (d), we made nonsubstantive changes to the paragraph to conform to plain language principles and to accommodate moving the text to § 780.12.

In § 816.38(a), now § 780.12(n)(3), we address the measures that you must specify in your reclamation plan to prevent adverse hydrologic effects resulting from acid-forming or toxic-forming materials being exposed during mining, if they are present in the stratum immediately below the lowest coal seam being mined. Several commenters, including regulatory authorities and operators, recommended deleting this paragraph, arguing that it erroneously presupposes that all coal seams and the pit floor contain acid-forming and toxic-forming materials. In addition, the commenters opined that requiring an impervious layer below the coal seam could potentially cause more problems than it solves by reducing recharge to aquifers below the coal seam and by sealing unmined coal faces, thus impeding potential groundwater recharge to the backfill. The commenters were particularly concerned with the proposed requirement to cover exposed coal seams and the stratum immediately beneath the lowest coal seam mined with a layer of compacted material with a hydraulic conductivity at least two orders of magnitude lower than the hydraulic conductivity of the overlying, less-compacted spoil. The commenters asserted that this requirement is unnecessary and will result in additional cost with little benefit to water quality by imposing increased inspection frequency. Commenters also opined that this would require operators to work adjacent to the highwall for longer periods, presenting numerous safety issues. We disagree with the commenters. This rule requires the development of a plan to prevent any adverse hydrologic impacts that might result from exposure of the stratum beneath the coal seam that was exposed during the mining process. The requirement to develop a plan will apply only when the baseline geologic information collected under section § 780.19(e) indicates that the stratum immediately below the lowest coal seam to be mined contains acid-forming or toxic-forming materials. Final § 773.15(n) prohibits the regulatory authority from approving the permit application unless the applicant demonstrates, and the regulatory authority concurs, that the operation has been designed to prevent the formation of toxic mine drainage or other discharges that would require long-term treatment after mining has been completed. Therefore, the plan must be adequate to satisfy this requirement. One option the permittee may employ is placing a compacted low permeability layer over the in-place stratum immediately beneath the coal seam using the same safety measures that allowed removal of the coal.

Section 780.13: What additional maps and plans must I include in the reclamation plan?

Section 780.13 explains the additional maps, plans, and cross sections that the applicant must include in the reclamation plan. We have adopted the section as proposed with the exception of one additional requirement, a few non-substantive changes, and renumbering of paragraphs.

A few commenters expressed concern about the proposed requirement in § 780.13(a)(9) to map each feature and facility that is constructed to protect or enhance fish, wildlife, and related environmental values. Commenters stated that this is time consuming and that these features are likely to change over the course of mining operations; therefore, the commenters advocated the elimination of these requirements. We disagree. This requirement provides valuable information that will allow the regulatory authority to assess, monitor, and review the evolving operation. While this requirement may result in more time and effort at the initial permitting stage, it should save time and effort in subsequent permit reviews. Furthermore, it is important to accurately document efforts to protect or enhance fish, wildlife, and related environmental values.

As discussed within the preamble to § 816.57(d), we have added to our performance standards a requirement to

establish 100-foot wide vegetative corridors along certain perennial and intermittent streams. In order to ensure consistency between the permit requirements and the performance standards, we have also added a new paragraph (a)(14) to § 780.13, which requires the applicant to provide data about each streamside vegetative corridor that it proposes to establish. Documenting the proposed location of vegetative corridors will aid the applicant in planning and allows the regulatory authority to assess the proposed location of the vegetative corridors to ensure they can be established consistent with the requirements of § 816.57(d).

The U.S. Forest Service supported adoption of proposed paragraph (a)(15) and we received no comments opposing it. For clarity, however, we have divided the requirements of this paragraph into two separate paragraphs, numbered (a)(16) and (a)(17) because of the addition of new paragraph (a)(14) to the final rule. Final paragraph (a)(16) requires the applicant to provide the ''location and geographic coordinates of each monitoring point for groundwater and surface water.'' Final paragraph (a)(17) requires the applicant to provide ''the location and geographic coordinates of each point at which you propose to monitor the biological condition of perennial and intermittent streams.''

Proposed paragraph (c) clarified that the regulatory authority may require an applicant to submit the materials required under this section in digital format. The U.S. Forest Service and others expressed general support for submitting data in digital format. Other commenters recommended that this paragraph be revised to encourage, but not require, the digital format option for all materials submitted for review and analysis by the public and the regulatory authority. These commenters expressed concern that requiring materials to be submitted in a digital format would be financially burdensome and that some operators or state regulatory authorities might not possess the technical ability to provide the information in a digital format. We do not agree. Proposed paragraph (c) did not require the submission of materials in a digital format but merely clarified that the regulatory authority can require digital submissions if it so chooses. Requiring permit materials to be submitted in digital format could actually save regulatory authorities a significant amount of time that might otherwise be spent digitizing materials submitted by applicants so that they will be accessible to the public and to us. Furthermore, submission of digital data is increasingly common and does not require highly specialized technology or equipment. Consequently, we have made no substantive change to the final rule.

Section 780.14: What requirements apply to the use of existing structures?

Most changes to § 780.14 are editorial in nature. They primarily implement plain language principles and improve syntax and structure. In addition, we revised paragraph (b)(2) to eliminate the requirement for specifying the interim steps in the schedule for reconstruction of each existing structure because such a requirement would have no utility to the regulatory authority. What matters from a regulatory perspective is the starting and ending dates of the reconstruction, which revised paragraph (b)(2) continues to require. We also revised paragraph (b)(2) to apply the schedule requirement to both modification and reconstruction of existing structures, not just to reconstruction of those structures. The change makes paragraph (b)(2) consistent with the language of paragraph (b)(1). It also avoids the need for the applicant and regulatory authority to distinguish between modification and reconstruction. That distinction serves no regulatory purpose because any existing structure must be brought into compliance with applicable regulatory requirements. It makes no difference whether the effort to achieve compliance is called modification or reconstruction.

Section 780.15: What plans for the use of explosives must I include in my application?

One commenter recommended that we revise the blasting regulations in relation to the impact of the use of explosives on birds. This recommendation is outside the scope of our current rulemaking because the proposed rule included no substantive revisions to the blasting regulations.

Section 780.16: What must I include in the fish and wildlife protection and enhancement plan?

Section 780.16 is intended to ensure that a proposed surface coal mining and reclamation operation is designed in a manner that meets the fish and wildlife protection and enhancement requirements of the regulatory program. Except as discussed below, we have adopted § 780.16 as proposed, with minor editorial revisions for clarity and consistency.

Final Paragraph (b): Protection of Threatened and Endangered Species and Species Proposed for Listing as Threatened or Endangered

Proposed paragraph (b) required the permittee to describe how the permit would comply with the Endangered Species Act, 16 U.S.C. 1531 *et seq.,* including any species-specific protection and enhancement plans developed in accordance with that law. In response to comments from federal agencies, we have added a new paragraph (b)(1) stating that final paragraphs (b)(2) and (b)(3) apply when the proposed operation may affect species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or designated or proposed critical habitat under that law.

Another commenter requested that we add ''proposed species'' to this section. We made the recommended revisions because, as discussed in greater detail in the preamble text for section 773.15(j) above, both SMCRA and the Endangered Species Act provide authority to protect species that have been proposed for listing.[327] Section 7(a)(4) of the Endangered Species Act[328] requires that Federal agencies confer with the U.S. Fish and Wildlife Service on any agency action that is likely to jeopardize the continued existence of any species proposed to be listed as threatened or endangered. SMCRA sections 515(b)(24) and 516(b)(11)[329] require that, at a minimum, mining operations must ''to the extent possible using the best technology currently available, minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable.'' The requirement to minimize impacts to ''fish, wildlife, and related environmental values'' is not in any way limited to Endangered Species Act-listed species.

Several commenters expressed support for proposed § 780.16(b) to the extent that it requires compliance with the Endangered Species Act[330] and incorporation of any species-specific protection and enhancement measures into the permit, including those provided for under applicable biological opinions for the mining operations at issue. However, commenters also noted that ''species-specific protection and enhancement measures'' are not developed in accordance with the

[327] 80 FR 44436, 44565 (Jul. 27, 2015).

[328] 16 U.S.C. 1536(a)(4).

[329] 30 U.S.C. 1265(b)(24), 1266(b)(11).

[330] 16 U.S.C. 1531 *et seq.*

Endangered Species Act, as our proposed regulation indicated. They noted that a more appropriate Endangered Species Act tool might be a habitat conservation plan under Section 10 of the Endangered Species Act and suggested we replace ''protection and enhancement plan'' with ''habitat conservation plan'' as an example of a relevant plan developed in accordance with the Endangered Species Act. We agree and have changed the text of paragraph (b)(2) accordingly. However, species-specific protection and enhancement measures, where developed, should also be followed wherever possible.

Several commenters also requested that we require an applicant to demonstrate that it has complied with all applicable species-specific protection and enhancement measures. However, compliance with applicable species-specific protection and enhancement measures, while important, does not necessarily ensure compliance with the Endangered Species Act. For example, we, along with the U.S. Fish and Wildlife Service, and a representative group of state regulatory authorities have only developed species-specific protection and enhancement measures for a limited number of species. While this type of guidance can reduce uncertainty and streamline the permitting process, it is not possible to develop range-wide, species-specific protection and enhancement measures for every Endangered Species Act-listed species affected by coal mining operations. Further, the fact that guidance has not been produced for a particular species does not excuse an applicant from developing protection and enhancement measures specific to that species for inclusion in a permit application. Where species-specific protective measures have not been developed, an applicant will have to coordinate with the appropriate office of the U.S. Fish and Wildlife Service or National Marine Fisheries Service to ensure that adequate measures are incorporated into a permit. Where species-specific protective measures have been developed, such as the range-wide Indiana Bat protection and enhancement plan guidelines finalized in 2009,[331] site-specific modifications to these guidelines are often necessary depending on the size, location, or other characteristics of the operation and/or permit area. Therefore, we have determined that it is more accurate to simply require that an application must demonstrate compliance with the Endangered Species Act because this requirement would encompass any necessary species-specific protection and enhancement measures developed in coordination with the appropriate U.S. Fish and Wildlife Service or National Marine Fisheries Service office. However, in evaluating this suggestion we have determined that proposed paragraph (e)(4), containing the requirement that an application must demonstrate compliance with the Endangered Species Act should be moved to paragraph (b). Therefore, we combined proposed paragraph (e)(3) with final paragraph (b)(1) and moved proposed paragraph (e)(4) to a new paragraph at (b)(2) in the final rule.

Other commenters requested that we require applicants to demonstrate that the proposed permit would not adversely impact any species listed or proposed for listing under the Endangered Species Act. Additionally, one commenter suggested that there should be a strict prohibition on any activity within 100 feet of streams because of the potential to adversely impact aquatic species. We do not agree that additional prescriptive protective measures should be required in this section or that an applicant must demonstrate that a proposed mining operation will not adversely impact any listed species. In the final rule, we have revised our previous regulations to ensure that threatened and endangered species and species proposed for listing as threatened or endangered are correctly identified and described, as explained in § 779.20; that the permit is designed to protect and enhance those species, as explained in § 780.16; and that the regulatory authority makes a finding that the permit complies with the Endangered Species Act as explained in § 773.15(j). The analysis of what protection and enhancement measures are required under paragraph (b) should be species and site-specific and should be done in close coordination with the appropriate state or federal agencies. These types of species and site-specific considerations do not lend themselves to prescriptive rules. The exact process of developing protection and enhancement plans will depend on how the applicant intends to demonstrate achievement of the finding required under final § 773.15(j). Final § 780.16(b) fits into this scheme by simply requiring that an applicant describe how it will comply with the Endangered Species Act. This description will vary depending on how the applicant intends to demonstrate compliance with the Endangered Species Act, site-specific considerations, and the number and type of listed or proposed species potentially impacted by the operation.

Other commenters expressed concern over the requirement, now located in final paragraph (b)(2), that compliance with the Endangered Species Act must be demonstrated before the regulatory authority may approve a permit. Many commenters opined that it takes a long time to obtain approval of necessary protection and enhancement measures for proposed or listed species from the U.S. Fish and Wildlife Service or National Marine Fisheries Service and questioned whether it was possible to obtain a permit on the condition that no impact to listed species would occur until the coordination process was complete. We have evaluated this request and determined that, until the coordination process is complete, it would be very difficult to determine whether an operation will not impact species. However, where an operation can be reduced in size or divided into different phases to avoid proposed or listed species, there is no prohibition on pursuing a permit for that smaller area while simultaneously pursuing approval of a second, nearby permit where impacts to species may occur. This could allow an operator to begin mining on the permit that would have no impacts to species, assuming all other requirements were met, such as the requirement that phases of operations that are significantly related must be evaluated in a single impact statement pursuant to NEPA,[332] while continuing the coordination process on the permit where impacts to species are possible.

Final Paragraph (c): Protection of Other Species

One commenter recommended we remove from the final rule all language that the commenter characterized as ''subjective,'' such as ''to the maximum extent practicable'' or to ''minimize disturbances and effects'' and instead provide specific examples of techniques and practices that would be expected to be implemented or followed. We have not revised the final rule in response to this comment. Similar language is found throughout SMCRA, and provides an appropriate level of flexibility for each regulatory authority to determine the applicability of techniques and practices on a case-by-case basis. It would be inappropriate to prescribe techniques and practices within the regulations

[331] OSMRE, *Range-wide Indiana Bat Protection and Enhancement Plan Guidelines for Surface Coal-Mining Operations,* Jul. 2009, available at: *http://www.osmre.gov/lrg/docs/INBatPEPGuidelines.pdf* (last accessed Nov. 1, 2016).

[332] 40 CFR 1502.4(a).

implementing SMCRA, as these may be site specific, and the best technology currently available and best practices are not static and evolve.

In response to paragraph (c)(1) of the proposed rule, many commenters opposed the requirement to time mining operations as to avoid or minimize disruption of critical life cycle events for all fish and wildlife, such as migration, nesting, breeding, calving, and spawning. These commenters criticized the paragraph as either unclear, conflicting with other requirements, or overbroad and noted that, if implemented, it could halt all mining activity because these critical lifecycle events happen throughout the year. While it may, on a species by species basis, be necessary to time certain activities to avoid or minimize impacts on certain species, we generally agree with commenters that requiring it for all species would not be appropriate. Therefore, we have deleted this paragraph and renumbered the remaining paragraphs accordingly.

Proposed paragraph (c)(2), now final paragraph (c)(1), requires a description of how the permittee will retain forest cover and other native vegetation as long as possible and time the removal of that vegetation to minimize adverse impacts on aquatic and terrestrial species. Some commenters alleged that this requirement is too difficult to comply with because timing the removal of forest cover and native vegetation for one species might conflict with the timing for another species. As an example, several commenters pointed out conflicts between cutting restrictions for endangered bats and the needs of other species. We do not agree with this concern. Paragraph (c) addresses the protection of non-listed species and related environmental values and requires applicants to minimize disturbances and adverse impacts on species ''to the extent possible using the best technology currently available.'' If it is not possible to time the removal of vegetation to minimize adverse impacts to a non-Endangered Species Act species because of other species considerations, such as the Endangered Species Act-listed Indiana Bat tree cutting guidelines, a description of why the vegetation must be cut at a specific time is sufficient to satisfy this requirement. We have not made any changes as a result of these comments as this paragraph provides sufficient flexibility to time the removal of forest cover and vegetation to best protect aquatic and terrestrial species, including endangered species.

We received numerous comments, ranging from highly critical to very supportive, of the requirement in proposed paragraph (c)(3) that operations must maintain, to the extent possible, an intact forested stream buffer of at least 100 feet between surface disturbances and perennial and intermittent streams. We have deleted proposed paragraph (c)(3) because we have revised final § 816.57(b) to include a prohibition on mining in or within 100 feet of a perennial or intermittent stream, subject to the exemptions contained in final § 780.28, making proposed paragraph (c)(3) of this section redundant. A discussion of all comments on the 100 foot stream buffer, including comments on proposed paragraph (c)(3), is available in the preamble discussion of §§ 780.28 and 816.57.

One commenter requested that we define or otherwise clarify the term ''environmental values'' as discussed in proposed paragraphs (c)(4), (5), and (d)(1) because the term is not currently defined within the proposed rule or previous regulations. We decline to define this term, because imposing a national definition for ''environmental values'' would be too restrictive and would not account for regional differences. The regulatory authority has the proper expertise to determine its meaning on a case-by-case basis.

Proposed paragraph (c)(5) required the operator to periodically evaluate the impacts of the operation on fish, wildlife, and related environmental values in the permit and adjacent areas and to use of that information to modify the operations to avoid or minimize adverse effects. Several commenters expressed concern that we did not provide guidance on the appropriate frequency for these ''periodic evaluations'', on how rigorous the evaluation should be, and on who would be responsible for completing the evaluations. Some commenters recommended the removal of this paragraph because of concerns that operators might be required to change mining operations to offset impacts to wildlife beyond the control of the operators. We agree that the proposed rule language was ambiguous about how often the periodic review should be. In response, we are deleting this paragraph in the final rule and renumbering the remaining paragraphs. However, we have added a new requirement at final § 774.10(a)(2) that requires the regulatory authority to review the impacts of the operation on fish, wildlife, and related environmental values in the permit and adjacent areas. This review must occur not later than the middle of each permit term except that permits with a term longer than five years must be reviewed no less frequently than the permit midterm or every five years, whichever is more frequent. The regulatory authority must use that evaluation to determine whether it is necessary to order the permittee to modify operations to avoid or minimize adverse impacts on those values. The regulatory authority has the discretion to determine the rigor of these periodic reviews, which is appropriate because they have the local expertise to determine whether the operation is having the anticipated impact on fish, wildlife and related environmental values and whether revisions are necessary. For example, if unexpected drought conditions cause protection and enhancement measures to be less effective than initially anticipated, the regulatory authority review of the fish and wildlife protection and enhancement plan should evaluate whether, and to what extent, revisions should be made to the permit to effectively implement section 515(b)(24) of SMCRA.[333] The review under final § 774.10(a)(2) is separate from any monitoring and evaluation requirements that may be required to ensure compliance with the Endangered Species Act.

Some commenters stated that proposed paragraph (c)(6), which we adopted as final paragraph (c)(3) and which requires the selection of non-invasive native species for revegetation, could conflict with the need to use non-native species for site stabilization, such as on steep slopes, and in situations where erosion is a problem. As support, some commenters noted that the Natural Resources Conservation Service guidelines propose the use of non-natives to control erosion. We do not view these requirements as conflicting. The final rule does not prohibit the use of non-invasive, non-native vegetation when appropriate to control erosion and when approved in the revegetation plan. However, § 780.16 focuses on the protection and enhancement of fish and wildlife resources, which typically benefit from the use of non-invasive, native species, whenever possible. In response to comments requesting the discretion to use non-native plant species in limited circumstances, we have modified this paragraph to allow for the limited use of non-native species. Specifically, we have included a reference to final § 780.12(g)(4), which allows for use of non-native species when they are necessary to achieve a quick-growing, temporary, stabilizing cover on disturbed and regraded areas, as long as the species selected to

[333] 30 U.S.C. 1265(b)(24).

achieve this purpose will not impede the establishment of permanent vegetation.

Commenters questioned the benefits of using native vegetation in final paragraph (c)(3), alleging that non-native vegetation provides increased forage and habitat for turkey, deer, and elk. We do not agree. The best available science indicates that, on a broader ecological scale, planting native species contributes to the overall health of natural communities. Disturbances of intact ecosystems that open and fragment habitat, such as land clearing activities, increase the potential of invasion by alien species. Native plants provide important alternatives to alien species for conservation and restoration projects in these disturbed areas. Native species can satisfy many of the same land management needs that nonnative species do, but often with lower costs and maintenance requirements. Once established in an appropriate area, most native plant species are hardy and do not require watering, fertilizers, or pesticides.[334] They generally require less watering and fertilizing than non-natives because they are adapted to local soils and climate conditions. They are less likely to need pesticides because they are often more resistant to insects and disease. Finally, local wildlife evolved along with local plants; therefore, wildlife readily uses native plant communities for food, cover and rearing young.

Commenters also recommended that the determination of the types of vegetation to be used should be left to the discretion of the regulatory authority and should be done on a case-by-case basis because regional and site-specific conditions vary. They also stated that landowner input should be considered when determining vegetative cover. In response to these concerns, we note that final § 780.12(g)(4) gives the regulatory authority sufficient flexibility to allow the use of non-native species when necessary to achieve a quick-growing, temporary, stabilizing cover on disturbed and regraded areas, as long as the selected species will not impede the establishment of permanent vegetation. However, SMCRA clearly directs mining operations to establish ''permanent vegetative cover of the same seasonal variety native to the area of land to be affected,'' allowing non-native species to be used only ''where desirable and necessary to achieve the approved postmining land use plan.'' [335] Therefore, because of the statutory importance of the use of native species, we have decided that it is not necessary or appropriate to expand the regulatory authority's discretion any further than the exemption in final § 780.12(g)(4) and have not made any changes in response to these comments.

Proposed paragraph (c)(7) is renumbered in the final rule as paragraph (c)(4). In the final rule we require a permittee to describe the plan for avoiding wetlands, perennial and intermittent streams, and habitat adjacent to perennial or intermittent streams. If avoidance of perennial or intermittent streams is not possible, we outline the steps to minimize impacts that must be taken in final paragraphs (c)(4)(i)(A)–(C).

In final paragraph (c)(4)(i), we have added ''wetlands'' to the list of important habitat features that must, if possible, be avoided during mining. This change is in response to comments from other federal agencies who expressed concern that wetlands were not specifically mentioned in this paragraph. Adding the term ''wetlands'' to relevant sections of final paragraph (c)(4) and its subparts will ensure that operations avoid mining through wetlands as well as perennial and intermittent streams, and habitat adjacent to perennial or intermittent streams, if possible.

One commenter expressed concern that the requirement in proposed paragraph (c)(7)(ii), final paragraph (c)(4)(i)(B), to ''minimize the length of the stream mined through,'' is duplicative of the Clean Water Act section 404 [336] permitting program and is impermissible under section 702 of SMCRA.[337] We disagree. Final paragraph (c)(4) is designed to ensure that operations use ''the best technology currently available [to] minimize disturbances and adverse impacts'' [338] on the fish and wildlife that depend on the wetlands, perennial and intermittent streams, and habitat adjacent to perennial or intermittent streams. Thus, compliance with this provision of SMCRA is a separate, independent obligation on operators from requirements of the Clean Water Act.

In response to a comment we received from a federal agency we have added paragraph (c)(4)(ii) which requires the permittee to identify the authorizations, certifications, and permits required by the Clean Water Act, 33 U.S.C. 1251 *et seq.,* and the steps the permittee will take or has taken to procure those authorizations, certifications, and permits. Furthermore, we point out that issuance of a permit does not authorize a permittee to conduct any surface mining activity in or affecting waters subject to the Clean Water Act until the appropriate Clean Water Act authorization, certification, or permit is obtained. Information submitted and analyses conducted under subchapter G of this chapter may inform the agency responsible for authorizations, certifications, and permits under the Clean Water Act, but they are not a substitute for the reviews, authorizations, certifications, and permits required under the Clean Water Act.

Final Paragraph (d): Enhancement Measures

Proposed paragraph (d) required that permit applicants describe how they would use the best technology currently available to enhance fish, wildlife, and related environmental values both within and outside the area to be disturbed by mining activities, where practicable. Section 515(b)(24) of SMCRA [339] requires that surface coal mining and reclamation operations ''to the extent possible using the best technology currently available, minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable.'' Therefore, to be consistent with the statutory language, final § 780.16(d)(1)(i) adds the qualifying phrase ''to the extent possible'' to the proposed rule.

Proposed paragraph (d)(1) also included a list of twelve potential enhancement measures. Many commenters were generally supportive of these potential enhancement measures and as discussed below, we are adopting that list in revised form as final paragraph (d)(2). Others were concerned that these potential enhancement measures were requirements, or could be construed by regulatory authorities as mandatory enhancement measures to be performed on each permitted operation. Commenters explained that mandating conservation easements and/or deed restrictions may conflict with State Trust Lands, state agency goals and objectives, and result in unlawful takings or overly burdensome requirements that private landowners or local government agencies would not be willing to accept. These concerns are

[334] Virginia Department of Conservation and Recreation. *Native Plants for Conservation, Restoration, and Landscaping,* (Sept. 2011). *http://www.dcr.virginia.gov/natural-heritage//document/cp-nat-plants.pdf* (last accessed Nov. 1, 2016).

[335] 30 U.S.C. 1265(b)(19).

[336] 33 U.S.C. 1344.

[337] 30 U.S.C. 1292.

[338] 30 U.S.C. 1265(b)(24).

[339] *Id.*

misplaced as these enhancement measures are only provided as a list of potential measures to be used, to the extent possible. In addition, the list provided is not exhaustive, as regulatory authorities have the discretion to approve other types of enhancement measures on a case-by-case basis. Other commenters interpreted proposed paragraph (d)(1) as requiring implementation of all twelve potential enhancement measures or, for each enhancement measure not used, an explanation of why that particular enhancement measure was not practicable. That was not our intent. Therefore, we modified proposed paragraph (d)(1) by separating it into final paragraphs (d)(1)(i) and (d)(1)(ii). New language in final paragraph (d)(1)(i) clarifies that the list of proposed enhancement measures in final paragraph (d)(2) is not exhaustive and that regulatory authorities may approve other enhancement measures. New language in final paragraph (d)(1)(ii) clarifies that if an applicant does not include any enhancement measure, it must explain, to the satisfaction of the regulatory authority, why implementation of enhancement measures is not practicable. An applicant does not have to address the practicability of all twelve potential enhancement measures.

Several commenters alleged that it would be difficult to know whether an enhancement measure is ''practicable'' and expressed concern that a regulatory authority could force an applicant to enact all enhancement measures. However, this standard was present in our previous regulations and commenters did not identify any situations in which a regulatory authority had abused its discretion with respect to whether an enhancement measure was practicable. Therefore, we have not defined ''practicable'' in response to these comments.

Commenters opined that it is inappropriate to allow enhancement measures distinct from the area to be disturbed by mining activities, especially if enhancement measures would take place in a location physically unconnected to the mine site. Allowing the regulatory authority the flexibility to approve enhancement measures in locations away from the disturbance area is necessary to fully realize the mandate in section 515(b)(24) of SMCRA to achieve enhancement of fish, wildlife, and related environmental values where practicable.[340] While it is typically preferable to conduct enhancement measures on or near the disturbed areas, allowing enhancement measures away from the disturbed area provides significant flexibility and may, at times, be the most beneficial and/or practicable option. Further, there is no requirement within SMCRA that permitted sites must only contain lands spatially connected to one another.

Commenters expressed concern with a perceived ambiguity of the phrase ''natural succession'' in proposed paragraph (d)(1)(iv), which is now final paragraph (d)(2)(iv), as it relates to the establishment or description of a native plant community. Commenters alleged that the term ''natural succession'' is too broad in concept and needs a specific definition. The commenters requested clarification of the term ''natural succession'' and an explanation of why use of the term is necessary. We disagree that natural succession is an ambiguous concept. Our final rule uses the term ''natural succession'' in the standard ecological context of that term, which means the predictable maturation of the native vegetative community over time. The references to natural succession are not a prescriptive mandate for one particular type of plant community. Instead, we use the term ''natural succession'' as an outcome-based requirement aimed at ensuring that the types of plant communities that are initially established allow for the predictable maturation of the site. When a site would typically mature to forest, it would be appropriate to establish native vegetation that will not impede that process.

One commenter suggested we promote the establishment of pollinator-friendly species as described within Presidential Memorandum ''Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators.'' [341] This suggestion furthers the goals not only of the Presidential Memorandum but also of SMCRA section 515(b)(24) [342] because it clearly promotes fish, wildlife, and related environmental values. Consequently, we have added the clause ''establishing native plant communities designed to restore or expand native pollinator populations and habitats'' to final paragraph (d)(2)(iv) in response to this comment.

Some commenters also recommended we revise § 780.16(d)(2)(iv) and (v) as we have in the proposed rule at § 780.16(c)(6), which is now final § 780.16(c)(4), to allow non-native species to be used. We disagree. Because these paragraphs describe a choice of discretionary enhancement measures, they are appropriately more limited in scope than the requirements of final § 780.16(c)(4). While the use of non-native species may, at times, be necessary, it should not be considered an enhancement measure.

Another commenter sought clarification about how native forest and other native vegetation will be reestablished ''both within and outside of the permit area'' as stated in proposed paragraph (d)(1)(iv), which is now final paragraph (d)(2)(iv). The commenter asserted that this paragraph needed to be revised and limited to ''areas within the permit area'' that have been or will be disturbed by mining activities. We do not agree. This section provides optional measures to maximize opportunities to enhance restoration of native vegetation and natural wildlife habitat. Enhancement opportunities may arise within the permit boundary. However, where disturbance from mining may remove a significant portion of native forest or other native vegetation, it may be possible to look some distance outside of the disturbance area for opportunities to reestablish native vegetative cover during mining. The resulting benefits to species could be realized while mining was ongoing, thus offsetting some of the adverse impact on species caused by mining.

This particular commenter also asserted that mining companies cannot operate outside approved permit areas; thus, according to the commenter, any regulation that requires lands not disturbed by mining activities to be affected would be contrary to SMCRA's requirement to minimize disturbances. We do not agree. Some of these measures could be implemented off-permit without adding land to the permit area if the enhancement activity would involve de minimis disturbance, as described in proposed § 780.16(d)(3) and in final § 780.16(d)(4). If reestablishment of native vegetation would involve more than a de minimis disturbance, or if excluding lands from a permit area would restrict the regulatory authority's ability to inspect and confirm completion of a permit term, then these lands could be made part of the permit area in order to implement the planned enhancement.

Commenters stated that the enhancement measure at proposed paragraph (d)(1)(v), which is now final paragraph (d)(2)(v), involving the establishment of vegetative corridors at least 100 feet wide along each bank of

[340] 30 U.S.C. 1265(b)(24).

[341] Presidential Memorandum of June 20, 2014, *Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators,* 79 FR 35903 (June 24, 2014).

[342] 30 U.S.C. 1265(b)(24).

streams that lacked such buffers before mining, could be interpreted by a regulatory authority as requiring an artificial water source, especially in semi-arid states. Further, the commenters stated that the cost of providing these artificial water sources was not analyzed in the DEIS and that we did not evaluate legal considerations related to water rights in western regions. The commenters concern is misplaced. Nothing in this paragraph requires establishment of vegetation that would need an artificial water source. Use of vegetation that requires an artificial water source would be inconsistent with the purpose of the fish and wildlife enhancement measures in this rule, which is to encourage restoration or establishment of natural conditions using native species.

Commenters voiced concern that proposed § 780.16(d)(1)(v), which is now final § 780.16(d)(2)(v), was too inflexible in requiring that, if an enhancement measure involved creating a vegetative corridor for a stream that previously lacked such a buffer, the buffer zone had to be at least 100 feet wide. We agree with this concern and have modified this paragraph to provide additional flexibility. The regulation now states a preference, but not a requirement, for a minimum 100-foot corridor for such enhancement measures. For clarity, we have also revised this requirement to describe the enhancement as the creation of a corridor where there is no such corridor before mining but where a vegetative corridor typically would exist under natural conditions.

Another commenter was concerned that in the event extra material is needed to restore the 100-foot riparian zone and is stacked at the edge of the vegetative corridor, it could disrupt the mine operator's ability to restore the permit to approximate original contour or cropland use. The commenter did not provide an explanation as to why it may be necessary to stack extra material to create a vegetative corridor. However, regardless of the size of the hypothetical stack we do not anticipate this as an impediment to achieving approximate original contour. In the commenter's scenario the stacking would be temporary. Ultimately, the reclamation plan would require the material to be placed to achieve approximate original contour, establish the vegetative corridor consistent with this final rule, and the approved postmining land use. Accordingly, we have not modified the proposed rule in response to this comment.

Proposed paragraph (d)(1)(vii), which is now final paragraph (d)(2)(vii), was modified to specify that permanently fencing off perennial and intermittent streams, as well as wetlands, from livestock was also an appropriate enhancement measure. This change was made to address federal agency concerns about inclusion of wetlands (as discussed above) and to retain consistency with other parts of the final rule about promoting the protection of wetlands.

Final paragraph (d)(3), which we proposed as paragraph (d)(2), makes the use of enhancement measures mandatory where a proposed surface mining activity would result in the temporary or permanent loss of mature native forest or other native plant communities that cannot be restored fully before final bond release under §§ 800.40 through 800.43 of this chapter or permanent loss of a segment of a perennial or intermittent stream. Final paragraph (d)(3)(ii), which we proposed as paragraph (d)(2)(ii), requires that the enhancement measures be commensurate with the magnitude of the long-term adverse impacts of the proposed operation and, ideally, be permanent.

In the preamble discussion of proposed § 780.16(d)(2), which is now final paragraph (d)(3), we explained that ''long-term'' means that the permittee would not be able to correct the resource loss before expiration of the period of extended revegetation responsibility as prescribed in proposed § 816.115 and identified two examples of long-term loss: the removal of significant native forest cover and the burial of a perennial or intermittent stream segment by an excess spoil fill or coal mine waste disposal facility. We invited comment on whether there are other interpretations of ''long-term'' that we should consider. We received two comments in support of the proposed rule's preamble description of ''long-term'' and were offered no alternate definitions. We did, however, receive many comments requesting that we further clarify ''long-term'' within this section. In response to these comments we have revised this paragraph to clarify that ''long-term'' adverse impacts are either the permanent loss of wetlands, or segments of perennial or intermittent streams, or the temporary or permanent loss of mature native plant or forest communities that cannot be restored before bond release.

In the preamble discussion of proposed § 780.16(d)(2), which is now final § 780.16(d)(3), we also invited comment on whether the regulatory authority may consider mitigation measures approved under the authority of the Clean Water Act as satisfying the separate SMCRA requirement for mandatory enhancement measures. We received comments in support of allowing Clean Water Act mitigation to satisfy the requirement for fish and wildlife enhancement measures under this paragraph. Mitigation required under the Clean Water Act may satisfy the fish and wildlife enhancement requirement under the final rule to the extent that mitigation under the Clean Water Act requires actual on-site enhancement activities. Payments into a general fund, as opposed to payments or activities directed to improvement or preservation of a specific stream or site, would not be acceptable because the general fund may be used to finance enhancement projects outside the coalfields and because it would not be possible to determine whether the payment into a general mitigation fund would be commensurate with the magnitude of long-term adverse impacts as required under final paragraph (d)(3)(ii).

We received comments from federal agencies that wetlands should be included in proposed paragraph (d)(2)(i), which is now final paragraph (d)(3)(i)(B). We agree with this comment and have added wetlands to this paragraph.

We also invited comment on proposed § 780.16(d)(2)(ii), which is now final paragraph (d)(3)(ii), about whether our regulations should define ''commensurate'' in the context of ''long-term'' and, if so, how we should define that term. We received two comments in support of defining ''commensurate,'' but neither provided an example of a definition of that term. In light of the small number of affirmative responses and the fact that neither commenter provided any suggested definition, we do not believe that a definition is warranted. Instead, we have determined that the regulatory authority should have the flexibility to determine if the enhancement measures are commensurate to the magnitude of long-term adverse impacts of the proposed operation. Therefore, we are not adding a definition of ''commensurate.''

Final paragraph (d)(3)(iii)(A) provides that enhancement measures to address a proposed operation with long term effects must be implemented within the same watershed if possible. Otherwise, enhancement measures must be implemented in the closest watershed available as long as it is approved by the regulatory authority. Some commenters requested that we require the term ''watershed'' to be applied in accordance with the Hydrologic Unit Code to provide boundaries for the

enhancement measures. We disagree. The regulatory authority is in the best position to determine the scope and location of the enhancement measures. The regulatory authority may factor in the size of the watershed, which requires a case-by-case, region-by-region analysis and cooperation between the operators and the regulatory authority. In any case, the regulatory authority should have flexibility on these issues.

A few commenters also requested that we identify the approach to be used in identifying suitable surrogate enhancements in adjacent watersheds and specify the criteria for determining the equivalent size and cost of enhancement. Commenters also requested that we provide a mitigation hierarchy similar to the 2008 Compensatory Mitigation for Losses of Aquatic Resources.[343] We decline to make these changes. Because this information is best assessed on a case-by-case basis, the regulatory authorities should have the discretion to make these determinations.

One commenter requested we add language to proposed § 780.16(d)(2)(iii)(A), which is now final § 780.16(d)(3)(iii)(A), to specify that, on federal lands, proposed enhancement measures would have to comply with the Federal Land Policy and Management Act,[344] and be consistent with that federal land management agency's land use plan. We disagree. The suggested rule change is not necessary because, for federal lands, any areas upon which fish and wildlife enhancement measures are conducted will be part of the permit area and all proposed measures will be reviewed and processed as part of the SMCRA permit application and Mineral Leasing Act mining plan, as described in Parts 740 through 746 of our regulations. Nothing in this or any other rule grants the permittee authority to take any action on federal lands that is inconsistent with any land management agency's land use plan or federal law.

Proposed paragraph (d)(2)(iv) provided that the regulatory authority must include a condition in the approved permit that requires the completion of the enhancement measures for operations with anticipated long-term adverse impacts. We received a comment that this language seemed circular because we were essentially requiring insertion of a permit condition requiring the applicant to comply with conditions of the permit. Upon consideration of this comment, we agree and have deleted the paragraph.

Some commenters advocated removing proposed paragraph (d)(3), which is now final paragraph (d)(4), as inconsistent with SMCRA. Specifically, these commenters alleged that achievement of the enhancement requirements described in paragraph (d)(2) would always involve more than a de minimis disturbance of the surface land outside the area to be mined, and therefore would need to be placed within the permit. We do not agree that all enhancement measures would be considered more than a de minimis disturbance. In the final paragraph (d)(2), which we proposed as paragraph (d)(1), there are examples of enhancement measures that do not rise to the level of de minimis disturbance, such as establishing conservation easements or nest boxes for birds. Therefore, we have adopted final paragraph (d)(4) because it is important to allow small enhancement measures without the added burden of including those areas within the permit boundary.

Another concern voiced by commenters is that if there is more than a de minimis disturbance to the lands associated with these enhancement measures, the revegetation standards within the permit must be met on these lands associated with the enhancement measures. We agree that if there is more than a de minimis disturbance to the land, for any reason, the area would have to be permitted under SMCRA and revegetation standards would have to be met. However, we did not revise the rule in response to this concern because there are numerous enhancement measures that can be completed that would not require adding additional land to the permit area, such as creating rock piles of value to raptors and other wildlife for nesting and shelter.

Commenters also were concerned that the term ''de minimis disturbance'' is subjective and open to interpretation, and some commenters requested a definition of the term. We decline to define the term. Regulatory authorities are in the best position to determine what constitutes ''de minimis disturbance'' in each circumstance; therefore, a definition in these regulations is not necessary.

Some of the same commenters further alleged that the enhancement measures and the terms describing the enhancement measures as prescribed by proposed § 780.16(d)(3), now § 780.16(d)(2), were inconsistent with other requirements in the proposed rule. Specifically, the commenters expressed concern that the terms ''proposed operation'' and ''area to be mined'', are not defined in our previous regulations or the proposed rule. We are not making any changes in response to these comments. The commenters did not identify the alleged inconsistencies and the two terms, ''proposed operation'' and ''area to be mined'' are used throughout SMCRA, our previous and existing regulations, and are generally accepted terms in the mining industry.

Similarly, several commenters stated that the enhancement option allowing the reclamation of ''previously mined areas located outside the area that you propose to disturb'' creates confusion as to whether activities related to the enhancement measures outside the mining area are considered a mining activity. Other commenters also expressed concern about a perceived inconsistency within proposed § 780.16(d)(2)(xi) and asked the following question: ''[i]s [the area] 'outside the area you propose to disturb' to be included within the proposed permit area?'' We agree that this was confusing. Therefore, we have revised final § 780.16(d)(2)(xi) to prescribe, ''[r]eclaiming previously mined areas located outside the area that you propose to disturb for coal extraction.'' This revision more clearly reflects that this area is within the permit area and related to mining activity, but is not an area of the permit that is proposed to be disturbed by coal extraction.

Final Paragraph (e): Fish and Wildlife Service and National Marine Fisheries Service Review

Proposed §§ 779.20(d) and 780.16(e) contained substantively identical provisions regarding U.S. Fish and Wildlife Service review of the fish and wildlife resource information and the fish and wildlife protection and enhancement plan, respectively. The final rule consolidates proposed §§ 779.20(d) and 780.16(e) into final § 780.16(e), both to streamline the regulations and in response to a comment noting that the Service reviews baseline fish and wildlife resource information together with the fish and wildlife protection and enhancement plan, not separately.

We have modified paragraph (e) and other provisions of the final rule to reference the National Marine Fisheries Service because that agency, along with the U.S. Fish and Wildlife Service, shares responsibility for administration of the Endangered Species Act. This modification is necessary for accuracy and to clarify that, where applicable, such as in situations where anadromous fish or most species within a marine environment would be impacted, the regulatory authority must provide the

[343] 73 FR 19594 (Jun. 9, 2008).

[344] 43 U.S.C. 1701 *et seq.*

resource information, as explained within this section, to the National Marine Fisheries Service.

Final paragraph (e)(1)(i) requires the regulatory authority to provide both the protection and enhancement plan developed under this section and the resource information required under final § 779.20 to the appropriate regional or field office of the U.S. Fish and Wildlife Service or to the National Marine Fisheries Service, as applicable, when that information includes species listed as threatened or endangered under the Endangered Species Act, critical habitat designated under that law, or species proposed for listing as threatened or endangered under that law. The regulatory authority must provide both the resource information and the protection and enhancement plan to the appropriate Service(s) no later than the time that it provides written notice of the permit application to governmental agencies under existing § 773.6(a)(3)(ii).

Several commenters supported this provision because it would ensure better coordination and sharing of information among the applicant, the regulatory authority, and the applicable Service early in the permitting process. Other commenters, however, were confused by these transmittal requirements, at least as they stood in the proposed rule where we had placed them in two separate sections. Proposed § 779.20(d)(1)(i) contained the requirement to transmit resource information to the Service(s) at the time the application is filed with the regulatory authority, while proposed § 780.16(e)(1)(i) contained the requirement to transmit the protection and enhancement plan. The commenters criticized us for creating redundant requirements, asserting that the U.S. Fish and Wildlife Service review of baseline wildlife information in the permit application was an unnecessary step because § 780.16 already allowed the agency to review this information in connection with the fish and wildlife enhancement plan. In response to these comments, we consolidated the two provisions in final § 780.16(e)(1)(i).

Final paragraph (e)(1)(ii) is similar to our previous regulations, which allowed the U.S. Fish and Wildlife Service to request fish and wildlife resource information and the fish and wildlife protection and enhancement plan submitted as part of a permit application when the information in those applications does not include species listed as threatened or endangered under the Endangered Species Act, critical habitat designated under that law, or species proposed for listing as threatened or endangered under that law. Under both the previous regulations and the final rule, the regulatory authority must provide that information to the U.S. Fish and Wildlife Service within ten days of receipt of the request.

Proposed §§ 779.20(d)(2)(ii) through (iv) and 780.16(e)(2)(ii) through (iv) prescribed how the regulatory authority must handle comments received from the U.S. Fish and Wildlife Service and how any disagreements must be resolved. These provisions mirrored the 1996 Biological Opinion [345] dispute resolution process. We received many comments, both in support of and opposed to these requirements. After considering these comments, we decided not to adopt proposed §§ 779.20(d)(2)(ii) through (iv) and 780.16(e)(2)(ii) through (iv). Instead, final § 773.15(j) provides applicants and regulatory authorities with several pathways for demonstrating compliance with the Endangered Species Act.

Previous § 780.18: Reclamation Plan: General Requirements

We have removed and reserved previous § 780.18. As discussed in the preamble to the proposed rule we have revised many aspects of previous § 780.18 and moved it to final rule § 780.12.[346]

Section 780.19: What baseline information on hydrology, geology, and aquatic biology must I provide?

This section establishes the baseline information on hydrology, geology, and aquatic biology that is required to be contained within the permit application. We received many comments both supporting and objecting to this section; these comments are addressed below.

Several commenters addressed this section in its entirety. Of these commenters, some supported the revisions within the proposed rule that would require more extensive baseline data collection and found the revisions to be both attainable and prudent. In contrast, other commenters opposed the proposed revisions and requested that they be removed from the final rule. The commenters opposing the revisions generally considered the proposed baseline collection requirements to be too costly, not beneficial, duplicative of the Clean Water Act, in violation of section 702 of SMCRA,[347] and inappropriate for inclusion in the regulations at a national or even regional scale. Commenters' concerns regarding duplication of the Clean Water Act are discussed in Part IV.I., above. We have made a number of changes to the baseline data collection requirements of the final rule in response to some of these general comments as well as more specific comments, described below.

One commenter suggested that we should require the applicant to monitor all baseline monitoring sites for all parameters throughout the life of the permit to ensure uniformity of the water-quality data; thus enhancing the ability to detect adverse impacts from the coal mining operation. We agree with the commenter that baseline monitoring sites need to be monitored throughout mining and reclamation. However, unlike the commenter, we recognize the need for flexibility; *i.e.,* that the frequency and parameter lists of the monitoring sites could be modified based on site specific factors, as long as sufficient data are collected to adequately assess these resources. After baseline monitoring has been completed and mining has commenced, the operator can use the permit revision procedures of § 774.13 to request that the regulatory authority modify the monitoring requirements established in the permit.

A commenter commended us for requiring monthly collection of baseline samples as discussed in paragraphs (b)(6)(ii)(A) and (c)(4)(ii)(A), and excluding samples collected during abnormal hydrologic events. In contrast, however, many commenters thought collecting twelve monthly, evenly spaced, samples of groundwater and surface water was not necessary to establish seasonal variation and did nothing but add time to the permitting process and substantially increase costs. We disagree with this assertion. A study by the U.S. Environmental Protection Agency in 2001 [348] indicated that twelve, evenly spaced samples were the absolute minimum to establish statistical rigor. As a result, we have retained this provision; however, we have provided the regulatory authority with some discretion as it relates to establishing the groundwater baseline. We discuss the rationale for this and change in rule language further in the

[345] 1996 Biological Opinion and Conference Report (1996 Biological Opinion), Consultation Conducted by the U.S. Dep't. of the Interior, U.S. Fish and Wildlife Serv. regarding Endangered Species Act—Section 7 Consultation. Effective September 24, 1996.

[346] 80 FR 44436, 44487–44493 (Jul. 27, 2015).

[347] 30 U.S.C. 1292.

[348] U.S. Envtl. Prot. Agency, Office of Water, *Statistical Analysis of Abandoned Mine Drainage in the Establishment of the Baseline Pollution Load for Coal Re-mining Permits,* 266, EPA–821–B–01–014, (Dec. 2001).

preamble discussion of paragraph (b). In response to other comments about these paragraphs, however, we clarified the extent of the baseline sample period by adding the term ''approximately'' with respect to the requirement for ''equally spaced monthly intervals.'' Several commenters objected to the former terminology and requested latitude to account for variations in field conditions. We did not intend the ''equally spaced monthly intervals'' to be interpreted to mean that there could be no variation in the monthly spacing intervals, but we recognize that the proposed rule could be misinterpreted. Therefore, we have revised the final rule at paragraphs (b)(6) about groundwater and (c)(4) about surface water to provide discretion regarding the sampling intervals. This change also responds to comments received from several regulatory authorities, which expressed concern that dangerous weather conditions and frozen streams could make it dangerous or impossible to collect evenly spaced monthly samples. These regulatory authorities noted specifically that significant snow packs and icy conditions can occur, particularly in the western and northern reaches of the coalfields. Because of groundwater contributions to intermittent and perennial streams, completely frozen streams are rare in most circumstances. Despite this rarity, we recognize the importance of providing the regulatory authority discretion as to what constitutes approximately equally spaced sampling intervals, so that dangerous conditions and the need to sample of completely frozen streams can be avoided. In addition, we have added paragraphs (b)(6)(ii)(B) and (c)(4)(ii)(B) to provide the regulatory authorities flexibility to modify the intervals to ensure the safety of personnel while conducting groundwater and surface water sampling trips and in the rare cases of completely frozen streams.

We also modified the language of the paragraphs (b) and (c) concerning the use of the Palmer Drought Severity Index as a trigger to extend baseline sampling. The proposed rule contained a ''+/− 3.0'' standard. Several states provided an analysis of this standard for their respective states, which concluded that long periods of time existed during which daily or weekly Palmer Drought Severity Index exceeded +/− 3.0. The result of these analyses indicate that the time required under the proposed rule to collect baseline data would be extended for multiple years in order to meet that standard. In response, we have removed the reference to the Palmer Drought Severity Index in the context of extending the baseline data collection period.

Another commenter opined that we did not conduct a frequency analysis to determine the cost of collecting and analyzing the disqualified baseline data to the industry, or the uncertainty of the cost to a mining company to obtain permits in a timely manner. The change discussed above removes the need for us to analyze costs to industry for collecting and analyzing disqualified data and for extended permit processing time.

Certain paragraphs of the final rule, however, still require that the Palmer Drought Severity Index be noted during sample collection to give a sense of magnitude to precipitation deficits or surpluses. This notation will provide important context to the baseline data collected with regard to water quality and quantity. The final rule also provides discretion to the regulatory authority to extend the baseline sampling period to ensure that the baseline data collected at the site is representative of the premining hydrology in the area if National Oceanic Atmospheric Administration, or other atmospheric databases, including the Palmer Drought Severity Index, indicate weather conditions were highly unusual during the baseline sampling period.

A commenter asserted that the proposed rule does not specify how all samples will be collected and analyzed or identify appropriate analytic methods. We have not altered the final rule in response to this comment because it is inappropriate to provide more than a framework from which to collect baseline samples due to the wide variety of standardized methods available to collect and analyze water. Commenters also claimed that we should allow the use of statistical methods and qualitative assessments to establish watershed baseline conditions. Qualitative assessments do not satisfy the intent of establishing the baseline conditions in a watershed. Instead of conducting a qualitative assessment to establish the baseline conditions in a watershed, it is important to collect actual baseline data for the permit. However, the final rule allows regulatory discretion in determining the statistical methods used to assess the baseline data collected for the permit application.

Final Paragraph (a)(1): General Requirements

In paragraph (a)(1), we are finalizing the requirements for the baseline information on hydrology, geology, and aquatic biology that must be included within a permit application. We proposed that this information be provided in ''sufficient detail'' to assist the applicant in developing valid probable hydrologic consequences conclusions and to help the regulatory authority make certain hydrologic determinations. Several commenters requested that we clarify the meaning of ''sufficient detail'' or otherwise provide specific guidance to ensure consistency in the permitting process. A definition is unnecessary. Section 780.20, ''How must I prepare the determination of the probable hydrologic consequences of my proposed operation?'', describes the objective of this part, which is to ensure that the permit applicant provides the regulatory authority with comprehensive and reliable information on how it proposes to conduct surface mining activities and reclaim the disturbed area in compliance with the Act, this chapter, and the regulatory program. Therefore, each regulatory authority is in the best position to provide guidance on what constitutes ''sufficient detail'' to meet that program's requirements.

One commenter alleged that we failed to define ''probable'' in § 780.19(a)(1) and should provide a definition or further elaborate on what is sufficient to satisfy the probable hydrologic consequences of the operation. Webster's dictionary defines probable as ''likely to happen or to be true but not certain.'' [349] This common definition adequately describes the intent of the certainty of events that need to be evaluated when determining the probable hydrologic consequences and no further regulatory definition is needed.

Several commenters expressed concern about the ability to acquire landowner permission for sampling in the adjacent area for baseline or monitoring purposes. We are aware of this concern, but it has been an issue since SMCRA was passed and has been successfully navigated for the past 35 years. Furthermore, the regulatory authority has the latitude to modify sampling locations when landowner access is problematic.

Several commenters were opposed to proposed paragraph (a)(4), now paragraph (a)(1)(iv), which would have required baseline information in sufficient detail to assist the regulatory authority in preparing the cumulative hydrologic impact assessment. As

[349] probable. 2016. *In Merriam-Webster.com.* Retrieved Nov. 2, 2016, from *http://www.merriam-webster.com/dictionary/probable.* Oxford Univ. Press.

required by § 780.21, the cumulative hydrologic impact assessment includes an evaluation of whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. These commenters criticized a perceived lack of sufficient technical guidance with respect to the information and metrics needed in the cumulative hydrologic impact assessment. Because these comments are more relevant to § 780.21, relating to requirements that apply to the preparation and review of the cumulative hydrologic impact assessment, these comments are addressed within that section.

Final Paragraph (a)(2): Core Baseline Water-Quality Data Requirements for Surface Water and Groundwater

In response to many of the general comments outlined above, we have made changes to the baseline data collection requirements. Significantly, we have removed six parameters that we proposed to have operators collect and analyze in surface water and groundwater—ammonia, arsenic, cadmium, copper, nitrogen, and zinc.[350] Removing these parameters will reduce the amount of data collected and the potential for duplication without reducing the protections proposed. First, information on the presence or absence of the parameters we removed is available under an existing Clean Water Act process. Pursuant to 40 CFR 122.44(d), the Clean Water Act NPDES permitting authority completes a reasonable potential analysis and develops permit limits for any pollutant in an authorized discharge that has a reasonable potential to cause or contribute to an exceedance of water quality criteria. The parameters we removed, except for ammonia and nitrogen, are contained in the parameter list for the baseline determination for reasonable potential analysis. Second, state regulatory agencies indicated these parameters are rarely found in mine effluent in appreciable concentrations. Third, we have made revisions to the final rule to ensure that regulatory authorities have the flexibility to require collection of additional parameters and/or monitoring. Specifically, we added language to §§ 780.19(b)(4) and 780.19(c)(2) to clarify that a regulatory authority can require baseline collection of any parameter that is not on the list of parameters contained in these regulations. One commenter mistakenly asserted that because we have identified the parameter specific conductance as a core baseline water-quality requirement, we are, by default, enforcing an effluent limit standard for conductivity. We do not prescribe the water quality standards for discharges from mine sites. Instead, the Clean Water Act authority makes those determinations.[351] Inclusion of the parameter specific conductance in the baseline sampling as part of the baseline sampling protocol is meant to provide another parameter to help establish the premining water-quality conditions.

A number of commenters suggested various parameters be added or deleted from the baseline data collection list found in proposed § 780.19.[352] Conversely, a number of commenters objected to the expanded list as too costly, too burdensome to collect, analyze, or review, and without offering any real benefit to establishing the baseline condition in the streams. Several commenters took a more moderate approach and suggested that any extra parameters beyond those required over the last 30 years should be considered for discretionary inclusion by each regulatory authority and not be part of a nationwide list. As discussed above, we have removed several parameters from the mandatory list in response to commenters' suggestions. We have also declined to add other parameters to a nationwide list, but the rule affords necessary discretion to the regulatory authority to add other parameters if deemed useful at a particular site. Within the final rule, for the sake of clarity, we have listed the parameters in a table located in renumbered § 780.19(a)(2) for both surface water and groundwater.

Several commenters suggested the cation-anion balance requirement should be removed from the parameter list unless laboratory data is suspected to be inaccurate. The cation-anion ratio is a measure of the electrical neutrality of the water sample. To achieve electrical neutrality, the sum total of the negatively charged particles (anions) must equal the sum of the positively charged particles (cations). When the two are approximately equal, two things are evident—no ions with substantive concentrations are missing from the sample and the analysis is accurate. Analyzing just the major cations and anions will not usually result in exact proportions of positive and negative ions because not every ion is analyzed. When the ratio is not within approximately 10%, it indicates that either the analysis is flawed by under or over-reporting the ionic content of a particular ion or an ion constituting a significant portion of the water sample is missing. For either reason, the cation-anion balance is a quick, easy, and inexpensive method of performing quality assurance and quality control of the water sample. For these reasons, we have retained the cation-anion balance requirement. We also note that most labs report this ratio when the major cations and anions are analyzed.

A commenter suggested that the preamble discuss the differences in how variations in selenium speciation impacts aquatic life. Selenium speciation refers to the different forms of selenium (elemental, selenate, selenite, and selenide). A fact sheet from the California Resources Agency provides a concise summary, which we paraphrase here.[353] Selenium has a complex environmental chemistry. In natural systems, it occurs in four different chemical (oxidation or valence) forms: Selenide ($Se2-$); elemental selenium (Se0); selenite (Se4+), and selenate (Se6+). The form selenium takes in nature depends on a variety of environmental conditions, and the chemical form is very important in understanding how it affects aquatic life. In alkaline surface waters that are commonly found in arid areas, selenium occurs mainly as soluble selenate salts that are highly mobile because they are soluble in water and do not adhere well to soils. Selenates can be reduced to selenites, which are more readily accumulated by fish and other aquatic organisms. Selenites may be converted to elemental selenium, which is not very soluble in water and is not readily taken up by plants or animals. In sediment, most of the selenium may occur in the elemental form. If sediments become oxidized (exposed to air) most of the selenium can be converted to selenates and selenites. Metal and organic selenides also are common in bottom sediments. Like elemental selenium, selenides can become oxidized to forms that are more available to plants and wildlife. Organic forms of selenium also occur in or are produced by plants and animals. While the organic forms of selenium are typically less abundant than inorganic selenium (selenate and selenite), the

[350] 80 FR 44436, 44600–44601 (Jul. 27, 2015).

[351] *See, e.g.,* U.S. Envtl. Prot. Agency, *A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams* 76 FR 30938 (May 27, 2011).

[352] 80 FR 44436, 44600–44601 (Jul. 27, 2015).

[353] State of California Res. Agency, *Fact Sheet: Selenium and Its Importance to the Salton Sea* (Feb. 2005), *http://www.water.ca.gov/serp.cfm?q=selinium&cx=001779225245372747843%3Amxwnbyjgliw&cof=FORID%3A10&ie=UTF-8&submit.x=13&submit.y=3.* (last accessed Nov. 1, 2016).

organic forms are important from a biological toxicity standpoint.

Despite these differences in selenium speciation, we find no need to revise the proposed rule in response to this comment. Like the proposed rule, the final rule at § 780.19(b) requires baseline data on total and dissolved selenium in surface water and the dissolved fraction in groundwater. Other provisions of § 780.19 require detailed baseline information on geology, including geochemistry. This combination should be adequate for the applicant to prepare a probable hydrologic consequences determination, as discussed in § 780.20, that predicts the impact of the proposed operation on levels of selenium and other parameters in surface water and a hydrologic reclamation plan, as discussed in § 780.22, that explains how the applicant will address adverse impacts and prevent material damage outside the permit area. The regulatory authority must independently prepare a cumulative hydrologic impact assessment of whether the proposed operation would cause material damage to the hydrologic balance outside the permit area in conformity with § 780.21.

Several commenters suggested that we require testing for dissolved analytes instead of total analytes for groundwater. We agreed with the suggestions because under ideal conditions (proper well construction, well development, and groundwater sampling procedures) field-filtered groundwater samples (dissolved) should yield identical metal concentrations when compared to unfiltered groundwater samples; [354] hence, we have made the change at § 780.19(a)(2) of the final rule.

One commenter suggested that, when evaluating stream function, more than flow data should be collected. The commenter further opined that the baseline data collection should include an evaluation of the premining hydrological regime and the material composition of stream beds, flow patterns, water chemistry, and surface water temperature. We agree, however, all of these requirements, except temperature, are addressed in the proposed rule that we are finalizing today at paragraph (c)(6)(iii)(A) and § 784.19(c)(6)(i)(A). The omission of water temperature from paragraph (c)(6)(iii)(A) and § 784.19(c)(6)(i)(A) was an oversight. It is important to require water temperature measurements for all water-quality samples because water temperature influences biological activity and water chemistry. Based on the commenter's suggestion, we have revised the parameters in paragraph (a)(2) of this section to include temperature within the baseline data collection requirements for surface water and groundwater.

Final Paragraph (b): Groundwater Information

Several commenters raised concerns with § 780.19(b)(2) about baseline collection requirements when an underground mine is present within the permit or adjacent area. One commenter asserted that the need for the requirement was too narrow and that this change lacked justification. Another commenter thought sampling all mine works within 500 feet of the proposed operation should be sufficient. We disagree with both of these comments. Both the regulatory authority and the applicant need to understand the spatial and temporal relationships of adjacent and/or overlying mine works. Both entities need to analyze water quality and quantity data regarding underground mine pools in areas adjacent to proposed permitting actions; especially if the mine works are hydrologically connected to the proposed permitted area. This information and data are necessary for the applicant to analyze the probable hydrologic consequences and for the regulatory authority to develop the cumulative hydrologic impact assessment. We note, however, that the applicant is not required to undertake the sampling unless the regulatory authority finds that a hydrologic connection exists between the adjacent or overlying underground mine and the proposed operation. When permitting an operation that may hydrologically impact an adjacent underground mine pool, there is no justification for ignoring that connection. Hydrologically connected underground mine pools may result in the need for treatment facilities because the water quality in those mine pools may affect the proposed operation and may also pose significant environmental and safety concerns if the new operation causes problems due to underground openings that are flooded or gas-filled.

In proposed paragraph (b)(2), we required an assessment of the characteristics of underground mine pools present in the permit area and stated that the determination of the probable hydrologic consequences required under § 780.20 must include a discussion of the effect of the proposed mining operation on ''any'' underground mine pools within the proposed permit and adjacent areas. One commenter objected to the unilateral treatment of underground mine pools. The commenter argued that mine pools below drainage elevation have a low chance or historic incidence of impacting surface hydrology. Thus, the commenter alleged that applying this provision to mine pools below drainage elevation would add effort and expense with limited to no environmental benefits. We decline to make modifications based on this comment for several reasons. First, all underground mine pools are part of a hydrologic system whether there classified as above drainage or below drainage.[355] Information about how mine pools affect baseline hydrologic conditions is necessary to estimate the impacts the proposed operation will have on the hydrologic system, including mine pools. Second, several examples exist of active coal mining operations breaching flooded adjacent mines and inundating the active mines with water.[356] Consequently, knowing the extent and characteristics of adjacent mine pools is a vital piece of information for both safety and environmental reasons. Third, contrary to the commenter's statements, examples exist of flooded underground mine pools discharging to streams.[357] For these reasons, we are retaining the requirement for an assessment of the characteristics of any underground mine pool within the permit area or adjacent areas as proposed.

Another commenter alleged that we provided no details on the methods that the applicant should use to assess seasonal changes in quality, quantity, and flow patterns in a given mine pool. They also asserted that we provided no information about how the applicant should demonstrate that the mine pool is or is not physically connected to the proposed operation. Details on assessing seasonal changes and associated methodology are best left to the discretion of the regulatory authority. Industry and the technical reviewers

[354] Robert A. Saar, *Filtration of ground water Samples: A review of Industry practice,* 17(1) Groundwater Monitoring and Remediation, 56–62, (Feb. 1997); U.S. Envtl. Prot. Agency, Envtl. Engineering Committee of the Science Advisory Board, *To filter, or not to filter; That is the question,* 1997, EPA–SAB–EEC–LTR–97–011, (Sept. 1997).

[355] David M. Light & Joseph J. Donovan,, *Mine-water flow between contiguous flooded underground coal mines with hydraulically comprised barriers,* 21(2) Environmental & Engineering Geoscience, 147–164, (May 2015).

[356] J. Donovan, et al., *6th ICARDS Cairns, QLD,* pp. 869–875 (2003); Pennsylvania Dep't. of Envtl. Prot., Report of Comm'n. on Abandoned Mine Voids and Mine Safety, p. 3 (2002).

[357] J.W. Hawkins and M. Dunn, *Final report Fairmont, West Virginia mine-pool, Hydrologic characteristics of a 35-year-old underground mine pool,* U.S. Dep't. of the Interior, OSMRE, Mine Water and the Environment, Vol. 26, pp. 150–159 (2014).

have a wide array of skills, expertise, and methods that enable this requirement to be addressed. With respect to demonstrating the hydraulic connection between mine pools, methods exist to provide a reasonable demonstration of hydraulic interaction. These methods include installation of piezometers in the strata of interest with an assessment of the hydraulic head, groundwater movement patterns, and structural geology influences between the mine site and adjacent mining.

Several commenters suggested that the ''modeling'' we specified for predicting mine pools has not yet been developed or validated for most mining regions and therefore is not practicable. We disagree with these comments. Modeling is a broad term and incorporates the entire range of models from simple mathematical models to complex numerical models. We are not prescribing the exact modeling methods to be used; the regulatory authority has discretion to make this determination on the level of detail required.

Related to paragraph (b)(3), ''[m]onitoring wells,'' several commenters suggested we remove the phrase ''when necessary'' from §§ 780.19(b)(3) and 784.19(b)(3) with respect to when an applicant must install monitoring wells to document seasonal groundwater variation. We agree with the commenter and have made this change because the information is necessary to determine groundwater movement of parameters to down gradient water bodies and to be able to evaluate impacts to groundwater quantity and quality as a result of the mining operation.

Several commenters suggested that groundwater quantity measurements required in paragraph (b)(5) for each coal seam and aquifer are not necessary to establish baseline characterization and did nothing but add additional cost. Another commenter asserted that installation of up and down gradient monitoring wells, as required by paragraph (b)(6), is not necessary because it adds unnecessary time and cost to the permitting process and should be left to the discretion of the regulatory authority. We disagree with these comments. Groundwater levels can change over relatively large areas as the result of surface and underground coal mining. Changes in groundwater levels can affect groundwater flow direction, travel times, and water quality, potentially resulting in adverse impacts to the hydrology within and outside the permit area. Without adequate monitoring in place, it becomes significantly harder to do the evaluation and to correct the problem before it becomes more widespread.

A commenter opined that the groundwater data that we proposed to require in paragraph (b)(5) is insufficient to establish groundwater quantity and that groundwater discharge rates or usage rates as required in this section do not represent groundwater quantity. The commenter asserted that the direction of groundwater flow (horizontally and vertically) requires elevation data, not just depth to water data. We agree and have modified the final rule text requiring elevation data for water table surfaces and potentiometric head surfaces. The same commenter asserted that to determine the quantity of groundwater, an operator would need information on the geometry of the aquifer (area times saturated thickness). The commenter suggested that we require information on the areal extent of aquifers and saturated thickness. We agree with the commenter and have revised the final rule text to require that the applicant determine the areal extent and thickness of aquifers. Although we agree with the commenter that groundwater discharge rates or usage rates do not represent groundwater quantity, we have retained the requirement for this information in the final rule because it is closely associated with groundwater quantity.

Several commenters objected to the use of the term ''water bearing stratum'' in proposed paragraph (b)(5). In response, we have changed the term ''water bearing stratum'' to ''aquifer'' in recognition of commenters' concern that, as proposed, this provision might have been misinterpreted to include water contained in rock units that do not sufficiently supply water in usable quantities. The term ''aquifer'' is used in hydrogeology to denote water bearing units with properties to yield water in economic quantities sufficient to supply domestic or public water wells. We are aware of the use of perched aquifer systems in many states, and this terminology change helps satisfy the commenter's concern and affords users of these systems the sampling, monitoring, and protections found in the revised regulations.

One commenter opposed our limits on using extrapolated measurements to determine seasonal variations in groundwater and surface water quality. Like the proposed rule, the final rule does not allow extrapolated data to be used because based on our past experience, extrapolating data is not a reliably accurate method to document and describe seasonal variations in chemical parameters. Because seasonal variations can be significant, we require collection of this data.

One commenter stated that the requirements related to the frequency and duration of data collection and requirement for the geographic distribution of wells in proposed, and now final paragraph (b)(6), are welcome additions to the groundwater characterization requirements.

Several commenters suggested that groundwater quality does not change much over the course of a month or a year; therefore, twelve monthly samples should not be required. We agree and have revised the final rule by adding paragraph (b)(6)(ii)(C), which affords the regulatory authority discretion to grant the applicant an option to collect eight samples spread over two years with certain conditions. Specifically, the regulatory authority may initiate review of the permit application after collection and analysis of the first four quarterly groundwater samples, but it may not approve the application until after receipt and analysis of the final four quarterly groundwater samples. We are allowing regulatory authority to start reviewing the application because the likelihood of the groundwater data substantially changing during the final four quarters is low due to typically slow groundwater travel times.

Final Paragraph (c): Surface-Water Information

One commenter expressed concern with proposed paragraph (c)(2)(xix) relating to surface water quality descriptions, which would have required baseline information for any parameter added to a National Pollutant Discharge Elimination System permit. The commenter indicated that this requirement would cause unnecessary delays to the SMCRA permit review process because the National Pollutant Discharge Elimination System permit is often not obtained until later in the SMCRA permitting process, which could require the applicant to redo the baseline collection data. We agree and have revised the rule to clarify that the National Pollutant Discharge Elimination System parameter requirement would apply only when those parameters are known at the time of permit application. This change should ensure that there are no unnecessary permitting delays as a result of this requirement.

One commenter noted that the requirements in proposed paragraph (c)(3)(i) referring to ephemeral streams contradicted with the requirements in proposed paragraph (c)(4)(i). In proposed paragraph (c)(3)(i), we specified that the applicant provide

baseline information on seasonal flow variations and peak-flow magnitude and frequency for all perennial, intermittent, and ephemeral streams and other surface-water discharges within the proposed permit and adjacent areas. However, proposed paragraph (c)(4)(i) specified a requirement that the permit applicant establish monitoring points in a representative number of ephemeral streams within the proposed permit area, to ensure collection of data sufficient to fully describe baseline surface water conditions. For clarity, the monitoring requirements for a representative sample of ephemeral streams has been retained in final paragraph (c)(4)(i)(B) and removed from final paragraph (c)(3), which now only applies to perennial and intermittent streams. As discussed in the preamble to the proposed rule,[358] we proposed to modify the previous regulations to require the use of generally-accepted professional flow measurement techniques to ensure the accuracy of baseline flow data. We proposed this change to eliminate visual and estimated flow methods which have proven to be very inaccurate. Accurate flow measurements must be obtained to appropriately evaluate the impacts of the operation on receiving streams. We received numerous comments about various aspects of our proposed flow measurement changes. One commenter indicated that the proposed rule could be interpreted to ban the use of weirs. This is incorrect; weirs are not banned. A weir is a calibrated device using a pre-defined stage-discharge measurement that can be visually recorded by noting the stage of the water flowing through the weir. The distinction is that the visual observation of a stage or measurement has been calibrated to a stage-discharge curve and produces an accurate flow estimate. This method has a scientific basis and provides the level of accuracy and precision necessary to derive accurate flows.

One commenter suggested that the proposed rule should be modified to continue to allow well-accepted, standardized, flow measurement methods. We agree; the final rule does allow-generally accepted methods, but does not allow visual flow estimates for the reasons discussed above. Another commenter opined that not allowing visual flow measurements would create conflict with the requirements of agencies that do allow visual flow measurements. Because visual observations are not acceptable under the final rule, there should be no conflict. Non-SMCRA agencies that accept visual flow measurements can continue to do so even if our requirements are more rigorous. Another commenter suggested we add language pertaining to peer-reviewed citations to document the flow measurement method chosen. This is not necessary because the regulatory authority can decide the generally-accepted measured flow method it prefers and require whatever documentation necessary to substantiate the flow measurement method.

A few commenters remarked that we did not fully consider the burdensome costs to industry of implementing the proposed requirements in 780.19(c)(3)(i)(A) about measuring and analyzing peak flow. We agree with the commenters that the costs of measuring and analyzing peak flow magnitude and frequency were not fully considered, but we have corrected that omission in the RIA and addressed it in the preamble discussion of the Paperwork Reduction Act of 1995, below. However, we do not agree with the commenters that the additional costs to obtain this data would pose an unrealistic burden and thus should be eliminated. The data collected as part of final paragraph (c)(3)(i)(A) will help establish a surface water flow baseline that industry and the regulatory authority can use to better assess the impacts of mining and the effectiveness of reclamation.

One commenter claimed that the regulations are overbroad in that they require upgradient and down gradient baseline sampling points on all intermittent and perennial streams even if impacts are not probable. The regulations at paragraph (c)(4)(i)(A) require baseline characterization on all intermittent and perennial streams on and adjacent to the permitted area. This information is not overbroad because it is vital to help the applicant and regulatory authority to understand the surface water system, provide context and data for the probable hydrologic consequence determination, hydrologic reclamation plan, and cumulative hydrologic impact assessment analysis, and to protect both the operator and regulatory authority in the event of a non-mining related impact in the surface water system on or adjacent to the permitted area. The commenter also requested that we provide greater clarity to the word ''potentially'' in the context of monitoring on potentially affected streams. Potentially affected streams are all streams capable of receiving mine water from the permitted site and streams undermined by an underground mining operation. In underground mining operations, the regulation also requires sampling all streams within a reasonable angle of de-watering as provided in the definition at § 701.5.

With regard to paragraph (c)(4)(i)(B), a commenter suggested that we specify the number of sampling locations that qualify as a representative number when sampling ephemeral streams and other commenters requested more guidance on who determines the ''representative sample of ephemeral streams.'' We decline to prescribe the number of representative samples that adequately characterize ephemeral streams, hydrology, and biology and instead rely on the applicant and regulatory authority to decide the density of sampling on ephemeral streams. It is within the regulatory authority's discretion to determine what constitutes a representative sample of ephemeral streams in order to ensure the permit application contains ''sufficient detail'' about the hydrology, geology, and aquatic biology as required by paragraph (a). We also decline a request from a commenter to prescribe what ''sufficient detail'' means in this context. The regulatory authority is in the best position to determine whether a permit application contains sufficient detail about hydrology, geology, and aquatic biology for it to process the application.

Another commenter suggested ephemeral stream sampling for twelve consecutive months was not possible because ephemeral streams only flow in response to precipitation events. We agree with the comment and have added language in several places to clearly indicate a zero flow event is a valid flow observation. The commenter also recommended daily measurements of intermittent and perennial streams in the proposed and adjacent areas to separate seasonal and event-generated variations. We are declining to require daily flow measurements but sufficient discretion exists within the rule for regulatory authorities to require daily flow measurements when they deem it necessary to characterize baseline conditions.

Several commenters favored the increased monitoring requirements and went further to suggest that twenty-four months of data should be collected, analyzed, and submitted for permit application review. We decline to require twenty-four months of data because of the statistical validity offered by twelve months of evenly spaced data, as discussed above. However, the regulatory authority does have the latitude to require as much additional baseline data as necessary to adequately characterize baseline.

A commenter opined that the requirements outlined in proposed

[358] 80 FR 44436, 44498 (Jul. 27, 2015).

paragraph (c)(4) amounted to a snapshot in time and were inadequate to determine the baseline flow conditions. As we understand the comment, the commenter suggests that obtaining peak flow measurements up and down gradient of the proposed operation on all intermittent and perennial streams is insufficient to characterize seasonal variation. We disagree with the assertion. The minimum requirements prescribed by the regulation provide an adequate baseline characterization. Further, the combination of the locations identified in final paragraphs (c)(4), quantitative measurements found in (c)(3), minimum parameter list at (a)(2), and monthly frequency at (c)(4) will provide adequate baseline characterization. These regulations are minimum sampling requirements; the regulatory agency may require more locations, samples, and increased frequency as necessary.

We received many comments about the requirement in paragraph (c)(5) for self-recording devices to measure precipitation. Most commenters alleged the devices were prone to maintenance problems, that they were not practical on large mine sites, and/or that adequate measurements could be obtained from other sources. The final rule still requires these devices because variations in precipitation can occur over relatively small areas. For example at large mine sites, the operator might need more than one recording device to ensure that precipitation events are recorded adequately at the mine site. The commenters' concern over maintenance is an issue that can be addressed when the operator is choosing a self-recording device to measure precipitation. There are many types of self-recording devices to measure precipitation on the market and not all have the same issues with maintenance. Any mechanical device left in the environment is prone to some maintenance issues, but operators can minimize these issues by choosing a device that best fits their site. Similarly, a commenter asked for clarification surrounding use and validity of hydrologic models generated by precipitation records. The final rule text at paragraph (c)(5)(ii) is clear and provides the regulatory authority with discretion to determine if a hydrologic model is necessary, and, if so, the regulatory authority can decide the accuracy and validity of the model results. Another commenter suggested that the final rule should not require a precipitation recording device at each permitted area. The commenter suggested that several ''permit areas'' can be in very close proximity to one another resulting in redundant data collection. We agree and have added paragraph (c)(5)(iii) in the final rule to allow close proximity permitted areas to share a precipitation recording device. However, it is important to note, as we mention above, that because precipitation can vary significantly across relatively small areas, the regulatory authority should carefully consider exercising this discretion because a precipitation recording device located nearby will not always provide accurate data for the precipitation event at the mine site.

Final Paragraph (c)(6): Stream Assessments

We received numerous comments, both supporting and objecting to the scope and scale of our proposed stream assessment requirements in §§ 780.19(c)(6) and 780.19(e), especially as they related to the following requirements: Sampling of macroinvertebrate populations within all streams; ephemeral stream baseline sampling; and detailed descriptions of stream channel and streamside vegetation requirements for streams in the adjacent area. Commenters asked how that information would be useful in designing the mining and reclamation plan or in the context of other SMCRA regulatory program requirements. Some commenters recommended requiring data for only a representative sample of all streams, rather than for each stream. Further, we received other comments on a variety of topics. All of these comments are addressed below.

In the final rule, we have consolidated all stream assessment requirements in § 780.19(c)(6) by merging proposed paragraphs (c)(6) and (e). Comments relevant to proposed paragraph (e) are addressed in this section. In addition to consolidating the paragraphs, we have carefully reevaluated each component of the proposed rule concerning stream assessments. The final rule retains only those components that add value to the permitting process and that have utility in the context of SMCRA regulatory programs. However, for the most part, we have not adopted the suggestion to require data only for a representative sample of streams. Each stream is unique in terms of configuration, vegetation, and aquatic life. Therefore, it is important to include data specific to each stream in the permit application. The following table summarizes how we revised the data requirements from the proposed rule to the final rule.

Stream assessment component	Required in Proposed Rule [30 CFR 780.19(c)(6)&(e)]	Required in Final Rule [30 CFR 780.19(c)(6)]
Map with identification of each stream	All perennial, intermittent, and ephemeral streams within the proposed permit and adjacent areas.	All perennial, intermittent, and ephemeral streams within the proposed permit area. All perennial and intermittent streams within the adjacent area.
Location of transition points from ephemeral to intermittent and from intermittent to perennial.	All perennial, intermittent, and ephemeral streams within the proposed permit and adjacent areas.	All perennial, intermittent, and ephemeral streams within the proposed permit area. All perennial and intermittent streams within the adjacent area.
Stream pattern, profile, and dimensions, with measurements of channel slope, sinuosity, water depth, alluvial groundwater depth, depth to bedrock, bankfull depth, bankfull width, width of the flood-prone area, and dominant in-stream substrate.	All perennial, intermittent, and ephemeral streams within proposed permit and adjacent areas.	All perennial and intermittent streams within the proposed permit.
Streamside vegetation characteristics	All perennial, intermittent, and ephemeral streams within proposed permit and adjacent areas.	All perennial, intermittent, and ephemeral streams within the proposed permit area.
Identification of stream segments on list of impaired surface waters under section 303(d) of the Clean Water Act.	All perennial, intermittent, and ephemeral streams within the proposed permit and adjacent areas.	All perennial, intermittent, and ephemeral streams within the proposed permit and adjacent areas.

Stream assessment component	Required in Proposed Rule [30 CFR 780.19(c)(6)&(e)]	Required in Final Rule [30 CFR 780.19(c)(6)]
Extent and quality of streamside wetlands	No	All perennial, intermittent, and ephemeral streams within the proposed permit area. All perennial and intermittent streams within the adjacent area.
Biological condition	All perennial and intermittent streams within the proposed permit area.. All perennial and intermittent streams within the adjacent area that would receive discharges from the proposed operation.. A representative sample of ephemeral streams within the proposed permit area. A representative sample of ephemeral streams within the adjacent area that would receive discharges from the proposed operation.	All perennial streams within the proposed permit area. Each perennial stream within the adjacent area that could be affected by the proposed operation All intermittent streams within the proposed permit area, if a scientifically defensible protocol for assessment of intermittent streams has been established. In the absence of a protocol, a description of the biology of the stream is required. Each intermittent stream within the adjacent area that could be affected by the proposed operation, if a scientifically defensible protocol for assessment of intermittent streams has been established. In the absence of a protocol, a description of the biology of the stream is required.
Location of channel head on terminal reaches of stream.	All perennial, intermittent, and ephemeral streams within the proposed permit and adjacent areas..	All perennial, intermittent, and ephemeral streams within the proposed permit area All perennial and intermittent streams within the adjacent area.

The language contained in the introductory text of proposed paragraph (c)(6) has been revised and is included as part of final paragraphs (c)(6)(i) and (ii). Final paragraph (c)(6)(i), now requires the applicant to map and separately identify all perennial, intermittent, and ephemeral stream segments within the proposed permit area and all perennial and intermittent stream segments within the adjacent area. In the proposed rule, these requirements would have extended to ephemeral streams adjacent to the permit area as well, but this requirement has been eliminated in the final rule because we have determined that the data collected from adjacent ephemeral streams would serve no useful purpose within a SMCRA permit as there are no performance standards or reclamation requirements pertinent to ephemeral streams in adjacent areas. That is not the case for ephemeral streams within the proposed permit area because final rule §§ 780.27 and 816.56 establish permitting and reclamation requirements that apply when mining in or through an ephemeral stream. For the purposes of clarity and continuity, proposed paragraph (c)(6)(iv) has been moved to final paragraph (c)(6)(i)(B), and proposed paragraph (c)(6)(v) has been moved to final rule (c)(6)(i)(C). In final paragraph (c)(6)(i)(C), we have also clarified that any map of streams must be consistent with any U.S. Army Corps of Engineers determination of the locations of transition points from ephemeral to intermittent and from intermittent to perennial streams, and vice versa, when applicable, to the extent such a determination exists.

In final paragraph (c)(6)(ii) we begin to explain the substantive stream assessment requirements. This paragraph was located in the proposed rule at 780.19(c)(6)(i). Some commenters opposed the proposed rule because many of the requirements were inapplicable to ephemeral streams. In response, we have divided this portion of the rule into two separate categories—perennial and intermittent streams, and ephemeral streams. For perennial and intermittent streams, final paragraph (c)(6)(ii)(A) requires the same amount of information as in the proposed rule; however, because this type of information is not easily attainable and would not be useful within these final regulations, we have now excluded ephemeral streams from these requirements. Now, in final paragraph (c)(6)(ii)(B), we require only a description of the general stream-channel configuration of ephemeral streams within the proposed permit area.

In response to comments claiming this portion of the rule was confusing when it referred to ''riparian zone'' vegetation, the requirements within proposed rule paragraphs (c)(6)(ii) and (vi), now final paragraphs (c)(6)(iii) and (iv), have been revised for clarity. First, final paragraph (c)(6)(iii) now specifies the types of vegetation that we were referring to when we proposed to require a description of ''riparian zone vegetation''. Specifically, in the final rule, we have changed ''riparian zone vegetation'' to ''vegetation growing along the banks of each stream'' and ''percentage of the riparian zone that is forested'' to ''[t]he extent to which streamside vegetation consists of trees and shrubs''. Second, final paragraph (c)(6)(iv) now states that ''[y]ou must identify the parameters responsible for the impaired condition and the total maximum daily loads associated with those parameters, when applicable.'' This language is clearer than the general reference to stressors in the proposed rule, as this has been replaced with identification of the parameters that cause the impaired condition.

We have also made a substantive change to final paragraph (c)(6)(iii) by adding an additional requirement—a scientific calculation of the species diversity of the vegetation. This addition was made in response to comments from other federal agencies that stated it will assist the regulatory authority in documenting baseline conditions with an appropriate level of detail and better ensure restoration of any streamside vegetative corridors damaged or destroyed by mining in or near streams. We agree and have modified the final rule accordingly.

Many commenters raised concerns about the data we are requiring in final paragraphs (c)(6)(ii) and (iii). Some commenters recommended that we identify specific methodologies that would be used to gather these data required in the final rule within

§ 780.19(c)(6)(ii) and (iii). Other commenters requested that the applicant have the option of collecting vegetative information using aerial mapping and/or other geographic information system data or methodologies. According to these commenters, the methodologies for collecting these data should be left to the discretion of the regulatory authority due to varying regional and site specific conditions and should be determined on a case-by-case basis. We agree with other commenters that suggested the on-the-ground locations of the data points should be determined as a collaborative effort between the regulatory authority and the applicant and that specific methodologies should not be identified in this rule. The regulatory authorities are in the best position to assess the methodologies, protocols, and locations acceptable for the data collection requirements within the final paragraphs (c)(6)(ii) and (iii). In some situations, the regulatory authority may determine that it is scientifically defensible to use aerial mapping and/or other geographic information system data when sampling during the correct time of year, for example during full leaf-out, to determine the extent to which streamside vegetation consists of trees and shrubs and the percentage of channel canopy coverage as required in final paragraphs (c)(6)(iii)(B) and (C). However, we decline to revise the rule to provide the regulatory authority with the discretion to eliminate some of these requirements altogether. These requirements are all necessary to attain the appropriate level of detail for establishing the baseline condition on the site for future monitoring and to assess reclamation success.

Final paragraph (c)(6)(v) has been modified to include a requirement for assessing the extent and quality of streamside wetlands. This requirement applies to all perennial, intermittent, and ephemeral streams within the proposed permit area and for all perennial and intermittent streams within the adjacent area, and it requires the identification of the extent of wetlands adjoining streams and a description of the quality of those wetlands. We added this paragraph in response to comments from other federal agencies that recommended additional protections for wetlands in the final rule because wetlands have vegetation not normally associated with other types of habitat. This change will assist regulatory authorities in documenting baseline conditions with an appropriate level of detail in order to better ensure restoration of any wetlands damaged or destroyed by mining in or near streams. This assessment requirement is consistent with 515(b)(19) of SMCRA [359] which requires establishment of ''a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area.''

In the proposed rule, paragraph (e) contained the requirements related to the assessment of the biological condition of streams. In the final rule, we revised these requirements and moved them to paragraphs (c)(6)(vi) and (vii). As finalized, an assessment of the biological condition is required for each perennial stream within the proposed permit area and within the adjacent area that could be affected by the proposed operation. For intermittent streams, the biological condition assessment requirements apply to each intermittent stream within the proposed permit area and within the adjacent area that could be affected by the proposed operation, but only if a scientifically defensible bioassessment protocol has been established to assess intermittent streams in the state or region in which the stream is located. Under the rule finalized today, we have eliminated the requirement to assess the biological condition of all ephemeral streams and those intermittent streams in states or regions in which there are no established scientifically defensible bioassessment protocols available; these changes will be discussed in more detail below.

Many commenters opposed the proposed requirements for assessing biological condition because of the alleged limited applicability of these provisions within semi-arid and arid regions. As support, these commenters noted that the preamble to the proposed rule only discusses evidence supporting these requirements with examples from West Virginia and other areas with 26 or more inches of average precipitation per year. In addition, the proposed rule required the use of a bioassessment protocol for all stream types, which many commenters alleged would have very little value because of a lack of baseline studies to use as a reference. They also noted that natural stream conditions are highly variable in arid and semi-arid areas both aerially and from stream to stream, and this makes it difficult to determine a mine's impacts on the biological condition of streams.

We agree with these commenters in part and, as discussed below, have removed provisions requiring the determination of the biological condition of all ephemeral streams and those intermittent streams without established scientifically defensible bioassessment protocols within the state or region where the proposed mining will occur. However, we disagree with these commenters in other respects. Arid and semi-arid states across the United States have scientifically defensible bioassessment protocols for perennial streams and/or intermittent streams that have been established by Clean Water Act authorities and these protocols consider geographic and annual variation of macroinvertebrate populations. In their comments, several SMCRA regulatory authorities in the western states provided evidence of rigorous protocols for determining the biological condition of perennial streams that are already in place.[360] Also, the U.S. Environmental Protection Agency has established a scientifically defensible bioassessment protocol and accompanying indices that are valid on all perennial streams within the 48 conterminous states,[361] further supporting the requirement of sampling protocols and indices in perennial streams.[362] The ability to obtain information through bioassessment protocols is currently available on national, regional, and state levels and the ability to establish effective baseline information on all perennial streams, no matter the size, habitat type, or vegetative cover is attainable using the best technology currently available.

[359] 30 U.S.C. 1265(b)(19).

[360] *See* Arizona Department of Environmental Quality. *Implementation Procedures For the Narrative Biocriteria Standard.* (2015); Colorado Dep't. of Pub. Health and Env't. Water Quality Control Div.—Monitoring Unit. *Development of Biological Assessment Tools for Colorado;* M. Tepley, *Montana Rivers and Streams Assessment.* Cramer Fish Sciences, Lacey Office, (2013); Utah Dep't. of Envtl. Quality, Div. of Water Quality. 2014. Utah Comprehensive Assessment of Stream Ecosystems; E.G. Hargett, *The Wyoming Stream Integrity Index (WSII)—Multimetric Indices for Assessment of Wadeable Streams and Large Rivers in Wyoming.* Wyoming Dep't. of Envtl. Quality Water Quality Div. document #11–0787, (2011); U.S. Envtl. Prot. Agency, *Information on Bioassessment and Biocriteria Programs from Streams and Wadeable Rivers. https://www.epa.gov/wqc/information-bioassessment-and-biocriteria-programs-streams-and-wadeable-rivers (last accessed Oct. 21, 2016).*

[361] For the 48 conterminous states, U.S. Envtl. Prot. Agency, *National Rivers and Streams Assessment: Field Operations Manual.* EPA–841–B–07–009. Washington, DC (2007).

[362] Alaska is scheduled to have these protocols and indices established in 2020. Further, ''AKMAP statistical surveys can provide baseline information for protection and restoration actions.'' S*ee,* Alaska Dep't. of Envtl. Conservation. *Alaska Clean Water Five-Year Strategic Plan Fiscal Years 2016–2020,* p. 5 (2015).

Some commenters recommended that we use biological assessments that focus on terrestrial productivity to assess the biological condition of streams, such as yield in pounds per acre, percent groundcover, stems per acre, tree diameter at breast height, livestock average daily gains, and species frequency. We disagree because these assessments do not assess the aquatic biota as accurately as the bioassessment protocols we are requiring in the final rule and, thus, are not the best technology currently available to assess the effects of mining on perennial streams.

One commenter requested we remove all bioassessment protocols because streams were already being reclaimed successfully. We disagree. There are documented instances of streams adversely affected by mining across the United States. In addition, these baseline assessments are not solely designed to monitor the reclamation of streams, but also to monitor streams that are not approved for disturbance but may be impacted by the operation. Across all coal bearing regions, since the approval of state run regulatory authorities, examples of surface water impacts have been identified.[363] While many of these effects are minor and moderate, they also involve off-site impacts. Other impacts are not currently detected, and this rule is designed to improve the baseline analysis to further detect the potential for offsite impacts, to detect unplanned impacts, and to minimize these off-site impacts using the best technology currently available. We are retaining these requirements. These baseline assessments of the biological condition of streams where scientifically defensible protocols exist will allow for appropriate stream assessment and monitoring and will result in minimization of effects to fish, wildlife, and environmental resources consistent with the requirements of section 515(b)(24) of SMCRA.[364]

Some commenters also recommended that we eliminate the requirement for bioassessments of every perennial stream potentially affected by the proposed operation. These commenters suggested we use a representative stream sample or solely streams from adjacent areas, which they claim would suffice to assess baseline condition and monitor reclamation within the proposed permit. We disagree. First, because offsite impacts are to be avoided or minimized when they do occur, all streams within the influence of the operation need an appropriate level of knowledge specific to each stream to be able to comprehensively measure these offsite impacts (if they occur). And because these offsite impacts may encompass many different types of effects (*e.g.,* physical, chemical, biological, human-related) to surface waters off of the permitted site at any time or in any location, this level of detail using the best technology currently available is warranted. Second, small perennial streams that occur within the proposed permitted site may differ in physical, chemical, and biotic attributes from those adjacent to the proposed permitted site. If perennial streams from areas adjacent to the permit are used for this baseline survey, the attributes and biological assemblages that contain localized and unique species within the permit may be missed.[365] Assessing only a subset of perennial streams within the proposed site may also lose this type of biological resolution and is not appropriate when SMCRA requires the operation to minimize effects to water quality and quantity as required by section 515(b)(10) of SMCRA,[366] and to fish and wildlife and related environmental values as required by 515(b)(24) of SMCRA.[367] In summary, the perennial streams under these requirements may contain rare, sensitive, and important habitat and small populations of rare and sensitive organisms that are not likely to be comprehensively cataloged without thoroughly sampling the potential permitted site. Third, it is incumbent that the permittee provide assurance that effects of the operation on federal, state, and tribal-listed threatened and endangered species have been properly assessed.

Another reason the commenters offered for deleting these mandatory bioassessments was that these bioassessment protocols have historically been conducted for a different purpose: As part of a suite of metrics (*i.e.,* scientifically defensible data) used and not a stand-alone tool to characterize the nature of an ecosystem or community. We did not alter the rule in response to these comments and are retaining these bioassessments as specified in final paragraph (c)(vii). The U.S. Environmental Protection Agency first established the policy that scientifically defensible biocriteria values may be used independently to provide conclusive evidence that water quality standards are or are not attained.[368] But more importantly, as used in this rule, bioassessments (using at a minimum, macroinvertebrate sampling) are part of a suite of scientifically defensible data that will be used. These bioassessments also include physical, chemical, and other biological attribute measurements to determine baseline condition and to monitor the operation through final bond release. In addition, regulatory authorities routinely use bioassessment protocols for practical and compliance purposes, including total maximum daily load development and monitoring, measuring national pollutant discharge elimination system permit compliance, analyzing and establishing best practices for restoration, and measuring the progress of stream restoration. Similar to our discussion in the preamble to the proposed rule, we anticipate that the SMCRA regulatory authority, with assistance from the appropriate Clean Water Act agencies, will define the range of values required to support each designated use and premining use of the stream.[369] The SMCRA and the Clean Water Act authorities have the knowledge and history to provide permit applicants with a robust protocol that will define the range of values required to support each existing and applicable Clean Water Act water quality standards of the stream in question. The final rule simply codifies a minimum requirement to incorporate within this protocol a measurement of aquatic organisms (benthic macroinvertebrates), a calculated values for habitat (including vegetation), and assessments of water quality and quantity. The baseline biological, physical, and chemical assessments of these streams will also allow the regulatory authority to provide guidance to operators on ways to prevent material damage to the hydrologic balance outside of the permitted area because these baseline measurements can be compared with the measurements needed to support each designated use and premining use of the stream in question. The comparison between the values, including index values, and the baseline measurements is based upon substantial studies and scientific support, and it is appropriate to conduct monitoring of

[363] Representative sample of SMCRA regulatory authority Notice of Violations across the United States.

[364] 30 U.S.C. 1265(b)(24).

[365] Judy L. Meyer, et al., *The Contribution of Headwater Streams to Biodiversity in River Networks,* Journal of the American Water Resources Association (JAWRA) 43(1):86–103. DOI: 10.1111/j.1752–1688.2007.00008 (2007).

[366] 30 U.S.C. 1265(b)(10).

[367] *Id.* at 1265(b)(24).

[368] T.T. Davies, Memorandum to Water Management Division Directors, *Transmittal of final policy on biological assessments and criteria.* U.S. Envtl. Prot. Agency. Washington, DC (June 19, 1991).

[369] 80 FR 44436, 44475 (Jul. 27, 2015).

streams potentially impacted by coal mining activities using these protocols.

One commenter requested that we address whether the biological assessments currently employed for Clean Water Act section 404 [370] permitting will suffice. If the assessment includes all of the characteristics required in this final rule and its implementing regulations, the Clean Water Act section 404 assessment will suffice. This commenter was also concerned that these bioassessment requirements could result in needless data duplication that may delay permitting issuance and potentially conflict with the Clean Water Act and the U.S. Army Corps of Engineers requirements. We understand this concern. Final § 780.19(h) requires coordination between the SMCRA regulatory authority and the Clean Water Act authority. Coordination may include baseline data collection points and parameters and the sharing of data to the extent practicable and consistent with each agency's mission, statutory requirements, and implementing regulations. This will minimize delays, data duplication, and conflicting requests.

Commenters also voiced concern over the quality control that the regulatory authority would use for these bioassessments. These commenters indicated that strict quality controls to accurately determine the perennial stream condition would be difficult to execute and requested that the regulatory authority be provided discretion to either modify or eliminate bioassessment protocols. One commenter specified that the regulatory authority should be able to use its discretion to grant waivers of this requirement to protect the safety of the individuals performing the studies. We disagree that quality control for these bioassessments would be too difficult to execute. We also decline to make these bioassessments optional. These bioassessment protocols, both at the state and federal level are designed to address quality control throughout the design, data collection, and analysis phases. These protocols were developed specifically to consider the safety of those performing the protocols and we anticipate that the bioassessments will be conducted consistent with the safety of those performing the assessments. If a state protocol is not available that includes these quality and safety procedures, the ''National Rivers and Streams Assessment 2013/2014 Field Operations Manual for Wadeable Streams'' includes quality assurance measures in field and laboratory design and operations and statistical analysis techniques to provide comprehensive data integrity. This protocol also includes a section that describes the recommended training, communications, safety considerations, safety equipment and facilities, and safety guidelines for field operations. This protocol addresses quality assurance and quality control issues and is valid throughout the 48 conterminous states; therefore, it may be used to assess and monitor SMCRA-permitted operations. Final § 780.19(c)(6)(vii)(E) includes a requirement to describe the technical elements of the bioassessment protocol, including, but not limited to sampling methods, sampling gear, index period, sample processing and analysis, and quality assurance/quality control procedures; an appropriate, scientifically defensible bioassessment would have this information readily available.

Commenters also expressed concern with the proposed rule's reliance on the information created by the bioassessments. Specifically, they noted that the proposed rule did not account for changes in biodiversity of a perennial stream or other surface waters caused by outside sources during the life of the permit. We disagree. Final § 780.19(c)(4)(i) requires sampling upgradient and downgradient of the proposed permit area in each perennial and intermittent stream within the proposed permit and adjacent areas. This sampling array will account for potential effects from outside sources. In addition, the protocols and indices we are requiring have been established while considering natural spatial and annual variation. Determining the effects of human activity in streams involves the establishment of reference streams and conditions. This process includes the sampling of aquatic biota and the habitat (*e.g.,* geography, altitude, vegetation, attributes of the physical stream channel and surrounding area, and water chemistry) in and adjacent to the stream. These data are collected to determine reference and non-reference streams and produce consistent results. Once these reference streams and conditions are established, index thresholds are then established, and these will be used to make assessments and monitor streams. This is also mainly an iterative process, where reference streams and conditions are sampled, resampled, and reanalyzed, and the index may be refined as time passes and more data are collected. These metrics are also ecologically relevant to the biological assemblage or community under study and are sensitive to stressors beyond the permitted site, and provide a response that can be discriminated from natural variation. Again, each permit can rely on the National Rivers and Streams Assessment for streams to provide the minimum requirements found in this final rule because this assessment is scientifically defensible in the 48 conterminous states.

Several commenters opposed our use of bioassessment indices as one way to describe ecological function. They noted that well-respected aquatic ecologists, including one ecologist we have cited and relied upon within the proposed rule, have not been able to agree on metrics of ecological function in stream networks, let alone on the ability to restore them. As one example, commenters referred to the Maryland Stream Restoration Association, and these commenters asserted that this association has not yet agreed on such metrics for streams in the Appalachian counties of Maryland. We attempted to corroborate the commenters' assertion, but we could not find a source for this disagreement on the metrics for the Appalachian counties of Maryland. We did, however, discover that the official Web site of the Maryland Stream Restoration Association includes at least one reference to a protocol for adequate stream restoration within the Chesapeake Bay watershed, which includes many references and examples of using biological indices to measure ecological function on restoration projects.[371] Additionally, the Maryland Department of Natural Resources uses bioassessment protocols (with identification to the genus level for regulatory actions) for restoration targeting and measuring restoration progress for Maryland's wadeable streams.[372] These Maryland Department of Natural Resources references further support our requirement for use of scientifically defensible bioassessments because they demonstrate that adequate protocols can be, and have been, developed for the measurement of ecological function. Ecological function is more thoroughly addressed in our preamble discussion of our definition of that term in § 701.5 above.

Several commenters stated that there are other scientifically defensible bioassessment protocols that could be

[370] 33 U.S.C. 1344.

[371] Joe Berg, et al., *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects:* FINAL REPORT, Urban Stormwater Work Group Chesapeake Bay Partnership (2012).

[372] Maryland Biological Assessment Methodology for Non-Tidal Wadeable Streams, Last Revised on June 4, 2014.

used to assess and monitor the biological condition of streams and recommended that we allow other bioassessment protocols and the multimetric bioassessments that were in the proposed rule. We agree with this recommendation. Further, we recognize that many states are not currently using multimetric macroinvertebrate sampling that use an index of biological integrity. Therefore, we have revised the final rule in response to these comments to allow for the use of other scientifically defensible bioassessment protocols as long as specific minimum requirements are satisfied. In paragraphs (c)(vii)(A) through (D) of the final rule we clarify the minimum requirements for scientifically defensible bioassessment protocols. This includes a measurement that is based upon an appropriate array of aquatic organisms, that at a minimum includes benthic macroinvertebrates, identified to the genus level where possible, otherwise to the lowest practical taxonomic level. We retain the minimum requirements to sample benthic macroinvertebrates as they are particularly useful for assessing the biological condition of the stream because they are diverse, abundant, sensitive to environmental stress, relatively immobile (compared to fish), and many macroinvertebrates have relatively long life cycles of at least a year. These characteristics of macroinvertebrates integrate the effects of environmental stressors over time and therefore are good indicators of local conditions as well as upstream land and water resource conditions. We do not require fish sampling and other organism samplings (such as periphyton) in our final rule; however, regulatory authorities have the discretion to require other sampling protocols. Additionally, the protocol must result in the calculation of index values for both stream habitat and aquatic biota based on the reference condition. We included the terms ''stream'' before habitat and ''aquatic biota based on the reference condition'' instead of only macroinvertebrates as proposed, as these more appropriately describe the requirements due to the inclusion of other types of bioassessments other than multimetric indices that use an index of biological integrity. We revised final paragraph (c)(vii)(C) and added paragraphs (c)(vii)(D) and (E) to provide clarity with respect to the appropriate final characteristics of the required bioassessment protocols. Final paragraph (c)(vii)(D) requires the protocol to include a quantitative assessment of in-stream and riparian habitat condition. Final paragraph (c)(vii)(E) requires the operator to describe the technical elements of the protocols, including, but not limited to; sampling methods, sampling gear, index period, sample processing and analysis, and quality assurance/quality control procedures. These two requirements are included to provide sufficient information to the regulatory authority that the bioassessment to be used will be appropriate and scientifically defensible; for scientifically defensible bioassessments, this information should be readily available. These measures are supported by current science and are also in response to comments described above regarding the concern over the bioassessment protocols containing the proper quality control and safety procedures. A publication by the U.S. Environmental Protection Agency in 2013 identified 13 technical elements of biological assessment programs and included recommendations on how to more precisely define aquatic life uses and approaches for deriving biological criteria, monitoring biological condition, supporting causal analysis, and developing-stressor response relationships.[373] This publication serves as resource to determine the scientific rigor of potential bioassessment protocols to be used.[374]

Many commenters supported biological condition assessments for all streams and other commenters supported only including them for intermittent and perennial streams. As a result of comments we received and our reanalysis of the proposed rule's biological condition requirements, we removed the provisions of proposed paragraph (e) that would have assessed the biological condition of all intermittent streams and a representative sample of ephemeral streams in those states or regions in which there are currently no established scientifically defensible bioassessment protocols available. For all intermittent and some representative number of ephemeral streams, the proposed rule would have required adherence to a multimetric bioassessment protocol.[375] Many commenters correctly noted that it is currently impractical to require the assessment of the biological condition of ephemeral streams and of those intermittent streams in states or regions in which there are no established bioassessment protocols available. Generally, the best technology currently available in many areas for these types of streams does not include bioassessment protocols because application of those protocols would not produce reliable, substantive information that the regulatory authority would be able to use to assess stream function or to monitor reclamation success.

Therefore, we did not include these requirements in the final rule. However, these intermittent and ephemeral streams represent a large proportion of the stream lengths within watersheds, especially in semi-arid and arid environments, and need to be assessed with a degree of scientific rigor. Current science provides examples of watershed management and resource protection only having limited success if non-perennial streams are excluded from assessments and reclamation activities.[376] One reason for the importance of these streams is that their natural, seasonal flow provides significant exports to the downstream habitat such as nutrients and processed organic matter.[377] In addition, these small streams and their associated adjacent vegetative communities can differ widely in physical, chemical, and biotic attributes and provide habitats for a range of species that may not be able to persist in perennial stream reaches due to competition, predation, invasive species, or abiotic factors.[378] Permanent residents as well as migrants travel through ephemeral and intermittent stream channels at particular seasons or life stages, and this movement links headwaters with downstream and adjacent terrestrial ecosystems.[379] Therefore, although we are not requiring the use of a scientifically defensible bioassessment protocol for these streams if one does not currently exist, final paragraphs (c)(6)(ii) and (iii) require the assessment of the physical structure of the channel and a habitat assessment of the vegetative communities within and adjacent to ephemeral streams and those

[373] U.S. Envtl. Prot. Agency, *Biological Assessment Program Review: Assessing Level of Technical Rigor to Support Water Quality Management.* Washington, DC, EPA 820–R–13–001 (2012).

[374] J.E., Allende, *Rigor: The essence of scientific work,* Elec. Journal of Biotechnology, 7(1), (2004).

[375] 33 U.S.C. 1251(a) or 1313(d).

[376] Catherine Leigh, *et al., Ecological research and management of intermittent rivers: an historical review and future directions.* Freshwater Biology (2015).

[377] Raphael D. Mazor, et al. *Integrating intermittent streams into watershed assessments: Applicability of an index of biotic integrity.* Freshwater Science, pgs. 459–474 (2011).

[378] Emily S. Bernhardt and Margaret Palmer. *The environmental costs of mountaintop mining valley fill operations for aquatic ecosystems of the Central Appalachians.* Annals of the New York Academy of Sciences, 1223.1: 39–57 (2011).

[379] Judy L. Meyer, et al. *The Contribution of Headwater Streams to Biodiversity in River Networks.* Journal of the American Water Resources Association (JAWRA) 43(1):86–103. DOI: 10.1111/j.1752–1688.2007.00008.x (2007).

intermittent streams in states or regions in which there are no scientifically defensible bioassessment protocols. Without established scientifically defensible bioassessment protocols, these assessments of the physical structure of the channel and an assessment of the vegetative communities are part of the best technology currently available to describe the streams and provide the regulatory authority with significant, useful, and scientifically defensible information to determine how to minimize the operations' effects to fish, wildlife, and related environmental resources consistent with section 515(b)(24) of SMCRA.[380] These requirements are consistent with proposed paragraphs (i) and (ii) and are discussed in further detail above.

In addition to the requirements of final paragraphs (c)(6)(ii) and (ii), final paragraph (c)(6)(viii) requires, at the time of application, a description of the results of a one-time sampling of the aquatic biota of each intermittent stream segment in states or regions in which there are no established bioassessment protocols available. Final paragraph (viii) requires that these one-time sampling events use a sampling method or protocol established or endorsed by an agency responsible for implementing the Clean Water Act, 33 U.S.C. 1251 *et seq*.[381] Although indices for the bioassessment of intermittent streams are not currently widely available, effective and scientifically defensible protocols exist nationwide (the best current technology also includes the proper Quality Assurance and Quality Control) to sample intermittent streams for the identification and cataloging of the biota found within streams. The best technology currently available for this one time sampling event are frequently the protocols for the bioassessments described above for perennial and some intermittent streams, but without the further scientific analysis and determination of index values. These one-time sampling events must also possess the same quality control and safety considerations as the scientifically defensible bioassessment protocols. As an example, the ''National Rivers and Streams Assessment 2013–2014 Field Operations Manual for Wadeable Streams'' published by the U.S. Environmental Protection Agency serves as a reliable national resource for sampling streams, including intermittent streams. Of critical importance to the sampling of intermittent streams is the correct timing of sampling. The protocol in the National Rivers and Streams Assessment 2013–2014 Field Operations Manual for Wadeable Streams requires greater than 50 percent water throughout the channel reach to execute sampling. The manual also advises against sampling when precipitation results in streamflow above baseflow. The appropriate time to sample intermittent streams is normally narrower than appropriate sampling of perennial streams, simply because of the amount of time when proper water flow exists. When conducted during the correct time of year, this one-time sample will provide the regulatory authority with a description of the biota within these intermittent streams and provide significant and useful information to determine how best to minimize the adverse impacts of the operation on fish, wildlife, and related environmental resources consistent with section 515(b)(24) of SMCRA.[382] These assessments will also help the regulatory authority determine if any species of special concern are present within these stream reaches. These assessments are not intended to be used for analyses other than to identify those species that are found within these streams and to aid in identification of the types of communities present (*e.g.,* coldwater stream community).

Other commenters requested we include an addition to the rule that requires a strict adherence to the approved bioassessment protocol (*e.g.,* sampling gear, sample index period, sample anniversary dates, and sample processing methods). This commenter also voiced a concern that sample periods for small perennial streams (those most likely to be directly affected by mining activities) are shorter than those for larger perennial streams. According to the commenter, we should prescribe sampling times that avoid early season and late-summer index periods because these streams are typically hydrologically stressed and they tend to score poorly (*e.g.,* reduced species diversity and richness) in many indices during these times. We decline to adopt this recommendation because the protocols, requirements, and updates incorporated into the final rule discussed above address this concern. For example, the U.S. EPA National Rivers and Streams Assessment 2013–2014: Field Operations Manual (Wadeable Streams) prohibits sampling of sites with water in less than 50% of the reach length. It also specifies that all sites must be sampled during base flow conditions. In addition, the coordination with the appropriate Clean Water Act authorities will help establish the appropriate sampling dates for the streams in question.

We received support for the identification of macroinvertebrates to the genus level within proposed paragraph (e)(2)(i), now included within final paragraphs (c)(6)(vii)(A) and (c)(6)(viii)(B), along with an assessment of every stream segment potentially affected by the permit. However, one commenter wanted us to specifically mention the limitations of these methods for assessing impacts to species sensitive to water-quality degradation, including federally-listed threatened and endangered species. Several supporters of the proposed rule also requested we require more sampling. For example, commenters suggested sampling fish to the species level, bird surveys, and hyporheic zone assessments in addition to macroinvertebrate data collection. Final paragraph (c)(6) sets out the minimum sampling requirements. We decline to add other requirements. The regulatory authority always has the discretion to require additional measures as appropriate to their region or to the particular permit under consideration.

Other commenters opposed the requirement in final paragraph (c)(viii)(A) to identify macroinvertebrates to the genus level. These commenters alleged that such a requirement is unnecessary, too expensive, and family level identification is preferred and already performing adequately. We disagree. While genus-level identifications are more expensive to process than family-level identifications, they are also the best technology currently available and allow for increased specificity, or degree of detail, of the biology that exists in streams. Further, most scientifically defensible protocols now require genus-level identification in their bioassessments when possible. Also, many studies show that genus-level identification provides both a greater degree of confidence on the condition of streams and a certain degree of knowledge about what types of stressors are affecting streams if they are undergoing stress. In the vast majority of situations, these genus-level identification tools, when compared to family level identification tools, detect smaller differences in water quality and are therefore preferred, not only for assessment purposes but for monitoring

[380] 30 U.S.C. 1265(b)(24).

[381] For example, the U.S. Envtl. Prot. Agency has a sampling protocol applicable across the nation. *National Rivers and Streams Assessment: Field Operations Manual.* (2007) EPA–841–B–07–009. U.S. Envtl. Prot. Agency, Washington, DC. This is just one example, more regional specific protocols may exist.

[382] 30 U.S.C. 1265(b)(24).

purposes.[383] We also recognize that there may be instances where it is not possible to identify to genus and an identification is needed due to a small sample size or other limiting factors, such as situations when an identification is needed and only a partial body is available for identification, the specimen is not the correct sex, or not within the appropriate life stage to identify to genus level. Therefore, final paragraph (c)(6)(viii)(B) now states that the applicant must identify benthic macroinvertebrates to the genus level where possible, otherwise to the lowest practical taxonomic level. This provision also allows for higher-level identifications where classifications of taxa such as flatworms, water mites, and oligochaetes are not practicable. In most instances, identification to the genus level is appropriate for samples in all life stages.

One commenter opposed our use of extrapolated measurements within the bioassessment protocols. This commenter opposed these by stating that in other sections of the proposed rule we will no longer allow extrapolated data because our past experience indicates that extrapolation is not a reliably accurate method to document and describe seasonal variation in chemical parameters; therefore this rule should be consistent and not use an extrapolated biological index value based on arbitrarily developed correlation methods to establish a standard for reclamation success. We disagree. We have experienced inaccuracies and other problems with the extrapolation of seasonal variation in chemical parameters while gathering baseline data and it is an established problem, while the extrapolation of biological condition data is a standard that has been produced and replicated within scientifically defensible bioassessment protocols.

A regulatory authority commenter indicated that the requirement in proposed paragraph (e)(2), now final paragraph (c)(6)(vii), to use a bioassessment method that is approved by the state Clean Water Act regulatory authority appears to be in direct conflict with the state's water quality laws and standards. The commenter opined that this requirement places an additional burden on the state regulatory authority to review, approve, and validate bioassessment protocols when a state may not have or use numerical bioassessment methods. We disagree. This requirement harmonizes a state's Clean Water Act bioassessment methods and the SMCRA requirements found in paragraph (c). Moreover, final paragraph (c)(6)(vii) requires applicants to use either a method approved by the state Clean Water Act authority or ''other scientifically-defensible bioassessment protocols accepted by agencies responsible for implementing the Clean Water Act, 33 U.S.C. 1251 *et seq.,* modified as necessary to meet the following requirements''. Thus, a SMCRA regulatory authority in a state without existing bioassessment methods approved by a state or tribal Clean Water Act authority must either develop a method acceptable to the Clean Water Act authority or use another scientifically defensible bioassessment protocol accepted by agencies responsible for implementing the Clean Water Act, such as the U.S. Environmental Protection Agency's National River and Streams Assessment for Wadeable Streams.

The commenter also maintained that the use of bioassessments and correlation index values are not reasonable for isolated locations in streams that have highly variable flow conditions. In response, we note that requirement for biological condition data in paragraph (c)(6) only applies to (1) all perennial streams and (2) any intermittent streams in a state or region with a scientifically defensible bioassessment method. If no bioassessment methods exist for intermittent streams, then the requirements to obtain biological condition data included in paragraph (c)(6) applies only to perennial streams on the permitted and adjacent area. We are also not aware of any type of situation the commenter describes in which hydrologic conditions are limited to such a small area and to such few streams that development of biological and correlation index values is precluded.[384] Hydrologic data may have widely variable temporal and spatial characteristics, but it typically forms patterns that cover areas large enough to enable development of scientifically defensible bioassessment protocols.

We sought comments within the proposed rule at 780.19(e) on the effectiveness of using index scores from bioassessment protocols to ascertain impacts on existing, reasonably foreseeable, or designated uses. Many commenters supported their use while many claimed they were not effective. We also invited commenters to suggest other approaches that may be equally or more effective. We received several suggestions, including: Solely qualitative measures; yield in pounds per acre, percent groundcover, stems per acre, diameter at breast height, livestock average daily gains, and species frequency; a standard that simply says that there is no material damage to the hydrologic balance outside the permit area if there is no change in designated use of the receiving stream as described by the Clean Water Act regulatory authority attributable to surface coal mining; Water Quality Standards and Physical Habitat scoring are both more dependable measures with replicable results that are not subject to as many variables both in the environment and sample methodology; standardized qualitative assessments for intermittent streams; premining and postmining qualitative biological and habitat assessments made at the appropriate time to determine if and where macroinvertebrates, fish, or amphibians are present in intermittent streams. Although we appreciate the suggestions, these alternatives do not adequately assess the biological functions of streams as accurately as bioassessment protocols described in the final rule and are not the best technology currently available.

Final Paragraph (d): Additional Information for Discharges From Previous Coal Mining Operations

A commenter from a regulatory agency suggested that we define the term ''discharge.'' We agree that this term could be clarified and have included the modifier ''point-source'' before discharge in the final rule. In this section, we also removed the requirement to obtain biological condition information because it was redundant with § 780.19(c)(6), which requires essentially the same information.

Several commenters suggested that a single, low-flow sample representing baseline for each mine discharge located over and adjacent to a mine site does not make sense in light of the requirement for twelve evenly-spaced monthly baseline samples in paragraphs (b) and (c) to characterize groundwater and surface water baseline conditions. Some commenters suggested that no sample was necessary for the discharges from previous operations due to the volume of sampling required for surface water and groundwater characterization. We understand the seeming contradiction in sampling frequency

[383] D.R. Lenat and V.H. Resh, *Taxonomy and stream ecology—the benefits of genus-and species-level identifications.* Journal of the North American Benthological Society, 20(2), pp. 287–298 (2011).

[384] Again, we reference the U.S. Entl. Prot. Agency's National Rivers and Stream Assessment as a scientifically defensible bioassessment for all perennial streams within the forty-eight conterminous states.

between surface water and groundwater and mine discharges, but these regulations are an adequate basis to establish the minimum regulatory authority standards. The low flow period is the most critical period to understand mine discharges because it is at that period when the concentrations of water quality parameters are the highest in both the discharge and receiving streams. Thus, a sample collected during this time is most likely to reveal potential issues as compared to samples taken during higher flows when concentrations are diluted. Of course, state regulatory authorities have the discretion to require whatever sampling frequencies for discharges that they consider necessary to make technical assessments and associated findings for permits within their jurisdiction. For the reasons identified above, we are not revising the sampling requirements for mine discharges.

One commenter suggested that the language pertaining to the required sampling for previous mine operations was imprecise and further questioned whether abandoned and permitted discharges were required to be sampled. The final rule language requires sampling of all discharges from abandoned mine sites found on and adjacent to a proposed mining operation that might have a hydrologic connection to the operation. This requirement provides information that both the regulatory authority and applicant will need to assess whether any adverse impacts from the discharges within and adjacent to the permitted area are a result of the current mining operation. Without this information, the operator and regulatory authority are less likely to detect any changes in water quality and/or flow from these previous mine discharges which may be linked to the proposed operation. For all of these reasons, we decline to change the final rule language regarding data requirements for pre-existing mine discharges.

A commenter opined that the extra monitoring and parameters proposed in §§ 780.19(d) and 784.19(d) are a disincentive for remining. We understand the concern with respect to remining. However, adequate baseline characterization is more important in remining situations, especially with pre-existing discharges. Section 780.28(e)(3)(i)(D) requires that, when mining through a degraded stream, the mining ''[w]ill not further degrade the form, hydrological function, biological condition, or ecological function of the existing stream.'' Thus, adequate baseline characterization is vital for determining if a remining operation is further degrading the form, hydrological function, biological condition, or ecological function of an existing stream segment.

Final Paragraph (e): Geologic Information

Some commenters suggested that the requirement at proposed paragraph (f)(3)(iii), now paragraph (e)(3), to obtain pyritic sulfur and alkalinity information should only apply to regions where it is necessary to acquire such data to prevent acid mine drainage. Under paragraph (e)(5), the regulatory authority has the discretion to waive the pyritic sulfur and alkalinity data if information exists to support the regulatory authority's written finding. We note, however, that we are unclear how *not* collecting the alkalinity and pyritic sulfur is beneficial in any manner. The applicant must conduct an analysis of the geochemical nature of the strata to be removed and assess the net neutralization potential of the entire overburden column. To do so, every stratum needs to be tested, its net neutralization potential calculated, and an analysis made of the overall net neutralization of all the overburden on the site. Only in cases where the strata can be shown through existing information to historically produce net alkaline effluent would it make sense to waive this requirement.

Another commenter requested that we define ''other parameters that may influence the required reclamation.'' In response, we note that such factors may include the weather regime, availability of water, placement of overburden containing sulfur, and vegetation requirements because these factors can significantly affect effluent water quality from the reclaimed site.

Final Paragraph (f): Cumulative Impact Area Information

We received a couple of comments about proposed paragraph (g),[385] now paragraph (f), which addresses cumulative impact area information. One commenter claimed that the paragraph requires the characterization of ''all'' perennial, intermittent, and ephemeral streams, implying there are no limits to what has to be considered when making a determination of the cumulative impacts of the proposed operation on the surface water and groundwater. The commenter asserted that we should use the term ''representative sampling'' and let the regulatory authority use their professional judgment on what is appropriate. This is a mischaracterization of the proposed rule text; there is no language in the paragraph that requires or implies ''all'' streams must be characterized. We require the operator to obtain the information necessary to assess the impacts of both the proposed operation and all anticipated mining on surface-water and groundwater systems in the cumulative impact area. Further, nothing in § 780.21 of the proposed or final rule, which sets the requirements for the preparation and review of the cumulative hydrologic impact assessment, requires or implies that ''all'' streams must be characterized to determine the cumulative hydrologic impacts. Therefore, the commenter's concerns are misplaced, and we have made no changes to the final rule based on this comment.

Another commenter pointed out that proposed paragraph (g), now final paragraph (f), requires the regulatory authority to obtain all hydrologic, geologic, and biologic information necessary to perform the cumulative hydrologic impact assessment. They opined that it places an extraordinary huge burden on the regulatory authority to obtain all this data and this rule appears to require the regulatory authority to research proposed cumulative hydrologic impact assessments, when the traditional role of the regulatory authority has been to evaluate and review permit applications that contain the information. We agree with the commenter. We mistakenly stated in the proposed rule that the regulatory authority was responsible for obtaining this information. The preamble to the previous final rule contains a lengthy discussion on this topic, which makes it clear that the applicant is responsible for collecting this information. *See* 48 FR 43970 (Sept. 26, 1983). In the final rule, we have corrected this error and changed ''[t]he regulatory authority must obtain . . .'' to ''[y]ou must obtain . . .''

We have also made other changes that clarify our intent and the role of the applicant and the regulatory authority. First, in paragraph (f)(1), of the final rule, to better conform to the subject of this paragraph, we changed the rule text from ''probable cumulative hydrologic impacts of the proposed operation . . .'' to ''impacts of both the proposed operation . . .'' Second, in paragraph (f)(2), we replaced the word ''must'' with ''may'' in the first sentence. This change better conforms to the sentence that followed. Third, we modified text within paragraph (f)(3) that clarifies the role of the regulatory authority and

[385] 80 FR 44436, 44602–44603 (Jul. 27, 2015).

complements the changes made in paragraph (f)(1).

Final Paragraph (g): Exception for Operations That Avoid Streams

This section establishes an exception for operations that avoid streams and specifies that the regulatory authority may waive the biological condition information requirements of paragraph (c)(6)(vi) through (viii) of this section if it is demonstrated, and if the regulatory authority finds in writing, that the operation will not: Mine through or bury a perennial or intermittent stream; create a point-source discharge to any perennial, intermittent, or ephemeral stream; or modify the base flow of any perennial or intermittent stream. Several commenters supported this proposed section. Other commenters requested that we remove the reference to ephemeral streams in § 780.19(h)(2), now § 780.19(g)(2). We disagree. Changes to the hydrology in ephemeral streams are linked to intermittent and perennial streams and must be considered when approving a potential exception for collecting baseline condition information.

Another commenter suggested that we include non-point source discharges within this paragraph because there are instances where these types of discharges can impact surface waters, potentially affecting aquatic environments. We decline to modify the final rule in response to this comment because the burden associated with monitoring all non-point source discharges into streams may be outweighed by any benefit that may be received. Moreover, the surface water monitoring requirements, as prescribed by the final rule are adequate to determine the quantity and quality of surface water. Other commenters requested more guidance on whether stormwater controls and outfalls that discharge into ephemeral, intermittent, or perennial streams are considered ''point sources'' under this paragraph. Consistent with section 502 of the Clean Water Act,[386] we consider stormwater (not including agricultural stormwater) that is discharged by means of any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or other floating craft into a stream to be a point source discharge.

One commenter correctly noted that proposed paragraph (h), now paragraph (g) allows the regulatory authority to grant a waiver from the requirement to establish baseline conditions in intermittent and perennial streams for biological information. However, this commenter indicated that this waiver could conflict with the stream baseline requirements in paragraph (c) pertaining to surface water baseline sample collection. We disagree. The establishment of baseline flow and quality characteristics in paragraph (c) applies to all streams within, and adjacent to, the permitted area and cannot be waived. Proposed paragraph (h), now final paragraph (g), only allows the regulatory authority to waive the biological information required in paragraphs (c)(6)(vi) through (viii)—not the water quality and quantity information in paragraph (c).

One commenter suggested that many other non-mining related impacts occur in streams that could potentially affect the receiving stream's aquatic environment. The commenter suggested removing the exemptions proposed in paragraph (h) and instead require biological condition baseline data in all circumstances. We disagree with the suggestion to remove the three exemption clauses because it saves time and resources in situations where it is not likely to yield data to help with reclamation, and also non-mining related activities are not regulated under SMCRA. The requirements of paragraphs (c)(2) and (3) will provide sufficient data to characterize baseline conditions in most situations where mining operations avoid all activities within or near streams. If the regulatory authority chooses to require biological condition data when one of the three conditions is present, the final rule contains sufficient discretion for them to do so. For these reasons, we are retaining the exemptions within the final rule language.

Final Paragraph (h): Coordination With Clean Water Act Agencies

We received several comments on proposed paragraph (i), now final paragraph (h), and, as a result, we have made a few revisions. First, some commenters asserted that requiring coordination with Clean Water Act agencies would not necessarily be useful if the Clean Water Act authority did not respond to coordination attempts. It is important to obtain the input from the Clean Water Act authority when considering aquatic impacts from SMCRA sites on adjacent receiving streams; the Clean Water Act authority is a valuable source of information and should be used in SMCRA permitting decisions. In response to the commenter's concerns, however, we added the phrase ''make best efforts to'' in the introductory text because the nature of response of the Clean Water Act authority is out of the control of the SMCRA regulatory authority. Adding ''make best efforts to'' also addresses other comments received on what is now final paragraph (h)(2), which provides that the regulatory authority make best efforts to ''minimize differences in baseline data collection points and parameters.'' These commenters also alleged that significant delays in SMCRA permitting will result if the regulatory authority must reconcile the baseline data collection points and parameters required by this rule with the Clean Water Act requirements, which are more complex and include a greater number of parameters. We understand the concern, but data collection reconciliation is important to alleviate wasted effort and to ensure consistency between the Clean Water Act authority and the SMCRA permit holders. For example, multiple but non-coordinated macroinvertebrate sampling can yield inaccurate results if conducted at a similar location and at a frequency that does not allow the site to recover sufficiently between sample events. For all of these reasons, we decline to completely remove the language requiring coordination.

One commenter suggested that we place a reasonable time limit on the agencies to respond to information needed from other agencies in order for the SMCRA regulatory authority to make a permitting decision. The commenter suggested that permit applicants would be at the mercy of other agencies to get all the information necessary for a permitting decision and suggested requiring a reasonable time limit for agency responses to information requests. We are not adopting this suggestion because we have no authority to place regulatory burdens on other agencies exercising other statutory authorities. The intent of this provision is to ensure all information is available to the SMCRA regulatory authority to make an evaluation, permitting decision, and permit findings and associated documents. In addition, the requirement to have sufficient information to make permitting decisions and develop supporting documentation is not a new requirement.

Final Paragraph (i): Corroboration of Baseline Data

We received many comments on the requirement in proposed paragraph (j), now final paragraph (i), to corroborate a sample of the baseline information. Many commenters indicated mandatory sample corroboration was not a feasible mechanism to achieve the desired result

[386] 33 U.S.C. 1362.

because of the timing and expense; others asked what constituted a ''sample.'' The intent of sample corroboration is to ensure the quality of the data collected and that the data accurately characterizes the baseline conditions. We recognize that co-collection of samples or other similar means of corroboration is not the only method to corroborate samples, and we have added the phrase ''visual observation of sample collection'' as an allowable means to corroborate a sample.

Some commenters inquired as to whether corroboration meant one sample or numerous samples. One commenter noted that, under the proposed provision, one sample is sufficient to meet the corroboration requirements but that such corroboration would have no validity because it has a statistical strength of zero. We understand the need for statistical certainty in some situations, but the goal of the corroboration is to evaluate gross water quality features not to achieve statistical certainty. Final paragraph (i), however, leaves the regulatory authority with the discretion to determine the number and means of sample corroboration, even if it is just one sample. The regulatory authority is in the best position to determine the number of corroboration samples due to their familiarity with the area, water quality, and labs used to general data.

Similarly, another commenter raised the possibility of safety concerns if corroboration were to occur during winter months when sites may not be readily or safely accessible. We did not revise paragraph (i) in response to this concern because we are not prescribing when the corroboration occurs; thus, the regulatory authority has the flexibility to approve corroboration at times when sites can be safely accessible.

A commenter, who supported the corroboration requirement, suggested that we revise the language to specify that the corroboration occur on a random sampling of sites with a large enough sample size to statistically represent the data reported to the state regulatory authority. For the same reasons discussed in the previous paragraphs, we decline to be more specific and prescriptive. The regulatory authority is in in the best position to determine corroboration protocol and validity for each proposed operation.

One commenter suggested we consider adopting standard quality assurance and quality control sampling procedures, such as those required by the U.S. Environmental Protection Agency, that require the collection of duplicates at ten percent of stations, analyzing field blanks, and duplicate identification of benthic samples. Similarly, several regulatory authorities commented that they already have sufficient corroboration requirements in their state regulations and the requirement should be stricken from the rule. We applaud these regulatory authorities for their efforts to ensure an adequate and accurate baseline characterization, but we decline to remove this requirement and we also decline to adopt standard quality assurance and quality control sampling procedures. Not all states are as proactive as these states cited by the commenters, and corroboration is an important responsibility that should be applicable to all states. As noted above, however, we have left the provision in general terms so that each state can tailor the corroboration protocol to its unique needs.

Many commenters opined that requiring the regulatory authority to corroborate a sample was a major change from the previous applicant self-monitoring requirement and will considerably increase staff time and cost to implement. Other commenters suggested that the regulatory agency be required to conduct this assessment and should not contract with third party entities at the applicant's expense to complete the task in lieu of the regulatory authority. The final rule, as modified, emphasizes the need for accurate baseline information to be collected by the applicant. Final paragraph (i) simply establishes a quality assurance and control step in the application review process, subject to regulatory authority approval, that should not incur extraneous expense to either the regulatory authority or the applicant because of the minimal number of samples required.

Section 780.20: How must I prepare the determination of the probable hydrologic consequences of my proposed operation (PHC determination)?

As discussed in the preamble to the proposed rule, we proposed to modify § 780.20.[387] After evaluating the comments we received, we are adopting the section as proposed, with the exceptions discussed below.

In general, this section relates to the preparation of the probable hydrologic consequences determination. One commenter requested that we provide a definition of a ''probable hydrologic consequences determination'' and provide a method for predicting the probable hydrologic consequences. Specifically, the commenter requested a defined level of probability; otherwise, the commenter opined that the concept of probable hydrologic consequences is ambiguous and the applicant has discretion to determine what probable hydrologic consequences determination means. We disagree. Section 507(b)(11) of SMCRA [388] and other guidance provided in §§ 780.20(a) and 784.20(a) sufficiently detail what must be considered by the applicant when determining the probable hydrologic consequences and the purpose and goal in making these determinations. In addition, we have published several technical reference documents concerning the development of probable hydrologic consequences determinations and cumulative hydrologic impact assessments. These documents can be accessed via our Web site at *http://www.osmre.gov/.* As a result, we do not need to set a level of probability or to otherwise define ''probable hydrologic consequences determination.''

Throughout this section we are substituting the term ''biology'' for ''biological condition'' for the same reasons we articulate in connection with final paragraphs (c)(6)(vi) through (viii) of § 780.19. In brief, we use the term ''biology'' to encompass the type of information needed to establish both the biological condition of perennial and intermittent streams, for which established protocols exist, and the biology of intermittent streams, for which established protocols are not currently in place. This recognizes that not all states have scientifically defensible protocols for assessing the biological condition of intermittent streams. For the same reasons, we have removed the requirement to evaluate, for the probable hydrologic consequences determination, the biological condition of ephemeral streams within the proposed permit and adjacent areas. For additional information on why we have made these type of changes, please refer to the preamble discussion in final paragraphs (c)(6)(vi) through (viii) of § 780.19, above.

Final Paragraph (a): Content of PHC Determination

Final paragraph (a), similar to proposed paragraph (a), revises the requirements concerning preparation of the determination of the probable hydrologic consequences of mining in previous §§ 780.21(f)(1) through (f)(3) by adding a requirement to consider the impacts of the proposed operation on

[387] 80 FR 44436, 44500–44501 (Jul. 27, 2015).

[388] 30 U.S.C. 1257(b)(11).

the biological condition of perennial and intermittent streams located within the proposed permit and adjacent areas, rather than only on the quantity and quality of surface water and groundwater as in the previous rule.

One commenter made a general statement that numerical standards and biological assessments should be included to improve probable hydrologic consequences determinations and cumulative hydrologic impact assessments. For information concerning the use of numerical standards in the final rule, please refer to the preamble discussion in § 773.15 above. For biological assessments, refer to § 780.19(c)(6)(ii) through (viii).

In response to proposed §§ 780.20(a) and 784.20(a), one commenter suggested that we should not extend the same protections to ephemeral streams as we do to intermittent and perennial streams. We did not propose to extend the same protections to ephemeral streams that we did for intermittent and perennial streams. In response to scientific literature supporting the benefits of these headwaters to essential biological and ecological functions, the final rule provides greater protections to ephemeral streams than do the existing regulations as described in Part VII of the preamble to the proposed rule.[389] These enhanced protective measures are consistent with the purpose of SMCRA at section 102(f) which requires us to ''strike a balance between protection of the environment and agricultural productivity and the Nation's need for coal as an essential source of energy.'' [390] While the protections we are now promulgating for ephemeral streams will be greater than under the previous rules, they will not be the same as those extended to intermittent and perennial streams. In particular, because of the difficulty in sampling the biological condition of ephemeral streams, we have removed ephemeral streams from the requirement under this paragraph to evaluate biological condition.

One commenter recommended we split paragraph (a) into two subparagraphs—one related to biological consequences and one related to hydrologic consequences. The commenter also requested that any discussion of biological consequences not be contained within the cumulative impact assessment. We are not adopting this suggestion because water quality and quantity are linked to biological condition and ecological function, and, in order for the regulatory authority to have a full description of the probable hydrologic consequences, we have determined that biological, hydrological, geologic, and ecological information should be addressed within the same assessment.

Several commenters opined that proposed paragraph (a), requiring the probable hydrologic consequences determination to include surface water quality impacts from point source discharges, effectively replaces the reasonable potential analysis under the Clean Water Act and is in violation of section 702 of SMCRA.[391] Furthermore, the commenter suggested the documentation of water quantity is problematic due to issues with stream flow modeling. We disagree. The probable hydrologic consequences determination has always required that the applicant address the anticipated effects of the planned mining operation and subsequent reclamation on the quality and quantity of surface water and groundwater water resources in the proposed permit and adjacent areas including those waterways that would receive drainage from the site; therefore, with regards to this requirement, paragraph (a) does not require additional analysis from what was previously required. We also disagree that this requirement in any way supersedes the Clean Water Act. Part IV.I. of this preamble further discusses the relationship between SMCRA and Clean Water Act.

One commenter objected to the requirement in paragraph (a) for the probable hydrologic consequences determination to include specific findings on the criteria listed in paragraphs (a)(1) through (a)(5) and further stated that SMCRA holds the regulatory authority responsible for making such findings relative to the cumulative impact. We disagree. Section 507(b)(11) of SMCRA [392] requires that the permit application contain, in a manner satisfactory to the regulatory authority, ''a determination of the probable hydrologic consequences of the mining and reclamation operations, both on and off the mine site, with respect to the hydrologic regime, quantity and quality of water in surface and ground water systems including the dissolved and suspended solids under seasonal flow conditions and the collection of sufficient data for the mine site and surrounding areas so that an assessment can be made by the regulatory authority of the probable cumulative impacts of all anticipated mining in the area upon the hydrology of the area and particularly upon water availability . . .'' Section 510 (b)(3) of SMCRA [393] states that neither a permit nor a revision to an existing application can be approved unless, among other things, ''the assessment of the probable cumulative impact of all anticipated mining in the area on the hydrologic balance specified in section 507(b) has been made by the regulatory authority and the proposed operation thereof has been designed to prevent material damage to hydrologic balance outside permit area . . .''

One commenter was concerned about proposed paragraph (a)(5)(vi) which requires that the probable hydrologic consequences determination contain a finding about the impact that any diversion of surface or subsurface flows to underground mine workings or any changes in watershed size as a result of the postmining surface configuration would have on the availability of surface water and groundwater. Commenters claimed the requirement was open ended, that evaluations of impacts starting at first order streams would be incredibly cumbersome and time consuming, and that such diversions should be addressed on a regional basis in order to properly assess impacts and costs. We disagree. Consideration of this type of data is necessary to produce a comprehensive probable hydrologic consequences determination for the proposed mining operation, as well as a thorough and inclusive cumulative hydrologic impact assessment. For example, diversions of surface or subsurface flows to underground mine workings will increase the existing volume of water which could exceed the holding capacity of the mine voids and result in an unanticipated blowout or discharge of the water to the ground surface. Diversions could also impact users of surface water or groundwater by diminishing or eliminating the availability of the water resources. We agree that it may be prudent in some instances to evaluate diversions of flows to underground mine workings on a regional basis and that should be considered by the regulatory authority while preparing the cumulative hydrologic impact assessment. However, it is the responsibility of the applicant to ensure that all activities of the proposed operation have been considered and evaluated relative to potential impacts. In addition, changes in watershed size as a result of the postmining surface configuration can

[389] 80 FR 44436, 44451 (Jul. 27, 2015).

[390] 30 U.S.C. 1202(f).

[391] 30 U.S.C. 1292.

[392] 30 U.S.C. 1257(b).

[393] 30 U.S.C. 1260(b)(3).

also affect the volume and availability of water resources resulting in either too much, or not enough, available water as compared to premining conditions; therefore, it is necessary that all activities for a proposed mining operation be considered for their potential effect on the quality and quantity of surface and groundwater, including the biology of the waterways, for the proposed permit and adjacent area.

In final paragraphs (a) and (a)(5)(vii), we have exempted operations that avoid streams from the requirement to assess the impact the proposed operation will have on biology of perennial and intermittent stream. We are doing this for the same reasons we articulate above in the preamble discussion of final rule § 780.19(g), which allows the regulatory authority to waive the biological information requirements of final rule § 780.19(c)(6)(vi) through (viii), if the applicant demonstrates and the regulatory authority finds in writing that the operation will not mine through or bury a perennial or intermittent stream, create a point source discharge to any perennial, intermittent, or ephemeral stream, or modify the base flow of any perennial or intermittent stream. For additional information on why we made these types of changes, please refer to the preamble discussion above. One commenter questioned whether, during preparation of the probable hydrologic consequences determination, an operator would always be able to obtain from the regulatory authority the criteria needed to determine whether the operation may cause material damage to the hydrologic balance outside the permit area as required in paragraph (a)(1). We anticipate that the applicant will collaborate and coordinate with the regulatory authority as necessary to ensure that the criteria for assessing the material damage to the hydrologic balance outside the permit area are established in time to be available for the probable hydrologic consequences determination. We also anticipate that the regulatory authority will coordinate with Clean Water Act agencies in preparing these criteria.

We have revised final paragraph (a)(2) to clarify that the applicant must evaluate the potential for toxic mine drainage not only during active mining and reclamation operations but also after these activities have been completed. This provision now specifies that when making a finding on whether acid-forming or toxic-forming materials are present that could result in contamination of surface water or groundwater, the applicant must consider discharges of toxic mine drainage that could occur after the completion of land reclamation in the evaluation.

Proposed paragraph (a)(5) required that the applicant determine what impact the proposed operation will have on specific water quality parameters, including parameters for which baseline information is required under § 780.19(a)(2). We required in proposed paragraph (a)(5)(ii) the addition of any other water quality parameters in the evaluation that were identified to be of local importance.

One commenter disagreed with this addition because it required the regulatory authority to identify the water quality parameters of local importance rather than the Clean Water Act authorities, which the commenter alleged violates section 702 of SMCRA.[394] As discussed in Part IV, section I of this preamble, we disagree that this requirement in any way supersedes the Clean Water Act. Of course, the SMCRA regulatory authority should consult with the Clean Water Act regulatory authority as needed to identify water quality parameters of local importance.

We also revised paragraph (a)(5)(ii) in the final rule to clarify that the proposed reference to ''water quality'' refers to both groundwater and surface water quality. We further revised this paragraph to reference the parameters listed § 780.19(a)(2) as those which must be addressed in the findings on the impacts of the proposed operation on groundwater and surface water. Consequently, we have deleted as redundant proposed paragraphs (5)(ii)(A) through (K) which listed those parameters.

Another commenter requested that we revise proposed paragraph (a)(5)(ii)(L), now paragraph (a)(5)(ii) in the final rule, to state that the regulatory authority would identity parameters of local importance. We agree and have made appropriate revisions to that paragraph. The regulatory authority is in the best position to identify those local parameters of concern, if applicable, and include them in the required baseline monitoring data. Therefore, we have revised §§ 780.19 and 780.23 in the final rule to specify that the regulatory authority will be the one that determines parameters to be of local importance. We anticipate that, during the development of the permit application package, the applicant will take part in this process by consulting with the regulatory authority about which, if any, additional parameters should be added to the baseline monitoring plans.

One commenter indicated that peak-flow data, as required in proposed paragraph (a)(5)(iv), may be insufficient to accurately predict trends in ephemeral streams due to the episodic nature of the flows. We agree with the commenter and have now exempted ephemeral streams from the requirement in §§ 780.19(c)(3) and 780.20(a)(5)(iv) in the final rule. Peak-flow magnitude and frequency data will be required for perennial and intermittent streams within the proposed permit and adjacent areas.

Many commenters on proposed § 780.20(a)(5)(vii) reiterated various points made in connection with proposed § 780.19(e), now § 780.19(c)(6)(ii) through (viii), such as: Support for the assessment of the effects the proposed operation will have on the biological condition of streams; requests that the regulations be revised to clarify that a qualitative evaluation of streams is sufficient in certain cases to establish findings on the biological condition of streams; and that it is not necessary to complete a new and comprehensive assessment of streams for every mine site. Our responses to these comments are set out in the preamble to final § 780.19(c)(6)(ii) through (viii) and are not repeated here.

In § 780.20(a)(5)(vii), we proposed to require an evaluation of the biological condition of the operation in streams both within the permit area and in ''adjacent areas.'' Several commenters expressed concern that the baseline data collection and permitting process may be difficult because the extent of the ''adjacent area'' may not be easy to determine and may change as data are collected and analyzed. We encourage applicants to coordinate with the regulatory authority in determining the size of the adjacent area, *i.e.,* the area from which baseline data must be collected. However, should the regulatory authority determine that supplemental information, including additional information on the adjacent area, is needed to fully evaluate the probable hydrologic consequences of the proposed operation you must then submit supplemental information, as explained in paragraph (b), below.

Final Paragraph (b): Supplemental Information

As proposed, paragraph (b) was substantively identical to previous § 780.21(b)(3), with the exception that we proposed to expand the conditions under which the regulatory authority must request additional supplemental information related to the probable

[394] 30 U.S.C. 1292.

hydrologic consequences determination. We received numerous comments stating that the requirement to submit supplemental information is redundant with similar data requirements in § 780.19, and is onerous and burdensome. Commenters also stated that the supplemental information should not be mandatory under these circumstances, given the more comprehensive nature of baseline permit application information requirements concerning hydrology and geology that will be required under the rule and given that the regulatory authority has the implied authority to request additional information if and when necessary. We agree with these comments and have removed paragraph (b) from the final rule.

Final Paragraph (c): Subsequent Reviews of PHC Determinations

We are adopting paragraph (c)(1), now final paragraph (b)(1), as proposed, which is substantively identical to previous § 780.21(f)(4), which requires that the regulatory authority determine whether a new or updated probable hydrologic consequences determination is needed as part of the process of evaluating permit revision applications. We proposed paragraph (c)(2) to clarify that the applicant must prepare a new or updated probable hydrologic consequences determination whenever a regulatory authority review finds that one is needed. Several commenters objected to the addition of proposed paragraph (c)(2). These commenters noted that a new or updated probable hydrologic consequences determination would result in increased cost and staff time to the applicant. We disagree. The requirement in proposed paragraph (c)(1), now final paragraph (b)(1), for the regulatory authority to make a determination on whether a new or updated probable hydrologic consequences determination is necessary for a permit revision is substantively the same as that in previous § 780.21(f)(4); it has always been anticipated that the applicant would submit a revised or new determination should the regulatory authority deem one necessary. Thus, as this is an existing requirement, there will not be any additional cost or staff time beyond satisfying the requirement of the previous § 780.21(f)(4). This requirement, moreover, is consistent with section 510(b)(3) of SMCRA [395] which requires that ''the assessment of the probable cumulative impact of all anticipated mining in the area on the hydrologic balance specified in section 507(b) has been made by the regulatory authority and the proposed operation thereof has been designed to prevent material damage to hydrologic balance outside permit area'' prior to approval.[396] Likewise, for permit revision applications, section 510(b)(3) of SMCRA requires, ''the assessment of the probable cumulative impact of all anticipated mining in the area on the hydrologic balance specified in section 507(b) has been made by the regulatory authority and the proposed operation thereof has been designed to prevent material damage to hydrologic balance outside permit area'' prior to approval.[397]

One commenter expressed concern that unless the regulations set forth specific criteria to determine when an updated or new probable hydrologic consequences determination is needed, an applicant could be subjected to denials or endless cycles of probable hydrologic consequences determination studies depending on the bias and preferences of the regulatory authority. Thus, this commenter and others requested that we revise this paragraph to provide objective criteria to clarify this provision and ensure consistency. We disagree with the commenter's assertion that objective criteria for defining when an updated or new probable hydrologic consequences determination must be made should be included in this section of the final rule. Section 510(b)(3) of SMCRA [398] is not explicit regarding that criteria that will result in the need for a new or updated probable hydrologic consequences determination, as these criteria may vary among state regulatory programs. Regulatory authorities should have discretion in establishing the criteria that will trigger the need for an updated probable hydrologic consequences determination based on the changes that are proposed in the permit revision application and based upon local, regional, and operational conditions. Further, we do not agree with the commenter's concern about regulatory abuse. Section 510(b)(3) of SMCRA [399] clearly contemplates the regulatory authority making the assessment of the probable cumulative impact of all anticipated mining in the area. In the event the regulatory authority denies the permit, the permittee may exercise its rights pursuant to section 514 of SMCRA.[400]

Section 780.21: What requirements apply to preparation, use, and review of the cumulative hydrologic impact assessment (CHIA)?

Our previous regulations contained very few standards or criteria for preparation of the cumulative hydrologic impact assessment. As we stated in the preamble to the proposed rule, the lack of standards or content requirements for the cumulative hydrologic impact assessment, coupled with the lack of a definition of ''material damage to the hydrologic balance outside the permit area,'' created an impediment to stream protection under SMCRA because there are no objective criteria to apply. Therefore, as discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 780.21 to include content requirements for the cumulative hydrologic impact assessment, procedural requirements, and criteria for determining material damage to the hydrologic balance outside the permit area.[401] We received numerous comments on our proposed revisions. After evaluating the comments, we are adopting § 780.21 as proposed, with the revisions discussed below.

Final Paragraph (a): General Requirements

Proposed paragraph (a)(2) provided that the regulatory authority would consider relevant information on file for other mining operations located within the cumulative impact area or in similar watersheds during preparation of the cumulative hydrologic impact assessment. One state regulatory authority suggested we change ''will consider'' to ''may consider.'' We reject this comment because the intent of the cumulative hydrologic impact assessment is specifically to assess the cumulative impacts of all coal mining and reclamation operations in the defined cumulative impact area. To properly assess these impacts, the regulatory authority must consider other mining operations in the defined cumulative area. Thus, we have changed ''will consider'' to ''must consider'' in order to indicate the necessity of the requirement to consider other mining operations and to clarify that this aspect of the cumulative hydrologic impact assessment cannot be overlooked during the assessment. Further, this modification reflects the plain language principles discussed in Part II of this preamble because ''will consider'' expresses that the activity may be completed in the future. Because the

[395] 30 U.S.C. 1257(b)(11) and 1260(b)(3).

[396] 30 U.S.C. 1260(b)(3).

[397] 30 U.S.C. 1260(b)(3).

[398] *Id.*

[399] *Id.*

[400] 30 U.S.C. 1264.

[401] 80 FR 44436, 44501–44503 (Jul. 27, 2015).

information about existing mining operations is available, its consideration should occur prior to completion of the cumulative hydrologic impact assessment and not at some point in the future.

Another commenter opined that the analysis conducted in the cumulative hydrologic impact assessment should be performed by mine operators instead of the SMCRA regulatory authority. This commenter asserted that regulatory authorities have historically been negligent in conducting thorough cumulative hydrologic impact assessments because of limited resources and that material damage findings historically often have included little supporting analysis or information. This commenter also asserted that the previous regulations do not require collection of sufficient data to prepare an adequate cumulative hydrologic impact assessment and that mine operators have information more readily available than do the regulatory authorities and this information should be utilized. Section 507(b)(11) of SMCRA [402] specifically requires an assessment to be performed by the regulatory authority of the probable cumulative impacts of all anticipated mining in the area upon the hydrology of the area. Further, section 510(b)(3) of SMCRA [403] specifies that no permit application or revision may be approved unless the application affirmatively demonstrates and the regulatory authority finds in writing that the assessment of the probable cumulative impact of all anticipated mining in the area has been made and the operation has been designed to prevent material damage to the hydrologic balance outside the permit area. This assessment cannot be delegated to mine operators as the commenter proposes and therefore, we have not changed the final rule in response to this comment.

One commenter recommended that we use consistent terminology between the preamble to the proposed rule, which stated that we intended to ensure that the regulatory authority considers all available information and the proposed rule, which states that the regulatory authority ''must consider'' relevant information on file. We are not modifying the final rule in response to this comment. Although the regulatory authority should consider any information available to it for the assessment, paragraph (a)(2) sets a minimum standard for the regulatory authority to consider relevant coal mining information on file. We recognize that some information associated with other adjacent and underlying industries, such as oil and gas, may be proprietary or difficult to obtain. For this reason, the regulatory authority should consider all available information, but it must consider coal mining information that it has on file.

One regulatory authority commenter indicated that the proposed rule did not include a provision for proposed mine sites that may be hydrologically isolated. When preparing the cumulative hydrologic impact assessment only ''relevant'' information must be considered. In this context, hydrologically isolated, proposed mine sites do not have ''relevant'' information associated with the permit application. Therefore, we are not modifying the final rule in response to this comment.

Paragraph (a)(3) of the final rule clarifies that information required for preparation of the cumulative hydrologic impact assessment must be received and reviewed prior to approval of the permit application. The proposed rule only required receipt of the information prior to permit application approval. We made this change to ensure that the regulatory authority both received and used all the information necessary to properly develop the cumulative hydrologic impact assessment.

Final Paragraph (b): Contents

Proposed paragraph (b) established detailed requirements for the content of the cumulative hydrologic impact assessment to ensure that the assessment is sufficiently comprehensive to support the required finding that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Several commenters supported the content requirements identified in proposed paragraph (b), but other commenters opposed elements of those requirements.

One commenter questioned the requirement of paragraph (b)(1)(iv) that the designated uses of surface water under section 303(c) of the Clean Water Act [404] be displayed on a map. The commenter reasoned that the designated uses that must be specified to meet this requirement should include the designated uses prescribed by the state in which the operation may occur because many states adopt their own designated uses that may differ from federal designations. We agree with the commenter that states may change a designated use. However, the U.S. Environmental Protection Agency is required to review those changes to ensure that revisions in designated uses are consistent with the Clean Water Act and that new or revised criteria protect the designated uses to ensure compliance with the requirements of section 303(c) of the Clean Water Act and federal water quality standards. Therefore, we are still requiring that the current approved designated uses under 303(c) of the Clean Water Act [405] be displayed on a map for the purpose of the cumulative hydrologic impact assessment. However, at the suggestion of a federal agency we removed reference to section 101(a) of the Clean Water Act,[406] which is a statement of the general goals and policies of the Clean Water Act. Limiting reference to section 303(c) of the Clean Water Act is more precise.

As discussed earlier in this preamble, final § 780.19 requires the collection of certain baseline hydrologic information. Final paragraph (b)(3) of § 780.21 requires that the cumulative hydrologic impact assessment contain a description of the baseline hydrologic information for the proposed permit and adjacent areas that are collected under § 780.19. In response to comments about the level of detail required, final paragraph (b)(3) clarifies that the description must be both qualitative and quantitative. Both quantitative and qualitative information on water quality and quantity is needed to describe baseline hydrologic conditions adequately because qualitative descriptions often provide needed context for quantitative information.

Proposed paragraph (b)(3)(ii) would have required information about existing usage of surface water and groundwater, as well as information defining the quality of water required for each existing and reasonably foreseeable use of groundwater and surface water and each designated use of surface water under section 303(c) of the Clean Water Act.[407] Two commenters indicated that the cumulative hydrologic impact assessment findings on reasonably foreseeable designated uses are not clearly defined and may result in variable interpretations when forecasting potential reasonably foreseeable uses. One commenter requested that we make a distinction between protecting designated uses and existing uses. Another commenter strongly recommended that the final rule clarify that the corrective action for

[402] 30 U.S.C. 1257(b)(11).

[403] 30 U.S.C. 1260(b)(3).

[404] 33 U.S.C. 1251(a) or 33 U.S.C. 1313(c).

[405] *Id.*

[406] 33 U.S.C. 1251(a).

[407] *Id.*

designated uses should be tied to the postmining land use and be determined by the state Clean Water Act authority, instead of some other arbitrarily assigned higher use that was not achievable prior to mining. In response to all of these comments, final paragraph (b)(3)(ii) includes a requirement for information on the quantity, as well as the quality, of water needed to support, maintain, or attain water uses. In addition, final paragraph (b)(3)(ii) requires a list of water uses for which the information required in paragraph (b)(3) must be assessed. Specifically, for surface water, final paragraph (b)(3)(ii)(A) requires assessment of the designated uses or, if no designated use exists, each premining use. Final paragraph (b)(3)(ii)(B) requires assessment of premining uses of groundwater. Unlike the proposed rule, the final rule does not require an assessment of reasonably foreseeable uses of either surface water or groundwater. We did not adopt the proposed requirement for assessment of reasonably foreseeable uses because of the subjective nature of that determination.

Proposed paragraph (b)(3)(iii) would have required the inclusion of a description and map of the local and regional groundwater systems as part of the cumulative hydrologic impact assessment. One regulatory authority sought flexibility regarding the presentation and description of the local and regional aquifer system. In response to this comment, we slightly modified the requirement to allow a description or map rather than requiring submission of both a description and a map in all cases. This change provides the regulatory authority with flexibility to accept maps, descriptions, or both in order to best explain aquifer characteristics, such as hydraulic gradient.

Proposed paragraph (b)(3)(iv) required baseline information on the biological condition of all perennial, intermittent, and ephemeral streams. In response to comments, we modified final paragraph (b)(3)(iv) to be consistent with the monitoring requirements at final § 780.19(c)(6)(vi) through (viii) of this part, which no longer require monitoring of the biological condition of ephemeral streams.

One commenter questioned proposed paragraph (b)(5), which required that a quantitative assessment be conducted on how all anticipated surface and underground mining may impact the quality of surface water and groundwater in the cumulative impact area. According to the commenter, this requirement is too vague. The commenter was concerned with how these impacts would be expressed in terms of each baseline parameter identified under § 780.19. The commenter requested guidance on evaluating impacts within the cumulative impact area on a parameter-by-parameter basis. We direct the commenter to the definition of ''cumulative impact area'' in § 701.5, which establishes the scope and intent of the evaluations within the cumulative impact area. We decline to delve into an explanation of methods used to predict water quality on a parameter-by-parameter basis because it is beyond the scope of this document. In general, to arrive at mining-induced changes by parameter, most common methods entail some form of statistical method, with regression analysis of parameter concentration through time being the most common. Additionally, guidance documents are available through our National Library at *www.osmre.gov/resources/Library.shtm*. These documents provide guidance on preparation of the determination of the probable hydrologic consequences of the operation that the applicant must prepare and the cumulative hydrologic impact assessment that the regulatory authority must prepare. We are also available for technical assistance in developing the methods necessary to support cumulative hydrologic impact assessment findings. In summary, both the regulatory authority and the applicant need to understand and forecast the impact of the mining and reclamation plan on the baseline parameters in final § 780.19 and assess the sum total of these impacts on the hydrologic balance within the cumulative impact area, as defined at § 701.5 and as required in paragraphs (b)(3) through (b)(5) of § 780.21.

Proposed paragraph (b)(6) required that the cumulative hydrologic impact assessment include criteria defining material damage to the hydrologic balance outside the permit area on a site-specific basis. Proposed paragraph (b)(6)(i) required that these criteria be established on a numerical basis for each parameter of concern. Numerous commenters argued that there is no authority under SMCRA to establish numerical criteria for material damage to the hydrologic balance outside the permit area. Commenters also claimed that establishment of enforceable water quality criteria under SMCRA that differ from water quality standards promulgated under the Clean Water Act would violate section 702(a) of SMCRA. Section 702(a) provides, in relevant part, that ''[n]othing in this Act shall be construed as superseding, amending, modifying, or repealing'' the Clean Water Act ''or any rule or regulation promulgated thereunder.'' Part IV.I. of this preamble discusses the interrelationship between the Clean Water Act and SMCRA. Other commenters provided suggestions to refine the language of this provision. For instance, one commenter suggested replacing the phrase ''numerical terms'' with ''be expressed in applicable state or federal water quality standards (or criteria)'' to allow the use of both numerical and narrative standards. Another commenter supported the use of narrative standards, when applicable, compared to numerical standards. One state regulatory authority requested that the rule require the use of numerical and narrative standards that have defensible numeric threshold criteria.

After evaluating these and other similar comments, we decided not to adopt the proposed requirement that numerical criteria be established for each parameter of concern. Instead, final paragraph (b)(6) requires that the cumulative hydrologic impact assessment and the permit include site-specific numeric or narrative thresholds for material damage to the hydrologic balance outside the permit area. The regulatory authority has the discretion to determine which parameters require material damage thresholds. Material damage thresholds define the point at which the operation has failed to prevent material damage to the hydrologic balance outside the permit area.

Final paragraph (b)(6)(i) provides that, when identifying material damage thresholds in connection with a particular permit, the regulatory authority will, in consultation with the Clean Water Act authority, as appropriate, undertake a comprehensive evaluation that considers the following factors—

(1) The baseline data collected under § 780.19;

(2) The PHC determination prepared under § 780.20;

(3) Applicable water quality standards under section 303(c) of the Clean Water Act;

(4) Applicable state or tribal water quality standards for surface water and groundwater;

(5) Ambient water quality criteria developed under section 304(a) of the Clean Water Act; [408]

(6) Biological requirements of any species listed as threatened or endangered under the Endangered Species Act of 1973, or their designated

[408] 33 U.S.C. 1314(a).

critical habitat, habitat occupied by those species, and areas in which those species are present for only a short time but that are important to their persistence; and

(7) Other pertinent information and considerations to identify the parameters for which thresholds are necessary.

The factors listed above and in final paragraphs (b)(6)(i)(A) through (G) do not constitute material damage thresholds in and of themselves; they are only factors to be considered in determining which parameters require material damage thresholds and what those thresholds should be.

Final paragraph (b)(6)(ii) modifies final paragraph (b)(6)(i) slightly in that it provides that the regulatory authority, in consultation with the Clean Water Act authority, must adopt numeric material damage thresholds as appropriate, taking into consideration relevant contaminants for which there are water quality criteria under the Clean Water Act, 33 U.S.C. 1251 *et seq.* Final paragraph (b)(6)(ii) further provides that the regulatory authority may not adopt a narrative threshold for parameters for which numeric water quality criteria exist under the Clean Water Act. These provisions reflect concerns that were raised during the rule review process. They are intended to promote coordination and consistency with Clean Water Act regulatory programs.

One environmental organization recommended that we codify the following language from the preamble of the proposed rule: ''SMCRA material damage criteria must be no less stringent than Clean Water Act water quality standards and criteria in all cases, but, in some situations, they may need to be more stringent to protect unique uses or to comply with the Endangered Species Act.'' We did not adopt this recommendation because there may be situations in which the quoted preamble language does not apply.

An industry commenter expressed concern that we did not provide sufficient information or clear specifications for the ''numerical terms for each parameter of concern. Final paragraph (b)(6) no longer includes the quoted phrase from the proposed rule. Instead, the final rule grants the regulatory authority discretion to determine which parameters require material damage thresholds and whether those thresholds should be narrative or numeric, except as provided in final paragraph (b)(6)(ii).

Proposed paragraph (b)(6)(ii) provided that, in establishing material damage criteria, which we now refer to as material damage thresholds, the regulatory authority must take into consideration the biological requirements of any species listed as threatened or endangered under the Endangered Species Act when those species or designated critical habitat are present within the cumulative impact area. The U.S. Fish and Wildlife Service requested that we revise this provision to also apply to both the habitat occupied by those species and any areas in which those species are present only for a short time but that are important to their persistence, such as migration and dispersal corridors. Final paragraph (b)(6)(i)(F) includes the recommended language as an evaluation criterion for material damage thresholds.

In the proposed rule,[409] we invited comment on whether the final rule should require that the regulatory authority establish corrective action thresholds, which would be lower than material damage thresholds to identify the point at which the permittee must take action to minimize adverse trends that may continue and ultimately cause material damage to the hydrologic balance outside the permit area. We received comments both supporting and opposing the development of these corrective action thresholds. Several commenters supported the establishment of corrective action thresholds because it would provide a more objective way to assess the existence or nonexistence of material damage to the hydrologic balance outside the permit area. One commenter opposed the concept of corrective action thresholds because, according to the commenter, establishment of those thresholds would conflict with section 702 of the Act. Part IV.I., above, discusses this issue. Another commenter opposed corrective action thresholds as being duplicative of the requirement to monitor surface water and groundwater during mining, which should be sufficient to identify trends that could lead to potential problems. In addition, the commenter noted that the regulatory authority would also be aware of trends through review of the quarterly water monitoring reports required for all operations and the annual reports required by some state programs.

After evaluating these comments and the changes that we made to paragraph (b)(6), we are adding new paragraph (b)(7) to the final rule. This paragraph requires the establishment of evaluation thresholds. We included the requirement for evaluation thresholds within the final rule because we agree with commenters that thresholds would provide a more objective method to assess the potential development of material damage outside the permit area. In addition, evaluation thresholds provide an opportunity to develop and implement corrective measures before adverse impacts rise to the level of material damage to the hydrologic balance outside the permit area. We revised the terminology from ''corrective action thresholds'' to ''evaluation thresholds'' because the action of reaching a threshold would result in reassessment of the probable hydrologic consequences determination and cumulative hydrologic impact assessment. Corrective action may not be necessary if additional evaluation shows that the impact will not rise to the level of material damage to the hydrologic balance outside the permit area. However, if adverse trends exist, it is incumbent upon the SMCRA regulatory authority to evaluate the causes of the adverse trends and take action to ensure that the trends do not result in material damage to the hydrologic balance outside the permit area.

Final paragraph (b)(7) requires that evaluation thresholds be expressed as numeric values because the thresholds must be measurable in order to function as an early warning system that provides ample opportunity for the permittee and the regulatory authority to conduct the necessary evaluation and undertake any necessary measures to prevent material damage to the hydrologic balance outside the permit area. This requirement is intended to identify and address potential water quality and quantity issues before any standards have been violated. This early intervention strategy is necessary because, once a water quality issue exists, it is often very costly or impossible to correct. Evaluation thresholds institutionalize early detection techniques, which can prevent the need for long-term treatment and other costly environmental harms through the prevention of material damage to the hydrologic balance outside the permit area.

Under final § 773.15(e), a SMCRA regulatory authority may not approve a SMCRA permit application if the cumulative hydrologic impact assessment indicates material damage to the hydrologic balance is likely to occur outside the permit area. Material damage to the hydrologic balance outside the permit area that occurs after permit issuance constitutes a violation of final § 816.34(a)(2). In that situation,

[409] 80 FR 44436, 44502 (Jul. 27, 2015).

the state regulatory authority must take enforcement action.

Evaluation thresholds are not enforceable as performance standards. They also do not amend, supersede, modify or otherwise conflict with applicable Clean Water Act requirements, including any National Pollutant Discharge Elimination System effluent limitations or applicable state or federal water quality standards. Instead, evaluation thresholds trigger an obligation for the regulatory authority, in consultation with the Clean Water Act agency, as appropriate, to evaluate the circumstances causing adverse trends and exceedance of the threshold. The purpose of the evaluation and coordination is to better ensure that material damage to the hydrologic balance outside the permit area does not occur as a result of mining activity. If monitoring results at the locations designated under final paragraph (b)(6)(iv) document an exceedance of an evaluation threshold, the regulatory authority must determine the cause of the exceedance in consultation with the Clean Water Act authority, as appropriate. The regulatory authority must also determine the likelihood that the evaluation threshold exceedance will develop into material damage to the hydrologic balance outside the permit area.

The regulatory authority must issue an order to revise the permit if the regulatory authority determines that the adverse trend is the result, in whole or in part, of the mining operation. For a more complete discussion of the relationship between material damage thresholds, evaluation thresholds, and water monitoring requirements please see the discussion of general comments in Part IV. M. of this preamble.

We received numerous comments on proposed paragraph (b)(8), now final paragraph (b)(9). In response to these comments and to maintain consistency with other aspects of the final rule, we revised proposed paragraph (b)(8)(i), now final paragraph (b)(9)(i), to ensure that the proposed operation will not result in violation of applicable Clean Water Act water quality standards or disrupt or preclude attainment of certain uses as identified in final paragraphs (b)(9)(i)(A), (B) and (C). For consistency with the revised definition of ''material damage to the hydrologic balance outside the permit area'' in § 701.5, we deleted ''reasonably foreseeable uses'' from this paragraph. The final rule still protects designated and premining uses. It more closely mirrors the requirements of SMCRA, while explicitly acknowledging that isolated water quality exceedances or short-term local or temporal stream impacts may occur and may not rise to the level of material damage to the hydrologic balance outside the permit area.

Two regulatory authority commenters suggested we replace the term ''exceedance'' with ''long term exceedance'' at proposed paragraph (b)(8)(i)(B), now paragraph (b)(9)(i). In consideration of the implications associated with words that may qualify exceedance such as ''long-term'' or ''minor,'' and concerns on how the term would be interpreted, we removed the reference to exceedance at previous paragraph (b)(8)(i)(B), now final paragraph (b)(9)(i).

An industry commenter suggested that we revise proposed (b)(8)(i)(B) to account for drought conditions, changes in human activity, and other environmental and human use changes that are unrelated to mining that could affect a watershed or streamflow regime. In response, we added language to final paragraphs (b)(9)(i) through (iv) that the proposed operation—

(1) Will not violate applicable Clean Water Act water quality standards;

(2) Preclude attainment of premining use when no water quality standards exist, or preclude attainment of premining uses for groundwater;

(3) Not result in changes in size or frequency peak flows in areas outside the permit boundary;

(4) Perennial and intermittent streams will have sufficient base flow at all times to maintain their premining flow regime; and

(5) Be designed to protect quality and quantity of aquifer units to ensure the prevailing hydrologic balance.

This revision clarifies that it is the mining operation that cannot cause the adverse impacts identified in final paragraphs (b)(9)(i) through (iv). It allows the regulatory authority to distinguish between environmental and human use changes that are related to mining from the proposed operation and those that are not. In addition, the baseline monitoring requirements in § 780.19 of the final rule will better enable the regulatory authority to distinguish between mining-related impacts and non-mining impacts.

Final paragraph (b)(9) requires the regulatory authority to, after consultation with the Clean Water Act authority, as appropriate, provide supporting data and analyses that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. To support this finding, the cumulative hydrologic impact assessment must include several determinations, with appropriate documentation, or an explanation of why the determination is not necessary or appropriate. Final paragraph (b)(9)(i) provides that one of those determinations is that, except as provided in final §§ 780.22(b) and 816.40, the proposed operation will not: (A) Cause or contribute to a violation of applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or other applicable state or tribal water quality standards; (B) cause or contribute to a violation of applicable state or tribal groundwater quality standards; (C) preclude attainment of a premining use of a surface water located outside the permit area when no water quality standards have been established for that surface water; or (D) preclude attainment of a premining use of groundwater located outside the permit area.

We have also revised paragraph (b)(8), now final rule paragraph (b)(9), slightly by moving three subsections. Proposed paragraph (b)(8)(i)(A) pertained to conversion of streams from one stream type to another stream type (*e.g.,* intermittent to ephemeral) outside of the permit area. We have allowed some forms of conversion as long as the stream maintains its designated use(s) and have moved this language to final rule paragraph (b)(9)(iii). We retained the language pertaining to streams maintaining their applicable Clean Water Act water quality standards and moved it to final rule paragraph (b)(9)(i)(A). We also slightly modified language at paragraph (b)(6)(i)(F) pertaining to adversely affecting threatened or endangered species. We modified final rule paragraph (b)(6)(i)(F) to say the cumulative hydrologic impact assessment evaluation must consider impacts to threatened and endangered species and also included language to the definition of material damage to the hydrologic balance outside the permit area pertaining to a violation of the Endangered Species Act. We changed the language in those two sections to match the intent of each respective section. Adding language to the definition of ''material damage to the hydrologic balance outside the permit area'' in reference to a violation of the Endangered Species Act also serves as a way to memorialize the performance standard nature of such an event. We also made these changes to be consistent with final rule § 780.16(b), pertaining to the fish and wildlife protection and enhancement plan and § 779.20, pertaining to information about the fish

and wildlife resources to be included in the permit application.

Some commenters expressed concern with the proposed language at paragraph (b)(8)(ii), now paragraph (b)(9)(ii), requiring that the operation be designed to prevent an increase in damage from flooding when compared to premining conditions. One of the commenters indicated that it would be difficult to make the measurements required under this provision and that it would require an investigation of premining flood events to establish baseline for assessing damage from flooding. We agree that the proposed language could be interpreted to require an investigation of premining flood events. We have removed the phrase ''damage from'' within paragraph (b)(9)(ii) of the final rule in order to clarify that such a premining investigation is not required. The final rule, however, continues to require a finding that the operation has been designed to ensure that flows will not cause increased flooding outside the permit area compared to premining conditions. This revision focuses assessment upon peak flows that could result in flooding and not damage from flooding. In addition, we added the phrase ''outside the permit area'' to clarify that the operation must be designed to ensure that neither the mining operation nor the final configuration of the reclaimed area will result in changes in the size or frequency of peak flows from precipitation events or thaws that would cause an increase in flooding outside the permit area, when compared with premining conditions. We made this change to focus the assessment on peak flows that could result in flooding and potential damage. One commenter suggested modifying the word ''changes'' to ''increases'' to be more accurate and limiting. This modification is not necessary because the final rule at paragraph (b)(9)(ii) states that the changes would be of size or frequency to cause an increase in flooding.

Another commenter recommended that the applicant should plan for, and submit, sufficient information on the magnitude of precipitation events, especially given that the operator knows the final reclamation configuration of the site and can anticipate the magnitude of stormwater runoff resulting from the final reclamation configuration. The commenter also opined that this information was not required in the proposed rule. We do not agree with the commenter that the proposed rule did not address this issue; design criteria for postmining site configuration are found at §§ 816.102 to 816.111. These design criteria guide the design, construction, and implementation of the final site reclamation configuration and include requirements to address postmining drainage issues and stormwater management. In addition, hydrologic performance criteria exist at section 816.34 to prevent stormwater-induced flooding from SMCRA sites.

One commenter questioned the application of the term ''recharge capacity'' within proposed paragraph (b)(8)(iii), now paragraph (b)(9)(iii). We have removed this term from this paragraph of the final rule because the term refers to the ability of the overburden to release water to the surface water system and does not reflect the goal of maintaining baseflow in streams overlying and adjacent to a SMCRA mine site. Recharge capacity is an important consideration in the overall hydrologic balance but is not the primary objective of paragraph (b)(9)(iii). Recharge capacity is a term used to describe the movement of water through soil and rock, ultimately to discharge as surface water flow. This concept is different than the primary objective of (b)(9)(iii) which is to maintain baseflow in a stream. For this reason, we removed the term ''recharge capacity'' to focus the requirement on sustaining baseflow to prevent material damage to the hydrologic balance outside the permit area.

Commenters alleged that, as proposed, paragraph (b)(8)(iii), now paragraph (b)(9)(iii), prohibited the conversion of a perennial or intermittent stream to an ephemeral stream or conversion of a perennial stream to an intermittent stream. A regulatory authority commented that, as drafted, the provision would result in the inability of mine operators to permit and mine lands because stream conversion is a common, existing occurrence during mining and reclamation. Two other commenters indicated that, in effect, this paragraph would be impossible to satisfy because streams behave differently depending upon numerous natural and man-made interdependent variables. The commenters further opined that technological and economic limitations may necessitate stream conversion in some situations. The same commenters also suggested that it should be permissible to allow a portion of a watershed to be degraded as long as the watershed as a whole remains functional. For these reasons the commenters recommended removal of the proposed provision that they interpreted as limiting or preventing stream conversions. Several of the commenter's raised concerns about conversions both inside the permit area and outside the permit area. We address commenters' concerns about conversions outside the permit area in this section of the final rule and discuss the changes to the final rule about conversions inside the permit area in the preamble discussion of final rule §§ 780.28(e) and 784.28(e), below. In consideration of the comments specific to preparation, use, and review of the cumulative hydrologic impact assessment, we have revised paragraph (b)(9)(iii) of the final rule about conversions of perennial and intermittent streams outside the permit area. We acknowledge that conversion of streams may often have beneficial effects, such as converting an ephemeral stream to an intermittent or perennial stream. Thus, we have revised the rule language to allow conversion of intermittent streams to perennial streams or conversion of an ephemeral stream to an intermittent or perennial stream outside the permit area as long as the conversion is consistent with the requirements in paragraph (b)(9)(i) and does not violate the Endangered Species Act. Allowing conversion of certain streams addresses the commenters' concern about limiting or preventing conversion while at the same time adhering to the environmental objectives of SMCRA found in sections 510(b) and 515(b).[410]

One regulatory authority suggested that we delete proposed paragraph (b)(8)(iv), now paragraph (b)(9)(iv), related to the protection of the quantity and quality of water in ''any aquifer that significantly ensures the prevailing hydrologic balance.'' The commenter opined that water replacement requirements for in-use water supplies are already protected and adhered to by operators and that replacement supplies are of equal or better quantity, quality, and delivery method. We interpret this comment to mean that existing rule language in other sections provides the same protection as proposed paragraph (b)(9)(iv) and that existing water replacement provisions can be better than existing conditions. While we support the regulatory authorities' continued use and implementation of water replacement requirements, we decline to remove the provision because final paragraph (b)(9)(iv) protects more resources than the water replacement provisions found in the previous regulations. Water replacement provisions are designed to address individual water supplies on a case-by-case basis, which implies an intact

[410] 30 U.S.C. 1260(b) and 1265(b).

aquifer system. In contrast, final paragraph (b)(9)(iv) requires a review of, and prevention of, material damage to the hydrologic balance outside the permit area to important and hydrologically significant aquifers in order to address an entire aquifer, not just a single water supply.

Final Paragraph (c): Subsequent Reviews

We have made a minor change to proposed paragraph (c)(1)(i), now final paragraph(c)(2). Commenters pointed out that, within this section, biological monitoring was not included in the review of monitoring data that the regulatory authority must perform. We agree that it should be included and have added the requirement to this section.

One commenter opined that proposed § 780.21(c) is not adequately conservative because it requires cumulative hydrologic impact assessments only for significant permit revisions. According to the commenter, cumulative hydrologic impact assessments should also be required for certain non-significant revisions. However, the commenter did not provide any specific examples of non-significant revisions that would have the potential to affect the analysis. We are retaining the rule as proposed in relationship to this comment. As explained in the preamble to the proposed rule [411] preparation of a new or updated cumulative hydrologic impact assessment will occur whenever the regulatory authority finds that one is needed based on the evaluation in final paragraphs (c)(1) and (2).

Several industry and regulatory authority commenters expressed concern that the cumulative hydrologic impact assessment review process required in paragraph (c) was linked to permit renewal. These commenters stated that section 506(d) of SMCRA [412] guarantees the right of successive permit renewal and any changes to the cumulative hydrologic impact assessment and underlying conclusions might provide an opportunity to void this right. In response, we have revised final paragraph (c)(2) to require review of the cumulative hydrologic impact assessment, including the evaluation thresholds, every three years instead of linking the review to the renewal of the permit. Because of the same concerns about permit renewal, we have revised paragraphs (b)(vii) through (viii) of final rule § 774.15, related to permit renewal, to remove the requirements to review all monitoring data and to review the probable hydrologic consequences determination.

One regulatory authority commenter explained that it has been standard practice since its program was approved to update the cumulative hydrologic impact assessment whenever a change or proposed change of any aspect of the hydrologic environment warranted the update or when area is added to the permit. The commenter continued by noting that a significant update to the probable hydrologic consequences determination or the hydrologic reclamation plan would trigger a cumulative hydrologic impact assessment update. Another regulatory authority commenter indicated that cumulative hydrologic impact assessment reviews are done as a matter of course and updated as necessary. Industry commenters recognized that any data analysis may be done periodically, as determined by the regulatory authority, in the Annual Report, interim review, or other similar report or process. Commenters generally supported a requirement that allows the state regulatory authority discretion for determining when a cumulative hydrologic impact assessment needs to be updated. Although we recognize that some states do a good job with these updates, a periodic review of the cumulative hydrologic impact assessment data and conclusions must occur on a frequent basis to ensure that material damage to the hydrologic balance outside the permit area is not occurring or is likely to occur through the life of the permit. The absence of consistent cumulative hydrologic impact assessment reviews likely results in adverse trends that may persist to a point where corrective action options become limited, costly, or impossible. Regular review will allow the operation plan to be adjusted before corrective action is needed or options become too limited to adequately protect the hydrologic balance. We selected three year intervals for this review because that time period is not linked with permit renewal or mid-term review but is frequent enough to allow for detection of necessary changes in the mining and reclamation plan and/or needed corrective action to ensure protection of the hydrologic balance outside the permit area. This ensures that permit renewal and mid-term reviews are not contingent on the cumulative hydrologic impact assessment review.

Section 780.22: What information must I include in the hydrologic reclamation plan and what information must I provide on alternative water sources?

Section 780.22 describes the information the operator must include in the hydrologic reclamation plan and the information that must be provided on alternative water sources. As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 780.22.[413] In response to comments that we received, we have made several modifications.

Final Paragraph (a): Hydrologic Reclamation Plan

This paragraph identifies the requirements the permit applicant must include in the hydrologic reclamation plan, including the maps and descriptions that demonstrate how the proposed operation will comply with the applicable provisions of subchapter K, that relate to protection of the hydrologic balance. We received a comment from a regulatory authority on proposed paragraphs (a)(2)(i) and (ii), requesting that we clarify the relationship between disturbances to the hydrologic balance in adjacent areas, which are allowable, and material damage to the hydrologic balance outside the permit area, which is not allowable. The regulatory authority also suggested that we define disturbances. We have defined material damage to the hydrologic balance outside the permit area in § 701.5 and have provided a general discussion of material damage to the hydrologic balance outside the permit area in Part IV. L. of the preamble. Under our regulations as finalized today, any activity that adversely affects the hydrology of adjacent areas but that does not rise to the level of material damage to the hydrologic balance outside the permit area would be considered a disturbance subject to the minimization requirements of our rule. Consequently, although we appreciate the commenter's concern, it is not necessary to define ''disturbance,'' and we have not made any substantive changes to these paragraphs in the final rule. Importantly, these paragraphs retain the distinctions present in sections 510(b)(3) and 515(b)(10) of SMCRA.[414] We did make minor revisions to clarify the applicability of the bonding sections to paragraphs (a)(2) and (4).

[411] 80 FR 44436, 44503 (Jul. 27, 2015).

[412] 30 U.S.C. 1256(d).

[413] 80 FR 44436, 44526–27 (Jul. 27, 2015).

[414] 30 U.S.C. 1260(b)(3) and 1265(b)(10).

Final Paragraph (b): Alternative Water Source Information

Several regulatory authority commenters expressed concern about proposed paragraph (b). One regulatory authority suggested that we delete the paragraph and retain the previous regulations. In particular, the regulatory authority did not like it that this provision invoked the alternative water source requirements for adverse effects to water sources ''within the proposed permit . . . area[ ].'' The commenter pointed out that there are always adverse impacts within the permit area. We are not accepting the suggestion to remove the entire paragraph (b) because this paragraph is necessary to clarify the water supply replacement requirements of sections 717(b) and 720(a)(2) of SMCRA.[415] However, upon our own review of the rule language, we recognized that we erroneously included the phrase ''within the proposed permit area and adjacent area'' in paragraph (b)(1) of the proposed rule and are removing it from the final rule to ensure the regulations conform to section 717(b) and 720(a)(2), which do not contain this limiting phrase.

Some of the other regulatory authority commenters asserted that in certain situations the regulatory authority already requires water supply infrastructure to be put in place in advance of mining to ensure uninterrupted service. It is good that some regulatory authorities are already ensuring that there will be no gap in the water supply as a result of mining. However, given the importance Congress has placed on protecting water supplies, this requirement should be applicable everywhere. The importance of protection water supplies was underscored in section 717(b) of SMCRA that requires that the operator of a surface coal mine replace the water supply of an owner of interest in real property who obtains all or part of his supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source where such supply has been affected by contamination, diminution, or interruption proximately resulting from such surface operation.[416] Similarly, section 709(a) of SMCRA affords protections for water replacement as a result of underground mining operations requiring that underground coal mining operations must promptly replace any drinking, domestic, or residential water supply from a well or spring in existence prior to the application for a surface coal mining and reclamation permit, which has been affected by contamination, diminution or interruption resulting from underground coal mining operations.[417] Thus, we are not removing paragraph (b)(1) from the final rule text, but have revised some of the text for the sake of clarity. For the sake of clarity, we also added paragraph (b)(1)(ii) to include the requirement for an implementation schedule as part of the water supply replacement plan. This additional requirement will help ensure that the water supply replacement plan developed by the operator is well planned and feasible. One regulatory authority suggested that we delete the word ''may'' in proposed paragraph (b)(3)(i). This paragraph requires that an alternative water supply be developed and installed on a permanent basis before the operation ''may'' adversely affect an existing water supply protected under the performance standards of final § 816.40, which discusses the responsibility of an operator to replace water supplies. If there is a possibility that a coal-mining operation could adversely impact an existing water supply, an alternative water supply must be developed and installed on a permanent basis before the operation reaches a point where it could adversely affect that existing water supply. Although we do not agree with the commenter's concern about the use of ''may'' we have revised the text for the purpose of clarity and without using the word ''may'' in the revision. Therefore, within the final rule, paragraph (b)(3)(i) in the final rule reads, ''[w]hen a suitable alternative water source is available, your operation plan must require that the alternative water supply be developed and installed on a permanent basis before your operation advances to the point at which it could adversely affect and existing water supply protected under § 816.40 of the chapter.''

Other commenters expressed concern about the lack of regulatory authority discretion in the proposed rule to make a determination that a water supply could be adversely impacted. In addition, a commenter was concerned about the potential burden on industry, especially for underground operations, to replace all potentially impacted water supplies in advance of mining. The final rule mirrors the water replacement provisions located in previous §§ 816.41(h) and 817.41(j), which provide the regulatory authority the discretion to approve the probable hydrologic consequences determination that identifies specific water supplies that may be adversely affected and that would require an alternative source. The final rule does not require replacement of all potentially impacted supplies prior to any mining; however, the water must be replaced prior to the supply being adversely impacted. This provision guarantees that there will be no gap in the availability of water sources and that water sources remain available for use throughout the mining process. As long as this guarantee is met, the timing of when a specific alternative water source needs to be replaced is left to the discretion of the regulatory authority, as approved in the water supply replacement plan.

Section 780.23: What information must I include in plans for monitoring of groundwater, surface water, and the biological condition of streams during and after mining?

As discussed in the preamble to the proposed rule,[418] we proposed to modify our regulations at § 780.23. This section describes what the operator must include in plans for monitoring of groundwater and surface water, and the biological condition of streams during and after mining. This includes annual biological monitoring of intermittent and perennial streams. In response to comments and based upon our further evaluation of the proposed rule, we have made several changes to the final rule.

We have revised paragraph (a)(1)(i) and (b)(1)(i) to clarify that the monitoring plans for groundwater and surface water must include the locations of monitoring sites, the measurements that must be taken at each location, and a listing of the parameters to be monitored. This additional information will assist the review and analysis of the data obtained from monitoring by providing location and measurement context. Additionally, in final paragraphs (a)(1)(ii) and (b)(1)(iii), we have deleted ''for each parameter'' to be consistent with the changes made to final paragraphs (a)(1)(i) and (b)(1)(i).

Final Paragraph (a): Groundwater Monitoring Plan

In the second sentence of § 780.23(a)(1)(iii), we state that, at a minimum, the groundwater monitoring plan must include monitors in three types of locations. One commenter requested that we rephrase this sentence to require only that the groundwater monitoring plan ''consider'' the placement of monitoring wells in these three types of locations because the

[415] 30 U.S.C. 1307(b) and 1309a(a)(2).

[416] 30 U.S.C. 1307(b).

[417] 30 U.S.C. 1309a(a)(2).

[418] 80 FR 44436, 44505–44507 (Jul. 27, 2015).

commenter alleges that some operators cannot establish monitoring sites at the locations specified in this section due to factors beyond their control, such as land ownership conflicts. We decline to make this change because it would, in effect, make the requirements of subparagraphs (A)–(C) about monitoring well placement discretionary. The groundwater sampling data collected as part of paragraph (a) is necessary for comparison with the groundwater data collected as part of § 780.19, a comparison that will help identify any trends and changes in the groundwater conditions. We recognize that land ownership conflicts may present certain challenges. However, without minimum requirements for groundwater monitoring, the regulatory authority would have insufficient data to determine if material damage to the hydrologic balance outside the permit area has occurred. Therefore, we have determined that locating monitoring wells as required under paragraphs (a)(iii)(A) through (C) is necessary, despite potential difficulties associated with locating monitoring wells in different locations.

Several commenters questioned the necessity of installing groundwater monitoring wells in aquifers located above and below the coal seam to be mined as proposed in paragraph (a)(1)(iii)(A), in backfilled portions of the permit area as proposed in paragraph (a)(1)(iii)(B), and in existing underground mine workings that are in direct hydrologic connection to the proposed operation as proposed in paragraph (a)(1)(iii)(C). The commenters considered monitoring above and below the coal seam unnecessary and expensive, and wells installed in the backfill and in underground mine workings to be of little value. Despite these comments, we have not removed these requirements because they are necessary to ensure that the coal mining operation, during and after mining, is not causing material damage to the hydrologic balance outside the permit area. Data collected from upgradient monitoring wells installed in aquifers located above and below the coal seam provide information on the condition of the groundwater entering the mine site. Comparison of this upgradient information to groundwater data obtained from downgradient monitoring wells as it exits the mine site will provide the mine operator and the regulatory authority insight into the effects of the mining activities on the quality and quantity of the groundwater as compared to offsite conditions. Monitoring wells installed in the backfill area and in the underground mine pools is necessary because these areas are the most likely sources of acid mine drainage if it develops. Therefore, we are retaining these requirements in the final rule.

One commenter questioned whether the monitoring wells required under proposed § 784.23(a)(1)(iii)(C) for mine pools that result from underground mining operations would be removed before final bond release and asserted that if they are not removed, it could become a safety issue. Data from hydrologically connected mine pools will provide both the permittee and the regulatory authority with necessary information to evaluate the efficacy of the probable hydrologic consequences determination and to evaluate conditions in the mine pools prior to final bond release; thus, we are retaining the requirement. However, we agree with the commenter that a monitoring well left after final bond release could become a safety issue if it is not transferred to the property owner because no one would be responsible for maintaining the well. When no longer needed, and with approval by the regulatory authority, monitoring wells must be permanently sealed or transferred to another party consistent with §§ 816.13 and 816.39 of this part. Therefore, because appropriate transfer or sealing of monitoring wells must already occur under final §§ 816.13 and 816.39, respectively, we do not need to make any changes to final § 784.23 in response to this comment. Under paragraph (a)(1)(iv)(B), we now requiring that the monitoring data be used to determine the ''biology'' of the perennial and intermittent streams within the proposed permit and adjacent areas instead of the ''biological condition'' of those streams. We made this change for the same reasons we articulated above in connection with final § 780.19(c)(6)(vi) through (viii): ''biology'' encompasses the type of information needed to establish both the biological condition of perennial and intermittent streams, for which established protocols exist and the biology of intermittent streams for which established protocols do not exist. This language change recognizes that not all states have scientifically valid protocols for assessing the biological condition of intermittent streams. We also made an editorial correction, by inserting ''proposed'' before permit and adjacent areas. During the development of the groundwater monitoring plan, the permit has not been issued yet and is part of the permit application. By inserting the word ''proposed'', final paragraph (a)(1)(iv)(B) now correctly reflects the status of the permit application process during compliance with this provision.

Under final paragraphs (a)(2)(i) and (b)(2)(i), we replaced the text ''if those parameters relate to'' with ''to the extent needed to assess,'' in order to clarify that the parameters to be monitored under final paragraphs (a)(2)(i) and (b)(2)(i) must be sufficient to evaluate the requirements of paragraphs (a)(2)(i)(A), and (B) and (b)(2)(A)–(E). Furthermore, under paragraphs (a)(2)(i)(A) and (b)(2)(i)(B), we have added ''accuracy of the'' to stipulate that the purpose of the monitoring is to improve accuracy of the findings and predictions of the probable hydrologic consequences determination prepared under § 780.20.

Under the final rule, we have deleted proposed paragraphs (a)(2)(i)(B) and (b)(2)(i)(D) regarding the requirement to monitor the parameters necessary to assess the biological condition of perennial or intermittent streams or other surface water bodies that receive discharges from groundwater within the proposed permit and adjacent areas. The remaining sections have been renumbered accordingly. The monitoring requirements in the deleted paragraphs were removed because the information they required was already accounted for in the monitoring requirements under final paragraphs (a)(2)(i)(A) and (b)(2)(i)(B), which require monitoring of parameters necessary to assess the accuracy of the findings and predictions in the probable hydrologic consequences determination under § 780.20. In turn, § 780.20(a)(5)(vii) states that the applicant must base the probable hydrologic consequences determination on an analysis of the baseline hydrologic, geologic, *biological,* and other information required under § 780.19 and must include findings on the impact that the proposed operation will have on the biology of perennial and intermittent streams within the proposed permit and adjacent areas, except as provided in § 780.19(g) of that part. Therefore, monitoring of parameters necessary to assess the accuracy of the findings and predictions of the probable hydrologic consequences determination would necessarily include monitoring of the biology, making proposed (a)(2)(i)(B) and (b)(2)(i)(D) redundant.

We made several changes to final paragraphs (a)(2)(ii) and (b)(2)(ii). First, we revised the titles of these paragraphs to clarify that these sections contain the minimum requirements for sampling and analysis of groundwater and surface

water, respectively. Next, we clarified paragraphs (a)(2)(ii) and (b)(2)(ii) by deleting ''that the following parameters be measured at each location'' and replacing it with ''collection and analysis of a sample from each monitoring point.'' Finally, we added language to the end of paragraphs (a)(2)(ii) and (b)(2)(ii) to better introduce the data sampling and analysis requirements in (a)(2)(ii)(A) through (D) and (b)(2)(ii)(A) through (D).

We also reduced redundancies in the rule by removing the breakout of specific parameters that must be collected and analyzed every 3 months in proposed paragraphs (a)(2)(ii)(A) through (Q) and (b)(2)(ii)(B) through (S). These parameters are already listed in final § 780.19(a)(2). Instead, final paragraphs (a)(2)(ii)(A) and (b)(2)(ii)(A) simply require that the data collected include an analysis of each sample for parameters listed in § 780.19(a)(2). The remaining requirements have been re-lettered accordingly. For clarification purposes, under proposed paragraph (a)(2)(ii)(R), now final paragraph (a)(2)(ii)(B), we have added language that specifies that the reporting requirements apply to water levels for all wells and discharge rates for all springs or underground openings used for monitoring purposes. We have revised proposed paragraphs (a)(2)(ii)(S) and (b)(2)(ii)(T), now final paragraphs (a)(2)(ii)(C) and (b)(2)(ii)(C), respectively, for clarity. Final paragraphs (a)(2)(ii)(C) and (b)(2)(ii)(C) now more clearly state that the data required under this paragraph must include an analysis of all parameters detected in the baseline sampling conducted under § 780.19(d) of this part.

Proposed paragraphs (a)(2)(ii)(T) and (b)(2)(ii)(U), now final paragraphs (a)(2)(ii)(D) and (b)(2)(ii)(D), respectively, have been modified to be consistent with the revisions made to the titles of these sections. Additionally, we have replaced the phrase ''parameters of local significance'' with the phrase ''other parameters of concern'' for consistency with the definition of ''parameters of concern'' included in final § 701.5.

Proposed paragraphs (a)(3)(ii) and (b)(3)(ii) included the sentence: ''[a]t a minimum, the plan must require monitoring of all parameters for which the regulatory has established a 'material damage criteria' [419] pursuant to the cumulative hydrologic impact assessment.'' We have revised and moved this requirement. It is now found in final § 780.23(a)(2)(i) and (ii)(D) and states that the plan must require monitoring of all parameters for which the regulatory authority has established ''evaluation thresholds under § 780.21(b)(7) of this part.'' We chose to require monitoring for evaluation thresholds instead of material damage thresholds because, as set forth in final § 780.21(b)(7), evaluation thresholds must be set for all critical water quality and quantity parameters. Evaluation thresholds under § 780.21(b)(7) are values for water quality and quantity parameters that, when attained, will trigger reassessment of the probable hydrologic consequences determination and development of corrective measures, if necessary, to prevent material damage to the hydrologic balance outside the permit area. Monitoring of these critical parameters is thus crucial to detect whether hydrologic conditions are being affected by the mining operation in a manner that could cause an exceedance of the comparable material damage threshold if corrective action is not taken. Thus, any parameter for which there is an evaluation threshold set must be monitored; otherwise, the purpose of setting an evaluation threshold is not being achieved.

Commenters noted that ''water-bearing stratum,'' as used in proposed paragraph (a)(4), is a new term and is not defined. In response, in final paragraph (a)(4), we have replaced the term ''water-bearing stratum'' with ''aquifer,'' a term that is defined in § 701.5. This change avoids using an undefined term but does not change the meaning of the paragraph.

Several commenters requested, that, in order to better protect groundwater resources, we rescind the exception in paragraph (a)(4) from monitoring for aquifers that have no existing or foreseeable use for agricultural or other human purposes or for fish and wildlife purposes and that do not significantly ensure the hydrologic balance within the cumulative impact area. We decline to make this change. SMCRA requires monitoring ''for those surface coal mining and reclamation operations which remove or disturb strata that serve as aquifers which significantly insure the hydrologic balance of water use either on or off the mining site.'' [420] Because SMCRA does not further define the qualities of aquifers that ''significantly insure the hydrologic balance,'' we have used our discretion to interpret this monitoring requirement to refer to aquifers that are or have an existing or foreseeable use for agricultural, human, or fish and wildlife purposes.

This exception also implements section 102(f) of SMCRA [421] by striking a balance between the protection of the environment and supporting the Nation's need for coal by requiring ground water monitoring only where there is an existing or foreseeable use for agricultural, human, or fish and wildlife purposes, or where the aquifer significantly ensures the hydrologic balance within the cumulative impact area. Where a permit qualifies for the exemption in final (a)(4), the applicant can avoid monitoring costs, allowing resources to be available for other protection and enhancement measures that could have a more direct benefit to the environment.

Final Paragraph (b): Surface-Water Monitoring Plan

For changes made to final paragraphs (b)(1)(i), (b)(1)(iii), (b)(2)(i), (b)(2)(ii), and (b)(3)(ii), please refer to the preamble discussion above in the corresponding paragraphs in final paragraph (a).

Several commenters requested that we allow multiple permits to rely on data from a single self-recording device where the multiple permits are close enough to share data. These commenters alleged that allowing multiple operators to share the cost of a self-recording device could result in labor and equipment cost reductions. In response to these comments we have added final paragraph (b)(1)(ii)(C) to allow, at the discretion of the regulatory authority, a single self-recording device to provide precipitation monitoring data for multiple permits that are contiguous or nearly contiguous provided the device can provide adequate and accurate coverage of precipitation events occurring in that area.

We removed the phrase ''for each parameter to be monitored'' in paragraph (b)(1)(iii). For additional information about this change, please refer to the preamble discussion above in final paragraph (a)(1)(ii).

We revised paragraph (b)(1)(v)(B) to more thoroughly address concerns from commenters about the clarity of the proposed rule. This provision now requires the applicant to describe how the monitoring data will be used to determine the impacts of the operation ''upon the biology of perennial and intermittent streams, lakes, and ponds within the proposed permit and adjacent areas.'' For clarity we have substituted a reference to ''lakes'' and

[419] ''Material damage criteria'' are referred to as ''material damage thresholds'' in the final rule. *See* final preamble discussion for section 780.21(b)(6).

[420] 30 U.S.C. 1267(b)(2).

[421] 30 U.S.C. 1202(f).

''ponds'' for the reference in the proposed rule to ''other surface-water bodies.'' We have discussed the substitution of ''biology'' for ''biological condition'' to ''biology'' above in the preamble discussion of § 780.19(c)(6)(vi) through (viii).

A commenter questioned the need for the monitoring data required in proposed paragraph (b)(1)(v)(B) to determine the impacts of the operation on the biology of streams that will be mined through, alleging that this data is unnecessary. The commenter also alleged that this requirement contradicts SMCRA's requirement to minimize impacts within the permit boundary. We disagree that this data is unnecessary. The collection of data related to baseline hydrologic and biologic conditions is necessary for the operator to make a determination whether restoration of the stream is possible as required in §§ 780.12, 780.27, 780.28, 816.56, and 816.57 of this chapter. In addition, it provides information on the quality and quantity of the surface waters prior to mining which will document the baseline conditions needed for determining whether stream restoration is successful.

In final rule paragraph (b)(2)(i), we have deleted ''if those parameters relate to the'' and replaced it with ''to the extent needed to assess the . . . .'' Please see the preamble discussion at (a)(2)(i) for more discussion of this change. In the final rule, we have also deleted proposed paragraph (b)(2)(i)(D) which set out a requirement for monitoring of the biological condition of perennial or intermittent streams or other surface water bodies within the proposed permit and adjacent areas and have renumbered the remaining paragraphs accordingly. Please refer to the preamble discussion above in § 780.28(a)(2)(i)(B) for further information about this change.

In the final rule, we revised proposed paragraph (b)(2)(i)(E), now final paragraph (b)(2)(i)(D), to clarify that the surface-water monitoring plan must include monitoring of those parameters necessary to assess the suitability of the quality and quantity of surface water for all designated uses under 303(c) of the Clean Water Act.[422] We further revised this provision to specify that, if there are no designated uses associated with the surface water, the parameters for monitoring must be sufficient to assess all premining uses of the surface water. We have also clarified that these requirements apply both to surface water located within the proposed permit and to those in the adjacent areas. Similarly, we revised proposed paragraph (b)(2)(i)(F), now final paragraph (b)(2)(i)(E), to clarify the monitoring plan must include the parameters needed to assess the suitability of the quality and quantity of surface water to support the premining land uses both within the proposed permit and adjacent areas.

We have revised final paragraph (b)(2)(ii) for clarity. Please refer to the preamble discussion above on paragraph (a)(2)(ii) for more information. Proposed paragraph (b)(2)(ii)(A), now final paragraph (b)(2)(ii)(B), remains essentially unchanged except that we have clarified that flow rates must be obtained from each sampling location.

We have revised proposed paragraphs (b)(2)(ii)(T) and (U), now final paragraphs (b)(2)(ii)(C) and (D) for clarity. For additional information, please refer to the preamble discussions above on final paragraphs (a)(2)(ii)(C) and (D).

One commenter requested that we include a list of parameters in § 780.23(b)(2)(iii), related to minimum requirements for point source discharges, including those parameters listed in proposed § 780.23(b)(2)(ii)(A) through (S). Conversely, another commenter did not want us to require all of the parameters referenced in § 780.23(b)(2)(ii) for point-source discharges, alleging that it would be outside of our authority under SMCRA. Monitoring requirements for point-source discharges are determined by Clean Water Act authorities under the National Pollutant Discharge Elimination System program. We do not have the authority under SMCRA to mandate what parameters must be included in National Pollutant Discharge Elimination System permits; therefore, we have made no changes to the final rule in response to these comments.

A commenter stated that we should delete proposed paragraph (b)(2)(iii)(B) which requires the surface water monitoring plan to include the measurement of flow rates for point-source discharges. The commenter alleged that this paragraph supersedes section 402 Clean Water Act requirements[423] by establishing criteria for flow measurements other than under National Pollutant Discharge Elimination System permits. We disagree with the commenter. Paragraph (b)(2)(iii)(A) of this section clearly states that monitoring of point-source discharges must be in accordance with 40 CFR parts 122, 123, and 434 and as required by the National Pollutant Discharge Elimination System permitting authority and the measurement of flow rates is required as part of the National Pollutant Discharge Elimination System permit. Therefore, the requirement to measure the flow rates does not supersede section 402 Clean Water Act; it is consistent with that Act. We have also prohibited the use of visual observations to measure flow rates. As we have stated elsewhere in this preamble, visual observations, by their very nature, lack precision and vary among observers. As such, they are not an objective measurement and cannot be reproduced.

We have provided additional language at the end of final paragraph (b)(2)(iv) to specify that the applicant must revise the surface-water monitoring plan to incorporate any site-specific monitoring requirements imposed by the National Pollutant Discharge Elimination System permitting or Clean Water Act authority subsequent to submission of the SMCRA permit application. We have added this provision to ensure that the applicant updates the SMCRA permit application as necessary with information that it has submitted in accordance with National Pollutant Discharge Elimination System permit requirements.

We are adopting final paragraph (b)(3)(ii) as proposed except that we are requiring that the plan include monitoring of all parameters for which the regulatory authority has established evaluation thresholds under § 780.21(b)(7) of this part. We explain this revision further at our preamble discussion for (a)(3)(ii).

Final Paragraph (c): Biological Condition Monitoring Plan

Various commenters opposed the new biological condition monitoring plan requirements at proposed paragraph (c), alleging that the new requirements will be costly to comply with and do not offer clear guidance. Commenters specifically expressed uncertainty about the frequency and timing of monitoring under this paragraph. We acknowledge that the requirements at proposed paragraph (c), final paragraph (c), may contribute to increased monitoring costs. However, we have carefully evaluated the potential benefits of the information required by this provision and have determined that it is necessary to adequately determine the condition of the stream premining, during mining, and after mining. We find that the beneficial impacts of this information outweigh the costs and burdens to the operator and regulatory authority. With respect to the frequency of monitoring

[422] 33 U.S.C. 1251(a) and 30 U.S.C. 1313(c).

[423] 33 U.S.C. 1342.

during and after mining, the final rule within paragraph (c)(2)(iii) clarifies that the sampling frequency must be no less than annual and must not be so frequent as to deplete the populations being monitored.

Some commenters opposed the requirement for the biological condition monitoring plan as proposed in paragraph (c), because of an alleged lack of available studies demonstrating that this type of monitoring is necessary for or appropriate to streams outside of Appalachia. We have determined that these requirements are necessary for and appropriate for mining operations throughout the country. Although we cite studies about Appalachia in support of our conclusions,[424] the ability to obtain information through bioassessment protocols is currently available on international, national, regional, and state levels and the ability to establish effective baseline information for monitoring on all perennial streams, no matter the size, habitat type, or vegetative cover is attainable using the best technology currently available. Additionally, the U.S. Environmental Protection Agency authored the ''National Rivers and Streams Assessment.'' This assessment explains the minimum requirements for monitoring streams and is consistent with our final rule. Further, this assessment is scientifically defensible in the 48 conterminous states.[425] As to the necessity of this monitoring, there are long-standing examples of surface water impacts identified by SMCRA regulatory authorities across all coal bearing regions. While many of these effects are minor, they also often involve off-site impacts, and to minimize these off-site impacts using the best technology currently available, we are retaining these requirements. These baseline assessments of the biological condition of perennial streams where scientifically defensible protocols exist will allow for appropriate stream assessment and monitoring and will result in minimization of effects to fish, wildlife, and environmental resources consistent with the requirements of section 515(b)(24) of SMCRA.[426] For further discussion of using scientifically defensible bioassessment protocols when monitoring streams please see the final preamble discussion in § 780.19(c)(6).

As stated in final § 780.19(c)(6)(vii), the permittee must adhere to a bioassessment protocol approved by the state or tribal agency responsible for preparing the water quality inventory required under section 305(b) of the Clean Water Act,[427] 33 U.S.C. 1315(b), or other scientifically-defensible bioassessment protocol accepted by agencies responsible for implementing the Clean Water Act. Through coordination with the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, and state Clean Water Act authorities, publications and additional information on applicability and region-specific bioassessment protocols can be provided for SMCRA regulatory authorities to establish appropriate biological condition monitoring plans consistent with the required use of scientifically-defensible bioassessment protocols. For further information on bioassessment protocols, please refer to the preamble discussion of paragraphs (vi) through (viii) of final § 780.19(c)(6).

Many commenters supported the requirement to monitor the effects of the mining operation upon the biological condition of intermittent and perennial streams, noting that biological monitoring is necessary to assess the effects of mining operations on fish, wildlife, and related environmental resources as well as to determine whether material damage to the hydrological balance outside the permit area is occurring. Other commenters opposed monitoring the effects of the mining operation upon the biological condition of streams and recommended that we eliminate this requirement from the rule. Commenters opposing the biological condition monitoring requirement alleged that, because only one sample is taken per year, the information gathered will not be helpful in determining, in a timely manner, whether corrective actions are necessary. While these commenters are correct that this sampling is only required annually, additional samples can be taken as long as the additional sampling will not deplete the populations of species being monitored. Additionally, the information obtained from the biological condition monitoring plan should be evaluated alongside the other parts of the water monitoring requirements, such as the surface-water and groundwater monitoring requirements of paragraphs (a) and (b). Taken together, the once-a-year biological condition monitoring and the other more frequent monitoring requirements of paragraphs (a) and (b), will allow the regulatory authority to have the data necessary to identify trends that indicate that an operation is at risk of causing material damage to the hydrologic balance outside the permit area. Therefore, we are retaining the requirement for biological condition monitoring because it is necessary to determine whether material damage to the hydrological balance outside the permit area is occurring, as well as to assess the effects of mining operations on fish, wildlife, and related environmental resources.

These commenters also asserted that biological condition monitoring does not identify the cause of the impacts and could reflect impacts not associated with the mining operations, such as logging, farming, livestock, irrigation, natural variation, or unusual flow events. We agree that in certain instances, such as those listed above, it is possible that the biological condition monitoring may show impacts that are not directly associated with the mining operations. However, as stated above, we intend for data obtained from the biological condition monitoring to be evaluated with the data obtained from surface-water and groundwater monitoring, not on a stand-alone basis. Evaluation of the data resulting from the three types of monitoring will allow the regulatory authority to determine if impacts to stream biology are related to the mining operation and if corrective action is needed to prevent the operation from causing material damage to the hydrological balance outside the permit area. This requirement provides applicants better protection against potential liability for environmental harm because the additional data will make it easier to determine whether the impact is a result of mining activities or activities unrelated to mining.

[424] *See, e.g.,* S.T. Larned, et al., *Emerging concepts in temporary-river ecology.* Freshwater Biology. pgs. 55, 717–738 (2010).

L.A. Beche, et al., *Long-term seasonal variation in the biological traits of benthic-macroinvertebrates in two Mediterranean-climate streams in California, U.S.A.* Freshwater Biology. pgs. 51: 56–75 (2006).

A. Boulton and P. Lake. *The ecology of two intermittent streams in Victoria, Australia III. Temporal changes in faunal composition.* Freshwater Biology pgs. 27, 123–138 (1992).

E. Bernhardt and M. Palmer. *The environmental costs of mountaintop mining valley fill operations for aquatic ecosystems of the Central Appalachians.* The Year in Ecology and Conservation Biology. Ann. N.Y. Acad. Sci. pgs. 39–57 (2011).

C. Leigh and K. Fritz, *Ecological research and management of intermittent rivers: An historical review and future directions.* Freshwater Biology (2015).

T. Nadeau and M. Cable Rains, *Hydrological Connectivity Between Headwater Streams and Downstream Waters: How Science Can Inform Policy.* Journal of the American Water Resources Ass'n, pgs. 43(1): 118–133 (2007).

[425] U.S. Envtl. Prot. Agency. *National Rivers and Streams Assessment 2013–2014: Field Operations Manual—Wadeable.* EPA–841–B–12–009b. Office of Water Washington, DC (2013), *see also,* U.S. Envtl. Prot. Agency, *https://www.epa.gov/wqc/information-bioassessment-and-biocriteria-programs-streams-and-wadeable-rivers* (last accessed Nov. 1, 2016).

[426] 30 U.S.C. 1265(b)(24).

[427] 33 U.S.C. 1315(b).

Several commenters suggested that the biological condition monitoring plans in §§ 780.23(c) and 784.23(c) should be prepared by a qualified ecologist or biologist. Because the requirements contained in final paragraph (c) and paragraphs (vi) through (viii) of final § 780.19(c)(6) contain detailed requirements about what must be monitored and which scientific protocols are acceptable, it is not necessary to also have the plans be prepared by a qualified ecologist or biologist.

We made minor clarifying revisions throughout final paragraph (c). Specifically, the phrase ''for which baseline biological condition data was collected under § 780.19(c)(6)(iv) of this part'' has been added to paragraphs (c)(1) and (c)(2)(ii). This addition provides greater specificity as to the monitoring locations within the proposed permit and adjacent areas that the biological condition monitoring plan must include. Additionally, we updated the citation in final paragraph (c)(2)(i) to reflect changes we made to final § 780.19.

Final Paragraph (d): Exceptions

This paragraph lists exceptions to the requirements for monitoring groundwater, surface water and the biological condition of streams during and after mining. It provides the regulatory authority with the flexibility to modify the groundwater and surface water requirements of paragraphs (a) and (b) of this section and modify or waive the biological condition monitoring plan requirements of paragraph (c) of this section. As discussed below, we did not make any changes to this section in response to comments.

One commenter recommended deleting proposed paragraph (d)(1), which provides the regulatory authority the discretion to modify groundwater, surface water, and biological condition monitoring plan requirements if the proposed permit includes only land eligible for remining. This commenter expressed concern that this provision could be abused through overuse and that biological condition monitoring should be waived only when a stream contains no valuable biological community. The commenter asserted that biological communities in these remined areas will be impacted and that merely conducting a baseline assessment of a stream's biological condition would not be sufficient. Many commenters expressed concern that, in some instances, pre-SMCRA unreclaimed mines have been left undisturbed for so long that the area has naturally revegetated and that any mining would re-disturb important plant communities, despite the fact that these areas might also contain unreclaimed abandoned mine features. We agree that, in some instances, unreclaimed areas that have naturally revegetated, may qualify for the exemption under final paragraph (d)(1). However, despite naturally revegetating and supporting a biological community, these sites are often still dangerous because of unreclaimed spoil piles, highwalls, and pits. Further, reclamation funds are severely limited and remining is often the only viable method of reclaiming previously mined areas, especially those that are far away from public roads or are not actively discharging acid-mine drainage.

The exception at final paragraph (d)(1) applies only where the permit area consists solely of lands eligible for remining and the regulatory authority has determined that a less extensive monitoring plan is adequate to monitor the impacts. The applicant would also have to comply with final § 785.25. Therefore, the exception cannot be invoked for every remining operation. With this exception we are attempting to encourage the mining of already disturbed sites, which will then be reclaimed in a manner that returns the land to a premining state or another appropriate postmining land use. While additional disturbances, and the potential for water quality impacts, would occur with any mining operation, reclaiming these sites to a more natural condition is the best alternative in the long term. This exception conforms to section 102(h) of SMCRA,[428] by promoting the reclamation of mined areas left without adequate reclamation prior to the enactment of SMCRA. While a small percentage of previously mined areas may have naturally revegetated over decades, most of these sites, regardless of revegetation, continue to substantially degrade the quality of the environment, prevent or damage the beneficial use of land or water resources, and endanger the health or safety of the public. For these reasons, we are retaining the exception as proposed.

Several commenters also recommended that we allow the regulatory authority to waive biological condition monitoring requirements in other circumstances. Other commenters suggested that we defer to the Clean Water Act authority to determine if biological monitoring is necessary. In support of this position, these commenters assert, without any supporting evidence, that Clean Water Act authorities allow large municipal wastewater treatment plants to eliminate biological monitoring. We do not agree that the regulatory authority should have increased discretion to waive biological condition monitoring. As discussed above and in the preamble to the proposed rule,[429] biological monitoring is generally necessary to determine whether material damage to the hydrologic balance outside the permit area is occurring and to assess the effects of mining operations on fish, wildlife, and related environmental resources. The biological condition monitoring plan is just one part of the water monitoring requirements under 780.23. Other parts of the water monitoring requirements, such as the surface water and groundwater monitoring requirements of paragraphs (a) and (b), determine whether corrective actions are necessary. Taken together, the once-a-year biological condition monitoring and the other more frequent monitoring requirements, will allow the regulatory authority to have the data necessary to identify trends that indicate that an operation is at risk of causing material damage to the hydrologic balance outside the permit area. Despite the importance of this data, the final rule, at (d)(1) and (d)(2), recognizes that there are some limited situations when biological condition monitoring would be unnecessary or unlikely to be helpful in detecting material damage to the hydrologic balance outside the permit area and the effects of mining operations on fish, wildlife, and related environmental resources. We do not find any other exceptions necessary or appropriate under SMCRA. We also do not agree that deference to a Clean Water Act authority is appropriate under this provision as paragraph (d) relates to all monitoring, not just the monitoring done pursuant to the Clean Water Act. It is the regulatory authority's responsibility to ensure that SMCRA's requirements are met, including those related to material damage to the hydrologic balance outside the permit area and fish, wildlife, and related environmental resources. Finally, municipal wastewater treatment plants are not subject the same requirements as surface coal mining and reclamation operations and the analogy to these facilities is not indicative or representative of SMCRA's requirements.

[428] 30 U.S.C. 1202(h).

[429] 80 FR 44436, 44469 (Jul. 27, 2015).

Final Paragraph (e): Coordination With Clean Water Act Agencies

This paragraph is being finalized as proposed with the exception that it has been reorganized for clarity. The statement ''make best efforts to'' was initially applied only to minimizing differences in monitoring locations and reporting requirements and sharing data to the extent practicable and consistent with each agency's mission, statutory requirements, and implementing regulations. Several commenters noted that coordinating with Clean Water Act agencies in a timely manner can be difficult if the regulatory authority does not receive responses from the Clean Water Act agencies. We agree and, in response to this comment, moved the statement ''make best efforts to'' to the first sentence of the paragraph, revising the section to read that the SMCRA regulatory authority must make its best effort to consult in a timely manner with the agencies responsible for issuing permits, authorizations, and certifications under the Clean Water Act, minimize differences in monitoring locations and reporting requirements, and share data to the extent practicable and consistent with each agency's mission, statutory requirements, and implementing regulations.

Section 780.24: What requirements apply to the postmining land use?

One commenter opposed adoption of proposed § 780.24 because, according to the commenter, previous § 780.24 is sufficient. The commenter did not elaborate further. We disagree for the reasons discussed in the preamble to the proposed rule.[430]

Another commenter alleged that the proposed rule confuses land use and land capability. We disagree. Whenever sections 508(a)(2) and (3) and 515(b)(2) of SMCRA [431] use the term ''capable'' or ''capability,'' they do so in the context of land uses, as do our regulations.

The commenter also alleged that the preamble to proposed § 780.24 assumes that a change to a higher or better land use would be a change to a higher capability. According to the commenter, a change to a higher or better postmining land use may reduce the capability of the land to support other uses that it could previously support. We agree that implementation of certain postmining land uses would reduce the capability of the land to support other uses. For example, construction of industrial or commercial facilities as part of implementation of a commercial or industrial postmining land use would reduce the capability of the land to support fish and wildlife habitat or cropland. However, this principle applies regardless of whether a higher or better use is involved. Our rules do not seek to prevent this outcome. Instead, they require that the permittee reclaim the land to a condition in which it is capable of supporting the uses that the land was capable of supporting before any mining. If the land was capable of supporting both industrial and cropland uses prior to any mining, then the permittee must reclaim the mined land to a condition capable of supporting both industrial and cropland uses after mining and reclamation. Nothing in our rules prohibits implementation of the industrial land use before bond release, even if doing so reduces or effectively eliminates the site's capability to support cropland. Our rules, like section 515(b)(2) of SMCRA,[432] merely require that the land be reclaimed to its premining capability until implementation of the postmining land use, which is not the responsibility of the permittee. Thus, our rules operate as a protective measure to ensure restoration of site capability in the event that the approved postmining land use is not implemented.

A few commenters alleged that the proposed rule would greatly limit postmining land use options and severely complicate the ability to obtain approval of higher or better uses. According to the commenters, the proposed rule thus would place an undue burden on the landowner and restrict landowner rights. We do not agree. In reality, the final rule would ease the requirements for obtaining approval of a proposed postmining land use that differs from the actual premining use, provided that the proposed use is a use that the land was capable of supporting prior to any mining. Proposed and final paragraphs (b)(1)(iii)(E) through (G) add three new demonstration and finding requirements for approval of alternative postmining land uses; *i.e.,* higher or better uses that preclude restoration of the land to a condition capable of supporting the uses that it was capable of supporting before any mining. Those additional provisions are intended to ensure that restoration of the land to a condition capable of supporting the alternative postmining land use would not result in increased flooding on adjoining properties, preclude attainment of designated uses of surface water outside the permit area, or preclude actual premining uses of surface water outside the permit area. The latter two criteria are elements of the definition of ''material damage to the hydrologic balance outside the permit area in § 701.5, while the first criterion is intended to protect downstream properties from flood damage, consistent with section 102(a) of SMCRA,[433] which provides that one of the purposes of SMCRA is to protect society and the environment from the adverse effects of surface coal mining operations. None of the three new criteria place an undue burden on the landowner or unduly restrict landowner rights.

The same commenters further alleged that adoption of the proposed rule would place a burden on state regulatory authorities by requiring significantly more time for review and inspection. We do not agree. As discussed in the preamble to the proposed rule,[434] adoption of this rule will reduce the burden on both permit applicants and regulatory authorities by eliminating the requirement in our previous rules to process all proposed postmining land uses that differ from the premining use or uses as alternative postmining land uses. Under the proposed and final rules, the alternative postmining land use review process does not apply if the proposed postmining land use is a use that the site was capable of supporting before any mining, even if that land use is not that same as the current premining land use. The final rule includes no additional regulatory authority review and inspection requirements for this type of land use change. It is true that both proposed and final paragraphs (b)(1)(iii)(E) through (G) add three new demonstration and finding requirements for approval of alternative postmining land uses (higher or better uses). However, we anticipate that the additional burden associated with those demonstrations and findings will be more than offset by a reduction in the number of alternative postmining land use determinations required under the final rule compared to the previous rules.

Final Paragraph (a): What postmining land use information must my application contain?

Proposed paragraph (a)(2) would require that each permit application include a discussion of the utility and capability of the reclaimed land to support a variety of other uses, including the uses that the land was capable of supporting before any mining, as identified under § 779.22, regardless of the proposed postmining

[430] 80 FR 44436, 44507–44508 (Jul. 27, 2015).

[431] 30 U.S.C. 1258(a)(2) and (3) and 1265(b)(2).

[432] 30 U.S.C. 1265(b)(2).

[433] 30 U.S.C. 1202(a).

[434] *See* 80 FR 44436, 44508–44509 (Jul. 27, 2015).

land use. One commenter expressed concern that the proposed rule would result in an extensive list of current uses. Proposed paragraph (a)(2) would require more than a list of current uses—it would require a discussion of the utility and capability of the reclaimed land to support both those uses and the other uses that the land was capable of supporting before any mining. A separate regulation at § 779.22(a)(1) requires only a list of existing uses, consistent with section 508(a)(2)(A) of SMCRA,[435] which provides that the application also must identify ''the uses existing at the time of application.'' To the extent that the commenter may have been concerned about a potentially unlimited suite of land uses, we note that our intent is to require identification and discussion only of those land use categories set forth in the definition of ''land use'' in § 701.5.

The commenter further alleged that the proposed rule does not account for historical land use practices and capabilities resulting from agricultural practices. According to the commenter, the conversion of prairies to cropland and the installation of drainage ditches and drain tiles have altered the capability of the affected lands to support certain land uses. Nothing in the proposed or final rules would have the effect alleged by the commenter. Both proposed and final § 780.24(a)(2) require identification and discussion of the uses that the land was capable of supporting before any mining not at some time in the distant past before the advent of agriculture. It does not matter whether that capability is naturally occurring or the result of agriculture drainage projects or other human intervention.

The commenter also alleged that the proposed rule differs from the statutory provision that it is intended to implement because section 508(a)(2)(B) of SMCRA [436] focuses on the capability of the land whereas the proposed rule changes the emphasis to the uses that the land was capable of supporting before any mining. According to the commenter, this change in emphasis is unnecessary and will not result in provision of any useful information.

We do not agree. Section 508(a)(3) of SMCRA [437] provides the primary statutory authority for § 780.24(a)(2), not, as the commenter alleges, section 508(a)(2)(B) of SMCRA. Sections 508(a) and (a)(3) of SMCRA require that the reclamation plan submitted as part of the permit application ''include, in the degree of detail necessary to demonstrate that reclamation required by the State or Federal program can be accomplished,'' a statement of ''the use which is proposed to be made of the land following reclamation, including a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses.'' In this context, the term ''alternative uses'' refers to the uses that the land was capable of supporting before any mining. Section 515(b)(2) of SMCRA [438] requires that surface coal mining and reclamation operations ''restore the land affected to a condition capable of supporting the uses which it was capable of supporting prior to any mining, or higher or better uses of which there is reasonably likelihood.'' The information required by proposed paragraph (a)(2) is critical ''to demonstrate that reclamation required by the state or federal program can be accomplished,'' as required by section 508(a) of SMCRA, because it is needed to determine whether the proposed operation has been designed to comply with the performance standard in section 515(b)(2) of SMCRA.

However, in response to these and other comments concerned about the potential burden on regulatory authorities and relevance to permitting decisions, we have made two modifications to proposed paragraph (a)(2). First, final rule § 780.24(a)(2) excludes prime farmland historically used as cropland. Under existing § 785.17(e)(1), the approved postmining land use for these prime farmlands must be cropland, so there is no discretion available in determining an appropriate postmining land use. Furthermore, lands reclaimed in accordance with prime farmland standards will be capable of supporting almost all other potential land uses by default. Second, we have limited the scope of final paragraph (a)(2) to include only the proposed postmining land use and the variety of uses that the land was capable of supporting before any mining. The proposed rule implied that the applicant had to discuss other uses in addition to these. We agree that information concerning any other potential postmining land use would not be relevant to the decision making process.

Proposed paragraph (a)(4)(i) would require that each permit application include a copy of the comments concerning the proposed postmining land use that the applicant receives from the legal or equitable owner of record of the land surface. One commenter erroneously described this provision as a requirement for the regulatory authority to consult with the landowner on all proposed postmining land uses. The commenter did not indicate whether it thought that such consultation should be required, as it is for approval of higher or better uses. However, section 508(a)(3) of SMCRA requires only that the application include ''the comments of any owner of the surface.'' Proposed paragraph (a)(4)(i) is consistent with this statutory requirement and we are adopting it as final without change. The fact that SMCRA requires that the landowner have an opportunity to comment on the proposed postmining land use, however, implies that the regulatory authority must consider those comments, to the extent appropriate, when deciding whether to approve the proposed postmining land use.

Proposed paragraph (a)(4)(ii) would require that each permit application include a copy of the comments concerning the proposed postmining land use that the applicant receives from state and local government agencies that would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation. One commenter urged us not to apply this requirement when the premining and postmining land uses are the same. The commenter further alleged that the permit applicant would be unable to meet this requirement in states and localities that do not have planning or zoning entities.

Section 508(a)(3) of SMCRA requires that the application include the comments of ''State and local governments or agencies thereof which would have to initiate, implement, approve or authorize the proposed use of the land following reclamation.'' There is no exception for situations in which the premining and postmining land uses are identical. In addition, there is no guarantee that state and local governments and agencies would not have a role in initiation, implementation, approval, or authorization of the postmining land use in those circumstances. Therefore, we are adopting proposed paragraph (a)(4)(ii) without change. However, nothing in that paragraph compels those governments or agencies to submit comments. Nor does that paragraph prohibit approval of the proposed postmining land use in the absence of comments from those governments or agencies. Consequently, the commenter's statement that the applicant would be unable to meet this requirement in states and localities that do not have planning or zoning entities has no basis.

[435] 30 U.S.C. 1258(a)(2)(A).

[436] 30 U.S.C. 1258(a)(2)(B).

[437] 30 U.S.C. 1258(a)(3).

[438] 30 U.S.C. 1265(b)(2).

Numerous commenters opposed adoption of proposed paragraph (a)(6)(ii), which would have required that the permit applicant disclose any monetary compensation provided to the landowner in exchange for the landowner's agreement to an alternative postmining land use. Many commenters alleged that we have no authority to require disclosure of private contracts, with one commenter asserting that it would require the disclosure of proprietary and confidential business information. Other commenters asserted that the provision would be impossible to enforce. Some commenters opined that the required information is not relevant to whether the postmining land use change is likely to be achieved, nor is it information that the regulatory authority could use in reaching a decision on a request for approval of an alternative postmining land use. One commenter erroneously asserted that this provision would act as a prohibition on compensation and would illegally require the regulatory authority to adjudicate contract disputes. Another commenter urged us to respect the ability of landowners to determine how best to use their property after mining and to avoid unnecessary regulation of private real estate dealings where such regulation would provide no significant environmental or land use planning benefit.

Another commenter alleged that the proposed rule would not be effective in addressing the core issue, which is the failure of regulatory authorities to make an independent and fact-based determination that the proposed change in land use meets statutory requirements. According to the commenter, compensation for landowner agreement to a postmining land use change could easily be disguised as something else and there is no reason to believe that disclosure of compensation would improve the quality of the decision-making process. Therefore, the commenter recommended that the monetary disclosure provision be deleted and replaced with a provision specifying that landowner consent alone is insufficient basis for approval of a proposed alternative postmining land use without further demonstrations of compliance with the criteria for approval of an alternative postmining land use.

The commenter explained that, in her experience, some permittees have made payments or used other means to persuade landowners to concur with alternative postmining land uses that are not higher or better uses or for which there is no intent to implement. According to the commenter, under the previous rules, landowner consent was often given for uses that were neither higher nor better, that were improbable or impractical, and that sometimes were even undesirable for the landowner. The commenter further stated that regulators rely on landowner consent to an excessive degree to document whether the proposed postmining land use meets the statutory standards for approval as a higher or better use. The commenter cites a decision of Administrative Law Judge Harvey Sweitzer in *Farrell Cooper Mining Company* v. *OSMRE,* Docket No. 2013–1–R, September 30, 2015, as providing insight into the legal and economic forces that hinder proper land restoration following mining. According to the commenter, mining can alter landforms for the better, but the economics of mining also can push both permittees and surface owners to overestimate the need for, and utility of, such structures, resulting in the creation of impoundments too large to ever fill with water, losses of pastureland, retention of mining-related structures for industrial uses never realized, and creation of flat land in inaccessible areas where there is no need to such land. The commenter further stated that, as in the *Farrell-Cooper* decision, she had repeatedly observed legal instruments in which coal companies essentially contract upfront with surface owners to mandate their acquiescence in any future changes to landforms or land use that the permittee may seek to permit. The commenter also cited the *Farrell-Cooper* decision as documenting the failure of regulators to enforce their laws and regulations and make independent and factually supported findings because of deferral to landowner judgment.

After considering these comments, we decided to adopt the approach recommended by the last comment discussed above. Specifically, we are not adopting proposed paragraph (a)(6)(ii). Instead, we revised proposed paragraph (b)(2)(ii) to include language clarifying that landowner consent alone is an insufficient basis for a regulatory authority finding that the applicant or permittee has made the demonstration needed for approval of a proposed alternative postmining land use. We agree with the commenter that this approach should be more effective in ensuring that both applicants and regulatory authorities consider all the criteria in paragraphs (b)(1)(i) through (iii) for approval of alternative postmining land uses rather than deferring to the professed wishes of the landowner. We also agree with the commenter that, while the regulatory authority must take the preferences of landowners into consideration when evaluating a proposed postmining land use, landowner consent is not probative of whether a proposed land use meets the criteria for approval.

Final Paragraph (b): What requirements apply to the approval of alternative postmining land uses?

One commenter asserted that we should delete proposed paragraph (b)(1) because the preamble provides only anecdotal evidence to support the proposition that the current regulations are insufficient to reliably achieve proposed higher or better land uses. However, the commenter only provided arguments concerning paragraph (b)(1)(i), so we interpret the comment as being directed at only that subparagraph. Proposed paragraph (b)(1)(i) would require that the applicant demonstrate that there is a reasonable likelihood that a proposed alternative postmining land use will be achieved after mining and reclamation, as documented by, for example, real estate and construction contracts, plans for installation of any necessary infrastructure, procurement of any necessary zoning approvals, landowner commitments, economic forecasts, and studies by land use planning agencies. According to the commenter, it is impractical to expect long-term mining operations to present evidence such as real estate and construction contracts to support the proposition that the mined area will in fact achieve the proposed postmining land use years prior to the completion of reclamation activities.

Moreover, our regulations do not require attainment of proposed alternative postmining land uses (higher or better uses) as the commenter appears to imply, but, consistent with the underlying statutory provision, they do require that the applicant demonstrate, and the regulatory authority find, that there is a reasonable likelihood that the proposed higher or better use will be achieved. Section 515(b)(2) of SMCRA [439] requires that the permittee restore land affected by mining operations to a condition capable of supporting either the uses that it was capable of supporting prior to any mining or ''higher or better uses of which there is reasonable likelihood.'' Our proposed and final rules give fuller effect than our previous rules to this statutory provision by creating a clearer distinction between requirements applicable to proposed higher or better postmining land uses and requirements

[439] 30 U.S.C. 1265(b)(2).

applicable to proposed postmining land uses consisting of one or more of the uses that the site was capable of supporting prior to any mining.

Our rules always have required a demonstration and finding that there is a reasonable likelihood of achieving a proposed alternative postmining land use, as does the statute. Proposed paragraph (b)(1)(i) differs from the previous rule only in that the proposed rule provides examples of how that demonstration and finding may be made. The list is not exhaustive, but it provides guidance on the type of documentation needed to make a good-faith demonstration and finding. If a permit applicant is unable to provide documentation of this nature, then there is no basis upon which the regulatory authority can make a finding that there is a reasonable likelihood of achieving the proposed postmining use, as the commenter implicitly acknowledges. When there is uncertainty about the reasonable likelihood of achieving a higher or better use, the applicant should propose a different postmining land use, one that the land was capable of supporting before any mining. If, at a later date, implementation of a higher or better use becomes more likely, the permittee may submit a permit revision application to change the postmining land use.

The commenter also questioned the ability of regulatory authorities to evaluate the likelihood that real estate and construction contracts will ensure implementation of the postmining land use. However, the commenter provided no explanation of why this would be the case and we have no reason to believe that regulatory authorities lack this capability.

Final paragraph (b)(1) differs slightly from proposed paragraph (b)(1) in that we replaced the phrase ''use or uses'' with ''uses'' for consistency with paragraph (a) and to emphasize that the default requirement is to restore the site to a condition in which it is capable of supporting the uses that it was capable of supporting before mining, not just the single use that existed prior to mining. The revised language is consistent with section 515(b)(2) of SMCRA,[440] which requires that the land be restored ''to a condition capable of supporting the uses which it was capable of supporting prior to any mining.''

We revised proposed paragraph (b)(1)(iii)(D) by adding the word ''tribal'' to the phrase ''Federal, State, or local law'' found in section 515(b)(2) of SMCRA. We consider this revision to be a clarification rather than a substantive change because we have always considered tribal law to be included in the statutory phrase.

We revised proposed paragraph (b)(1)(iii)(E) to refer to changes in the size or frequency of peak flows that would cause an increase in flooding rather than an increase in damage from flooding as in the proposed rule. We made this change because determination of whether there would be an increase in flooding is easier and more feasible than a determination of whether there would be an increase in damage from flooding. The latter standard would require projection of future development downstream of the proposed permit area, which could be difficult and speculative.

Final paragraphs (b)(1)(iii)(F) and (G) differ from their counterparts in the proposed rule in that we removed references to reasonably foreseeable uses of surface water and groundwater. The final rule no longer includes the term ''reasonably foreseeable uses'' in contexts other than protection of reasonably foreseeable surface land uses from the adverse impacts of subsidence. Our reasons for deletion of this term are twofold. First, the term appears in SMCRA only in section 516(b)(1), which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. Sections 717(b) and 720(a)(2) of SMCRA separately protect certain water uses. Second, numerous commenters opposed inclusion of the term ''reasonably foreseeable uses'' on the basis that it is too subjective, difficult to determine, and open to widely varying interpretations, which could result in inconsistent application throughout the coalfields.

Final paragraphs (b)(1)(iii)(F) and (G) also differ from their counterparts in the proposed rule in that we clarified that these paragraphs apply only outside the permit area, consistent with section 510(b)(3) of SMCRA,[441] which applies the prohibition on material damage to the hydrologic balance only outside the permit area. We also removed all references to groundwater because these paragraphs pertain only to surface flows. In addition, we revised these paragraphs to track more closely the language concerning designated uses of surface water under the Clean Water Act in our definition of ''material damage to the hydrologic balance outside the permit area'' in § 701.5. Finally, in response to comments from the U.S. Environmental Protection Agency, we replaced the term ''existing'' when referring to uses of surface water with ''any actual use of surface water outside the permit area before mining.'' This change is intended to avoid any confusion with the term ''existing uses'' under the regulations implementing the Clean Water Act.

One commenter expressed concern that proposed paragraph (b)(1)(iii)(F) could be an issue in the arid Southwest when the operation includes the construction of permanent impoundments that do not discharge. According to the commenter, the rule could be interpreted to mean that non-discharging impoundments are precluding downstream reaches from attaining their designated use even though the immediate downstream reaches are ephemeral. This situation could exist only if the runoff from a mine comprises a critical element of the flow necessary to support a designated use of surface water outside the permit area under section 303(c) of the Clean Water Act.[442] We do not anticipate that such a situation would arise, given the infrequency and ephemeral nature of surface runoff in arid areas.

Another commenter stated that proposed paragraph (b)(2)(i) requiring the regulatory authority to consult with ''the landowner or the land management agency having jurisdiction over the lands to which the use would apply'' is vague and unnecessary because it does not explain what specifically the regulatory authority is to seek consultation on. The commenter opines that the regulatory authority only needs to know that the landowner has consented to the land use change. Further, the commenter states that our previous regulations require that consent be provided in writing and thus, the proposed paragraph is unnecessary. We disagree. In our experience landowners frequently discuss significant concerns about alternate postmining land uses when engaged by the regulatory authority. For this reason, consulting with the landowner is essential, particularly when assessing the ''reasonable likelihood'' that a change in land use will occur. Therefore, we are adopting this paragraph as proposed.

Final Paragraph (d): What restrictions apply to the retention of mining-related structures?

Paragraph (d) establishes restrictions on the retention of mining-related structures, other than impoundments and roads, for potential future use in support of the postmining land use. One

[440] 30 U.S.C. 1265(b)(2).

[441] 30 U.S.C. 1260(b)(3).

[442] 33 U.S.C. 1313(c).

commenter asserted that we should not adopt proposed paragraph (d) because adoption is likely to lead to economic waste when structures that could have been utilized by successive landowners or tenants are torn down during reclamation. We find that the outcome posited by the commenter is unlikely to occur. Structures that are not used for postmining land use purposes are unlikely to be maintained by current or future landowners. As such, they rapidly become eyesores and attractive nuisances. Unused structures also prevent restoration of the land upon which they are sited to a condition capable of supporting the uses that the land was capable of supporting before any mining, as required by section 515(b)(2) of SMCRA. Therefore, we are adopting paragraph (d) as proposed, with the modifications discussed below.

One commenter opposed the provisions in proposed paragraphs (d)(2) and (3) that effectively require that the land upon which a structure is sited be revegetated with native vegetation if the structure is removed because of a failure to implement the approved postmining land use during the revegetation responsibility period. According to the commenter, the land from which the structure was removed could be used for cropland or in some other manner that would not warrant planting of native vegetation. The commenter also noted that planting with native vegetation may not be consistent with the surface owner's land use intentions.

Surface owner intentions are an important consideration, but they are not the exclusive criterion for selection of the species planted on land disturbed by mining operations. Section 515(b)(19) of SMCRA [443] requires that lands disturbed by surface coal mining operations be revegetated with native species unless introduced species are desirable and necessary to achieve the postmining land use. Section 515(b)(20) of SMCRA [444] provides an exception to that requirement for sites with a long-term, intensive agricultural postmining land use.

However, we determined that the proposed rule's revegetation requirement was not fully in accord with the underlying statutory provisions discussed above because it did not clearly provide for the exceptions authorized by the statute. Therefore, in final 30 CFR 780.24(d)(2) and (3), we are replacing the phrase ''establishing native vegetation in accordance with § 816.111 of this chapter'' in the proposed rule with ''revegetating the site in accordance with the revegetation plan approved under § 780.12(g) of this part for the permit area surrounding the site upon which the structure was previously located.'' Section 780.12(g) includes the exceptions allowed under paragraphs (b)(19) and (20) of SMCRA.

One commenter expressed concern that proposed paragraph (d)(3) may not allow buildings left after reclamation to be sold. Nothing in the proposed or final rules would prohibit sale of a building. If the sale occurs before expiration of the revegetation responsibility period and the building continues to be used in support of the postmining land use, the building may remain on site. If the sale occurs before expiration of the revegetation responsibility period and the building is no longer used in support of the postmining land use, but is being used for some other purpose, the permittee may apply for a change in postmining land use for the land containing the building. If the sale occurs after final bond release for the land upon the building is sited, the sale and use of the building are no longer a concern under SMCRA because the land is no longer considered to be the site of a surface coal mining and reclamation operations subject to jurisdiction under SMCRA. Under all other circumstances, the buyer must remove the building unless it is used in support of the approved postmining land use.

Final Paragraph (e): What special provisions apply to previously mined areas?

Several commenters noted that proposed paragraph (e) contained an erroneous cross-reference to 30 CFR 780.24(b))(1)(iv), which does not exist. One commenter alleged that adoption of proposed paragraph (e) without correction of the cross-reference would have the effect of prohibiting the regulatory authority from approving any alternative postmining land uses on previously mined land. The commenter also asserted that adoption of the proposed requirement for compliance with proposed paragraph (a) would create a significant disincentive to remining previously mined land because paragraph (a) requires restoration of the land to a condition in which it is capable of supporting the uses that it was capable of supporting before any mining. According to the commenter, compliance with this requirement is impossible if topsoil and subsoil was not salvaged prior to the initial mining.

After evaluating these comments, we find that the commenters are correct. In addition, our review disclosed that the language of proposed paragraph (e) did not match the description of that paragraph in the preamble to the proposed rule. The preamble discussion accurately describes our intent, whereas the actual language of the proviso in proposed paragraph (e) does not. Therefore, we are not adopting the language of paragraph (e) set forth in the proposed rule. Instead, the language of paragraph (e) that we are adopting as part of this final rule is consistent with the description and discussion in the preamble to proposed paragraph (e).[445] Specifically, we are replacing the phrase ''provided that you comply with paragraphs (a) and (b) of this section'' in the proposed rule with ''provided that restoration of the land to that capability does not require disturbance of land previously unaffected by mining.'' Final paragraph (e) does not include the limitations that would lead to the outcomes described by the commenter. It will not create a disincentive for remining.

Section 780.25: What information must I provide for siltation structures, impoundments, and refuse piles?

Section 780.25 as proposed, provides for safety enhancements related to siltation structures, impoundments, and refuse piles.[446] We received a general comment supporting the proposed rule, particularly those related to safety enhancements, such as the planning for the stabilization of siltation structures, impoundments, and refuse piles. As discussed below, some commenters also suggested improvements. After evaluating all the comments, we made several modifications resulting in a final rule that addresses the concerns of commenters and improves the clarity of § 780.25.

Final Paragraph (a): How do I determine the hazard potential of a proposed impoundment?

For the purposes of clarity and to be consistent with other bureaus within the Department of the Interior, final paragraph (a) includes a table representing a simplified process of hazard classification. In response to the proposed rule, a commenter considered our reliance upon the U.S. Department of Agriculture Natural Resource Conservation Service's Technical Release No. 60, misplaced. The commenter noted that, within the Department of the Interior, the Technical Release No. 60 has been superseded by the Federal Emergency Management Agency's hazard

[443] 30 U.S.C. 1265(b)(19).

[444] 30 U.S.C. 1265(b)(20).

[445] 80 FR 44436, 44510, 44608 (Jul. 27, 2015).

[446] 80 FR 44436, 44511–44513 (Jul. 27, 2015).

classifications. There is little difference between the two classification systems, but to be consistent, we are incorporating the classification table in the Federal Emergency Management Agency's *Federal Guidelines for Dam Safety, Hazard Potential Classification System for Dams* in the final rule. The table characterizes the hazard potential of a dam as ''low,'' ''significant,'' or ''high.'' In addition, the nature of the hazard is considered—with the primary consideration being the potential for human mortality. Additionally, because SMCRA mandates protection of the environment as well as the public, the potential for environmental or ''lifeline losses'' is also considered. ''Lifeline losses'' refer to disruption of important public utilities, some of which could result in risk to the public. For example, disruption of highways, waterlines, or communications could interfere with police, fire, or ambulance services. Major railroads and highways are included in this category due to the impact of their disruption on large numbers of people. A feature of the system is that it is used only for hazard classification, and each agency or bureau is able to impose design, operation, and maintenance criteria that meet their specific needs. For example, within final paragraph (a), we are requiring applicants to use the Federal Emergency Management Agency hazard classification system, but we impose the additional requirements detailed within the remainder of § 780.25.

Final Paragraph (b): How must I prepare the general plan for proposed siltation structures, impoundments, and refuse piles?

As a result of the adoption of the hazard potential classification system for dams within paragraph (a) of the final rule, we have relocated the explanation of general plan requirements for proposed siltation structures, impoundments, and refuse piles, discussed at paragraph (a) within the proposed rule, to paragraph (b) of the final rule.

Some commenters raised concerns that this section blurs the distinction between typical sediment structures and structures that satisfy the Mine Safety and Health Administration criteria and imposes unreasonable evaluation and design criteria on sediment structures. Specifically, these commenters questioned the requirement for geotechnical evaluation, including consideration of subsidence, on a small sediment structure designed to typically contain little or no water.

We concur that extensive geotechnical evaluations as proposed in paragraph (a)(1)(iv) and now found in final paragraph (b)(4)(i), are not necessary for small structures in areas with 26.0 inches or less of average annual precipitation or for siltation structures. This is because such structures cannot impound sufficient water to pose a significant risk in the event of failure. Therefore, we have altered the final rule to grant exemptions for small structures in areas with less than 26.0 inches of annual precipitation, found at paragraph (b)(4)(ii)(A), and at paragraph (b)(4)(ii)(B), for siltation structures; as long as the structures do not meet the criteria in § 77.216(a) of this title [447] or have a ''significant'' or ''high'' hazard potential as detailed in the hazard potential classification table within paragraph (a) of this section.

Some commenters also claimed that the requirements in the proposed rule at paragraph (a)(1)(iv), now paragraph (b)(5)(i) in the final rule, are focused on regional issues, such as breakthroughs into underground workings and refuse piles, which are more common in the eastern portion of nation. These commenters asserted that this provision requires a large amount of additional and unnecessary design, permitting, and construction work for the small impoundments typical in western mines that generally pose little risk of failure or danger to the public. Similar to our discussion of the exemptions within final paragraph (b)(4), we concur that extensive evaluations of breakthroughs, as required in final paragraph (b)(5)(i) would not be necessary for small structures in areas with 26.0 inches or less of average annual precipitation or for siltation structures. Again, this is because such structures cannot impound sufficient water to pose a significant risk in the event of failure. We have provided exemptions in paragraphs (b)(5)(ii)(A) for structures in areas with less than 26.0 inches of annual precipitation, and (b)(5)(ii)(B) for siltation structures; as long as the structures do not meet the criteria in 30 CFR 77.216(a) or have a ''significant'' or ''high'' hazard potential under paragraph (a) of this section.

The same commenter that generally supported the safety enhancements to § 780.25 also specifically supported the inclusion of the requirement within the proposed rule at paragraph (a)(1)(v), now paragraph(b)(5)(i), that the general plan for each impoundment include an analysis of the potential for the impoundment to drain into subjacent underground mine workings and an analysis of the impacts of such drainage. We agree that prudent planning is appropriate; therefore, we are incorporating this requirement, as proposed, into the final rule.

In paragraph (a)(1)(vi)(A) of the proposed rule, we included a requirement that the plan must include ''a certification statement that includes a schedule setting forth the dates when any detailed plans for structures that are not submitted with the general plan will be submitted to the regulatory authority.'' We have modified this requirement and reclassified it as paragraph (b)(6) in the final rule. We have removed the ''certification statement'' but required the plan include a schedule setting forth the dates when detailed design plans will be submitted to the regulatory authority.

Final Paragraph (c): How must I prepare the detailed design plan for proposed siltation structures, impoundments, and refuse piles?

Proposed paragraph (a)(2) applied to structures that meet the criteria for ''Significant'' or ''High Hazard'' classification in accordance with the U.S. Department of Agriculture Natural Resources Conservation Service Technical Release 60 [448] and the criteria of the Mine Safety and Health Administration's regulation at 30 CFR 77.216(a). Proposed paragraph (a)(3) applied to ''other structures,'' or structures not meeting these criteria.

We have reclassified proposed paragraphs (a)(2), relating to design plans for high hazard dams, significant hazard dams, and certain impounding structures to paragraph (c)(1), and (a)(3), relating to other structures, to paragraph (c)(2) within the final rule. Additionally, we have made clarifications and modifications to these sections. We have renumbered the paragraphs for clarity and to emphasize the distinctions between the two classifications.

In addition to the reclassification of proposed rule (a)(2) to (c)(1) in the final rule, we have removed the references to the U.S. Department of Agriculture's Technical Release 60, hazard classification procedure from final paragraph (c)(1) and revised it to apply to structures that would have a significant or high hazard potential under paragraph (a) of final rule and, similar to the proposed rule, would satisfy the criteria of the Mine Safety and Health Administration's regulation at 30 CFR 77.216(a).

[447] 30 CFR 77.216(a), Water, sediment, slurry impoundments and impoundment structures; general. Mine Safety and Health Admin., Dep't. of Labor.

[448] U.S. Dep't. of Agric., Natural Resources Conservation Serv., *Earth Dams and Reservoirs,* Technical Release No. 60 (July 2005).

Paragraphs (c)(1) and (c)(2) of the final rule both include requirements related to who may prepare plans. We have moved these from ''general requirements'' and provided separate paragraphs for each to emphasize the distinctions between the levels of associated risk and design requirements. The structures within paragraph (c)(1) of the final rule are critical structures, the failure of which could result in significant loss of human life. Therefore, we have made the design plans for these structures subject to more stringent requirements, including that they be prepared by or under the direction of a registered professional engineer; or for structures covered in paragraph (c)(2), a licensed land surveyor. However, we note that all coal mine waste structures to which §§ 816.81 through 816.84 apply, must be designed by a registered, professional engineer even if such structures do not meet the hazard classification criteria of (c)(1). In addition, we are requiring that the engineer or land surveyor certify the plans. The engineer or land surveyor must have a documented history of experience with dams and impoundments. This is a new requirement; however, due to the potential for loss of life in the event of failure it is important that designers of these structures have, in addition to appropriate credentials, a documented history of pertinent experience.

Paragraph (a)(3) of the proposed rule, now paragraph (c)(2), includes detailed design plan requirements for ''other structures.'' Similar to the detailed design plans for high hazard dams, significant hazard dams, and impounding structures, this paragraph details each of the requirements necessary for an adequate design plan for structures other than those enumerated in paragraph (c)(1). Additionally, within paragraph (c)(2)(i)(A), we included the requirement that the qualified registered professional engineer, or qualified registered professional land surveyor in states that allow land surveyors to design these structures, must be experienced in the design and construction of impoundments. Again, this is a new requirement. We recognize that although the hazard is inherently lower there is still a potential for loss of life. Therefore, utilizing experienced professionals is necessary. Paragraph (c)(2)(i)(B) also includes a requirement that all coal mine waste structures to which §§ 816.81 through 816.84 of this chapter apply must be certified by a qualified, registered, professional engineer to ensure proper construction.

One commenter questioned the requirement in proposed paragraph (c)(2), that the applicant submit the Mine Safety and Health Administration plan to the SMCRA regulatory authority and suggested that we delete it. This commenter alleged that this proposed requirement is unnecessarily confusing and meaningless because an incomplete plan would not be useful to the regulatory authority. The commenter suggested that the provision be either eliminated or revised to require the submission of the completed Mine Safety Health Administration impoundment plan through a permit revision. The commenter also noted that the Mine Safety and Health Administration plan is already subject to many layers of review and submitting it to the regulatory authority would be duplicative. In addition, the commenter noted that many of the procedures set out in the plan do not impact the environment and would not be relevant to a SMCRA review. We concur with the commenter and have removed the requirement within the final rule. It is not necessary for the applicant to submit plans required by the Mine Safety and Health Administration to the SMCRA regulatory authority because, even without those plans, the SMCRA regulatory authority can determine whether there are deviations from the SMCRA plans.

We have moved the requirements that detailed plans not submitted with the permit application be submitted in accordance with a provided schedule and that they be submitted and approved before construction begins from paragraph (a)(1)(vi), under ''General requirements'' in the proposed rule, to paragraph (c)(3) ''Timing of submittal of detailed plans'' in the final rule. This was done because requirements for detailed plans were provided in the two previous paragraphs in the final rule: High hazard dams, significant hazard dams, and certain impounding structures in paragraph (c)(1) and other structures in paragraph (c)(2). We decided to address the issue of scheduling immediately after requirements for those plans were presented.

Final Paragraph (d): What additional design requirements apply to siltation structures?

For the purpose of clarity, proposed paragraph (b), relating to siltation structures, has been reclassified and is found at paragraph (d) in the final rule.

Final Paragraph (e): What additional design requirements apply to permanent and temporary impoundments?

For the purposes of clarity, proposed paragraph (c), relating to ''permanent and temporary impoundments,'' has been modified and reclassified as paragraph (e) within the final rule. We removed the reference to the criteria for Significant Hazard Class or High Hazard Class dams in published by the U.S. Department of Agriculture, Natural Resources Conservation Service Technical Release No. 60. As discussed above, in connection with paragraph (a), we are requiring hazard classification to be done in accordance with the Federal Emergency Management Agency's hazard potential classification system.

In proposed paragraph (c)(4), now (e)(3), we proposed a requirement that permittees of impoundments that will meet the Significant Hazard Class or High Hazard Class criteria for dams [449] or satisfy the Mine Safety and Health Administration criteria of 30 CFR 77.216(a), include with each plan a stability analyses of the structure. One commenter stated that the Mine Safety and Health Administration already require these actions as part of their regulatory program and doing so here would be duplicative. The commenter also indicated that by adding this to the SMCRA permit we are implying that compliance with the Mine Safety and Health Administration provisions is not adequate. This commenter asserted that it is likely to cause inconsistency in requirements between the Mine Safety and Health Administration and the SMCRA regulatory authority. In general, the commenters requested that we remove the provision. We disagree. We are well within our statutory authority under section 515(f) of SMCRA [450] to impose the requirements of paragraph (e)(3). Section 515(f) of SMCRA requires operators to follow standards and criteria that conform to standards and criteria used by engineers to ensure that flood control structures are safe and effectively perform their intended function. In addition, these requirements in no way supersede requirements imposed by the Mine Safety and Health Administration but are, in practice, complementary. Analyses required by the Mine Safety Health Administration are pertinent to individual stages of construction and are submitted piecemeal during construction. Those required by the SMCRA regulatory authority are

[449] U.S. Dep't. of Agriculture, Natural Resources Conservation Serv. 2005. ''Earth Dams and Reservoirs'' Technical Release No.60 (July 2005).

[450] 30 U.S.C. 1265(f).

pertinent to the structure upon completion of all construction. The regulatory authority cannot, during the application review process, evaluate the potential impact of the completed structure without requiring and receiving analyses based on the final configuration. Therefore, in the final rule we now reference the hazard classification in paragraph (a) rather than the Natural Resources Conservation Service Technical Release No. 60. To the extent that duplication may exist between the two regulatory regimes, we encourage states to coordinate the processing of permit applications with the Mine Safety and Health Administration. For example, the states could perform side-by-side review of the analyses of initial stages submitted to Mine Safety and Health Administration and the final configuration submitted with the SMCRA permit application.

Final Paragraph (f): What additional design requirements apply to coal mine waste impoundments, refuse piles, and impounding structures constructed of coal mine waste?

In proposed paragraph (d)(2)(iv), now paragraph (f)(2)(iv) in the final rule, we require that impoundments and siltation structures be designed to ensure that at least 90 percent of the stormwater stored in the impoundment during the design precipitation event will be removed within a 10-day period. One commenter asserted that this requirement would need to be addressed in the National Pollutant Discharge Elimination System permit as well because it could impact mixing zone limits, loading limits, and whether the operation meets numerical effluent standards. This assertion appears to be based on a belief that greater than normal (stormwater) discharges equate to greater than normal loadings of parameters. We proposed this requirement for safety reasons as it is important to restore the stormwater storage capacity as quickly as possible to prepare for the possible occurrence of another significant event. Although the rate of discharge of water is greater than normal following a significant precipitation event, parameters with numerical effluent limits commonly defined in a National Pollutant Discharge Elimination System permit tend to be at low concentrations after a significant precipitation event, due to dilution, with the exception of suspended solids. Therefore, in many cases we do not anticipate that it would be necessary to address stormwater discharged over time or that such a discharge would tend to exceed loading limits or numerical effluent standards. These are issues that should be examined during the National Pollutant Discharge Elimination System permitting process and addressed in that permit. Nothing in this section, however, exempts an operator from complying with its National Pollutant Discharge Elimination System permit as approved. Should discharges of stormwater following a precipitation event result in exceedances of effluent limitations defined in the permit, they would be addressed in the same way as any other such exceedance. In addition to potential enforcement by the Clean Water Act regulatory authority, the SMCRA regulatory authority may also have separate enforcement obligations for failure to comply with requirements of § 780.28(a).

One commenter suggested that we revise the permitting requirements to make them similar to the performance standard changes finalized in a 1983 rulemaking,[451] by: (1) Replacing the term ''coal processing waste banks'' with ''refuse piles'' and (2) replacing the term ''coal processing waste dams and embankments'' with references to coal mine waste impounding structures. We concur, and, as indicated in the proposed rule,[452] we have replaced the term ''coal processing waste banks'' with ''refuse piles'' and the terms ''coal processing waste dams and embankments'' with references to coal mine waste impounding structures.

Section 780.26: What special requirements apply to surface mining near underground mining?

We have redesignated proposed § 780.27, and it is now § 780.26 in the final rule. With the exception of the redesignation, we are finalizing this section as proposed. We received no comments on this section.

Section 780.27: What additional permitting requirements apply to proposed activities in or through ephemeral streams?

In the preamble to the proposed rule we discussed the unique characteristics of ephemeral streams and the vital importance of headwater streams, including ephemeral streams, in maintaining the ecological health and function of streams down gradient of headwater streams.[453] In the preamble to § 701.5 of the final rule, we discussed the revisions of the proposed definition of ''ephemeral stream.'' As revised, the final definition of ''ephemeral stream'' now includes those conveyances receiving runoff from snowmelt events and that have both a bed-and-bank configuration and an ordinary high water mark. The final rule also revises our definition of ''intermittent stream'' so that it no longer automatically includes streams draining a watershed of at least one-square mile. This change may result in a number of streams classified as ''intermittent'' under the previous regulations being categorized as ''ephemeral streams'' under the final rule because the final rule amends the definition of ''intermittent stream.'' Additionally, permitting requirements for ephemeral streams differ from those for perennial and intermittent streams. Because of the distinctions between ephemeral streams and other types of streams, we added § 780.27 to the final rule to specifically address the permitting requirements for mining in or through ephemeral streams. Creating this distinct section also addresses commenters' concerns that it was difficult to discern when regulations applied strictly to ephemeral streams or applied to all streams.

Final Paragraph (a): Clean Water Act Requirements

If the proposed permit area includes waters subject to the jurisdiction of the Clean Water Act, including some ephemeral streams, the regulatory authority must condition the permit to prohibit initiation of surface mining activities in or affecting the applicable waters before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act.[454]This paragraph makes clear that although a SMCRA permit may be obtained prior to you obtaining all necessary authorizations, certifications, and permits under the Clean Water Act, the regulatory authority must place a condition upon the permit that no surface mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act may be initiated before you, obtain all necessary authorizations, certifications, and permits under the Clean Water Act.[455]

A similar requirement was found in proposed § 780.28(a), however, as discussed in the introduction of § 780.27, we have separated out the requirements for ephemeral streams and the requirements pertaining to them are found in final rule § 780.27. This final paragraph more closely tracks the permit condition found in final rule § 773.17(h) and the provisions of final rule § 780.16(c)(4)(ii) about protection of other species and the requirement to

[451] 48 FR 44006 (Sept. 26, 1983).

[452] 80 FR 44436, 44511 (Jul. 27, 2015).

[453] 80 FR 44436, 44451–44453 (Jul. 27, 2015).

[454] 33 U.S.C. 1251 *et seq.*

[455] 33 U.S.C. 1251 *et seq.*

explain how you will avoid or minimize mining through or discharging dredged fill material into wetlands or streams that are subject to the jurisdiction of the Clean Water Act. This approach reconciles the needs of other federal agencies to consider the SMCRA permit when making decisions about granting Clean Water Act authorizations, certifications, and permits but balances the needs of the permittee to make informed decisions about the feasibility of mining in or through ephemeral streams. Placing a permit condition upon the permittee will avoid unnecessary and often costly permit revisions by requiring the permittee to consult with the Clean Water Act authority at the early stages of the SMCRA permitting process. These modifications to the final rule were based on both public comment and comments from a federal agency.

Final Paragraph (b): Postmining Surface Drainage Pattern and Stream-Channel Configuration

Unlike the requirements for intermittent and perennial streams discussed in § 780.28, final rule paragraph (b) of this section only requires the restoration of a postmining surface drainage pattern that is similar to the premining drainage pattern, relatively stable, and in dynamic near-equilibrium and postmining stream-channel configurations that are relatively stable and similar to the premining configuration of ephemeral streams. This means that the stream flood plains maintain their alignments and widths, and although the stream channel location within the floodplain may vary, the general configuration of the stream channel remains relatively constant. To be clear, this section does not require the establishment of hydrologic or ecological function as mandated for perennial and intermittent streams. Paragraph (b)(2) also allows the regulatory authority to approve or require a drainage pattern or stream-channel configuration that differs from the premining pattern if appropriate to: Ensure stability; prevent or minimize downcutting or widening of reconstructed stream channels and control meander migration; promote enhancement of fish and wildlife habitat; accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation; accommodate the construction of excess spoil fills, coal mine waste piles, or impounding structures; replace previously channelized or severely altered streams with a more natural, relatively stable, and ecologically sound drainage pattern or configuration; or reclaim a previously mined area. Because the drainage pattern and stream-channel configuration requirements need only be similar to the premining patterns and configurations, some differences are allowable—*i.e.,* an operator is not required to reconstruct 100 percent of the ephemeral streams that existed prior to mining to the same premining configuration. However, in order to control meander migration, ephemeral streams that are reconstructed, must be constructed within a floodplain-width lined channel that is filled with substrate material appropriate to the anticipated gradient and flow conditions. The reconstructed channel is initially excavated in this substrate and allowed to move within the floodplain as a natural stream would migrate. These processes contain meander migration within the designed floodplain and thus prevent uncontrolled erosion of the reconstructed stream channel. We added these requirements in consultation with another federal agency to clarify the goal of final rule § 780.27(b), *i.e.,* to ensure that the stream channel will be stabilized and erosion minimized.

These requirements ensure establishment of a postmining drainage pattern that is functionally equivalent to the premining pattern, is relatively stable, and in dynamic near equilibrium, while affording the regulatory authority the discretion to alter the drainage pattern in certain situations that are likely to be better for the hydrologic balance. For example, the regulatory authority may allow a variance from the requirements in paragraph (b)(1) when onsite conditions are such that undesirable situations can be avoided by altering the drainage pattern. Examples might include situations where reconstructing the premining pattern could result in instability, downcutting or widening, or excessive erosion of the reconstructed stream channel, or when reconstruction of the premining drainage pattern would eliminate an opportunity to enhance wildlife habitat. Other examples would include cases where the premining drainage is altered to accommodate anticipated increased runoff; accommodate construction of spoil, mine waste, or impounding structures; or to replace previously channelized or severely altered streams. Another example would be the accommodation of the construction of approved structures, such as excess spoil fills or coal mine waste impounding structures, which may necessitate drainage patterns alterations. Still another example of when the regulatory authority may approve an alternate drainage pattern is when the premining drainage pattern was altered by previous activities, whether mining-related or not. As noted by commenters, in some circumstances, restoring the postmining drainage to the approximate drainage pattern before any human activity occurred may be beneficial and should be allowed. To address this concern, we added final paragraph (b)(2)(vii) because the premining surface drainage pattern and stream-channel configuration on previously mined areas may not be optimal or desirable from a land use, hydrological or ecological perspective.

Final Paragraph (c): Streamside Vegetative Corridors

As discussed previously in this preamble, throughout the final rule we have replaced the term ''riparian corridor'' as used in the proposed rule with ''streamside vegetative corridor''; this change is also incorporated into this section. The final rule is based on the current understanding of the contributions made by streamside vegetative corridors along ephemeral streams. As discussed above, although a permittee is not required to reconstruct 100 percent of the ephemeral streams mined in or through, those ephemeral streams that are reconstructed must include streamside vegetative corridors constructed in accordance with § 816.56(c)(1) through (3) of the final rule. We note that final rule § 816.56(c)(4) provides exceptions to the requirements to establish streamside vegetative corridors. Final paragraphs (c)(4)(i) through (ii) of § 816.56 excludes prime farmland historically used for cropland or situations in which establishment of a streamside vegetative corridor comprised of native species would be incompatible with an approved post-mining land use that is implemented prior to final bond release. In response to commenters' concerns that prime farmland should not be impacted by streamside vegetative corridors, we have made clear in final rule § 780.27(c)(3) that final § 780.27(c)(1) and (2) do not apply to ephemeral streams located on prime farmland.

Several commenters objected to the requirement to establish a streamside vegetative corridor along ephemeral streams claiming that it is burdensome or unnecessary. We disagree. As noted in the preamble to the proposed rule,[456] scientific literature documents that streamside vegetative corridors—

[456] 80 FR 44436, 44494 (Jul. 27, 2015).

formerly referred to as riparian corridors in the proposed rule—are essential in promoting stream health and that ephemeral streams are important to the over-arching health of the hydrologic regime.[457] Given the unique and essential contributions of ephemeral streams to the hydrologic regime, the maintenance, restoration, and establishment of streamside vegetative corridors for these stream segments is a critical element of stream protection. Moreover, the history of our regulations related to buffer zones for streams is directly linked to the mandates of SMCRA found at sections 515(b)(10) and (24),[458] which require the minimization of disturbances to the prevailing hydrologic balance and to fish, wildlife, and related environmental values. Requirements for streamside vegetative corridors for ephemeral streams were not included in the previous regulations because the majority of the research that identified ephemeral streams as vital to the overall health of streams was conducted after the previous regulations were implemented. One of the purposes of this final rule is to incorporate the results of new research and best technology currently available. By including these protections for ephemeral streams we are satisfying this mandate.

One commenter expressed concern that the establishment of the riparian corridor, along ephemeral streams in particular, supersedes the Clean Water Act and is inconsistent with the land use provisions of SMCRA. Specifically, the commenter alleged that the proposed rule did not consider the actual orientation of headwater ephemeral streams where watershed breaks may fall within 100 feet of each side of the stream channel. It is not clear how the commenter concluded that this requirement supersedes the Clean Water Act. Although the Clean Water Act does not require establishment of postmining streamside vegetative corridors, it certainly does not prohibit the practice. It is also not clear how the commenter concluded that the requirement is inconsistent with SMCRA land use provisions because if the postmining land use requires reconstruction of ephemeral streams, construction of associated streamside vegetative corridors would be entirely consistent and required. In response to this comment, we also note that the natural streamside vegetative corridors contributing to the ecological condition of a stream will typically not extend beyond a watershed boundary. However, if they do and are affected by mining operations, or mining operations necessitate the reconstruction of these particular ephemeral streams, these 100-foot, streamside, vegetative buffers would also need to be part of the permitted site, including the area within an adjacent watershed. If the area within the other watershed is not affected by mining operations, this area would include the already existing vegetation and would already be in compliance of this requirement.

Other commenters suggest that the use of native species in the vegetative streamside corridor is in conflict with requirements imposed by the U.S. Army Corps of Engineers aimed at improving reclamation success by using non-native species. To eliminate this potential conflict, we added paragraph 816.57(d)(2)(i) to the final rule. That paragraph requires planting to be in accordance with the revegetation plan approved in the permit, unless the applicable Clean Water Act authority directs otherwise. Similarly, one commenter raised concerns that the requirement for streamside vegetative corridors along ephemeral streams may conflict with local government agency requirements, such as when a local government agency regulates a drain within that area. It is difficult to conceive of a situation where the scenario proffered by this commenter would occur on a mining permit or, if it did, why one of the other exceptions would not apply, such as the exception for prime farmland.

Some commenters stated that streams that have no streamside vegetation or aquatic life, such as slot canyons and desert swales, should be exempt from these requirements. Under the final rule, if baseline surveys confirm that vegetation does not exist within 100 feet of a stream, establishment of a streamside vegetative corridor is not required. However, we anticipate that these situations will be extremely rare because some vegetation almost exists.

Section 780.28: What additional permitting requirements apply to proposed activities in, through, or adjacent to a perennial or intermittent stream?

Final § 780.28 establishes standards for the review and approval of permit applications that propose to conduct surface mining activities in, through, or adjacent to streams. We discussed the purpose of these standards in the preamble to the proposed rule.[459] After evaluating the comments we received in response to the proposed rule, we have reorganized and made several modifications to this section in the final rule. Our reorganizational changes and relevant general comments are discussed below and are followed by a discussion of comments on specific paragraphs of § 780.28. Because of the reorganization, we provide an introduction to each final paragraph explaining how the final rule related to the proposed rule.

Many commenters opined that the organization of § 780.28 made it difficult to determine which permitting requirements applied to each stream classification. Proposed § 780.28 contained the permitting requirements for perennial, intermittent, and ephemeral streams. Commenters stated that this approach was confusing because the requirements for mining through or diverting ephemeral streams differed from those for perennial or intermittent streams. In response, and as explained in the preamble to § 780.27, we have removed the requirements applicable to ephemeral streams from § 780.28 and placed them in the new § 780.27. As a result, all requirements in § 780.28 apply to perennial and intermittent streams, and we have changed the title of the section to reflect this reorganization. The final rule clearly distinguishes between the requirements that apply to perennial, intermittent, and ephemeral streams. As discussed in more detail below, we have also made a number of organizational changes to § 780.28 to improve clarity.

In Part III of the preamble to the proposed rule,[460] we identified six specific goals for revising our regulations to better protect streams and associated environmental values. One of these goals was to protect and restore streams and related resources, including the headwater streams that are vital to maintaining the ecological health and productivity of downstream waters. We reiterate the need to protect these streams in the final rule. This need is strongly rooted in SMCRA and in scientific literature documenting the importance of streams.[461]

Some commenters, however, requested that we institute stronger protections than proposed and prohibit all mining in or through intermittent and perennial streams. Other commenters took the opposite position and argued that the proposed rule tipped the statutory balance between

[457] Catherine Leigh, et al. Ecological research and management of intermittent rivers: A historical review and future directions. Freshwater Biology. (2015).

[458] 80 FR 44436, 44513–44518 (Jul 27, 2015).

[459] 80 FR 44436, 44513–44518 (Jul. 27, 2015).

[460] *See* 80 FR 44436, 44443 (Jul. 27, 2015).

[461] 80 FR 44436, 44439 (Jul. 27, 2015).

environmental protection and the Nation's need for coal too far toward environmental protection without providing an adequate explanation of the need for such protection. As we discussed in the preamble to the proposed rule, while it is true that SMCRA contains numerous requirements aimed at minimizing or preventing adverse impacts to fish, wildlife, related environmental values, the quantity and quality of surface water and groundwater, and the hydrologic balance,[462] it is also true that SMCRA seeks to ''strike a balance between protection of the environment and agricultural productivity and the Nation's need for coal as an essential source of energy.'' [463] The final rule strikes the appropriate balance. It does not prohibit all mining in or through intermittent and perennial streams. Similar to our previous regulations, the final rule contains a general prohibition against mining in or through intermittent and perennial streams. However, the final rule contains carefully crafted exceptions to this general prohibition which will allow mining in or through intermittent and perennial streams if applicants satisfy certain requirements. These exceptions are designed to minimize disturbances and ensure the protection and restoration of perennial and intermittent streams and related resources which are critical to maintaining the ecological health and productivity of downstream waters, while balancing, as SMCRA requires, the nation's need for coal as an essential energy source. As we acknowledge in the preamble to the proposed rule, our previous regulations did not fully protect many vital environmental values.[464] The final rule, which includes these carefully crafted exceptions, is informed by our regulatory experience over the more than three decades since the adoption of our previous regulations, both as a regulatory authority and overseeing regulatory authorities, and reflects advances in scientific knowledge and mining and reclamation techniques developed during that time. Further, the final rule more completely implements sections 515(b)(24) and 516(b)(11) of SMCRA,[465] which provide that, to the extent possible using the best technology currently available, surface coal mining and reclamation operations must be conducted to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and to achieve enhancement of those resources where practicable. We acknowledge that some commenters assert that this translates to a blanket prohibition on mining in, through or adjacent to streams and others want fewer restrictions, but SMCRA requires, and we promulgate through the final rule, a median position, effectively balancing the commenters' concerns.

Some commenters alleged that restrictions on mining in or through streams may have negative impacts on proven lignite reserves, leaving the reserves stranded and unable to be economically mined. The commenters suggested that we create an exception for lignite. We disagree that this rule will strand lignite reserves. The commenters did not present any support for their position, and there is nothing inherently unique about lignite reserves that would prevent a permittee from satisfying the requirements of this section to allow mining in or through streams or relocating streams in order to recover lignite. More importantly, many of the requirements that the commenters allege would strand lignite reserves would likely be inapplicable under the final rule because of changes we have made in response to public comments and the interagency process. For instance, many streams located above the lignite reserves, especially in the Gulf Coast Region, that were classified as intermittent under the previous regulations, are now categorized as ephemeral streams in the final rule. This is the case because § 701.5 of the final rule amends the definitions of intermittent and ephemeral streams. Under the previous regulations, we would have categorized a stream with a bed-and-bank configuration that is always above the water table and with flows arising solely from precipitation (and snow melt) as intermittent if it had a drainage area of at least one square mile. As discussed in the preamble to final § 701.5, we will now consider a stream with ephemeral flow characteristics (*i.e.,* one with a bed-and-bank configuration, an ordinary high water mark, that is always above the water table and with flows arising solely from precipitation (and snow melt)) to be ephemeral, regardless of the size of the drainage area. Because the final rule contains fewer restrictions for mining in or through ephemeral streams, it is unlikely that lignite reserves will be stranded as a result of this rule. For these reasons, we did not add an exception for lignite.

As discussed more fully below in our discussion on final paragraph (e), we have restructured the final rule by adding a chart to explain the demonstrations a permittee must make prior to performing certain activities in or within a perennial or intermittent stream. Included in the chart are the requirements with which a permittee must comply when proposing to construct a coal mine waste facility that encroaches upon any part of a perennial or intermittent stream. Proposed paragraph (d) contained similar requirements. In response to the proposed rule, one commenter objected to the proposed permitting of coal mine waste facilities in 100-year floodplains and suggested that these facilities should require a higher level of scrutiny with greater long-term protective measures than proposed. In response, we note that, in most states, state and local authorities determine whether any facility may be constructed in a floodplain. Like any other permit applicant seeking to construct a structure in the 100-year floodplain, a permit applicant seeking to construct a coal mine waste facility in a 100-year floodplain must comply with state and local laws and regulations. We have not made any changes to the final rule in response to this comment. We defer to state or local authorities with knowledge of the applicable laws and regulations to make a determination on whether a coal mine waste facility may be appropriately placed in a 100-year floodplain.

Several commenters suggested that the final rule should allow temporary impacts to streams, such as a temporary conversion of a perennial stream to an intermittent stream. Temporary impacts to stream flow during mining and reclamation are allowed under the rule. This is consistent with SMCRA and our previous regulations.[466] As an example of one temporary impact permissible under the final rule, consider final rule paragraph (e)(2), which addresses converting a minimal portion of a mined-through segment of an intermittent stream. It may take several years for a backfilled area to reach hydrologic equilibrium. During that time, a stream may be temporarily converted. However, to convert a minimal portion of a stream, the permittee must still demonstrate that it will restore the hydrologic function and ecological function of the stream as a whole within the mined area to its premining stream type prior to bond release. This is only one example of an allowable temporary impact to streams

[462] 80 FR 44436, 44514.

[463] 30 U.S.C. 1202(f).

[464] 80 FR 44436, 44438–44447 (Jul. 27, 2015).

[465] 30 U.S.C. 1265(b)(24) and 1266(b)(11).

[466] *See* 30 CFR 1265(b)(10) which requires minimization to ''disturbances to the prevailing hydrologic balance at the mine site and in associated offsite areas,'' not avoidance or a prohibition of disturbances.

and we agree with the commenter that temporary impacts are permissible. We discuss the specific requirements a permittee must demonstrate to achieve approval to convert a minimal portion of a mined-through segment of an intermittent stream to an ephemeral stream in more detail in final paragraph (e)(2).

One regulatory authority commenter requested additional explanation about the performance standards for alluvial valley floors in Western states. We did not propose any changes to the previous regulations concerning alluvial valley floors in Western states. Therefore, the final rule does not affect those performance standards.

Final Paragraph (a): Clean Water Act Requirements

Final paragraph (a) is similar to proposed paragraph (a). For reference, we proposed to add paragraph (a) to emphasize that a person seeking to conduct surface mining activities ''in waters of the United States'' must procure all necessary authorizations, certifications, and permits pursuant to the Clean Water Act [467] before initiating mining in those waters. In the preamble to the proposed rule we explained that issuance of the SMCRA permit alone is not sufficient.[468]

We have modified final paragraph (a) to clarify that if the proposed permit area includes waters subject to the jurisdiction of the Clean Water Act, including perennial and intermittent streams, the regulatory authority must condition the permit to prohibit initiation of any surface mining activities in or affecting those waters before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act.[469] This paragraph makes clear that although a SMCRA permit may be obtained prior to you obtaining all necessary authorizations, certifications, and permits under the Clean Water Act, the regulatory authority must place a condition upon the permit that no surface mining activities in or affecting those waters may be initiated before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act.[470] Also, at the suggestion of a federal agency, we have removed reference to ''in waters of the United States'' and replaced it with the phrase, ''subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.*''

Final paragraph (a) more closely tracks the permit condition found in final rule § 773.17(h) and the provisions of final rule § 780.16(c)(4)(ii) about protection of other species and the requirement to explain how you will avoid or minimize mining through or discharging dredged fill material into wetlands or streams that are subject to the jurisdiction of the Clean Water Act. It differs from the proposed rule because it now conditions the initiation of surface mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act upon first receiving the necessary authorizations, certifications, and permits under the Clean Water Act. This difference in when applicable surface activities can be initiated reconciles the needs of other federal agencies to consider the SMCRA permit when making decisions about granting Clean Water Act authorizations, certifications, and permits but balances the needs of the permittee to make informed decisions about the feasibility of mining in or through intermittent or perennial streams. Placing a permit condition upon the permittee will avoid unnecessary and often costly permit revisions by requiring the permittee to consult with the Clean Water Act authority at the early stages of the SMCRA permitting process, but will not delay the SMCRA permit authorization. These modifications to the final rule were based on both public comment and comments from a federal agency.

Moreover, final paragraph (a) ensures protection of streams as required by section 515(b)(10) and compliance with section 702(a) of SMCRA, which specifies that nothing in the Act should be construed as superseding, amending, modifying, or repealing, ''federal laws relating to the preservation of water quality,'' including the Clean Water Act and state laws enacted pursuant to the Clean Water Act.[471]

Some commenters opposed the idea of us instituting a permit condition relative to the Clean Water Act asserting that it exceeds our authority under SMCRA, duplicates the requirements of the Clean Water Act, or inappropriately requires the SMCRA regulatory authority to determine whether the applicant obtained the appropriate Clean Water Act authorizations, certifications, or permits. We disagree. We are not exceeding our authority or duplicating the efforts of the Clean Water Act authority by requiring the regulatory authority to condition the permit to prohibit initiation of surface mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act before the permittee obtains all necessary authorizations, certifications, and permits pursuant to the Clean Water Act. Permit conditions are directly enforceable under SMCRA.[472] The fact that this permit condition requires compliance with the Clean Water Act before surface mining activities take place in streams does not convert the SMCRA enforcement of a permit condition into a Clean Water Act enforcement action, nor does it supersede the Clean Water Act.

Another commenter alleged that, in the rule, Clean Water Act requirements are always mentioned in the context of perennial or intermittent streams. The commenter suggested that wetlands are equally subject to the requirements of the Clean Water Act. The commenter recommended that specific mention of wetlands be added to § 780.28(a). We agree with the commenter that wetlands are equally subject to the requirements of the Clean Water Act; however, we decline to make changes to § 780.28(a) because § 780.28 specifically addresses activities in, through, or adjacent to perennial or intermittent streams. Please see the discussion of wetlands in the preamble to final rule § 780.16(c)(4).

Final Paragraph (b): To what activities does this section apply?

We have made non-substantive modifications to the title of this paragraph. Like proposed paragraph (b), final paragraph (b) explains that the permit applicant must provide certain information and demonstrations whenever it proposes to conduct surface mining activities in or through a perennial or intermittent stream or on the surface of lands within 100 feet of a perennial, or intermittent stream. We have added a reference to final paragraphs (c) through (g) in order to clarify that the specific demonstrations required are found in those paragraphs. As discussed above, we have also removed references to ephemeral streams from this section.

One commenter suggested that we replace the term ''bankfull'' in proposed paragraph (b)(1)(ii) with the phrase ''ordinary high water mark'' because ordinary high water mark is both more commonly accepted and more easily determined. We agree and have revised final paragraph (b)(2) and other references to ''bankfull'' throughout the final rule for consistency.[473] For further

[467] 33 U.S.C. 1251 *et seq.*

[468] 80 FR 44436, 44515 (Jul. 27, 2015).

[469] 33 U.S.C. 1251 *et seq.*

[470] 33 U.S.C. 1251 *et seq.*

[471] 30 U.S.C. 1292(a).

[472] *See* 30 U.S.C. 1271(a)(4).

[473] *See* Final rule sections: 701.5—ephemeral, intermittent, and perennial stream definitions,

Continued

discussion of this term, you may consult the preamble discussion on § 701.5 of the final rule.

Final Paragraph (c): Postmining Surface Drainage Pattern and Stream-Channel Configuration

As a general rule, a permittee that proposes to mine through a perennial or intermittent stream must include in its permit application a plan to restore a surface drainage pattern that is relatively stable, and in dynamic near-equilibrium and stream-channel configuration that is similar to the premining configuration and is relatively stable. Final paragraph (c)(1) prescribes this general rule, but final paragraph (c)(2) grants the regulatory authority discretion to approve or require a postmining drainage pattern or configuration that deviates from the general rule in specific circumstances. These requirements ensure the establishment of a postmining drainage pattern or stream-channel configuration that is functionally equivalent to the premining pattern, while affording the regulatory authority the discretion to approve other configurations when such configurations are likely to be better for the hydrologic balance or ecological function. We have re-designated and separated select portions of proposed paragraph (c) to create final paragraph (c) and more clearly explain the permittee's obligations. Components of final paragraph (c) were in proposed paragraph (c)(1) and we discussed them in the preamble to the proposed rule.[474] However, we re-designated the paragraph to improve clarity and address commenters' concerns that proposed § 780.28(c) was confusing. Additionally, as discussed below, we have added final paragraphs (c)(2)(iv) through (vii) to explain when the regulatory may approve or require a different postmining surface drainage pattern or stream-channel configuration.

The general requirement in final paragraph (c)(1) to return the drainage pattern and stream-channel configuration to the functional equivalent of the premining state recognizes that the design of a stream channel is essential to stream health and that successfully restoring stream channel configuration is the first step in the process of reestablishing the ''form'' of the stream. As explained in its definition at final rule § 701.5, the term ''form'' refers to the physical characteristics, pattern, profile and dimensions of a stream channel. Reestablishment of ''form'' is a prerequisite for restoration of hydrologic function and ecological function and ultimately, stream restoration.

Several commenters alleged that restoring the premining drainage pattern is a significant and onerous constraint on postmining grading and backfilling plans. The commenters also asserted that replicating premining characteristics of a stream channel would be virtually impossible. In response to these comments, we note that the final rule does not require the permittee to demonstrate that the postmining drainage pattern be returned to exactly the premining state. In both the proposed and final rule paragraph (c), we require only that the postmining drainage pattern be similar to the premining pattern unless the regulatory authority grants an exception under (c)(2). Other commenters claimed, without explaining the assertion, that the requirements in proposed paragraph (c), including the requirement to restore postmining drainage patterns, are unnecessary in most states. We disagree that these requirements are unnecessary in any state. As we have previously stated in this preamble, streams are important nationwide. Further, as we explained in the preamble of the proposed rule, ''in addition to [providing] ecological benefits, th[ese] requirement[s] would better implement the requirement in section 515(b)(3) of SMCRA that the permittee restore the approximate original contour of the land.'' [475] All mines, regardless of location, are subject to the requirement to restore approximate original contour. Moreover, requiring a permittee to restore the premining drainage pattern and stream channel configuration will likely result in the least impact to the hydrologic and ecological function of the stream as a whole. Therefore, we are retaining this essential requirement.

One commenter suggested that we add specific requirements to final paragraph (c) for applicants to submit data on stream pattern and sinuosity, water depth, alluvial groundwater depth, depth to bedrock, elevation, bankfull depth, and width. The commenter asserted that the general requirements in proposed paragraph (c) were not sufficient. According to the commenter, requiring this data would allow the regulatory authority to better compare the restored drainage pattern and stream-channel configuration with what existed prior to mining. The commenter also requested a definition, guidance, or methodology for determining flood-prone areas. This commenter recommended that we require commonly accepted hydrologic modeling like the Federal Emergency Management Agency's mapping system, Rosgen's Stream Classification, and the measuring of flood-prone elevation, and that we establish a specific distance for the width of each side of the flood-prone area. In addition, the commenter suggested that we provide guidance on considering seasonality effects when conducting these measurements. Conversely, we received numerous comments specifically opposing the adoption of such changes. These commenters claimed that this approach would be too prescriptive and stated that the regulatory authority should have discretion to determine which methodologies to adopt and what kind of data to require. We agree with these latter commenters that the regulatory authority is in the best position to adopt the most appropriate approach because it is the regulatory authority that is most familiar with the unique geographic and geologic characteristics of its own jurisdiction. This will also allow the regulatory authorities additional flexibility to adapt to changing circumstances or to adopt newer techniques as they become available without waiting for an additional federal rulemaking.

However, we note that many of the parameters suggested by the commenter, including sinuosity, bankfull depth, and the flood-prone area to bankfull width ratio (entrenchment) are included in the final rule § 701.5 definition of ''form'' and discussed in the preamble of final rule § 816.57(e). For clarification, a stream segment cannot be successfully reconfigured unless the ''form'' of a stream is restored throughout the length of each stream segment. Therefore, the commenters' concerns are addressed in the performance standards of final rule § 816.57(e) and may also be considered when developing the plan to configure a stream channel as required by final rule § 780.28(c)(1)(ii). As explained in the preamble to final rule § 816.57(e), in order to achieve Phase I bond release, a permittee must demonstrate that it has successfully restored or reconstructed the ''form'' of the stream segment in accordance with the approved design developed in accordance with § 780.28(c)(1). A permittee successfully restores ''form'' under our final rule by utilizing many of the methodologies the commenter suggests. Final paragraph (c) requires a plan to construct a postmining stream channel configuration similar to the premining configuration. Although we are not

780.16(c)(2), 780.28(b)(2) and (d)(2), 780.35(e), 780.37(a)(4)(i), 784.16(c)(2), 784.28(b)(2) and (d)(2), 784.35(e), 784.37(a)(4)(i), 816.57(b), 816.57(d)(iv), 816.97(j)(2)(i), 817.57(b), 817.57(d)(iv).

[474] 80 FR 44436, 44514–44516 (Jul. 27, 2015).

[475] 80 FR 44436, 44516 (Jul. 27, 2015).

requiring a specific methodology for restoring ''form'' in the permitting requirements of final paragraph (c), the performance standards require the characteristics that establish ''form'' to be present in the postmining stream channel configuration. Final paragraph (c) works in conjunction with the performance standards of § 816.57(e).

Final paragraph (c)(2) prescribes seven circumstances under which a regulatory authority may waive the general requirement to restore the premining drainage pattern and stream-channel configurations. Proposed paragraphs (c)(1)(i) through (iii) contained three of these exemptions, which we have retained in final paragraphs (c)(2)(i) through (iii). However, we have added clarity to these exemptions to ensure that the goal of final § 780.28(c) perpetuated, *i.e.,* that the stream channel be stabilized and erosion be minimized. The regulatory authority may grant these exemptions if it finds that a different pattern or configuration is necessary or appropriate to: (1) Ensure stability, (2) prevent or minimize deepening or widening of reconstructed stream channels and control meander migration, or (3) promote or enhance wildlife habitat consistent with sections 515(b)(24) and 516(b)(11) of SMCRA.[476] The same commenters that objected to the general requirements in proposed and final section (c)(1) also opined that the regulatory authority-approved deviations in proposed paragraph (c)(1)(i) through (iii) would be subject to a great amount of subjectivity and misinterpretation by regulators and could result in the inconsistent treatment of operators. We disagree that these requirements are too subjective, and we do not agree that they will be subject to misinterpretation. The information and demonstrations required supply basic information that the regulatory authority needs to determine if mining activity will result in material damage to the hydrologic balance outside the permit area as well as cause irreparable long-term damage to the health of the streams on permit. Despite the commenters' allegations, final paragraph (c)(2) provides more consistency in determining whether mining activity will result in material damage to the hydrologic balance or cause irreparable long-term damage to the health of streams, while simultaneously allowing each regulatory authority the flexibility to take site-specific considerations into account.

In paragraph (c)(2)(iv) through (vii) of the final rule, for the purposes explained below, we have added four more exemptions to the general requirement to restore the premining drainage pattern and stream-channel configurations. The regulatory authority may now also grant exemptions when doing so is necessary or appropriate to: (1) Accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation; (2) accommodate the construction of excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures; (3) replace a stream that was channelized or otherwise severely altered prior to submittal of the permit application with a more natural, relatively stable, or ecologically sound drainage pattern or stream-channel configuration; or (4) reclaim a previously mined area.

In response to a commenter's concern that mining may result in temporary or permanent increases in surface runoff, we have added final paragraph (c)(2)(iv). This provision accommodates situations in which watershed boundaries have been moved from premining locations. Relocating watershed boundaries may result in larger surface water flows in some watersheds and smaller surface water flows in other watersheds.

We have added final paragraph (c)(2)(v) in response to a comment suggesting that proposed paragraph (c) and proposed paragraph (d), which set out requirements to construct excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures, conflicted with one another. The commenter opined that it would be impossible to restore the surface drainage pattern and stream-channel configuration of a stream if an excess spoil fill or coal mine waste disposal facility is constructed. We have resolved this alleged conflict by clarifying that the regulatory authority may approve a postmining surface drainage pattern or stream-channel configuration that differs from the premining pattern or configuration when it is necessary to accommodate the construction of excess spoil fills, coal mine waste refuse piles or coal mine waste impounding structures.

We have added final paragraph (c)(2)(vi) to correlate with final paragraph (e)(3), which we added to the final rule to incentivize mining techniques that result in improvements to streams that are degraded. Final paragraph (c)(2)(vi) allows an exemption to the requirement to restore premining drainage pattern and stream-channel configurations if the regulatory authority finds that a different pattern or configuration is necessary or appropriate to replace a stream that was channelized or otherwise severely altered with a more natural, relatively stable, and ecologically sound drainage pattern or stream-channel configuration.

In response to several commenters, including a federal agency commenter, we have added exception (c)(2)(vii). This exception allows for a different pattern or configuration when it is necessary to reclaim a previously mined area because the premining surface drainage pattern and stream-channel configuration on previously mined areas may not be optimal or desirable from a land use, hydrological, or ecological perspective.

Some commenters suggested that there may be additional reasons to change minor channel drainage patterns such as to accommodate coal removal, minimize the re-handling of backfill, and conduct contemporaneous reclamation. We agree that minor deviations from the premining drainage pattern are permissible. However, the additional exceptions outlined by the commenters are not necessary because the final rule only requires the restored drainage patterns be similar to the original drainage patterns. They do not have to be exactly the same. Moreover, the commenters' concerns may be addressed in the expanded list of exemptions that we have discussed above.

Another commenter alleged that the requirements contained in proposed paragraph (c) did not appear to account for special cases, such as dropped off final cuts or initial cut development. We disagree because the examples the commenter provides are not special cases. Final paragraph (c)(2) provides the regulatory authority with discretion to approve a different postmining pattern in certain circumstances, including what the commenter describes as ''special cases.'' For example, if any of the conditions identified in paragraphs (c)(2)(i) through (vi) apply, such as promoting enhancement of the fish and wildlife habitat, in the reclaimed area of initial cut development or in the area of final cut, the regulatory authority could allow the permittee to alter the postmining drainage pattern from that which existed premining. If the exceptions identified in paragraphs (c)(2)(i) through (vi) do not apply, the permittee must reconstruct the drainage pattern to a condition similar to the premining pattern.

We have not adopted proposed paragraph (c)(2)(iv)(A), which would have required the selective placement of low permeability materials in the backfill or fill and associated stream channels to create an aquitard that

[476] 30 U.S.C. 1265(b)(24) and 1266(b)(11).

would channel infiltrated precipitation to restored streams in order to reestablish perennial or intermittent stream flow. Some commenters noted that this requirement could be difficult or impossible to achieve in many circumstances because of the lack of available soil or subsoil, root depth issues, lack of available aquitard material, and changes in permeability due to mining. These commenters stated that the regulatory authority is in the best position to establish objective standards for restoring the ecological function of a stream. While we acknowledge that reestablishing sufficient flow is paramount to successfully returning hydrologic function—and ultimately ecological function—to intermittent and perennial streams, we agree with the commenters that the applicant and the regulatory authority are in the best position to determine the most appropriate method for ensuring stream flow is reestablished post mining. In final paragraph (g) we set out the standards for stream restoration. Use of aquitards to reestablish flow is just one method of accomplishing this restoration Therefore, we have removed the specific requirement in proposed paragraph (c)(2)(iv)(A) to construct aquitards. As discussed in the preamble to final paragraph (g)(3)(iv)(A), although we do not require the use of aquitards we have required that the regulatory authority use the best technology currently available to *either* create standards to restore the form, hydrologic function, and water quality of intermittent streams and reestablishment of streamside vegetation for intermittent streams when there are no scientifically defensible protocols established to assess biological condition *or,* where scientifically defensible protocols exist, assess the biological condition of the stream.

For the reasons discussed in the final preamble to Part 800, we are not adopting proposed § 780.28(c)(2)(B), which would have required a separate bond guaranteeing the return of ecological function.

Final Paragraph (d): Streamside Vegetative Corridors

Final paragraph (d)(1) requires that any permittee proposing to conduct any surface mining activities in or through a perennial or intermittent stream or on the surface of lands within 100 feet of a perennial or intermittent stream must include in the permit application a plan to establish a vegetated streamside corridor at least 100 feet wide along each bank of the stream after the completion of surface mining activities. The streamside vegetative corridor must be consistent with natural vegetation patterns and must adhere to the streamside vegetative corridor requirements of final paragraph (d) of § 816.57. At final paragraph (d)(2) of § 780.28, we also require that the corridor width must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark. We proposed similar requirements at proposed paragraph (b)(3), but we have moved them to final paragraph (d) and consequently, re-titled this paragraph. We have also made some other modifications, as discussed below.

Although we have made substantive changes to the final rule in response to comments, we have retained many of the concepts and specific provisions of the proposed rule relating to streamside corridors. For example, proposed paragraph (b)(3)(i) required the corridor width to be measured on a line perpendicular to the stream, beginning at the ''bankfull elevation or, if there are no discernable banks, the centerline of the active channel.'' One commenter suggested that the 100-foot wide corridor should be measured following the angle of the land rather than horizontally on a line perpendicular to the stream beginning at the bankfull elevation or, if there are no discernable banks, the center line of the active channel. We recognize that it may be easier for a person to actually measure if he or she follows the angle of the land, but this type of measurement is also likely to produce irregular results across the country due to different topographies. Moreover, the method proposed by this commenter does not account for seasonal variability and, in practice, may not uniformly preserve a full 100-foot corridor on each side of the stream. As discussed in the preamble discussion of ''ordinary high water mark'' in § 701.5 of the final rule, one commenter suggested that the term ''ordinary high water mark'' is more commonly accepted and more easily determined than the term ''bankfull.'' We agree and have revised references to ''bankfull'' throughout the final rule. Thus, we modified final paragraph (d)(2) to provide that when determining the 100-foot width of the riparian corridor along both banks of the stream, measurements should be done horizontally on a line perpendicular to the ordinary high water mark.

We have also replaced the term ''riparian corridor'' with the term ''streamside vegetative corridor.'' Proposed paragraph (b)(3)(i) required a permittee seeking to conduct mining activities in or through streams or on the surface of lands within 100 feet of streams to establish a ''riparian corridor'' following mining. Several commenters misinterpreted the language in the proposed rule to mean that all lands within 100 feet of a stream must be revegetated with hydrophilic vegetation. One commenter who interpreted our rule this way cited the Bureau of Land Management's definition of ''riparian corridor'' as ''area exhibiting vegetation and physical characteristics reflective of permanent surface or subsurface water influence'' and suggested that not all areas within 100 feet of a stream have riparian characteristics. We did not intend to imply that the entirety of the corridor must be planted with hydrophilic vegetation. In order to correct this potential misinterpretation, we have replaced the phrase ''riparian corridor'' with ''streamside vegetative corridor.'' Our use of the term ''streamside vegetative corridor'' is intended to clarify that the permittee must use appropriate native vegetation, which is not always riparian or hydrophilic in nature. Postmining streamside vegetative corridors should reflect what is determined to exist in the premining landscape and are not necessarily dependent upon the presence of surface or groundwater. Despite this change in terminology, the comments on proposed (b)(3)(i), including references to ''riparian corridor'', and our responses to those comments are still pertinent to final paragraphs (d)(1) and (d)(2) and we discuss them below.

Many commenters supported the proposed corridor. Others supported the concept of a corridor, but suggested modifications to the size or implementation of the corridor. Still others opposed the proposed corridor. Many of the commenters who supported the proposed requirement for a corridor requested that we strengthen the proposal to impose a strict 100-foot buffer on each side of a stream and not allow the exceptions or variances that we proposed in paragraph (b)(3)(iii). These commenters asserted that anything less than an unequivocal 100-foot buffer on either side of all streams, even in situations where excess spoil is placed or coal mine waste disposal facilities exist, is ''unreasonable'' because the risk of damaging vital waterways and imperiled species poses a greater threat than the stranding of some coal reserves. Further, the commenters alleged that an already declining coal market will not suffer any significant loss if we were to impose a 100-foot ''buffer'' with no exceptions. Several commenters alleged that the

proposed 100-foot minimum width for the corridor as proposed in paragraph (d)(1) was arbitrary. Some of these commenters suggested that the regulatory authority should establish the width of the corridor on a site-by-site basis. Still other commenters objected to the 100-foot riparian corridor, alleging that we had converted a best management practice for operating near streams into an unauthorized, rigorous permitting and design standard that also dictates long-term land uses.

Upon review of these comments, we are retaining the requirement for a general rule establishing a 100-foot wide streamside vegetative corridor on each side of perennial and intermittent streams, subject to certain narrowly-tailored exceptions, because this strikes the necessary balance between environmental protection and the Nation's need for coal as an essential source of energy.[477] In the preamble to the proposed rule at Part IV and proposed § 816.57(a), we explained that this distance is consistent with our history of requiring a minimum, nationwide, 100-foot corridor width on either side of a stream. Contrary to the assertions by some commenters, this requirement has never been considered merely a ''best management practice.'' Furthermore, as discussed in the preamble to the proposed rule, this width is supported by science.[478] In sum, the minimum 100-foot corridor width is within the lower end of the range of recommended minimum widths for wildlife habitat and flood mitigation, in the middle of the range for sediment removal and nitrogen removal from streams, and exceeds the range recommended for water temperature moderation and bank stabilization and aquatic food web maintenance.[479] This approach is well within our authority pursuant to section 515(b)(24) of SMCRA to employ, to the extent possible, the best technology currently available, to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values. We conclude, therefore, that the 100-foot minimum width strikes an appropriate balance between the various recommended corridor widths and specific environmental objectives.

The 100 foot minimum corridor requirement, however, does not change the site-specific nature of the determination of the appropriate corridor width. While it does establish a minimum width, the provision also allows a regulatory authority, depending on the permit, to require a wider corridor. For example, a wider corridor may be preferable when species or habitats of concern are present or because of climatological and topographical characteristics of the permit and the relevant adjacent areas.

Some commenters recommended that we extend the requirement to establish a 100-foot corridor to non-forested areas. Like the proposed rule, the final rule 100-foot streamside vegetative corridor requirement applies whenever a permittee proposes to conduct surface mining on the surface of lands within 100 feet of streams, or when the permittee proposes to conduct surface mining activities in or through all streams, with the exception of diversions that will be in place less than three years and subject to the exceptions in final rule § 816.57(d)(4)(i) through (iii). Thus, the streamside vegetative corridor requirement is not limited to streams in forested areas as the commenter contends. Final rule paragraph (d) requires a permittee to populate streamside vegetative corridors consistent with natural vegetation patterns and the performance requirements of final § 816.57. Final § 816.57(d)(2) prescribes the specific requirements for planting streamside vegetative corridors. Although permittees are required to use native trees and shrubs when planting areas within the streamside corridor that were forested or may revert to forest under condition of natural succession, this requirement does not foreclose establishing streamside vegetative corridors on non-forested land. These requirements are part of the best technology currently available to minimize adverse impacts on fish, wildlife, and related environmental values and to achieve enhancement of those resources, as required by section 515(b)(24) of SMCRA.[480]

Other commenters contend that the removal of vegetation and soil disturbance from non-forested areas could lead to sedimentation and other pollution that may cause undue harm to streams and the species that depend on them. We disagree with the commenters asserting that a streamside vegetative corridor may cause undue harm to streams because these commenters fail to consider the other requirements of our regulations that require a permittee to implement erosion and sedimentation controls, such as final rule § 780.12(f), which is designed to stabilize exposed surfaces and effectively control erosion.

Another commenter asked if a riparian corridor must be established along all streams inside a permit area including streams that will not be impacted. In general, the section applies only to streams within the permit area that are affected by mining. Any affected streams within the permit area would be adequately protected by the requirements of this section. It is possible, however, that in a single permit area a permittee may propose to mine through one stream without touching a second stream, but that the 100-foot streamside vegetative corridors could overlap. Consistent with the permitting requirements of this paragraph and final rule § 816.57(d)(1)(ii), in this scenario the permittee must ''establish a vegetative corridor on any land [disturbed] within 100 feet of a perennial or intermittent stream.'' Therefore, to the extent it disturbs the second stream's vegetative corridor, the permittee must establish a streamside vegetative corridor for that second stream.

Some commenters suggested that the 100-foot riparian corridor should not apply in situations where no riparian corridor existed prior to mining or where there was ''human development'' prior to mining. As discussed in Part III of the preamble to the proposed rule,[481] streamside vegetative corridors are essential to stream health. Therefore, we decline to include additional exceptions to account for the use of the land prior to mining.

One commenter suggested that the establishing of a riparian corridor may degrade critical habitat for threatened, endangered, or candidate species by substituting vegetation. We intend § 780.28 to work in concert with the rest of Part 780, including § 780.16, which outlines the requirements for a valid fish and wildlife enhancement plan. As explained in the preamble discussion of § 780.16, the regulatory authority may not issue a permit until an applicant first explains how it will adhere to the Endangered Species Act and what action it will take to protect other species.

One commenter suggested that establishing a riparian corridor might impact property rights because the landowner might not want a streamside vegetative corridor as part of the postmining land use. The last sentence of final § 780.28(d) requires the corridor to be consistent with natural vegetation patterns and to adhere to the streamside

[477] 30 U.S.C. 1202(f).

[478] 80 FR 44436, 44494 and 44552 (Jul. 27, 2015).

[479] *See, e.g.,* David Welsch, *Riparian Forest Buffers: Functions and Design for Protection and Enhancement of Water Resources,* NA–PR–07–91, U.S. Dep't. of Agric., Forest Serv. Northeastern Area and Private Forestry (1991). *http://www.na.fs.fed.us/spfo/pubs/n_resource/buffer/cover.htm* (last accessed Nov. 1, 2016).

[480] 30 CFR 1265(b)(24).

[481] 80 FR 44436, 44443 (Jul. 27, 2015).

vegetative corridor requirements of final § 816.57(d). As discussed more fully in the preamble to final rule § 816.57(d)(4), there are exceptions to establishing a streamside vegetative corridor. To be consistent with final rule §§ 780.28(d) and 816.57(d), if a landowner does not consent to establishing a streamside vegetative corridor and none of the exceptions identified in final rule § 816.57(d)(4) are applicable, mining may not take place in or through a stream or on the surface of lands within 100 feet of a stream.

Several commenters objected to establishing a corridor along ephemeral streams. As discussed above, we are retaining the requirement to establish a streamside vegetative corridor for all streams, including ephemeral streams. However, because we have moved the permitting requirement for ephemeral streams to new § 780.27(c), we address comments specific to permit application requirements for mining in, through, or adjacent to ephemeral streams in the preamble to that paragraph.

We have moved the specific 100-foot streamside vegetative corridor standards and the exceptions to these requirements, initially placed in § 780.28(b)(3)(ii) and (iii),which prescribe permitting requirements to the performance standards of Part 816. We acknowledge that the permittee is obligated only to include a plan to establish a vegetated streamside corridor at the permitting stage. Although the sufficiency of the plan should be assessed in accordance with the requirements of final rule § 816.57(d), the adequacy of the streamside vegetative corridor is assessed after mining is complete and the corridor is constructed. The regulatory authority will assess the adequacy of the streamside vegetative corridor prior to bond release. Therefore, these requirements are more appropriately characterized as performance standards and are now in final rule paragraphs (d)(2) through (4) of § 816.57. Because of this relocation, we discuss comments specifically related to the exceptions proposed in § 780.28(b)(3)(iii) in the preamble to § 816.57(d)(4).

Final Paragraph (e): What demonstrations must I include in my application if I propose to conduct activities in or within 100 feet of a perennial or intermittent stream?

Similar to the proposed rule, final paragraph (e) generally prohibits mining in or near streams, but allows the permittee to conduct certain mining activities when the permittee demonstrates specific criteria. Some commenters supported this approach, emphasizing that this will protect fish and wildlife habitat and encourage ''beneficial remining'' techniques. Final paragraph (e) sets out the specific demonstrations that a permittee must include in a permit application if mining is proposed in or within 100 feet of a perennial or intermittent stream. In proposed paragraph (c) we explained the requirements to be satisfied when mining through or diverting a perennial, intermittent or ephemeral stream. In proposed paragraph (d), we explained the requirements to be satisfied when an applicant proposed to construct an excess spoil fill or coal mine waste disposal facility in a perennial or intermittent stream. Many commenters remarked that proposed paragraphs (c) and (d) were confusing because it was difficult to discern what demonstrations were necessary for mining through or diverting a stream and what additional demonstrations were required for constructing excess spoil fills or coal mine waste disposal facilities in a stream. Additionally, many commenters expressed confusion about mixed references to ephemeral streams, stating they could not differentiate when the demonstrations applied to perennial and intermittent streams only and when the required demonstrations applied to all streams. In consideration of these comments, we have consolidated into final paragraph (e) the demonstration requirements for intermittent and perennial streams that were in proposed paragraphs (c) and (d). To correspond with these changes, we have revised the title of this paragraph to encompass all proposed mining activities in or within 100 feet of a perennial or intermittent stream, not just the diversion of streams and placement of excess spoil fill or coal mine waste disposal facilities. In addition to the consolidation of proposed paragraphs (c) and (d) into final paragraph (e), we modified these provisions in response to comments, including comments from other federal agencies. These modifications include removal of references to ephemeral streams. As discussed above, we have consolidated the permitting requirements related to ephemeral streams and have moved them to final rule § 780.27. We also discuss other modifications to final paragraph (e) below.

One commenter considered any prohibition on mining in intermittent and perennial streams to be contrary to SMCRA. These commenters asserted that section 515(b)(10) [482] requires only that ''damage be minimized,'' which the commenter alleges is different than the prevention of damage from mining in or through streams. We recognize that section 515(b)(10) of SMCRA [483] requires that the permittee conduct surface mining operations to minimize disturbance to the prevailing hydrologic balance at the mine site and associated offsite areas, but section 510(b)(3) of SMCRA [484] forbids the issuance of a surface mining permit if the regulatory authority cannot find that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Scientific literature, studies, and examples of SMCRA-permitted sites demonstrate that, unless carefully designed, mining activities in or through streams can increase the potential for material damage to the hydrologic balance outside the permit area.[485] Contrary to the commenter's assertions, the required demonstrations set forth in proposed paragraphs (b), (c), and (d), and in final paragraph (e) are not a blanket prohibition on mining in these areas. Rather, final paragraph (e)(1) contains the findings required to ensure that, among other things, the proposed operation is designed to minimize the disturbance to the prevailing hydrologic balance at the mine site and prevent material damage to the hydrologic balance outside the permit area. These carefully crafted requirements balance environmental protection and responsible extraction of coal.

For clarity, we have included a table in final paragraph (e)(1) that identifies, by type of activity, the demonstrations that must be made as part of the permit application if the applicant proposed to conduct mining activities in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream. For

[482] 30 U.S.C. 1265(b)(10).

[483] *Id.*

[484] 30 U.S.C. 1260(b)(3).

[485] *See* Margaret A. Palmer, *Reforming watershed restoration: Science in need of application and applications in need of science.* Estuaries and Coasts 32(1): 1–17 (2009). Margaret A. Palmer, & Emily S. Bernhardt, *Mountaintop Mining Valley fills and Aquatic Ecosystems: A Scientific Primer on Impacts and Mitigation Approaches.* Working paper. (2009). Margaret A. Palmer, et al. *Mountaintop Mining Consequences.* Science 327(5962): 148–149 (2010). U.S. Dep't. of the Interior, U.S. Geological Survey, David J. Wangsness, *Reconnaissance of stream biota and physical and chemical water quality in areas of selected land use in the coal mining region, southwestern Indiana, 1979–80,* Open File Report 82–566 (1982). U.S. Dep't. of the Interior, U.S. Geological Survey, David J. Wangsness et al., *Hydrology of area 30, eastern region, Interior Coal Province, Illinois and Indiana* Open File Report 82–1005 (1983); U.S. Dep't of Interior, U.S. Geological Survey, David J. Wangsness, et al., *Hydrology of area 32, Eastern Region, Coal Province, Indiana* Open File Report 81–498 (1981). *https://pubs.usgs.gov/of/1981/0498/report.pdf.*

clarity, this preamble discussion refers to each column of the table by column number as shown below:

1	2	3	4
Demonstration	Activity		
	Any activity other than mining through or permanently diverting a stream or construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream.	Mining through or permanently diverting a stream.	Construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream.

As discussed separately in each paragraph several exceptions exist. Generally, permits subject to approved mining programs that expressly prohibit all surface mining activities in or within 100 feet of perennial or intermittent streams, as discussed in final paragraph (i) of this section, and similarly final § 816.57(i) are exempt from final paragraph (e) because all activity is prohibited.

Within the final rule we also allow certain exceptions applicable to permanent impoundments as specified in final paragraph (e)(4) and for streams that are considered intermittent due to low flowing springs and seeps as prescribed in final rule paragraph (e)(5).

A commenter contended that the proposed rule conflicted with page ES–19 of the DEIS, which stated that the preferred alternative ''would allow mining through any type of stream provided the applicant satisfactorily demonstrates to the regulatory authority'' that ''the hydrological form and ecological function of the affected stream segment could and would be restored using the techniques in the proposed reclamation plan.'' The commenter misquotes the DEIS. The DEIS describes Alternative 8, the Preferred Alternative, at page ES–19, and describes the demonstrations prescribed by proposed paragraph (c)(2)(ii) through (iv), which set out additional requirements applicable to permittees that propose to mine through or divert a perennial or intermittent stream. However, the four demonstrations prescribed by proposed paragraph (b)(2)(i) through (iv), that were prerequisites for satisfying proposed paragraphs (c)(2)(ii) through (iv), were also explained in the DEIS at page ES–19. The chart we have added to the final rule in paragraph (e)(1) should eliminate confusion. It explains each of the demonstrations required for each type of proposed mining activity and there are no longer incorporations by reference, which may have been a source of confusion to the commenter.

The chart differentiates between three categories of mining activities: Mining through or permanently diverting a stream, identified in column 3; construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream, identified in column 4; and any activity other than the activities identified in columns 3 and 4. This third category of activities is identified in column 2. The permittee must make the demonstrations listed in column 1 if there is a ''Yes'' in the column for the type of activity the applicant is proposing to conduct. For example, if an applicant seeks to mine through or permanently divert a stream, it must make the following demonstrations listed in column 1, subject to the exceptions provided in the chart: (i),(ii),(iii),(iv),(v),(vii),(viii),(ix),(x). Column 2 of the chart, which governs any activity other than mining through or permanently diverting a stream and construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream, correlates to the provisions of proposed paragraph (b)(2). Column 3 of the chart about mining through or permanently diverting a stream correlates to the provisions of proposed paragraph (c). Column 4 of the chart, about construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream, correlates to proposed paragraph (d). Each of the demonstrations, identified as paragraphs (i) through (xiii), is discussed below to the extent they were modified or were the subject of comment.

Proposed paragraphs (b)(2)(i) through (iv) set forth the general demonstrations necessary when a permittee proposes to mine in or near perennial or intermittent streams. Although we have moved the paragraphs to final paragraph (e), we have retained these demonstrations with modifications. For example, in response to comments received from another federal agency we modified proposed paragraphs (b)(2)(i) and (iii), now final paragraph (e)(1)(i), to provide that any proposed activity would not cause or contribute to the violation of any applicable water quality standards adopted pursuant to section 303(c) of the Clean Water Act,[486] or other applicable state or tribal water quality standards. This revision clarifies that the permittee must prevent all water quality violations and eliminates any confusion that the term ''designated use'' may have caused in the proposed rule.

In final rule paragraph (e)(1)(ii) we retain the requirement in proposed paragraph (b)(2)(iv) that proposed operations will not ''cause material damage to the hydrologic balance outside the permit area.'' Additionally, in response to a comment from another federal agency, we have added the requirement that the proposed activity also must not ''upset the dynamic near equilibrium of streams outside the permit area.'' As provided in the chart in column 4, the permittee must also demonstrate this requirement if proposing to construct an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches on any part of a stream. This is consistent with our revised definition of material damage to the hydrologic balance outside the permit area and the requirements of section 515(b)(22) of SMCRA about the placement of excess spoil.[487]

Proposed paragraph (b)(2)(ii), required that the permittee demonstrate that the mining activity would not result in conversion of a stream segment from intermittent to ephemeral, from perennial to intermittent, or from perennial to ephemeral. This requirement did not apply to excess spoil fills or coal mine waste facilities. As discussed more comprehensively in the explanation of final paragraph (e)(2), below, we have modified this

[486] 33 U.S.C. 1313(c).

[487] 30 U.S. C. 1265(b)(22).

demonstration by requiring two separate findings. The first finding, as prescribed in final paragraph (e)(1)(iii), requires the permittee to demonstrate that when proposing to conduct any activity in or through an intermittent or perennial stream, with the exception of the construction of excess spoil fill, coal mine waste refuse piles, or impounding structures, the permittee will not convert the affected stream segment from a perennial to ephemeral stream. We received many comments in support of prohibiting conversion of perennial to ephemeral streams. The commenters, including another federal agency, cited the significance of heightened biodiversity in perennial streams as rationale for precluding conversion. We agree and have modified the final rule. Final paragraph (e)(1)(iii) prohibits converting an affected stream segment from perennial to ephemeral.

The second finding derived from proposed (b)(2)(ii), now final paragraph (e)(1)(iv), requires that a permittee demonstrate that the proposed activity would not result in conversion of the affected stream segment from intermittent to ephemeral or from perennial to intermittent, except when the applicant proposes to construct an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream. As set forth in Column 3, final paragraph (e)(2) does allow limited exceptions, which we explain below, in the discussion of final paragraphs (e)(2) and (e)(5).

Final paragraph (e)(1)(v) is similar to proposed paragraph (b)(2)(ii). However, we have modified the final rule to require the permittee to demonstrate that ''there is no practicable alternative'' that would avoid mining through or diverting a perennial or intermittent stream. The final rule deviates from the proposed rule, which required the permittee to demonstrate ''that there is no reasonable alternative'' that would avoid mining through or diverting a perennial or intermittent stream when the permittee proposed to mine through or divert a perennial or intermittent stream. We determined that use of the phrase ''no reasonable alternative'' was not sufficiently precise; therefore we replaced the term. The analysis of practicable alternatives will identify whether an alternative is capable of being accomplished. For example, an applicant's unwillingness to pursue an alternative does not render it infeasible. Similarly, increased costs do not necessarily render an alternative infeasible. In the final rule, the applicant must demonstrate, and the regulatory authority must agree, that there is no ''practicable alternative'' to mining through or diverting the stream. The replacement of the term ''no reasonable alternative'' with the term ''no practicable alternative'' is consistent with other demonstration standards found in the proposed and final rule, such as paragraph (d)(ii), now paragraph (e)(1)(vi). Moreover, the use of the term ''practicable'' more closely tracks the requirements of section 515(b)(24) of SMCRA.[488] One commenter asserted that the proposed requirement was contrary to SMCRA and was duplicative of and in conflict with both section 404 of the Clean Water Act, which requires avoidance, minimization, and mitigation of impacts, and the Clean Water Act section 404(b)(1) alternatives analysis.[489] We disagree for several reasons. SMCRA requires that the permittee minimize disturbances to the prevailing hydrologic balance on the mine site[490] and this demonstration is necessary to determine if the operation would, in fact, be minimizing the disturbance to the prevailing hydrologic balance. Similarly, this requirement is an appropriate means of obtaining the background data and analyses that both the applicant and the regulatory authority need to make informed decisions about compliance with the requirements of sections 515(b)(24) and 516(b)(11) of SMCRA, both of which require the minimization of disturbances to fish, wildlife, and related environmental values and the enhancement of such resources where practicable.[491]

As prescribed by column 3, final paragraph (e)(1)(v) does not apply to specific intermittent streams as identified in final paragraph (e)(3) because the permittee must make different demonstrations for these types of streams. We explain the exceptions for these streams in the discussion of final paragraph (e)(3).

Final paragraph (e)(1)(vi) applies when a permittee proposes to construct an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of perennial or intermittent stream. The permittee must evaluate ''all potential upland locations, including abandoned mine lands and unreclaimed bond forfeiture sites'' and demonstrate that there is no practicable alternative that would avoid placement of excess spoil or coal mine waste in a perennial or intermittent stream. Proposed paragraph (d)(2)(ii) imposed a similar requirement that we have modified in response to comment. In the final rule, we have clarified that ''upland locations in the vicinity of the proposed operation'' includes abandoned mine lands and unreclaimed bond forfeiture sites. The term ''vicinity'' will be determined by the regulatory authority on a case-by-case basis. One commenter suggested that we alter the final rule to include ''abandoned underground mines'' after ''upland locations'' to increase the likelihood of selecting an alternative that reduces excess spoil placement or coal mine waste disposal in a perennial or intermittent stream and instead places it in an already disturbed area. Selective placement may aid in reclamation of another site. We agree with the commenter's rationale and are modifying final paragraph (e)(1)(vi) to add, ''including abandoned mine lands'' of all types, not only ''abandoned underground mines'' and ''unreclaimed bond forfeiture sites.'' The types of sites we listed are only two examples of the kinds of sites that the permittee should consider: This list is not exhaustive. However, we caution that although using abandoned underground mines may serve as a solution for avoiding above ground placement of excess spoil or coal mine waste, this solution may not always be practicable because of additional costs and permitting requirements and the burden of satisfying the other regulatory requirements related to these practices, including section 816.41, which prescribes the requirements for discharging water and other materials into an underground mine.

Another commenter suggested that we add the phrase, ''or reduce the extent of'' to proposed paragraph (d)(2)(ii), now paragraph (e)(1)(vi), so that it would read: ''[a]fter evaluating all potential upland locations in the vicinity of the proposed operation, there is no practicable alternative that would avoid or reduce the extent of placement of excess spoil or coal mine waste in a perennial or intermittent stream.'' The commenter alleged that the additional language is necessary to effectively communicate that the demonstration must decrease the amount of placement of excess spoil or coal mine waste. The commenter opined that the proposed phrase would clarify our proposed rule and prevent the permittee from placing any portion of the material in a perennial or intermittent stream. We agree with the commenter's assertion that construction of excess spoil fills, coal mine waste refuse piles, or encroachment of impounding structures

[488] 30 U.S.C. 1265(b)(24).

[489] 33 U.S.C. 1344(b)(1).

[490] 30 U.S.C. 1265(b)(10).

[491] 30 U.S.C. 1265(b)(24) and 1266(b)(11).

upon streams are permissible only when, among other criteria, no practicable alternative for placement in the vicinity exists, and that the permittee must minimize perennial and intermittent stream disturbance. However, we find the addition of the phrase ''or reduce the extent of'' limiting and not as protective. In the final rule we are retaining the term ''avoid.'' Merriam Webster's dictionary defines ''avoid'' as ''keep away from.'' [492] This term is more consistent with section 515(b)(10) of SMCRA [493] which requires permittees to minimize disturbances to the prevailing hydrologic balance.

Final paragraph (e)(1)(vii) requires the permittee to demonstrate that the proposed operation has been designed to minimize the extent to which the permittee will mine through or divert perennial and intermittent streams or cover streams by an excess spoil fill, coal mine waste refuse pile, or a coal mine waste impounding structure. The permittee must apply this minimization analysis after it makes the alternatives analysis required by final paragraph (e)(1)(v), discussed above. This demonstration is similar to the requirements in proposed paragraphs (c)(2)(iii), relating to mining through or diverting a perennial or intermittent stream, and (d)(2)(iii)(A), relating to construction of an excess spoil fill or a coal mine waste facility. Because of the format of our chart in final paragraph (e)(1) and the similarity between the requirements we have combined the demonstrations in the final rule. However, as prescribed by Column 3, this requirement does not apply to perennial or intermittent streams with a degraded form because the permittee must make different demonstrations for these types of streams. Furthermore, this final paragraph does not apply to streams that are considered intermittent due to low flowing springs and seeps as prescribed in final rule paragraph (e)(5) because again, different demonstrations are required.

Final paragraph (e)(1)(viii) requires the permittee to demonstrate that the stream restoration techniques prescribed in the proposed reclamation plan are adequate to ensure restoration or improvement of the form, hydrologic function, dynamic near-equilibrium, streamside vegetation, and ecological function of the stream after it has been mined through or permanently diverted. However, as prescribed by Column 3, this requirement does not apply to perennial or intermittent streams with a degraded form because the permittee must make different demonstrations for these types of streams. Furthermore, this final paragraph does not apply to streams that are considered intermittent due to low flowing springs and seeps as prescribed in final rule paragraph (e)(5) because again, different demonstrations are required.

Final paragraph (e)(1)(viii) is similar to proposed paragraph (c)(2)(iv), but we modified the final rule after considering comments and to conform to other final rule changes. For example, the final rule requires the permittee to restore or improve the hydrologic function. One commenter recommended that the final rule require a permittee to restore ''stream function in addition to hydrologic form'' to ensure the final rule fully protects the essential elements of stream health. In support, the commenter noted that current scientific literature indicates that a stream's form is generally not a proxy for its function. We agree. Although we mentioned ''form'' in the proposed rule, which we intended to include hydrologic form, many other commenters were confused by the term ''hydrologic form.'' We have eliminated that term and added a definition of ''hydrologic function'' to the final rule to emphasize the importance of the role streams play in transport of water and flow of water within the stream channel and floodplain. The term ''hydrologic function'' includes total flow volume, seasonal variations in streamflow and base flow, and provision of water needed to maintain floodplains and wetlands associated with the stream. ''Form'' includes the physical characteristics of the stream and is a prerequisite of ''hydrologic function.'' The final rule clarifies that a permittee must demonstrate that it will restore or improve both the ''form'' and hydrologic function of a mined through or diverted stream. Another commenter opined that the demonstrations that stream restoration plans must restore ''form and ecological function'' will require a new, expansive section of the permit similar to, and duplicative of, a section 404 Clean Water Act permit. We disagree and refer the commenter to our discussion in the general comments in Part IV. I. We have incorporated both of these requirements, as proposed, into the final rule and we encourage SMCRA regulatory authorities to coordinate the processing of permit applications with the Clean Water Act authority to avoid any potential for duplication.

This paragraph of the final rule also requires the permittee to demonstrate the requirements in proposed paragraph (b)(3), now final paragraph (d), about establishment of streamside vegetation when proposing to mine through or permanently divert a perennial or intermittent stream. One commenter recommended that we require establishment of a 100-foot forested buffer on either side of stream for excess spoil piles and coal waste disposal facilities. We disagree. Final paragraph (e)(1)(viii) specifically exempts excess spoil piles and coal waste disposal areas from this demonstration because the streams beneath them no longer exist, and the stormwater conveyances constructed in conjunction with the structures are not reconstructed streams. As discussed in final paragraph, (e)(5), permittees do not have to make the demonstration required in final paragraph (e)(1)(viii) for streams that are considered intermittent due to low flowing springs and seeps because different demonstrations are required.

Final paragraph (e)(1)(ix) requires the applicant to demonstrate that it has designed the proposed excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream to minimize the amount of excess spoil or coal mine waste the proposed operation will generate. We proposed that the permittee make this demonstration in proposed paragraph (d)(2)(i) and explained the proposed demonstration in the preamble.[494] One commenter contended that our reference to filter presses in the preamble to the proposed rule exhibits a preference for employing filter presses to reduce the generation of coal mine waste. This is an erroneous interpretation. Filter presses were listed as one of several examples of minimization processes that could be used by a permittee and should not be viewed as a preference or the only option.

Many commenters supported proposed paragraph (d)(2)(i), citing the increased level of stream protection compared to our previous regulations. We appreciate these comments and are adopting proposed paragraph (d)(2)(i), now paragraph (e)(1)(ix), with minor adjustments. As reflected in the chart found in paragraph (e)(1) of the final rule, we have added references in columns 2 and 3 to final rule § 780.35(b), which governs minimization of excess spoil. These references operate to remind any permittee proposing to engage in any activity in, through, or adjacent to a perennial or intermittent stream that, in demonstrating that it will minimize

[492] Avoid. 2016. In *Merriam-Webster*. Retrieved Nov. 10, 2016 from *www.merriam-webster.com/dictionary/avoid*.

[493] 30 U.S.C. 1265(b)(10).

[494] 80 FR 44436, 444517 (Jul. 27, 2015).

excess spoil, it must provide supporting calculations and other documentation of the design that it adopts to achieve minimization.

Final paragraph (e)(1)(x) requires that a permittee proposing to engage in any activity in, through, or adjacent to a perennial or intermittent stream must demonstrate that the proposed operation is designed, ''to the extent possible using the best technology currently available'', to minimize adverse impacts on fish, wildlife, and related environmental values. We required this demonstration in proposed paragraph (d)(iii)(A). However, as proposed it was applicable only when a permittee proposed to construct an excess spoil fill or coal mine waste disposal facility. Although we intended this requirement to apply to all activities in, through, or adjacent to perennial or intermittent streams, we did not articulate this requirement clearly in the proposed rule. Therefore, we have clarified the final rule to accurately express our intent. This clarification more accurately tracks the requirements of section 515(b)(24) of SMCRA,[495] which applies to any permit issued under any approved State or Federal program.[496]

Final paragraph (e)(1)(xi) requires a permittee that proposes construction of an excess spoil fill, coal mine waste facility, or impounding structure that encroaches upon any part of a stream to demonstrate that the fish and wildlife enhancement plan required in final rule § 780.16 includes measures that will fully and permanently offset any long-term adverse impacts on fish, wildlife, and related environmental values within the footprint of the fill, refuse pile or impoundment. We imposed this requirement in paragraph (d)(2)(iv) of the proposed rule, but we invited comment seeking suggestions for more specific standards or criteria for determining the meaning of ''fully and permanently offset.'' [497] Some commenters considered the term ''fully and permanently offset'' to be vague, but offered no clarification or alternative. In contrast, another commenter expressed its full endorsement of this phrase. Because we received no practicable alternative for standards or criteria for determining the meaning of ''fully and permanently offset,'' we have adopted the requirement as proposed with the exception of the redesignation. The regulatory authority will have some discretion to determine, on a case-by-case basis, whether the permittee has achieved the ''fully and permanently offset'' requirement.

In addition to the comments in response to our invitation for comment we received many other comments on this proposed paragraph. Another commenter expressed concern that the requirement may create a duplicative mitigation requirement if excess spoil fill or coal mine waste disposal facilities are built in waters within the jurisdiction of the Clean Water Act. We disagree. We expect the SMCRA and the Clean Water Act regulatory authority to coordinate to ensure the selection of the appropriate fish and wildlife enhancement plan, to achieve a solution that satisfies the requirements of both SMCRA and the Clean Water Act. The same commenter expressed concern that the proposed paragraph included the term ''related environmental values,'' which in the commenter's opinion creates a duplicative mitigation requirement. The language of SMCRA expressly requires that the regulatory authority consider ''fish, wildlife, and related environmental values.'' [498]

Another commenter questioned the statement in the preamble to proposed rule section 816.71 that referred to proposed rule § 780.28, where we explained that we do not consider surface runoff diversions constructed under § 816.71(e) to qualify as fish and wildlife enhancement measures pursuant to the requirements of § 780.16(d).[499] By their very nature, however, these diversions are channelized surface water runoff conveyances, and their design and construction do not include measures intended to provide any form of habitat; therefore, they would not qualify as a type of enhancement that would ''fully and permanently'' offset the long-term adverse effects of placement of excess spoil or coal mine waste facilities. We are therefore not changing the rule in response to this comment.

Another commenter alleged that proposed paragraph (d)(2)(iv), now paragraph (e)(1)(xi), inappropriately introduces a backdoor requirement for the establishment of a riparian corridor even though the proposed regulatory text about the establishment of a riparian corridor does not apply to coal mine waste disposal facilities and placement of excess spoil. The commenter misinterprets the proposed rule. If an applicant proposes an excess spoil fill or a coal mine waste disposal facility in an intermittent or perennial steam, the regulatory authority is obliged to ensure the fish and wildlife enhancement plan contains measures to fully and permanently offset any long-term adverse impacts within the footprint of the fill, refuse pile, or coal mine waste impoundment on fish, wildlife, and related values. We are not prescribing the enhancement measures that the permittee must select, although we do list potential enhancement measures in § 780.16(d). One potential enhancement measure in final rule § 780.16(d)(2)(v), proposed paragraph (d)(1)(v), is a vegetative corridor enhancement. In the preamble to the proposed rule, we recommended that, if that option is selected, the regulatory authority should consider the creation of a conservation easement to ensure that the enhancement is fully and permanently offsetting the impacts of the fill, refuse pile, or coal waste impoundment and that the newly planted vegetation is not destroyed at bond release. We did not mandate the selection of vegetative corridor enhancement or the use of conservation easements. We merely suggested these selections as options for enhancement measures. Other enhancement measures are permissible; thus, there is no backdoor requirement, and we have made no revisions to the final rule based on this comment.

Final paragraph (e)(1)(xii) requires a permittee to demonstrate that each excess spoil fill, coal mine waste refuse pile, and coal mine waste impounding structure it proposes to construct is designed in a manner that will not result in formation of toxic mine drainage. This demonstration was required in proposed paragraph (d)(2)(v); however, it was combined with another demonstration which is now required by final paragraph (e)(1)(i). For clarity we have separated these demonstrations in the final rule.

Final paragraph (e)(1)(xiii) requires that a permittee demonstrate compliance with the revegetation plan required under final rule § 780.12(g), which requires reforestation of each completed excess spoil fill if the land is forested at the time of the application or if the land would revert to forest under the conditions of natural succession. This demonstration is intended to minimize the adverse impacts of the fill on watershed hydrology, especially the quantity and quality of surface runoff, and aquatic life in the stream. We proposed this demonstration at paragraph (d)(vi), and are finalizing it, with the exception of the redesignation, as proposed.

Under the provisions in final paragraph (e)(2), a permittee may propose to convert a minimal portion of a segment of an intermittent stream

[495] 30 U.S.C. 1265(b)(24).

[496] 30 U.S.C. 1265(a).

[497] 80 FR 44436, 44518 (Jul. 27, 2015).

[498] *Id.*

[499] 80 FR 44436, 44556 (Jul. 27, 2015).

within the mined area to an ephemeral stream. The regulatory authority may approve the permittee's proposal if the permittee demonstrates and the regulatory authority finds that converting any portion of the intermittent stream will not degrade the hydrologic function, dynamic near-equilibrium, or the ecological function of the stream as a whole within the mined area. The regulatory authority must make this determination by comparing the proposed action to the baseline stream assessment conducted under § 780.19(c)(6).

This is a revision to our proposed rule. In the proposed rule at paragraph (b)(2)(ii), we required a permittee to demonstrate that any mining activity in or through a perennial, intermittent, or ephemeral stream, with the exception of constructing an excess spoil fill or coal mine waste facility, would not ''result in conversion of the stream segment from intermittent to ephemeral, from perennial to intermittent, or from perennial to ephemeral.'' [500] We received many comments opposing the proposed prohibition on stream conversions. For example, one commenter asserted that the prohibition on converting an intermittent stream to an ephemeral stream may preclude mining in many areas. This regulatory authority commenter asserted that converting stream types, should be based on compliance with water quality standards, designated uses, approved land uses, or other permit requirements instead of, what it opines as an arbitrary requirement. We agree. In the final rule, a portion of an intermittent stream may be converted to an ephemeral stream if a permittee can demonstrate and the regulatory finds that the permittee will not degrade the hydrologic or ecological function of the stream as a whole within the mined area. The compliance factors enumerated by the regulatory authority commenter should be included when demonstrating to the regulatory authority that no hydrologic or ecological function will be degraded and to satisfy the requirements of section 800.42 related to bond release. Additionally, in certain circumstances, a seep may create short segments of an intermittent stream in an otherwise ephemeral stream. This is an issue in certain areas, such as North Dakota. Therefore, we have created an exception to final paragraph (e)(2)(i) for this limited circumstance. The exception is enumerated at final rule paragraph (e)(2)(ii), by specifically exempting the circumstances more fully described in final rule § 780.28(e)(5).

A commenter questioned why converting an intermittent to an ephemeral stream may be permissible but converting a stream in the opposite manner, such as from an intermittent to a perennial stream or an ephemeral to an intermittent stream was not restricted in the proposed rule. The commenter is correct in that we do not require a permittee to demonstrate that the conversion of a stream from ephemeral to intermittent or intermittent to perennial would not degrade the hydrologic function or the ecological function. We have not restricted this type of conversion because the same processes that create streams that lose water as it flows downstream resulting in a conversion from intermittent to ephemeral and perennial to intermittent does occur in the opposing direction. Streams may gain flow after reclamation when increases in water volume contribute to, rather than diminish, the flow. This additional contribution of flow comes from infiltrated water exiting the backfill. The gaining stream now maintains flow throughout the year and develops physical features, including for example, an altered bed-and-bank that result in a classification of a stream as intermittent or perennial. Prior to mining, the same stream may have been classified as an intermittent or ephemeral stream because of the lack of certain physical features and the brief duration of flow. The reclassified stream with greater flow has beneficial characteristics, such as a potential increase in both the diversity and abundance of aquatic species and the potential to add more varied uses, especially recreational uses. Additionally, streams that gain flow can result in improved habitat especially if coupled with stream flow throughout the seasons. Moreover, converting an intermittent stream to a perennial stream or an ephemeral stream to an intermittent stream promotes a more productive and varied aquatic life as long as the sediment transport remains similar. Therefore, we do not restrict this type of conversion—from intermittent to perennial or from ephemeral to intermittent—beyond the criteria included in this section and §§ 780.12 and 780.19.

Another commenter objected to the proposed rule and argued that, as described in the Draft Environmental Impact Statement, it would preclude the conversion of any stream segment, and this complete restriction will effectively prohibit any mining that would directly impact the headwaters (or source) of an intermittent or perennial stream. As discussed in the introduction to final § 780.28, temporary impacts, such as temporarily converting certain streams, are permissible. This is consistent with SMCRA, which allows disturbances to be minimized, not precluded.[501] For this reason, we do allow permittees to convert intermittent to ephemeral streams as long as the permittee satisfies the requirements of final paragraph (e)(2). Similarly, another commenter claimed that prohibiting conversions of the upper limits of headwater streams would disproportionately affect Appalachian watersheds where mining in steep slopes is prevalent. The commenter supported this claim by noting that impacts to the location of the stream type transition point is likely to be most prevalent in steep slope environments, like Appalachia, as well as areas with thick overburden and low-gradient streams. We agree that conversion of intermittent streams to ephemeral streams is most common in areas like Appalachia where stream baseflow is more complex because of the permeability of rock strata and the presence or absence of fractures in the strata. Further, following mining the backfill is no longer stratified and, although reconstructed intermittent streams can be engineered to resemble premining characteristics, it is not realistic to expect that they can be precisely reproduced. Therefore, to prevent the disproportionate impact the commenter describes, some conversion must be allowed. Therefore, final paragraph (e)(2) allows for differences in geology and hydrology nationwide.

Another commenter questioned why we would authorize converting a perennial stream to an ephemeral stream, but not allow an intermittent stream to be converted to an ephemeral stream. As explained in the discussion of final paragraph (e)(1)(iii), permittees may not convert a perennial stream to an ephemeral stream, but permittees may, in specific circumstances, convert a minimal portion of a mined-through segment of an intermittent stream to an ephemeral stream. SMCRA allows minimized disturbances to the quality and quantity of surface water and groundwater both during and after surface coal mining.[502] In the final rule we clarify that a permittee may effect these stream conversions only after demonstrating that the hydrologic function and the ecological function of the stream segment as a whole, within the permit, will not be degraded. To ensure the hydrologic function and ecological function will not be

[500] 80 FR 44436, 44610 (Jul. 27, 2015).

[501] 30 CFR 1265(b)(10) and (b)(24).

[502] 30 U.S.C. 1265(b)(10).

degraded, the regulatory authority must examine and compare the baseline stream assessment data collected as required by final rule § 780.19(c)(6). We discuss this data fully in the preamble to final rule § 780.19(c)(6). We discuss the requirements for restoring ecological function in connection with final paragraph (g), below. As explained in final rule § 780.28(e)(2), allowing a permittee to convert a minimal segment of specific stream types satisfies the requirements of sections 515(b)(10) and 515(b)(24) of SMCRA because disturbances to the prevailing hydrologic balance are minimized and the permittee is required to employ the best control technology currently available to minimize disturbances to fish, wildlife, and related environmental values.[503]

Another commenter stated that the proposed rule, prohibiting stream conversions was highly restrictive, may strand coal, and did not recognize longitudinal variations in transition points, such as when transition points move upstream or downstream depending on precipitation patterns. We agree with the commenters that the proposed rule prohibited stream conversions and could restrict some mining. We also recognize that surface mining activities will, in most cases, lower the water table and, thus, impact the location of the stream type transition points which are the point where an ephemeral stream becomes intermittent or an intermittent stream becomes perennial. Furthermore, the inherent nature of mining, particularly disruption of the water table, makes minimal stream conversions unavoidable. We discuss points in support of allowing permittees to convert minimal portions of intermittent streams above in connection with final paragraph (e)(2).

To incentivize operators to engage in re-mining and the associated improvements that occur when mining through streams exhibiting substantial degradation as a result of prior anthropogenic activity and a degraded stream channel that has resulted in substantial adverse impact on ecological function, we have added provisions in final paragraph (e)(3) for mining operations that seek to mine in, through, or near certain intermittent streams. This exemption is restricted to intermittent streams that satisfy the following criteria, as prescribed by final paragraph (e)(3)(ii):

- Prior anthropogenic activity has resulted in substantial degradation of the profile or dimensions of the stream channel; and
- Degradation of the stream channel has resulted in a substantial adverse impact on the ecological function of the stream.

Implementation of these provisions is important because remining through these types of streams often provide environmental benefits including improved water quality and restored streamside vegetative corridors.[504] For example, satisfying the criteria in final paragraphs (e)(3) will accomplish the mandate of section 515(b)(24) of SMCRA [505] by minimizing disturbances to fish, wildlife, and other environmental values while simultaneously encouraging remining and the reclamation benefits that accompany mining. As explained in the chart in the final rule at paragraph (e)(1) and discussed above, final paragraphs (e)(1)(v) and(vii) provide exceptions to the demonstrations required in paragraph (e)(1) as long as the permittee demonstrates and the regulatory authority finds that implementation of the proposed mining and reclamation plan will satisfy five criteria. In particular, final paragraph (e)(3) provides exemptions from: The requirement in final paragraph (e)(1)(v) for a practicable alternative analysis and the requirement in final paragraph (e)(1)(vii) that the permittee minimize the extent of perennial or intermittent stream mined through. However, final paragraphs (e)(3)(i)(A)–(E) require a permittee proposing to mine through intermittent streams prescribed by final paragraph (e)(3)(i), to demonstrate that:

- It will improve the form of the stream segment;
- It will improve the hydrologic function or the dynamic near-equilibrium of the stream;
- Is likely to result in improvement of the biological condition, dynamic near-equilibrium or ecological function of the stream;
- It will not further degrade the hydrologic function, biological condition, or ecological function of the stream; and
- It will result in establishment of a streamside vegetative corridor in accordance with § 816.57(d) of this chapter.

Although not as comprehensive as the final rule, proposed § 816.57(b)(4) included a ''special provision for restoration of degraded stream segments.'' In this section we proposed to include a requirement that ''if the stream segment to be mined through or diverted is in a degraded condition before mining, you must implement measures to enhance the form and ecological function of the segment as part of the restoration or diversion process.'' As we explained in the preamble to the proposed rule,[506] we intended the proposed provision to ensure that stream segments degraded by prior human activities are improved to the fullest extent possible, not just restored to the condition that existed before the current mining operation. In the proposed rule we did not define what qualifies as a degraded stream. Although we have not defined ''degraded'' as some commenters requested, we have added final paragraph (e)(3)(ii) to clarify that the exemption allowed by final paragraph (e)(3) is conditioned upon the stream displaying two characteristics: Prior anthropogenic activity has resulted in substantial degradation of the profile or dimensions of the stream channel and degradation of the stream channel has resulted in substantial adverse impact on the ecological function of the stream.

We address the comments to proposed § 816.57(b)(4), about restoring degraded stream segments here because in final paragraph (e)(3), we have improved and modified proposed § 816.57(b)(4), and placed the new requirements in final rule § 780.28 because they are permitting requirements and not performance standards. One commenter suggested that permittees should restore streams to a higher quality than existed under premining conditions and that the actual premining conditions documented during baseline investigations should be a factor when designing and approving plans for stream restoration, but that this factor should not be dispositive. We agree and we have added language to the final rule at paragraphs (e)(3)(i)(C) and (D) to clarify that the permittee must consider both the biological condition or ecological function and hydrologic function of the stream, as determined by the baseline data, when designing the

[503] 30 U.S.C. 1265(b)(10) and (b)(24).

[504] *See* James McElfish, Jr. & Ann Beier, *Environmental Regulation of Coal Mining: SMCRA's Second Decade* 278 (1990); *see also* Pa. Dep't of Envtl. Prot., Discussion Paper on Water Quality Issues Related to Coal Mining (1998). U.S. Env't. Prot. Agency, Office of Water, Doc. No. EPA–821–B–00–002, *Economic and Environmental Impact Assessment of Proposed Effluent Limitation Guidelines and Standards for the Coal Mining Industry: Remining and Western Alkaline Subcategories* 8–1, (March 2000) (stating that ''EPA estimates that 38 percent to 44 percent of AML [Abandoned Mine Lands] acres affected by remining would experience significant decreases in AMD [abandoned mine drainage] pollutant levels.'').

[505] 30 CFR 1265(b)(24).

[506] 80 FR 44436, 44454 (Jul. 27, 2015).

reconstructed stream, and that it should improve streams harmed by anthropogenic activities, rather than return it to a similar state.

Another commenter opined that anthropogenic activities have severely altered many pre-mining stream channels and the resulting erosion should not be reproduced in the reclamation process. We agree and have modified the final rule to prevent the reproduction of degraded stream channels. Paragraphs (e)(3)(i)(B) through (D) requires a demonstration and finding by the regulatory authority that the design will not further degrade the hydrologic function, biological condition, or ecological function of the stream segment. These requirements, coupled with the other necessary demonstrations, are likely to improve the premining characteristics of the original stream channel to promote the recovery and enhancement of the aquatic habitat and the ecological and hydrologic functions of the stream.

In response to commenters, we have added final paragraph (e)(4), which prescribes that the demonstrations required by final paragraph (e)(1) do not apply to a stream segment that will be part of a permanent impoundment approved and constructed pursuant to the requirements of final rule § 816.49(b) that prescribes mandates for permanent impoundments.

We received comments from a regulatory authority explaining that, in its experience, particularly in North Dakota, streams that are otherwise ephemeral can have segments that are considered intermittent due to low flowing springs and seeps. The commenter asserted that in the geographic area where it performs oversight it is common to find short reaches of streams that are classified as intermittent because of low flowing springs from shallow aquifers. According to the commenter, these low flowing springs often occur at the upper reaches of an ephemeral stream in native grasslands and the flows frequently cease within a few hundred feet or less from the water source. The commenter explained that in its experience the water is frequently saline and usually has little or no value as fish and wildlife habitat. Furthermore, the features do not have sufficient flow to serve as a livestock watering source by ranchers. According to the commenter, proposed rule § 780.28(b)(2)(ii), precluding conversions of stream segments, from which final paragraph (e)(1)(iv) is derived, would essentially prohibit mining in certain areas. The commenter specifically referred to locations where lignite is mined because according to the commenter, the lignite seam is often the aquifer that supplies the groundwater for these low flowing springs. Therefore, the commenter recommended that proposed § 780.28(b)(2)(ii) be modified to allow the conversion of an intermittent stream to an ephemeral stream if the conversion does not affect water uses or significant wildlife habitat. We have incorporated this recommendation into the final rule at paragraph (e)(5). This exception is designed to address the limited scenario described by the commenter in reference to North Dakota. To accommodate the scenario the commenter describes we prescribe in column 3 of final paragraphs (e)(1)(iv), (vii), and (viii) that the permittee is not required to make the requisite demonstrations if the following alternative demonstrations enumerated in final paragraphs (e)(5)(i) through (iii) are satisfied:

- The intermittent stream segment is a minor interval in what is otherwise a predominately ephemeral stream;
- The permittee demonstrates to the satisfaction of the regulatory authority that the intermittent segment has no significant fish, wildlife, or related environmental values, as documented by the stream assessment baseline data collected as required by final rule § 780.19(c)(6); and
- The permittee demonstrates to the satisfaction of the regulatory authority that conversion of the intermittent stream will not adversely affect water uses.

These three alternative demonstrations include the requirement that the permittee demonstrate that the intermittent stream segment is a minor interval in what is otherwise a predominately ephemeral stream.

Final Paragraph (f): What design requirements apply to the diversion, restoration, and reconstruction of perennial and intermittent stream channels?

In addition to satisfying the requirements in paragraphs (a) through (e), permittees proposing to divert, restore, or reconstruct perennial and intermittent stream channels must also satisfy the design requirements prescribed in final paragraph (f). We proposed similar requirements in proposed paragraphs (c)(2)(v) and (vi) of § 780.28, but we have re-designated and modified these paragraphs in response to comments and for clarity.

Final paragraph (f)(1) is similar to proposed paragraph (c)(2)(v)(A). This paragraph applies to permanent stream-channel diversions, temporary stream-channel diversions that will remain in use for greater than three years, and stream channels reconstructed after the completion of mining. These structures must be designed to restore, approximate, or improve the premining characteristics of the original stream channel, to promote the recovery and enhancement of aquatic habitat and the ecological and hydrologic function of the stream, and to minimize adverse alteration of stream channels on and off the site, including channel deepening or enlargement. In final paragraph (f)(1)(ii), we have retained the requirements in proposed paragraph (c)(2)(v)(A) that the pertinent stream-channel characteristics include, but are not limited to, the baseline stream pattern, profile, dimensions, substrate, habitat, and natural vegetation growing in the riparian zone and along the banks of streams. Commenters supported these requirements because they make our regulations more consistent with similar requirements imposed under section 404 of the Clean Water Act and its implementing regulations. In addition to re-designating this section, we have also made some modifications to the final rule which we discuss below.

As proposed, this section applied to temporary stream-channel diversions that were to remain in place for two or more years. Some commenters objected to the imposition of design criteria for temporary stream-channel diversions, proclaiming it a wasteful and nonsensical requirement. One of these commenters suggested that temporary diversions should require only temporary designs, citing the unpredictability of the need for temporary diversions at the time of permitting. The same commenter also stated that the National Pollutant Discharge Elimination System requirements will be in place to protect downstream waters and our rule would be problematic for establishment of long term drainage control in terms of planning and layout cost, extra construction time expense, and maintenance. The same commenter also opined that additional land disturbance will result in added and un-necessary negative environmental impact. These commenters suggested striking the requirement or modifying it in the final rule to reflect a longer term. While we agree that the length of time a temporary stream-channel diversion may be in place may not be known at the time of permitting, we know from over thirty years of experience that many of these diversions are in place for significantly long periods. Further, if the commenters' suggestion of striking the required design criteria were accepted,

''temporary diversions'' may be constructed as little more than straight-lined ditches that could potentially be in place for the life of a permit, which may exceed decades. This outcome does not adequately implement the requirements of SMCRA, ''to minimize disturbances to the prevailing hydrologic balance at the mine-site and in associated offsite areas. . . .'' [507] Therefore, we are retaining the design criteria. However, we did reanalyze the two year requirement and changed the final rule to apply to temporary stream-channel diversions that will remain in use for three or more years. This is a reasonable time frame as many smaller mines will be completed in less than three years. It would not be reasonable to expect a temporary stream diversion in place for less than three years to reestablish the stream biology because the diversion may not be in place for a sufficient period to reestablish stream biology. However, a diversion of a stream segment in place for more than three years, and as long as several decades, is capable of developing sufficient biology and should be constructed to ''restore, approximate, or improve the premining characteristics of the original stream channel. . . .''

Throughout the final rule we have removed the proposed term ''restored'' and have replaced it with ''reconstructed'' in order to describe more accurately the reclamation that must occur after mining in or through intermittent or perennial streams. Several commenters stated that ''restored'' was vague because no stream that is re-created using the criteria in § 780.28 will have the exact characteristics of a pristine stream. Some of these commenters opined that using the term ''restored'' implied an unachievable standard. We agree with the commenters and note that reconstructed streams may deviate from the premining characteristics as long as the requirements of the final rule are satisfied. Additionally, we have added the phrase ''or improve'' to final paragraph (f)(1)(i), to emphasize the importance of, and to encourage, mining techniques that improve existing stream channels. In the proposed rule we required the design to ''promote the recovery and enhancement of aquatic habitat.'' Promoting recovery and enhancement of aquatic habitat is most successfully done by promoting recovery and enhancement of the ''ecological and hydrologic functions of the stream.'' Therefore, we have included the requirement to ''restore, approximate, or improve'' the premining characteristics of the original stream channel in the final rule to more accurately reflect the mandates of section 515(b)(24) of SMCRA [508] and the scientific literature that discusses the importance of hydrologic and ecological function.[509]

For clarity, we have separated out the last paragraph of proposed paragraph (c)(2)(v)(A) and re-designated it as final paragraph (f)(1)(iii). This provision clarifies that permittees planting vegetation along the banks of temporary diversions in use for three or more years are not required to include species that would not reach maturity until after the diversion is removed. This will prevent unnecessary land disturbance and cost. In the final rule, we have replaced the term ''in the riparian zone'' with ''along the banks of the diversion'' to fully encompass all streamside vegetation. Also, as discussed above, we have changed ''in use for 2 or more years'' with ''in use for 3 or more years.''

We have retained proposed paragraph (c)(2)(v)(B), but re-designated it as final paragraph (f)(2). This paragraph requires the permittee to design all temporary and permanent stream channel diversions to ensure that the hydraulic capacity is at least equal to the hydraulic capacity of the unmodified stream channel immediately upstream from the diversion and no greater than the hydraulic capacity of the unmodified stream channel immediately downstream of the diversion. As we explained in the preamble to the proposed rule,[510] this requirement will protect against the scouring and other adverse impacts that could result from a sudden constriction in channel capacity of the unmodified stream channel downstream of the diversion which may harm important habitat. This paragraph is consistent with the requirement in section 515(b)(24) of SMCRA to minimize adverse impacts on fish, wildlife, and related environmental values to the extent possible, using the best technology currently available.[511]

Final paragraph (f)(3) adopts the design criteria for all temporary and permanent stream-channel diversions that were in the proposed rule at proposed paragraph (c)(2)(v)(C). The final paragraph requires that all temporary and permanent stream-channel diversions be designed to ensure that the combination of channel, bank, and flood-plain configuration is adequate to pass safely the peak runoff of a 10-year, 6-hour precipitation event for a temporary diversion and 100-year, 6-hour precipitation event for a permanent diversion.

We invited comment on whether the design event for a temporary diversion should be raised to the 25-year, 6-hour event to provide added safety and protection against overtopping. In response we received some comments in support of raising the criteria, while other commenters were opposed. The commenters supporting the increase cited the unpredictability of storm events. The comments opposed to a larger precipitation event cited unnecessary increased costs to construct and maintain larger sediment structures. Another commenter suggested that we impose site-specific goals such as zero flows or allowable increases in downstream and upstream flood risks as implemented and determined by the Federal Emergency Management Agency. We disagree with this comment because adopting site-specific design storm standards would, effectively, result in no minimum national standards. Final paragraph (f)(3) prescribes minimum standards and the regulatory authority has discretion to impose more stringent site-specific standards if it deems them appropriate. This approach ensures flood risk is appropriately addressed. To comply with the minimization requirements of SMCRA we have the responsibility to address flood risk because any increase in flood risk caused by mining would constitute the potential for material damage to the hydrologic balance outside the permit area.[512] Ultimately, we decided to retain the 10-year, 6-hour design criteria because it provides sufficient protection. The 25-year, 6-hour criteria provides minimal risk reduction at the price of significantly additional cost and land disturbance. In addition, we point out to the commenters that throughout the final rule, we have adopted provisions, such as final rule § 816.43, that afford greater protection for stream diversions by imposing new design and performance criteria and sediment control measures that should capture any additional runoff within the permit area. Thus, although we are not adopting the commenters' specific suggestions, we

[507] 30 U.S.C. 1265(b)(10).

[508] 30 U.S.C. 1265(b)(24).

[509] *See* Lainie R. Levick et al., *The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest.* U.S. Envtl. Prot. Agency and U.S. Dep't of Agriculture ARS Southwest Watershed Research Center, EPA/600/R–08/134, ARS/233046, 116 p. *http://www.epa.gov/esd/land-sci/pdf.* Margaret A. Palmer, *Reforming watershed restoration: Science in need of application and applications in need of science.* Estuaries and Coasts 32(1): 1–17 (2009).

[510] 80 FR 44436, 44517 (Jul. 27, 2015).

[511] 30 U.S.C. 1265(b)(24).

[512] 30 U.S.C. 1265(b)(10).

have afforded sufficient protection to these diversions.

A commenter asserted that considerations for floodplains are not typically included in temporary diversion design; therefore, this commenter questioned whether proposed paragraph (c)(2)(v)(C), now final paragraph (f)(3), will no longer require a permit applicant to ''consider the size of the watershed reporting to the ditch when designing a temporary diversion.'' The commenter did not explain the term ''ditch.'' As we explain in the preamble to final rule § 816.43, there are several types of diversions, including diversion ditches, stream diversions, and conveyances or channels within the disturbed area. Historically, ''ditch'' has been used by industry and others—whether correctly or incorrectly—to describe each of these types of diversions. This is further complicated by the fact that each of these classifications of diversions may be subdivided as temporary or permanent. Because this comment was in direct response to proposed paragraph (c)(2)(v)(C), we interpreted the commenter to be referring to temporary stream diversions as classified by final rule § 816.43(a)(2)(i). The commenter's assertion that floodplain is not considered in temporary diversion design is incorrect. We note that, with the exception of the re-designation, the final rule pertaining to capacity of diversion ditches is identical to that in the existing rules at § 816.43(b)(3). Our final rule specifies that the permittee include precipitation event design criteria for temporary stream diversions. This includes the watershed area tributary that ''reports'' to the diverted stream. Therefore, permittees must continue to consider the size of the watershed ''reporting'' to the ''ditch.'' If the commenter was referring to temporary diversion ditches that are channels constructed to convey surface water runoff or other flows from areas not disturbed by mining activities away from or around disturbed areas, please refer to § 816.43 of the final rule.

Another commenter asserted that it is almost impossible for a stream channel diversion to meet the requirements of both proposed paragraphs (c)(2)(v)(B), now final paragraph (f)(2), which requires that the hydraulic capacity be no greater than the capacity of the unmodified stream channel downstream of the diversion and no less than the capacity of the unmodified stream channel upstream of the diversion, and proposed paragraph (c)(2)(v)(C), now final paragraph (f)(3), which requires that the design be able to pass the 10-year, 6-hour precipitation event for a temporary diversion and the 100-year, 6-hour event for a permanent diversion. As discussed above, we are retaining both paragraphs in the final rule and we have concluded that a permittee can and must satisfy both requirements. Together these requirements ensure that disturbances and adverse impacts to fish, wildlife, and related environmental values are minimized.[513] We acknowledge that reconciling these requirements may create challenges; however, these requirements are necessary to more closely recreate natural conditions as we have explained above. Although the permittee may exercise discretion in designing these diversions, the requirements of final paragraphs (f)(2) and (f)(3) must be satisfied. One method that a permittee may select to satisfy both requirements is to construct a lined channel designed to accommodate discharge from a 10-year or 100-year, 6-hour precipitation event for a temporary or permanent stream diversion then fill the channel with substrate material comparable to that of the premining stream channel. This material should be selected consistent with the baseline stream assessment required in final § 780.19(c)(6)(ii)A. After this is complete, a stream channel similar to the premining stream channel can be constructed in the substrate. The reconstructed stream channel and flood-prone area will convey in-channel and overbank flows that occur during typical precipitation events. If a larger storm event occurs, it is likely that the stream and flood-prone area substrate will be eroded; however, the lining of the larger channel that was constructed first will prevent erosion of the underlying spoil. This is consistent with how natural streams function. During storm events, the substrate in natural streams is typically eroded until bedrock is encountered. In our scenario, the channel that was constructed first operates similar to the bedrock in a natural stream.

Final paragraph (f)(4) requires a permittee to submit a certification from a qualified, registered, professional engineer that the designs for all diverted and reconstructed stream-channels occurring after the completion of mining satisfy the design criteria of this section and any additional design criteria established by the regulatory authority. This certification may be limited to the location, dimensions, and physical characteristics of the stream channel. This requirement was proposed at paragraph (c)(2)(iv). We have redesignated the final paragraph and, with minor exceptions, adopted the paragraph as proposed. Similar to other paragraphs in this section we have replaced the term ''restored'' to ''reconstructed'' because the latter term better describes the streams that are recreated after mining using the criteria prescribed in this section.

One commenter objected to this portion of the proposed rule, alleging that stream restoration requires far more than just engineering and that the rule should be clarified to ensure that the requirement applies only to the engineering aspect of stream channel restoration. The commenter also noted that the U.S. Army Corps of Engineers requires only permanent streams with watersheds over 640 acres to be certified by a professional engineer. Finally, the commenter considered this requirement to be excessive, costly, and useless because both the U.S. Army Corps of Engineers and the regulatory authority constantly inspect the reclamation of these streams.

In response, we note that this requirement does not apply to all streams within a permitted area; it applies only to stream segments reconstructed after being impacted by mining activities. Also, because of the permanency of these reconstructed streams, it is important to ensure that the reconstructed stream matches the design plan. This determination is most appropriately made by a qualified, registered, professional engineer. Moreover, the last sentence of final paragraph (f)(4) expressly limits the certification to the location, dimensions, and physical attributes of the stream. As we explained in the preamble to the proposed rule,[514] the engineering certification does not include assessment of ecological function because that is beyond the professional competency of an engineer.

Final Paragraph (g): What requirements apply to establishment of standards for restoration of the ecological function of a stream?

Final paragraph (g) replaces proposed paragraph (e) which prescribed the standards the permittee must satisfy to restore the ecological function of a stream and provided general guidance for regulatory authorities to establish standards for determining when the permittee had ''restored'' the ecological function of a restored or permanently-diverted perennial or intermittent stream. In the final rule, we have clarified that the permittee must ''reconstruct'' streams that it mines, not ''restore'' or ''permanently divert them;''

[513] 30 U.S.C. 1265(b)(24).

[514] 80 FR 44436, 44516 (Jul. 27, 2015).

have moved to paragraph (g) the criteria that the regulatory authorities must use to establish the standards for restoring ecological function; have clarified that the requirement to restore ecological function applies only to perennial and intermittent streams; and have prescribed the specific criteria the regulatory authority must use when it establishes standards for restoring the ecological function of perennial and intermittent streams. Specifically, the permittee must employ the best technology currently available when it restores the biological component of streams. Because the best technology currently available varies based upon the type of stream that is restored, we differentiated between the standards to be used for perennial and intermittent streams. We made these revisions in response to comments from the public and other federal agencies. We discuss the modifications we made to the final rule in more detail below.

In final paragraph (g)(1), we retained the requirement that the regulatory authority establish criteria for determining when the permittee has restored the ecological function of a perennial or intermittent stream after mining through the stream. However, in response to a federal agency comment, we removed the adjective ''objective'' because the requirements in final paragraphs (g)(2) through (4) provide adequate guidance for establishing these standards.

We made additional revisions to this requirement. First, we clarified that the requirement to restore ecological function applies only to perennial and intermittent streams. Although final § 780.28 specifically refers to these two stream types and not ephemeral streams, several commenters opined that the proposed rule was unclear about what requirements applied to each stream type. Therefore, final paragraph (g)(1) specifically refers to perennial and intermittent streams to clarify that any applicant proposing to mine through a perennial or intermittent stream must incorporate the standards imposed by the regulatory authority and explain how it will satisfy the standards. We reiterate that final § 780.27 provides the requirements applicable to ephemeral streams.

Second, consistent with other paragraphs of the final rule, we removed the proposed terms ''restored'' and ''permanently diverted.'' Several commenters asserted that those terms are vague. We agree and we have replaced those terms with ''reconstructed'' in order to describe more accurately the reclamation that must occur after mining in or through intermittent or perennial streams.

One commenter objected to the requirement that the regulatory authority establish standards for determining when ecological function has been restored because the commenter opined that permittees can never restore identical ecological function. In response, we acknowledge that there has been no consistent documentation that streams can be restored to their identical ecological function. Neither the proposed rule nor the final rule, however, requires that the restored ecological function of a stream be identical to what it was before mining. Instead, § 780.28(g)(3)(ii)(A) of the final rule explicitly provides that the reconstructed streams or stream-channel diversions need not have precisely the same biological condition or biota as the stream segment had before mining.

Several commenters contended that the permit requirements in proposed § 780.28(e)(1) were too subjective and vague. Similarly, some commenters were also concerned that the standards for restoring ecological function are too difficult to determine without further guidance and that developing standards will be a task too complex for regulatory authorities. Many commenters opined that the general reference to proposed § 816.57(b)(2), which provided the requirements for restoration of ''form'' and ''function'' of streams, was too vague and objected stating that the rule did not prescribe specific standards for the restoration of ecological function. To clarify, we are not establishing standards for restoration of ecological function. The regulatory authority must follow the minimum requirements we prescribe in final paragraph (g) to establish standards for determining when the permittee has restored ecological function. We are granting this discretion to the regulatory authority because of the unique characteristics of mining operations and biological systems across the nation and due to the specialized expertise of the regulatory authority in relationship to specific geographic areas. However, the regulatory authority must satisfy the criteria set forth in § 780.28 for establishing appropriate standards. Another commenter requested that we revise the regulations to penalize regulatory authorities that fail to establish standards, in accordance with our requirements, for determining when the permittee has restored the ecological function of a stream. This is not necessary. As we discussed, the final rule appropriately provides regulatory authorities with the flexibility and discretion to establish standards for their jurisdiction. If, at some point, we determine that a regulatory authority is not satisfying the minimum requirements as identified in § 780.28(g), we may exercise our oversight responsibilities as outlined in 30 CFR part 842.

We agree with the comments that we should have been more specific about the criteria for establishing standards for assessing whether the permittee has restored the ecological function of a reconstructed stream. To remedy this, in paragraphs (g)(2), (3), and (4) of the final rule, we clearly prescribed the minimum requirements the regulatory authority must satisfy when it establishes standards. The inclusion of these minimum requirements should also address the commenters' concern that the task of developing standards for determining when the ecological function is restored was too complex of a task for regulatory authorities. We have also moved proposed paragraphs § 816.57(b)(2)(ii)(B), (C), and (D), into final § 780.28(g) because these provisions are more appropriately categorized as permitting requirements, not performance standards.

Final paragraph (g)(2) replaces and enhances the requirement in proposed § 780.28(e)(1)(ii) that the regulatory authority must coordinate with ''the Clean Water Act permitting authority to ensure compliance with all Clean Water Act requirements.'' We have modified this requirement to encompass coordination with all ''appropriate agencies responsible for administering the Clean Water Act, 33 U.S.C. 1251 *et seq.*'' This clarification ensures that the regulatory authority must consult with any federal or state Clean Water Act regulatory authority including agencies responsible for permitting and enforcement actions. We have made this change in response to comments received by other federal agencies and state regulatory authorities.

In final paragraph (g)(3), we provide that the biological component standards for restoration of the ecological function of perennial and intermittent streams must employ the best technology currently available. This is consistent with section 515(b)(24) of SMCRA,[515] which requires utilization of the best technology currently available to minimize disturbances and adverse impacts upon fish, wildlife, and related environmental values. In the final rule we prescribe two separate standards for assessing the restoration of ecological function. The first standard, articulated in paragraphs (g)(3)(ii) and (iii), applies to perennial streams and to those

[515] 30 U.S.C. 1265(b)(24).

intermittent streams for which a scientifically defensible index of biotic integrity and the use of bioassessment protocols have been established. For these streams we specify that the best technology currently available is the biological condition of the stream as determined by an index of biotic integrity and the use of bioassessment protocols consistent with final rule § 780.19(c)(6). The second standard, articulated in paragraph (g)(3)(iv)(A), applies to all other intermittent streams. For these streams, we specify that the best technology currently available consists of the establishment of standards that rely upon restoration of the ''form,'' ''hydrologic function,'' and water quality of the stream and the reestablishment of streamside vegetation as a surrogate for the biological condition of the stream. We developed these two standards after reviewing pertinent scientific literature and considering the comments we received on this topic, including comments from other federal agencies, as we discuss below.

In the preamble to paragraph (b)(2)(ii)(C) of proposed § 816.57,[516] we invited comment on the effectiveness of using index scores from bioassessment protocols to ascertain impacts on existing, reasonably foreseeable, or designated uses. We also invited commenters to suggest other approaches that may be equally or more effective. We are discussing the response to these comments here because, as we discussed above, in the final rule we have moved those provisions to § 780.28(g)(3). Final rule §§ 780.28(g)(3)(ii) and (iii) now contain the provisions that govern the use of protocols for perennial streams and certain intermittent streams and final rule § 780.28(g)(3)(iv) now contains the provision that governs the standards that apply to all other intermittent streams. In response to our invitation, some commenters asserted that the Clean Water Act methodology for water quality standards and physical habitat scoring are more dependable measures than index scores derived from bioassessment protocols. These commenters asserted that the Clean Water Act methodologies are superior to index scores from bioassessment protocols because they are capable of replication and are not subject to as many variables in the environment and sample methodology. Other commenters recommended that if we decided to use index scores from bioassessment protocols we should require them to be used in a qualitative rather than a quantitative manner. We acknowledge that some Clean Water Act authorities use a qualitative or narrative approach in their multimetric bioassessment protocols. While these approaches may be acceptable, physical habitat measurements alone are generally inadequate to determine if the permittee has restored ecological function because water quality and biological measures are also important.[517] One other commenter encouraged us to require functional assessment protocols to test for specific attributes of stream function including: Timing and amount of leaf litter and wood inputs, dissolved organic carbon, dissolved oxygen, nitrogen and phosphorus levels, gross primary production, and nutrient uptake and storage. We have determined, however, that this level of specificity is not necessary because the protocol we set out in final § 780.19(c)(6)(vi) through (viii), and discussed in the preamble to § 780.19(c), should adequately capture the biological condition of streams. For additional discussion of this topic, please see general comment N in Part IV.

Other commenters objected to the requirement in proposed § 816.57(b)(2)(ii)(C), which has been moved to final § 780.28(g)(3). This provision required that the permittee assess the biological condition of a reconstructed stream by using a protocol that meets the requirements of proposed § 780.19(e)(2). Proposed § 780.19(e)(2)(i) required that, for perennial and intermittent streams, the permittee identify benthic macroinvertebrates to the genus level. The commenters specifically objected to this requirement, alleging that this level of identification is significantly more expensive and more stringent, that it is arbitrary, and that it has no apparent benefit. Another commenter added that the bioassessment method is resource intensive and that potentially affected streams are small and highly variable in nature, making the development of credible index values challenging, if not impossible. We disagree. As the commenters noted in response to proposed § 816.57(b)(2)(ii)(C), now 780.28(g)(3), genus-level identification is often more costly than family-level identification. However, scientific literature supports genus level identification because it provides a more accurate indication of the biological condition of a stream than family level. The assertion that genus level identification is too stringent or arbitrary is unfounded because many states require identification to the genus level.[518] For example, the state of West Virginia has developed and is in the process of adopting, a genus level index. Similarly, many projects in Virginia require use of the Eastern Kentucky Stream Assessment Protocol, which uses genus level taxonomy. We have, however, modified the aspects of the proposed rule that required genus level identification. Final § 780.19(c)(6)(vii) requires permittees to measure aquatic organisms identified to the genus level where possible, otherwise to the lowest practical taxonomic level. This modification allows for situations where the permittee cannot measure the genus level taxonomy without harming the population. We have incorporated these protocols by reference in final § 780.28(g)(3)(ii). Therefore, when the state regulatory authority establishes the criteria for best technology currently available for perennial streams and some intermittent streams, the protocols outlined in final rule § 780.19(c)(6), must be used, including identification to the genus level, where possible, otherwise to the lowest practical taxonomic level.

In response to our invitation for comment on the effectiveness of using index scores from bioassessment protocols to ascertain impacts on existing, reasonably foreseeable, or designated uses, another commenter opined that using bioassessment protocols would not effectively measure impact on designated uses for streams in western states. This commenter,

[516] 80 FR 44436, 44553 (Jul. 27, 2015).

[517] U.S. Envtl. Prot. Agency. *Rapid Bioassessment Protocols.* Watershed Academy Web. *https://cfpub.epa.gov/watertrain/moduleFrame.cfm?module_id=25&parent_object_id=1019&object_id=1019* (last accessed Nov. 10, 2016).

[518] The following are examples from coal mining regions across the nation. This list is not exhaustive: Gregory J. Pond, et al., *The Kentucky macroinvertebrate bioassessment index,* Kentucky Dep't for Env't. Protection, Division of Water, Water Quality Branch, Frankfort (2003).

Deborah Arnwine, *Quality system standard operating procedure for macroinvertebrate stream surveys,* Division of Water Pollution Control, Dep't of Env't. and Conservation, State of Tennessee (2011).

Eric G. Hargett, *The Wyoming Stream Integrity Index (WSII)–Multimetric indices for assessment of wadeable streams and large rivers in Wyoming.*'' Wyoming Dep't of Environmental Quality, Water Quality Division, Cheyenne, Wyoming. Document: 11–0787 (Aug. 2011).

Water Quality Assessment Branch Mississippi Dep't of Envtl. Quality, *Development and Application of the Mississippi Benthic Index of Stream Quality (M–BISQ).* (June 2003).

Texas Commission on Environmental Policy, *Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data* (June 2007)

Aquatic Life Use Attainment Methodology to Determine Use Attainment for Rivers and Streams, Policy Statement 10–1. 2010. Colorado Dep't of Public Health and Environment Water Quality Control Commission.

however, did not provide specific rationale for this assertion. Despite what the commenter claims, regulatory authorities, including those in western states, routinely use multimetric bioassessment protocols for many purposes, including using them to develop total maximum daily load development, to measure national pollutant discharge elimination system permit compliance, and to do a Use Attainability Analyses, which states employ in order to determine whether a designated use for a waterbody is not feasible. We acknowledge that a major challenge for conducting bioassessments in environmentally diverse regions is ensuring that an index provides consistent meaning in different environmental settings. Further, we recognize that those who develop bioassessment indices should carefully evaluate index performance across different environmental gradients where an index value is applied.[519] For this reason, and as we stated in the proposed rule, ''we anticipate that the SMCRA regulatory authority, with assistance from the appropriate Clean Water Act agencies, will define the range of index values required to support each existing and designated use of the stream segment in question.'' [520]

After considering all of the commenters' suggestions, we are retaining the requirement that SMCRA regulatory authorities use existing scientifically defensible multimetric bioassessment protocols to assess the ecological function when such protocols are available. This requirement is now set out in two places: Final rule § 780.28(g)(3), the analog to proposed rule § 816.57(b)(2)(ii)(C); and final rule §§ 780.19(c)(6)(vi) through (viii), the analog to proposed rule § 780.19(e)(2). These protocols are the best technology currently available to measure the biological condition of perennial and intermittent streams. The approach we take in the final rule is consistent with section 515(b)(24) of SMCRA,[521] which requires the impacts to fish, wildlife, and related environmental values be *minimized* using the best technology currently available. Additionally, studies show that the best technology currently available includes ''incentives for avoidance and minimization'' of disturbance to streams because that is less likely to result in loss of stream functions and services than compensatory mitigation.[522] The regulations at § 780.28(g)(3)(i) through (iv) implement the recommendations made by scientists and other stream experts about the best way to minimize the loss of stream functions.

At the same time, we recognize that some states may not have an established scientifically defensible protocol for intermittent streams. Therefore, in paragraph (g)(3)(iv)(A) we provide that in states without currently established scientifically defensible bioassessment protocols for intermittent streams, the permittee must rely upon the restoration of the form, hydrologic function, water quality, and reestablishment of streamside vegetation as surrogates for the biological condition of the stream. However, we do not mean this approach to be a permanent solution because states are developing additional bioassessment protocols for intermittent streams. Consequently, in final rule § 780.28(g)(3)(iv)(B), we require the regulatory authority at five year intervals to reevaluate the best technology currently available for intermittent streams. We expect the regulatory authorities to consider advancements in bioassessment protocols and to adjust their permitting processes to implement the best technology currently available.

Final § 780.28(g)(3)(ii)(C) ensures that populations of organisms used to assess biological condition are capable of maintaining themselves by independent effort and prevents the usage of stocked or introduced populations. We proposed a similar requirement in § 816.57(b)(2)(ii)(D); however, one commenter asserted that this provision did not provide sufficient detail explaining how an operator will determine whether a population is self-sustaining. In response, we note that the regulatory authority will have discretion to determine the sufficiency of the population reproduction. Natural reproduction is an indicator of a self-sustaining population. As discussed in the preamble to the proposed rule, organisms that happen to drift into the reconstructed channel from other areas will not accurately reflect that the permittee has restored ecological function.[523]

Based upon scientific literature we reviewed at commenters' suggestions,[524] we are also requiring that the bioassessment protocol prohibit substantial replacement of pollution-sensitive species with pollution-tolerant species. This provision in final paragraph (g)(3)(ii)(B) ensures that a full complement of native species is restored in the reconstructed stream and that the stream is not simply dominated by pollution-tolerant species.

One commenter opined that to determine if ecological function has been restored and to assess biological condition regulatory authority staff must possess more knowledge, skills, and abilities related to biological evaluation than required under the previous regulations and that this will create an unnecessary burden. We agree that expertise in biology may be required for regulatory staff to properly review permit applications that propose to conduct activities in, through, or adjacent to streams, but we disagree that the requirement is unnecessary. Restoring ecological function will result in significant long-term benefits to stream health. Additionally, in relationship to bioassessment protocols specifically, the regulatory authority is in the best position to assess protocols because it has the most relevant information and experience related to the specific geographic region and can tailor the protocols to meet local environmental constraints. Therefore, we are retaining this requirement. For further evaluation of the impacts upon regulatory authority staff, please review the RIA. Other commenters recommended that we require a qualified biologist or ecologist to formally attest to the sufficiency of any plan submitted in the permit application to restore the biological function of impacted streams and all determinations regarding restoration of stream ecological function. We have not adopted this recommended change. Instead, we have retained, with slight modification from what was proposed, a process that will ensure that reviewers use the standards as prescribed by final paragraphs (g)(2) through (4) to determine when the operator has restored the ecological function of the reconstructed stream, and that requires the applicant to incorporate those standards and explain how it will satisfy the requirements. As prescribed by final paragraph (g)(2) of § 780.28, this process includes coordination with Clean Water Act regulatory authorities. These authorities, along with the SMCRA regulatory authority, and, as

[519] *See* Raphael D. Mazor et al., *Bioassessment in complex environments: Designing an index for consistent meaning in different settings, Freshwater Science.* 2016. Published online Oct. 22, 2015.

[520] 80 FR 44436, 44475 (Jul. 27, 2015).

[521] 30 U.S.C. 1265(b)(24).

[522] Colleen E. Bronner, et al., 2013. *An Assessment of U.S. Stream Compensatory Mitigation Policy: Necessary Changes to Protect Ecosystem Functions and Services.* 49(2) Journal of the American Water Resources Association (JAWRA) 449–462 (April 2013).

[523] 80 FR 44436, 44553–44554 (Jul. 27, 2015).

[524] J. Todd Petty, et al. *Landscape indicators and thresholds of stream ecological impairment in an intensively mined Appalachian watershed,* 29(4) Journal of the North American Benthological Society, 1292–1309 (2010).

necessary, the U.S. Fish and Wildlife Service when performing its consultation duties under section 7 of the Endangered Species Act, have sufficient expertise to make the required determinations.

Although operators are not required to reconstruct streams that have the precise biological condition as their premining counterparts, we prescribed in proposed rule § 816.57(b)(2)(ii)(B) that the reconstructed stream must be adequate to support both the uses that existed before mining and must not preclude the attainment of the designated uses that existed before mining pursuant to sections 101(a) of 303(c) of the Clean Water Act.[525] We have retained this requirement, with the exception of removing reference to section 101(a) of the Clean Water Act, and moved it to final § 780.28(g)(4). Some commenters expressed support for allowing some variation in the species composition and the array of insects, fish, and other aquatic organisms found in a reconstructed stream or stream-channel diversion as long as the change in species composition does not preclude any use that existed prior to mining, nor attainment of any designated use before mining. However, other commenters indicated that these requirements are duplicative of the Clean Water Act and should be eliminated. We disagree because, as discussed in Part IV. I., above, the requirements of the final rule do not supersede or duplicate the Clean Water Act; instead, these requirements complement the Clean Water Act and will increase coordination between the SMCRA regulatory authority and the Clean Water Act authority.

Other commenters suggested that we revise proposed § 816.57(b)(2)(ii)(B), which has been moved to final rule § 780.28(g)(4), to make clear that all restored streams and receiving streams outside the permit area must have biological assemblages that support threatened and endangered species in the area. We decline to make this change here for several reasons. First, this comment is more applicable to final § 780.28(g)(3), which sets out the requirements for establishing, where applicable, appropriate biological conditions. Second, this revision would be duplicative because we have included specific requirements protecting threatened and endangered species throughout the final rule including, among others, § 773.15(j)(1), which requires documentation that the proposed permit area and adjacent area do not contain species listed or proposed for listing as threatened or endangered under the Endangered Species Act,[526] and § 773.15(j)(2), which requires documentation that the proposed operation would have no effect on species listed or proposed for listing as threatened or endangered under the Endangered Species Act.[527]

Similarly, one commenter asserted that proposed § 816.57(b)(2)(ii), now incorporated in final rule § 780.28(g)(4), did not protect newly listed, threatened or endangered species that are not designated or otherwise protected under the Endangered Species Act at the time the Clean Water Act designated use is developed. This commenter urged us to require that streams be restored to protect both designated use and any additional uses needed to support newly listed species. We did not make any changes to the final rule as a result of this comment because it is adequately addressed in final rule § 816.97(b)(1)(ii) through (iii), which require the operator to promptly report the presence of any federally-listed species located within the permit or adjacent area to the regulatory authority. This requirement applies even if the species was not listed before permit issuance. The regulatory authority must coordinate with the U.S. Fish and Wildlife Service to determine whether and under what conditions the operation may proceed and to revise the permit as necessary.

We added final paragraph (g)(4)(ii) in response to a federal agency comment and a similar comment from another commenter that alleged that prohibiting activity from completely ''precluding'' a water use is ''an inordinately lax standard that would allow severe impairment of a stream.'' One of these commenters also suggested that we replace ''preclude'' with ''cause or contribute to the impairment of.'' In lieu of accepting the recommendation to replace ''preclude'' we have retained that terminology in final paragraph (g)(4)(i) and we have added final paragraph (g)(4)(ii). This paragraph clarifies that the standards for restoring ecological function must not prevent a stream segment from satisfying the anti-degradation requirements of the Clean Water Act as adopted by state or tribes or as established by a federal rulemaking under the Clean Water Act.

Final Paragraph (h): What finding must the regulatory authority make before approving a permit application under this section?

Final paragraph (h), previously proposed paragraph (e)(2), specifies that a permittee's application proposing to conduct surface mining activities in or within 100 feet of a perennial or intermittent stream may not be approved unless the regulatory authority makes a specific, written finding that the permittee has fully satisfied all of the applicable requirements of final paragraphs (c) through (f) of this section. Additionally, for the permit to be valid the regulatory authority must include a detailed rationale for the finding. We did not receive any comments on this paragraph and we are accepting it as proposed.

Final Paragraph (i): Programmatic Alternative

We have added final paragraph (i) to clarify that paragraphs (c) through (h) of this section will not apply if a regulatory authority amends its program to expressly prohibit all surface mining activities, including the construction of stream-channel diversions, that would result in more than a de minimis disturbance of land in or within 100 feet of a perennial or intermittent stream. We have added this alternative in response to comments advocating a complete ban on activities within 100 feet of any stream because the commenters viewed a ban as the most protective course of action. Although we are not adopting a complete ban as part of the final rule, we have concluded that the regulatory authority should retain the discretion to enact more stringent measures. Thus, we are clarifying that the regulatory authority has the option to enact such a prohibition.

Section 780.29: What information must I include in the surface-water runoff control plan?

As discussed in the preamble to the proposed rule, section 780.29 identifies the required information for surface water runoff control plans.[528] After evaluating the comments that we received, we have made several changes to the final rule.

Final paragraph (a)(1) requires an explanation of how you will handle surface-water runoff in a manner that will prevent flows from the proposed permit area, both during and after mining and reclamation, from exceeding the premining peak flow from the same area for the same-size precipitation event. In most cases, this will require monitoring peak surface water flows in existing natural drainage channels at or near the permit boundary.

One commenter alleged that offsite flooding as a result of uncontrolled surface water runoff is probably limited

[525] 33 U.S.C. 1313(c).

[526] 16 U.S.C. 1531 *et seq.*

[527] 16 U.S.C. 1531 *et seq.*

[528] 80 FR 44436, 44519 (Jul. 27, 2015).

to areas where during mining and postmining topography are significantly altered from the premining conditions, for example, in steep slope areas of Appalachia. The commenter opined that the requirements should be limited, either through geographic or slope based restrictions, to areas where they would be applicable. We disagree. Regardless of the premining topography of a mine site, surface water runoff characteristics are significantly altered during mining; hence, a surface water runoff control plan is necessary to ensure that surface water flows from the site during mining do not exceed premining peak flows. Unless specifically exempted, such as in special categories of mining, the permittee is required to restore the mine site to approximate original contour. Therefore, the postmining topography should not be significantly different from the premining conditions. However, it will still be necessary to verify that postmining surface water runoff does not exceed premining flows. This will protect both downstream populations and shield industry from liability because flows from the mine site will be documented.

Some commenters expressed concern about the proposed use of the Natural Resource Conservation Service's synthetic storm distribution method for estimating peak storm flows as required in the proposed rule. These commenters were particularly concerned about our allowing only one method to estimate peak storm flows when other methods may be acceptable. In response to this comment, we have modified the final rule at paragraph (a)(1) to include the phrase ''or another scientifically-defensible method approved by the regulatory authority that takes into account the time of concentration to estimate peak flow discharges.'' We recognize that other equally viable methods for estimating storm peak flows exist and this change in the final rule provides the regulatory authority the discretion to allow other valid methods. However, although we are not prescribing a specific method for characterizing surface water runoff from a mine site, you must use a scientifically defensible, repeatable method acceptable to the regulatory authority that adequately characterizes precipitation-related surface water runoff. It is imperative that storm duration for each drainage be based on its time of concentration. Time of concentration is defined as the time needed for water to flow from the most remote point in a watershed to the watershed discharge point. A precipitation event is typically described by the frequency of occurrence and duration; for example, the 10-year, 24-hour event. The duration must be selected based on the time of concentration of the drainage being evaluated. A site specific storm duration is required because shorter duration storms typically have greater precipitation intensities, and use of the appropriate duration in the analysis will result in the maximum flow for a given frequency of occurrence event.

One commenter stated that development of a surface water runoff control plan to evaluate peak flows cannot be done using National Pollutant Discharge Elimination System points or the monitoring points required in § 780.19, regarding baseline information on hydrology, geology, and aquatic biology. We agree that those monitoring points are intended to facilitate assessment of water quality and all of these points may not be the best locations for assessing peak discharge from the permit area. Also, the National Pollutant Discharge Elimination System monitoring points within the permit area are not required for surface water runoff analysis. However, it is necessary for the operator to measure peak surface water flows at or near the permit boundaries. Often peak surface water flow monitoring points coincide with the location of National Pollutant Discharge Elimination System monitoring points. Therefore, in response to the commenter, we point out that select National Pollutant Discharge Elimination System monitoring points may be useful in analyzing surface water runoff. Paragraph (b) requires a monitoring-point density that adequately represents the drainage pattern across the entire proposed permit area, with a minimum of one monitoring point per watershed discharge point. In the context of a surface water runoff control plan, a watershed discharge point refers to a point of discharge from the permit area. The associated watershed is the drainage area that contributes to that point. Potentially, and to the commenter's point, the watershed discharge point may also coincide with a National Pollutant Discharge Elimination System monitoring point. The essential factor is that the drainage pattern across the entire proposed permit area is adequately represented.

One commenter noted that peak flows at any given moment during the operation may be different than the flows reflected during baseline sample collection, as mandated by section 780.19. Therefore, according to the commenter, this could result in false designs and expectations. We agree that precipitation events of any specific ''size'' are unlikely to reoccur on multiple occasions at a site. However, over the baseline monitoring period, multiple precipitation events and associated peak flows should be observed. From these, the premining relationship between precipitation and peak flows can be determined. This hydrologic response relationship can be plotted as a curve, and used to estimate peak flows for precipitation events that differ from those measured during the baseline monitoring period. Consequently, § 780.19(c)(3)(i)(A) requires baseline measurement of peak flow magnitude and frequency and § 780.19(c)(5) requires measurement of precipitation events using on-site, self-recording devices or, at the discretion of the regulatory authority, a single device located to provide baseline data for multiple permits located close to each other. Results of these measurements can be used in the design of the surface water runoff control system.

One commenter alleged that discharge estimates are based on empirical models and methodology that require the engineer to fit the appropriate methodology to the study area being evaluated. We agree. Premining precipitation and peak flow information obtained as described above can be used in these models to establish the hydrologic response characteristics of each drainage area being considered. The data collected will allow the engineer to verify that model output approximates the observed relationship between precipitation and peak flows. During mining and reclamation, the measured precipitation for each drainage area can be input to the model, and the output observed. The only requirement is that the measured peak flows from the permit area do not exceed the estimated premining peak flow for the same event.

Proposed and final paragraph (b) set out the various requirements for a surface-water-runoff monitoring and inspection program including the requirement that the program ''provide sufficient precipitation and stormwater discharge data for the proposed permit area to evaluate the effectiveness of the surface-water runoff control practices under paragraph (a).'' A commenter asserted that it was impossible to imagine that premining and postmining peak flows from same-sized precipitation events would be the same. The commenter alleged that it is not the size of the discharge, but whether damage could occur as a result of the discharge that should be considered. We agree in part. It is virtually certain that, if not controlled, surface water flows

from an area during and after mining will differ from, and in most cases exceed, premining flows for the same precipitation event. It is equally certain that flows from a larger event will then result in offsite damage that would not have occurred absent the mining activities. This is the very situation that the surface water runoff control plan required by this section is intended to prevent. We are requiring the permittee to design and construct or install surface water runoff control structures, as well as develop and implement the reclamation plan, so that, at any given time the flows at the permit boundary and on adjacent areas do not exceed premining flows for any given precipitation event.

Another requirement in proposed and final paragraph (b) is that the program must contain ''a monitoring-point density that adequately represents the drainage pattern across the entire proposed permit area, with a minimum of one monitoring point per watershed discharge point.'' Upon review of the proposed rule and the comments received, we recognize that there may be confusion about the role of ephemeral streams in the monitoring and inspection program. While it is essential that the ephemeral stream drainage pattern should be similar to the premining conditions and surface water flows should be similar to premining flows prior to final bond release, in a surface water runoff context, it is not necessary to measure discharges of particular ephemeral streams either before, during, or after mining. The purpose of monitoring in this context is to ensure that flows during and after mining do not exceed premining flows. Monitoring each ephemeral stream would require many monitoring points, yet not provide significant useful information because the pre- and postmining locations of ephemeral streams will differ, in some cases significantly. During mining, the surface water that typically feeds these ephemeral streams will be captured by the drainage control system and conveyed to one or more discrete flow monitoring points that may be associated with a National Pollutant Discharge Elimination System monitoring point. Therefore, we do not require you to include headwater streams that emanate from the permit area as ephemeral streams when you determine the monitoring-point density under paragraph (b).

Some commenters suggested that a federally-mandated minimum monitoring-point density standard is unnecessary and that the regulatory authority should have flexibility to establish the minimum point density based on local conditions, type of mining, type of sediment control measures, and other factors. The commenters appear to take issue with the requirement in paragraph (b) that there be a minimum of one monitoring point per watershed discharge point. Since the purpose of the surface water runoff control plan is to prevent offsite damage, the requirement for one monitoring point per discharge is reasonable as the data will validate that the surface water runoff control plan is working and that it is preventing mining-related offsite flooding, stream scouring and damage to private property. To specifically address the requirements of paragraph (a), monitoring points should be located at the places where streams flow from the permit area, and would, in most cases, coincide with the locations of baseline surface water monitoring points.

Citing the above reasons for a federally mandated minimum sampling density, another commenter suggested that the current criteria for sampling density are sufficient for most permits and that the changes in the proposed rule should be limited to applicable areas based upon either geographical or slope based considerations. We are not altering the final rule as a result of this comment. SMCRA regulations currently contain no minimum sampling density criteria. Regardless of geographic location or topography, changes to ground cover and precipitation infiltration characteristics occur and often result in increased stormwater runoff from a site in comparison to conditions prior to disturbance. The intent of stormwater runoff monitoring is to prevent offsite flooding attributable to mining activities. One monitoring point at each point of discharge of a perennial or intermittent stream leaving the permit area is the minimum that could be effective.

A commenter suggested that the phrase ''watershed discharge point'' as used in paragraph (b) of the proposed rule, is not clear with respect to the corresponding drainage area associated with that point. Similarly, another commenter noted that we did not define the term ''watershed discharge point'' and that a common understanding of the term is not available. To clarify, a watershed discharge point is a selected point of interest within a stream channel, such as a culvert location or a stream channel at a permit boundary. The associated watershed is the land area that drains to that watershed discharge point. These terms are commonly accepted in hydrology and engineering disciplines.

Another commenter suggested that it is not necessary for us to require post-mining monitoring and inspection of each watershed to evaluate the quantity of flow after mining because the regulatory authority will be making monthly inspections and discharge issues should be identified at that time. We have not changed the final rule as a result of this comment. Monthly inspections performed by the regulatory authority are unlikely to coincide with storm events and do not include measurement of peak stormwater discharges associated with these events. Therefore, results of scheduled inspections that occur after a storm event cannot be used to determine if flooding resulted from mining activities or if it would have occurred even in the absence of mining.

Another commenter suggested that pursuant to the Clean Water Act stormwater program, stormwater at mine sites is already carefully controlled by multiple best management practices, technology requirements, erosion and sediment control practices, and buffer zones. The commenter alleged that the requirement for a surface-water runoff monitoring and inspection program conflicts with, and is duplicative of Clean Water Act requirements. We disagree and are not making any changes to the final rule in response to this comment because, despite the cited stormwater control measures, stormwater-related offsite damage frequently occurs. In addition, the cited measures do not specifically include monitoring of stormwater discharges at permit boundaries. Therefore, the monitoring and inspection program required in final paragraph (b) supplements, rather than conflicts with existing requirements.

In the final rule we are dividing proposed paragraph (c) into paragraphs (c) and (d). Final paragraph (c) now contains the requirement for the surface-water runoff control plan to include ''[d]escriptions, maps, and cross-sections of runoff-control structures.'' After reviewing the comments we have decided to add a definition to address confusion about the scope of the term ''runoff-control structures'' which we use both here and in § 816.34(d)(1), which relates to protecting the hydrologic balance. The definition makes clear that the term ''runoff-control structures'' includes the many different types of hydraulic structures that play roles in controlling runoff of surface water on a mine site. All conveyance channels, including drainage benches, diversion ditches, and groin ditches, control where surface runoff flows, and these structures

control the rate of runoff by their channel slope and resistance to flow, the latter of which is dependent on channel surface roughness. Siltation structures such as sedimentation ponds or ditches control the rate of discharge by storing water entering the structures and releasing it at a slower rate, controlled by the outlet structure. All of these structures work as a system, controlling flow of surface water on and across a mine site, and the rate at which it is discharged outside the permit area. Our definition recognizes that these structures are interdependent and that they function as a system to control surface water runoff.

Final paragraph (d) now contains the requirement for the surface-water runoff control plan to include an ''explanation of how diversions will be constructed in compliance with § 816.43''. In proposed paragraph (c), this provision applied not only to diversions but also to ''other channels to collect and convey surface water runoff'' even though § 816.43 applies only to diversions. We have removed this erroneous reference to ''other channels to collect and convey surface water runoff'' from the final rule.

Section 780.31: What information must I provide concerning the protection of publicly owned parks and historic places?

We are finalizing section 780.31 as proposed. We received no comments on this section.

Section 780.33: What information must I provide concerning the relocation or use of public roads?

We are finalizing § 780.33 as proposed. We received no comments on this section.

Section 780.35: What information must I provide concerning the minimization and disposal of excess spoil?

As discussed in the preamble to the proposed rule, § 780.35 identifies the required information for minimization and disposal of excess spoil.[529] In response to proposed § 780.35, one commenter recommended that we restrict proposed rule changes on the minimization and disposal of excess spoil to where they are appropriate based on geography. According to the commenter, this restriction is warranted because of the proposed rule's reliance on data from central Appalachia. We disagree and have not revised the final rule in response to this comment because final rule § 780.35 applies to any site, regardless of geography, where excess spoil is, or would be, generated. After evaluating the other comments that we received, we are adopting the section as proposed, with the following exceptions and responses to comments.

Final Paragraph (b): Demonstration of Minimization of Excess Spoil

One commenter expressed concern that the definition of excess spoil could be interpreted to require spoil from an initial cut to be stored and hauled a significant distance to the final cut, as opposed to allowing the initial cut spoil to be blended into the surrounding area. The commenter notes that it is common practice in the Midwest to blend the initial cut spoil into the final approximate original contour configuration and leave a final cut impoundment. The commenter opined that a change from this practice would be extremely costly. The commenter was concerned that this paragraph in conjunction with the definition of ''excess spoil'' in § 701.5, may result in material blended into the surrounding area being interpreted as ''excess spoil'' and therefore creation of an end cut impoundment would be prohibited. We agree with the commenter's concern, however, as discussed in the preamble to the definition of ''excess spoil,'' we have clarified that material used to blend the final configuration of the mined-out area with the surrounding terrain in non-steep slope areas in accordance with §§ 816.102(b)(3) and 817.102(b)(3) is not considered excess spoil. Thus, final cut impoundments are still allowable in the situation described by the commenter as long as all other requirements of the regulations are satisfied.

In paragraph (b)(1) of the final rule we are including a requirement for submission of a demonstration, with supporting calculations and other documentation, that the operation has been designed to minimize, to the extent possible, the volume of excess spoil that the operation will generate. One commenter expressed concern that the requirement to demonstrate that the operation has been designed to minimize, to the extent possible, the volume of excess spoil that the operation will generate could be applied to temporary overburden stockpiles, such as those created by dozers, truck, loaders, shovels, or draglines, and which will be used for future reclamation. As discussed more fully in the preamble discussion of the definition of ''excess spoil'' in § 701.5, we added paragraph (5) to the definition of ''excess spoil'' to specifically exclude temporarily placed material from the definition. This modification will ensure that temporary overburden stockpiles are not subjected to this requirement.

In paragraph (b)(2)(iii), we proposed to limit postmining drainage structures, access roads, and berms on the perimeter of the backfilled area to a maximum width of 20 feet unless a need for greater width is demonstrated. In the proposed rule, we invited comment on whether the maximum width should be larger or smaller than 20 feet.[530] In response, a commenter suggested that the maximum width should be increased to 50–70 feet and that this increase would not place additional burden upon industry or the regulatory authority. Similarly, other commenters expressed concern that this limitation could result in unsafe conditions because, in their view, greater widths for roadways, along with safety berms and drainage structures, are necessary for safe operation during mining. In addition, some commenters questioned whether this limitation would be in conflict with typical state and federal safety regulations that are derived from typical mining and haulage equipment dimensions. We are adopting this paragraph as proposed. It is true that the widths of these structures may need to be greater during active mining to ensure safe operations and compliance with state or federal safety regulations. However, it is also true that adoption of this limitation should not impact safety because it is only applicable to the drainage structures, access roads, and berms on the perimeter of the backfilled area that remain after completion of mining and final grading. After final grading is complete, access to the perimeter of the backfilled area by mining or haulage equipment is not normally required. Moreover, in final paragraph (b)(2)(iii) we have now provided a narrow exception in cases where the permittee demonstrates an essential need to exceed the maximum width of 20 feet. We expect that the number of such cases will be very small because the 20 foot width is sufficient in most circumstances. Examples of an ''essential need'' would include a situation where there is no other alternative that will allow access to an area with a postmining land use that requires the use of large off-road or commercial vehicles.

Paragraph (b)(4) prohibits the creation of a permanent impoundment under § 816.49(b) or the placement of coal combustion residue or noncoal materials in the mine excavation if doing so would result in the creation of excess spoil. We received many

[529] 80 FR 44436, 44519–22 (Jul. 27, 2015).

[530] 80 FR 44436, 44520–44521 (Jul. 27, 2015).

comments about the correlation between the allowance of final cut impoundments and this section. A final cut impoundment results when no material is available to fill the final cut in an area mine. In most cases, material from the initial cut will have been used to blend the backfilled area into the surrounding topography. Although the term ''final cut impoundment'' is commonly used by industry and regulatory authorities, we have replaced it with the term ''permanent impoundment'' in the final rule to be consistent with section 515(b)(8) of SMCRA.[531] Some commenters opined that allowing these final cut impoundments to remain as permanent impoundments is contrary to the SMCRA requirement to achieve approximate original contour after mining is completed. We disagree. Permanent impoundments, of which final cut impoundments are one example, are specifically allowed in the definition of approximate original contour in paragraph (2) of section 701 of SMCRA.[532] However, the permittee is required to achieve approximate original contour on the remainder of the backfilled mined area.

A commenter alleged that we are attempting to limit the size of what the commenter characterized as ''final cut impoundments'' to no more than what is needed to support the approved postmining land use and that there is no legal basis for that limit. Although the comment was not clear, because the commenter referred to impoundments in connection with approved postmining land uses, we concluded that the commenter was referencing permanent impoundments. We disagree with commenter's assertion. Section 515(b)(8) of SMCRA [533] specifically links the size of an impoundment with its intended purpose. The allowable size of any permanent impoundment is based on its intended use as part of the postmining land use. However, there is nothing in the language of paragraph (b)(4) that explicitly or implicitly creates an additional limitation on permanent impoundment size.

Final Paragraph (c): Preferential Use of Preexisting Benches for Excess Spoil Disposal

After consideration of the comments related to performance standards about disposing of excess spoil on preexisting benches, we have added paragraph (c) to the final rule. This paragraph adds a permitting requirement to match the performance standards of final rule § 816.74. Paragraph (c) aids in the minimization of placement of excess spoil, to the extent possible, on undisturbed land. The previous regulations at § 816.74 allow, but do not require, placement of excess spoil on preexisting benches. Paragraph (c) requires that excess spoil placement on preexisting benches be maximized before any excess spoil fills can be constructed. Therefore, if surface mining is proposed in an area where mine benches from pre-law contour mining remain in the vicinity of the proposed permit, you must demonstrate how you will maximize placement of excess spoil on preexisting benches before you place any on undisturbed land.

Final Paragraph (e): Requirements Related to Perennial and Intermittent Streams

One commenter suggested we replace the term ''bankfull elevation'' with the term ''ordinary high water mark'' because the latter term is the one more commonly used and more easily measured. We agree and have revised paragraph (e) of the final rule so that the term ''ordinary high-water mark'' is used to represent the location on the cross section of a stream channel from which the 100-foot streamside vegetative corridor, which is now required by § 780.28(d), is measured. This change is consistent with the addition of the term ''ordinary high water mark'' throughout the final rule, including the final definition of ''ordinary high water mark'' in § 701.5.

Final Paragraph (f): Location and Profile

Proposed paragraph (e)(2), now final paragraph (f)(2), requires that fills be located on the most moderately sloping and naturally stable areas available. One commenter expressed concern that this requirement would encourage more fills in intermittent or perennial, rather than ephemeral streams. Paragraph (f)(2), however, should not be read in isolation and in fact requires the regulatory authority to determine the areas that are available for excess spoil fill construction after considering requirements of the Act,[534] and this chapter. These other requirements would include the stability requirements of paragraph (b) of § 816.71, relating to the disposition of excess spoil; the protections for perennial and intermittent streams as set out in § 780.28; and the requirement in § 816.71(a)(4) to minimize excess spoil and its adverse impacts on fish, wildlife, and other environmental values. Paragraph (b)(3) of this section, moreover, allows placement of spoil in the mined area to heights in excess of the premining elevation, whereas §§ 780.27(b)(2)(v) and 780.28(c)(2)(v) allow alteration of the premining drainage pattern in the mined area to accommodate construction of excess spoil fills. The intent of these provisions taken together is to minimize construction of excess spoil fills on undisturbed land, by moving spoil upslope, and to the extent possible, into the mined area, thereby minimizing the potential for spoil placement to impact streams, particularly perennial and intermittent streams.

The same commenter also alleged that this requirement would, in many cases, necessitate using the stream channel as a sediment conveyance. We disagree. Movement of excess spoil upslope, and into the mined area in conjunction with the requirement of § 816.57(h)(ii) to place siltation structures as near as possible to the toes of fills, will virtually eliminate the possibility of streams being used as sediment conveyances in connection with spoil placement.

Final Paragraph (h): Geotechnical Investigation

Proposed paragraph (g)(6), now paragraph (h)(6), requires the performance of stability analyses that addresses static, seismic, and post-earthquake (liquefaction) conditions because those conditions are part of a comprehensive stability analysis. One commenter stated that post-earthquake (liquefaction) conditions should not be a required part of a stability analysis because liquefaction is not a concern in coarse-sized mine spoil composed of a large fraction of rock material. Moreover, a liquefaction analysis would be a costly exercise with no apparent benefit.

We agree that the potential for liquefaction is primarily a concern in loose, saturated, relatively fine-grained soil materials, such as materials that are impounded in slurry impoundments and incorporated into upstream constructed impoundments. Excess spoil consists of soil and rock mixtures placed and compacted in an unsaturated state. Materials of this type, and placed in this manner, are not normally susceptible to liquefaction. Therefore, we have removed the requirement that the stability analysis include post-earthquake (liquefaction) conditions from the final rule. Excess spoil fills remain subject to all other slope stability requirements in final rule §§ 816.71 and 817.71, relating to disposal of excess spoil.

[531] 30 U.S.C. 1265(b)(8).

[532] 30 U.S.C. 1291(2).

[533] 30 U.S.C. 1265(b)(8).

[534] 30 U.S.C. 1265(b)(22)(E).

Section 780.37: What information must I provide concerning access and haul roads?

Final Paragraph (a): Design and Other Application Requirements

Paragraph (a)(4)(i) of final rule § 780.37 requires that the permit application identify each road that you propose to locate in or within 100 feet, measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark, of a perennial or intermittent stream. The final rule differs from the proposed rule in that it specifies that the measurement must begin at the ordinary high water mark of the stream, rather than at the bankfull elevation of the stream. A commenter on another rule with the 100-foot provision recommended this change because it is both more commonly used and readily determined than the bankfull elevation. We have made this change universally throughout our regulations.

Final paragraph (a)(5) requires that the permit application explain why the roads, fords, and stream crossings identified in paragraph (a)(4) are necessary and how they comply with the applicable requirements of § 780.28 and § 816.150(b)(5) and (d) and § 816.151(d)(2), (e)(5), and (e)(6). The final rule differs from the proposed and previous rules in that it adds fords, which are subject to the requirements of § 780.28 and thus should be included in the explanation required by paragraph (a)(5). The final rule also replaces the reference to section 515(b)(18) of SMCRA [535] in the proposed and previous rules with a reference to the regulations implementing that provision of SMCRA. This revision is nonsubstantive in nature because an applicant must comply with the referenced rules anyway, but adding the citations makes the rule more user-friendly, internally consistent, and easier to understand.

Final Paragraph (c): Standard Design and Plans

In response to proposed paragraph (c) a commenter pointed out that the cross reference to § 816.151(b) regarding factors of safety was in error and that the correct cross reference should be paragraph (c) of § 816.151. Likewise, the commenter noted the identical problem existed in proposed § 784.37(c) which similarly cited proposed § 817.151(b) instead of paragraph (c). We have made the necessary corrections to the final rule at both §§ 780.37(c) and 784.37(c).

[535] 30 U.S.C. 1265(b)(18).

Section 780.38: What information must I provide concerning support facilities?

We are finalizing § 780.38 as proposed. We received no comments on this section.

H. Part 783—Underground Mining Permit Applications—Minimum Requirements for Information on Environmental Resources and Conditions

Section 783.1: What does this part do?

With the exception of altering the title of this section for clarity, we are finalizing § 783.1 as proposed. We received no comments on this section.

Section 783.2: What is the objective of this part?

We are finalizing § 783.2 as proposed. We received no comments on this section.

Section 783.4: What responsibilities do I and government agencies have under this part?

We are finalizing section 783.4 as proposed. We received no comments on this section.

Section 783.10: Information Collection

Section 783.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 783.

Previous § 783.11: General Requirements

Like proposed § 779.11, the surface mining counterpart to § 783.11, we have removed and reserved previous § 783.11 for the reasons discussed in the preamble to the proposed rule.[536]

Previous § 783.12: General Environmental Resources Information

Like proposed § 779.12, the surface mining counterpart to § 783.12, we have removed and reserved previous § 783.12 for the reasons discussed in the preamble to the proposed rule.[537]

Section 783.17: What information on cultural, historic, and archeological resources must I include in my permit application?

We are finalizing § 783.17 as proposed. We received no comments on this section.

[536] 80 FR 44436, 44482 (Jul. 27, 2015).

[537] 80 FR 44436, 44482 (Jul. 27, 2015).

Section 783.18: What information on climate must I include in my permit application?

We are finalizing § 783.17 as proposed. We received no comments on this section.

Section 783.19: What information on vegetation must I include in my permit application?

We have modified this section; however, these modifications are discussed in final rule § 779.19, which is the surface mining counterpart to § 783.19.

Section 783.20: What information on fish and wildlife resources must I include in my permit application?

We have modified this section; however, these modifications are discussed in final rule § 779.20, which is the surface mining counterpart to § 783.20.

Section 783.21: What information on soils must I include in my permit application?

Similar to its surface mining counterpart found at § 779.21, § 783.21 identifies the information on soils that must be included in a permit application. However, § 783.21 is exclusive to underground mining permits.

Several commenters urged us to increase prime farmland reconnaissance surveys to include areas beyond the permit area and to extend these surveys into the adjacent area for areas that will be undermined. Moreover, some commenters recommended that all applicable soil survey information, including information required for the permit area, be included if prime farmland is identified in the adjacent area. In addition, some commenters recommended that all standards required by § 785.17, related to prime farmland, as well as § 823.15, related to revegetation and restoration of soil productivity, be fully applicable if prime farmlands are damaged by subsidence in the adjacent area. We are not accepting the suggestions in these comments because impacts caused by surface mining on prime farmland soils differ from impacts caused by mine subsidence. In surface mining, soil layers must be removed prior to mining. Those soil layers are later replaced as part of reclamation as further explained in final rule § 816.22(e). This is fundamentally different from what occurs from the settling of the soil layers caused by mine subsidence. It would not be appropriate to salvage soil layers prior to subsidence. In fact, doing so would have far greater impact on the

soil resource than would normally be caused by mine subsidence. Moreover, damage caused by subsidence can be frequently mitigated without the need for any soil salvaging. This is not true when compared to impacts caused by surface mining or impacts related to mining activities on the permit area of underground mines that would result in the destruction of the soil resource should it not be appropriately salvaged as required by § 817.22. Therefore, the regulations governing the soils above areas that are undermined are appropriately different. The determination that different standards apply to soils for undermined areas is consistent with SMCRA, which recognizes the distinct difference between surface coal mining and underground coal mining.[538] The requirements at §§ 784.30 and 817.121 satisfactorily address the restoration of damages from underground mining caused to prime farmland as well as damage to any renewable resource lands. Moreover, any comments related to suggestions to amend the prime farmland regulations at §§ 785.17 or 823.15 are not germane to this rulemaking and would be better suited to consideration under a potential future rulemaking on that topic.

Section 783.22: What information on land use and productivity must I include in my permit application?

We have modified this section; however, these modifications are discussed in final rule § 779.22, which is the surface mining counterpart to § 783.22.

Section 783.24: What maps, plans, and cross-sections must I submit with my permit application?

Similar to its surface mining counterpart found at § 779.24, § 783.24 identifies what maps, plans, and cross-sections must be included in a permit application. However, § 783.24 is exclusive to underground mining permits.

As proposed, § 783.24(a)(23) would have required that the application include maps, plans, or cross-sections showing the location and extent of known workings of active, inactive, or abandoned underground mines located either within the proposed permit area or within a 2,000-foot radius in any direction of the proposed underground workings. One commenter stated this requirement conflicts with the ''reasonable possibility of adverse impacts in the adjacent area'' included in the definition of adjacent area within § 701.5. It is also inconsistent with a similar requirement in § 779.24(a)(23) which does not have the 2,000-foot stipulation. We agree with the commenter and have removed the 2,000-foot radius requirement from the final rule.

One commenter asserted that the water well data required in proposed § 783.24(a) is redundant, will not serve any substantial purpose, and will be time consuming and costly to obtain. It was suggested that the regulatory authority be allowed flexibility in determining what type and the volume of well data is necessary to be submitted in the permit application and that some of the data be allowed to be maintained at the mine site for review. While we recognize that the collection of groundwater data will have associated costs, the data are necessary to determine the hydrogeology of the proposed mine site and adjacent areas so the applicant may properly evaluate and prepare a comprehensive determination of the probable hydrologic consequences of the proposed operation. The data are also necessary to support development of the hydrologic reclamation plan required by final rule § 780.22 and the cumulative hydrologic impact assessment required by final rule § 780.21. Therefore, we have not modified the final rule in response to this comment.

Previous § 783.25: Cross Sections, Maps, and Plans

Like proposed § 779.25, the surface mining counterpart to § 783.25, we have removed and reserved previous § 783.25 for the reasons discussed in the preamble to the proposed rule.[539]

Section 783.26: May I submit permit application information in increments as mining progresses?

We received several comments urging us to allow applicants to submit permit application information for the adjacent area in stages, especially for underground mining operations. Commenters alleged that requiring information for the entire adjacent area would be exorbitantly expensive and result in collection of data that either would be outdated by the time that underground mining activities could affect areas located distant from the area in which mining initially begins or would be useless because of changes in mining plans. One commenter also urged us to allow incremental monitoring of the adjacent area. According to the commenter, the applicant would have to obtain property for well installations in areas that would not normally require property control, which would be incredibly costly and difficult to obtain.

After considering these comments, we added two new §§ 783.26 and 784.40, to the final rule to allow incremental submission of permit application information for underground mines and incremental initiation of monitoring of groundwater, surface water, and the biological condition of perennial and intermittent streams in the adjacent area of underground mines. We decided not to allow incremental submission of permit application information and incremental initiation of monitoring for surface mines because surface mining involves much more extensive surface disturbance than underground mining and because most surface mines have a much shorter life than underground mines.

The chief drawback of allowing incremental submission of permit application information is that there may be insufficient information for the regulatory authority to prepare the cumulative hydrologic impact assessment or to make the findings required for approval of a permit application. Therefore, final rule § 783.26(b) specifies that the regulatory authority has complete discretion in deciding whether to grant a request for incremental submission of permit application information. The final rule also establishes minimum requirements and criteria for both requests for incremental submission and processing of those requests.

Specifically, paragraph (b)(1) of the final rule provides that each increment must be clearly defined. It also requires that each increment include at least five years of anticipated mining. This time period is equivalent to the standard term of a permit under final rule § 773.19(c) and section 506(b) of SMCRA.[540]

Paragraph (b)(2) requires that the schedule include a map showing the limits of underground mining activity under each increment. It also requires establishment of those limits in a manner that will prevent any impact on the succeeding increment before the regulatory authority approves mining within that increment.

Paragraph (b)(3) requires submission of data for each successive increment at least one year in advance of any anticipated impacts of underground mining upon that increment. This time period is consistent with final rule § 784.19(b) and (c), which require a minimum of 12 months of baseline

[538] 30 U.S.C. 1266(a).

[539] 80 FR 44436, 44482 and 44523 (Jul. 27, 2015).

[540] 30 U.S.C. 1256(b).

monitoring data in each permit application.

Paragraph (b)(4)(i) provides that the regulatory authority must condition the permit to require that the permittee reevaluate the adequacy of the probable hydrologic consequences determination under § 784.20 and the hydrologic reclamation plan under § 784.22 as part of each submission. The absence of baseline permit application information for all increments at the time of permit application approval means that the permittee must use the baseline data collected for each successive increment to reevaluate the accuracy of the probable hydrologic consequences determination and the adequacy of the hydrologic reclamation plan before the mining operation may affect the new increment.

Similarly, paragraph (b)(4)(ii) provides that the regulatory authority must condition the permit to prohibit the conduct of any underground mining activity that might impact an increment before the regulatory authority reviews the information submitted for that increment, updates the cumulative hydrologic impact assessment prepared under § 784.21 to incorporate that information, and determines that the findings made at the time of approval of the permit application under § 773.15 remain accurate. If the regulatory authority cannot make this determination, it must require that the permittee either cease mining or revise the permit in a manner that will correct that problem and enable the regulatory authority to make the necessary findings.

Final rule § 784.40 provides that the requirements, procedures, and criteria of 30 CFR 783.26 apply with equal force to the permit application information requirements of part 784. In addition, in response to the comment discussed above, § 784.40(c) specifies that the plans submitted under § 784.23 for monitoring of groundwater, surface water, and the biological condition of perennial and intermittent streams may be structured and implemented in an incremental manner consistent with the schedule approved under paragraph (b).

I. Part 784—Underground Mining Permit Applications—Minimum Requirements for Operation and Reclamation Plans

Section 784.1: What does this part do?

With the exception of altering the title of this section for clarity, we are finalizing § 784.1 as proposed. We received no comments on this section.

Section 784.2: What is the objective of this part?

We are finalizing § 784.2 as proposed. We received no comments on this section.

Section 784.4: What responsibilities do I and government agencies have under this part?

We are finalizing § 784.4 as proposed. We received no comments on this section.

Section 784.10: Information Collection

Section 784.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 784.

Section 784.11: What must I include in the general description of my proposed operations?

We are finalizing § 784.11 as proposed. We received no comments on this section.

Section 784.12: What must the reclamation plan include?

Final Paragraph (b): Reclamation Timetable

We received comments urging us to extend the requirements for reclamation plans to areas adjacent to the permit area including areas located above underground mine works. The commenters stated that the restoration plan and reclamation timetable should address restoration of the form of all perennial and intermittent stream segments through or beneath which mining will occur. These commenters suggested that under paragraph (b) we should require detailed timetables for the restoration of the form and function of streams that are damaged by subsidence and that reclamation plans should include lands disturbed within the area adjacent to the permit area. We are not adopting this suggestion because impacts caused by subsidence in the areas adjacent to underground mines are appropriately addressed in other sections of this regulation. As we discuss in § 783.21 and elsewhere within this preamble, under section 516(a) of SMCRA;[541] we are authorized to adopt regulations that consider the distinct differences between surface and underground mining. Specifically, § 784.30 identifies features, including certain structures and renewable resource lands that may be materially damaged by subsidence. Furthermore, in § 817.121, we require the development of plans to account for the correction of damages caused by subsidence to these features. In particular, § 817.121 requires repair of damages to wetlands, streams or other water bodies caused by subsidence.

Section 784.13: What additional maps and plans must I include in the reclamation plan?

We have modified this section; however, these modifications are discussed in final rule § 780.13, which is the surface mining counterpart to § 784.13.

Section 784.14: What requirements apply to the use of existing structures?

We have modified this section; however, these modifications are discussed in final rule § 780.14, which is the surface mining counterpart to § 784.14.

Section 784.16: What must I include in the fish and wildlife protection and enhancement plan?

Final Paragraph (d): Enhancement Measures

One commenter suggested that we clarify that the enhancement measures enumerated in proposed rule (d)(2), final rule paragraph (d)(3), are only necessary where there are actual long-term adverse impacts as opposed to only projected impacts before mining operations have begun. This commenter opined that the need for ''permanent'' enhancement measures cannot be established prior to beginning operations and until the potential resultant subsidence has actually occurred. The commenter misinterprets our rule. Paragraph (d) applies only to activities conducted on the surface of the land. Other commenters asserted that we made no distinction between surface and underground mines and that it is unclear if the required enhancement measures are applicable to the permit area only or to the permit area and the area overlying the underground workings. To clarify this point, we revised paragraph (d)(3)(i) to state, ''if you propose to conduct activities on the land surface that would result in'' to eliminate any confusion regarding underground mining. Subsidence impacts on streams are regulated under § 784.30 and 817.121. Activities subject to paragraph (d)(3) include, but are not limited to, the construction of refuse piles or slurry impoundments in intermittent or perennial streams.

[541] 30 U.S.C. 1266(a).

Previous § 784.17: Protection of Publicly Owned Parks and Historic Places

We have removed previous § 784.17 to final rule § 784.31. Section 784.17 is now reserved.

Previous § 784.18: Reclamation Plan: General Requirements

We have removed and reserved previous § 784.18. Like previous § 780.18, the surface mining counterpart to previous § 784.18, and as discussed in the preamble to the proposed rule we have moved and revised many aspects of previous § 784.18 to final rule § 780.12.[542]

Section 784.19: What baseline information on hydrology, geology, and aquatic biology must I provide?

In addition to the comments we received about baseline information for surface mining permits and comments that addressed both surface mining and underground mining permit applications baseline information, we received comments exclusive to the impact of the proposed rule upon underground mining. While we discussed the baseline information relative to surface mining in § 780.19, we are addressing the comments that are exclusive to underground mining in this section.

A commenter requested stream sampling to be restricted to streams over the shadow areas of underground mines that use planned subsidence (*i.e.,* longwall or high extraction room and pillar mining method). We have not made any changes in response to this comment. Although the typical room and pillar mining method leaves pillars in place to support the overlying overburden, all underground operations create mine voids that have the potential to result in a groundwater sink forming over large areas. Depending on the magnitude of the groundwater sink, impacts can range from none to full scale aquifer de-watering over large areas, especially if pillar or retreat mining occurs. The presence of fine grained lithology (silt and claystone), typically found in the overburden above coal seams, can mitigate the impacts experienced at the surface, but these geologic formations do not prevent all hydrologic impacts, especially in stream valleys with deep stress relief fractures, which can extend to 150 feet deep.[543] Any underground mine operating in overburden less than 150 feet deep or that experiences pillar failure can intercept those fractures and negatively impact the flow regime in overlying streams.

Another commenter noted a misplaced requirement in proposed paragraph (b)(6)(i)(C) that required monitoring points to be located in a representative number of ephemeral streams within the proposed permit and adjacent areas. Because that section of the regulations relates to groundwater information, final paragraph (b)(6)(i)(C) now specifies that a permit applicant locate monitoring points within the proposed permit area and the area overlying the proposed underground workings.

Final Paragraph (c): Surface-Water Information

One commenter alleged that no evidence of significant damage to streams resulting from longwall mining activity existed and that we provided no rationale for requiring operators to collect a substantial volume of environmental and engineering data that would support requiring stream assessments as proposed in paragraph (c)(6). Further, commenters claimed that the proposed assessments provided no specific purpose with respect to satisfying permit and bonding obligations. The commenters also indicated that the data collection would be costly and time consuming, and would provide neither the industry nor the regulatory agency with the information necessary to demonstrate whether or not streams have actually been damaged. We disagree with these comments. Numerous examples exist of longwall damage to streams both in United States and abroad, mostly in the form of dewatered stream channels.[544] For this reason, the data requests, engineering analysis, and hydrologic assessments are necessary to understand the geologic and hydrologic environment and to enable accurate hydrologic consequences and impact assessments.

Final Paragraph (c)(3): Surface-Water Quantity Descriptions

We modified the final rule at paragraph (c)(3) to remove the reference to ''ephemeral streams'' because this section applies only to perennial and intermittent streams. In response to proposed paragraph (c)(3)(D) about seepage-run sampling, one commenter stated that it is not reasonable to require seepage run analyses on ephemeral streams. We agree. Our removal of the reference to ''ephemeral streams'' addresses this concern. Other commenters expressed concern about the requirement for seepage analysis when longwall mining methods are employed beneath a perennial or intermittent stream. Specifically, one commenter favored the proposed language and suggested a seepage analysis for all coal mining operations adjacent to streams to help determine the interconnections between the surface and ground water systems and the proposed mine site. In a similar comment, another commenter suggested that seepage run analysis include all mining scenarios, not just longwall mining. We decline to add this language for all mining operations but note that sufficient flexibility exists for a regulatory authority to require such additional information if deemed necessary. A commenter commended us for requiring seepage run analysis, but recommended strengthening the language to include analysis of the entire length of an intermittent or perennial stream within and outside the permit area and performed at both low and high flow conditions to characterize the seepage under a variety of flow conditions. We have accepted this comment and have modified the rule language at § 784.19(c)(3)(D) to clarify where and when the seepage analysis is to occur. Another commenter requested that we clarify where, when, and how seepage analysis should be conducted. We decline to prescribe additional requirements as to where, when, and how the analysis should be done other than as described in paragraphs (c)(3), which requires all measurements to be made using generally-accepted professional techniques approved by the regulatory authority.

One commenter indicated the seepage run determinations do not take into account evaporation or uptake of water by plants and any analysis would necessarily be greatly influenced by temporal and seasonal weather events. The commenter opined that the proposed regulation would impose an onerous and costly sampling requirement that may not represent the actual reasons for changes in streamflow. We do not agree with the commenter because evapotranspiration is a minor component of the seepage analysis due to the location and depth of the water potentially moving toward

[542] 80 FR 44436, 44487–44493 (Jul. 27, 2015).

[543] Jay W. Hawkins et al., *Shallow Ground Water Flow in Unmined Regions of the Northern Appalachian Plateau: Part 1 and Part 2. Physical Characteristics.* 1996 Annual Meeting of the American Society for Surface Mining and Reclamation, Knoxville, TN (1996).

[544] *See, e.g.,* C.J. Booth, et al., *Hydrogeologic Impacts of Underground (Longwall) Mining in the Illinois Basin,* Proceedings: Third Workshop on Surface Subsidence Due to Underground Mining, Morgantown, W.Va., June 1–4, 1993, pp. 222–227; B.M. Stout, *Impact of longwall mining on headwater streams in northern West Virginia,* West Virginia Research Institute. Morgantown, W. Va. pg. 35 (2002), see also Wilkowske, 2007.

the mining. Stated another way, the water under analysis has already undergone evapotranspiration losses on its journey into the groundwater system. We also agree that groundwater is subject to seasonal and weather influences. However, the objective of the regulatory requirement for a seepage analysis is to document the interaction of proposed, and existing, mine pool(s) with the surface and groundwater systems adjacent and overlying the mined area. The regulatory authority has the discretion to decide the level of detail provided in the seepage analysis that accomplishes the objective.

One commenter opined that the problems associated with subsidence-induced stream loss were limited to the Appalachian region and should not be required throughout the country. They further suggested that each regulatory authority should have the latitude to decide the need for such analysis. We are not implementing these suggestions for several reasons. First, stream loss over longwall mined areas is not specific to the Appalachian Region. Stream de-watering has occurred in the Illinois coal basin, in the western United States, and abroad. Second, longwall mining causes subsidence in the overburden and induces fracturing in the overburden which can extend upwards from 24 to 54 times the mined height with a surface fracture zone extending from the land surface down to 50 feet.[545] Furthermore, these fractures can connect with natural stress relief fracturing in the valley floor which ultimately can produce impacts to the overlying aquifer units and surface water system. These impacts to overlying aquifers and surface water can cause stream de-watering as the hydrologic balance re-equilibrates to the new hydrologic stress imposed by the subsidence created by longwall panels. For these reasons, an assessment of the potential for underground mines to cause stream loss in overlying streams should be performed in all situations, regardless of region. Such an analysis is required to definitively state in the probable hydrologic consequences and cumulative hydrologic impact assessment and associated written findings that material damage to the hydrologic balance will not occur as a result of the proposed operation.

Final Paragraph (c)(6): Stream Assessments

Some commenters asserted that the information contained in proposed § 780.19(c)(6)(ii) and (iii) for a description of the riparian zone and for the biological condition of each stream segment is unnecessary in areas located above underground mine works. As proposed, these specific sections were only applicable to surface mining operations, while the counterpart to these provisions for underground mines was proposed within proposed § 784.19(c)(6)(ii) and (iii). Upon reconsideration, we have revised § 784.19(c)(6)(i) and (ii) in our final rule for underground mines to make it identical to § 780.19(c)(6)(ii) and (iii). For both sections, the data requirements are identical and pertain to permitted and adjacent area (for underground mines, the area overlying the underground works). In final rule paragraphs (c)(6)(ii) and (iii) of §§ 780.19 and 784.19, we removed the phrase ''riparian zone'' and replaced it with ''vegetation along the banks of each stream.'' We made this slight change to clarify the intent of the rule language and avoid confusion related to how ''riparian area'' would be interpreted.

Assessing the biological condition of each ephemeral, intermittent, or perennial stream that could be impacted by subsidence is critical with respect to determining potential impacts to aquatic communities and the possibility for material damage to the hydrologic balance outside the permit area. Therefore, we have retained requirements within the final rule at paragraphs (c)(6)(vii) and (viii), which requires biological condition assessments for underground mines. In § 784.19(c)(6)(v), we also added a requirement to identify the presence of and to assess the quality of wetlands adjoining streams on the permitted and adjacent areas. These two additions are in response to comments from other federal agencies requesting such and will provide further clarification about the level of detail needed to document baseline conditions. The additions will also ensure restoration of any streamside vegetative corridor and wetlands impacted by mining in or near streams. These assessment requirements are also consistent with 515(b)(19) of SMCRA [546] which requires establishment of ''a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area.''

Final Paragraph (g): Exception for Operations That Avoid Streams

One commenter requested that we clarify the term ''modify'' in proposed paragraph (h)(3), now final paragraph (g)(3). That provision allows a waiver of the biological information requirements if it can be demonstrated to the regulatory authority's satisfaction that the proposed operation will not ''modify the baseflow of any perennial or intermittent stream.'' The common definition of ''modify'' as found in any dictionary is sufficient and the regulatory authority is in the best position to determine if the baseflow of a perennial or intermittent stream has been modified. We expect that the regulatory authority will broadly interpret the word ''modify'' in the context of baseflow changes but only to include changes likely to result from mining. Prudence dictates that the regulatory authority would require the operator to have obtained the necessary baseline data to support or defend potential impacts that may result from mining before granting this waiver. We also expect that underground mines that intend to undermine a stream will be required to conduct the baseline stream assessment regardless of any potential baseflow modification consistent with paragraphs (c)(1) and (c)(3)(i) of § 784.19.

Section 784.20: How must I prepare the determination of the probable hydrologic consequences of my proposed operation (PHC determination)?

As discussed in the preamble to the proposed rule, § 784.20 explains the requirements of the determination of the probable hydrologic consequences of a proposed operation.[547] After evaluating the comments that we received exclusive to the impacts of underground mining, we are not making changes to the final rule.

Final Paragraph (a): Content of PHC Determination

Proposed § 784.20 is substantively identical to § 780.20, which pertains to surface mining, with the exception of paragraphs (a)(3), (a)(6), and (a)(7).

Some commenters suggested that we add specific language to § 784.20 to require that the probable hydrologic consequences determination contain a finding that the operation does not have the potential for causing subsidence-related dewatering that would lead to

[545] C.J. Coe & S.M. Stowe, *Evaluating the Impact of Longwall Mining on the Hydrologic Balance,* In: Proceedings, National Water Well Association Conference on the Impact of Mining on Ground Water, National Water Well Assoc. (1984).

[546] 30 U.S.C. 1265(b)(19).

[547] 80 FR 44436, 44526 (Jul. 27, 2015).

material damage to the hydrologic balance outside the permit area. Such a provision is not necessary. Our final rule at § 784.20(a)(6) requires the content of the probable hydrologic consequences to contain findings addressing the impact of subsidence from the proposed underground mining activities on perennial and intermittent streams. As stated at § 784.20(a), the probable hydrologic consequences determination must address the impacts of the proposed operation upon the quality and quantity of surface water and groundwater and upon the biology of intermittent and perennial streams under seasonal flow conditions for the proposed permit and the adjacent areas. The determination is based an analysis of baseline hydrologic, geologic, biological, and other information as required in final rule § 784.19. In addition, § 784.20(a)(1) requires a finding whether the operation may cause material damage to the hydrologic balance outside the permit area (*i.e.,* in the adjacent area, above the underground workings.) Thus, the probable hydrologic consequences determination includes an assessment of any potential for subsidence-related dewatering to cause material damage to the hydrologic balance outside the permit area. Any subsidence-induced dewatering impacts analyzed in the probable hydrologic consequences determination at § 784.20(a)(6) must also be addressed in the hydrologic reclamation plan established in § 784.22(a)(2).

Several commenters were concerned with the addition of § 784.20(a)(7). Paragraph (a)(7), requires that the probable hydrologic consequences determination include a finding on whether the proposed underground workings would flood after mine closure and, if so, a statement and explanation of the highest anticipated potentiometric surface of the mine pool after closure; whether, where, and when the mine pool is likely to result in a surface discharge; and the predicted quality of any discharge from the mine pool. The regulatory authority is to use this information, in combination with models and calculations of void space and adjacent mine barrier seepage, to predict the probability of a blowout, where and when blowouts might occur, and the likelihood that water discharged as a result of the blowout will require treatment to meet water quality standards or any applicable effluent limitations. Commenters stated that the prediction of mine pool hydrology and potential for discharges are speculative and challenging and would result in increased costs during preparation of the permit application. It was suggested that rather than requiring a determination, paragraph (a)(7) should require a discussion of the potential of the mine pool to discharge to the ground surface. Commenters also suggested that this analysis only be conducted as necessary on a case-by-case basis. We disagree, because before mining begins, it is important for the regulatory authority and applicant to understand what will happen at mine closure with the water quality and quantity of the mine pool. A primary environmental threat from an underground mine, other than subsidence, is the formation of a post-closure point source and non-point discharges, which often arise from water accumulating in the underground mind voids. These discharges may be acidic or alkaline in character, and contain unusually high metal concentrations or high total dissolved solids, resulting in elevated electrical conductivity in the receiving streams. The characteristic discharge can substantially degrade water quality and the biological condition of streams. The probable hydrologic consequences analysis is designed to address the anticipated effects of the planned mining operation and subsequent reclamation on the quality and quantity of surface water and groundwater systems within, and adjacent to, the proposed permit area, which should include water that accumulates in the mine pool. The analysis required by paragraph (a)(7) will, therefore provide the applicant with information regarding the likelihood that the proposed underground mining operation will create future noncompliant discharges of a perpetual nature that would require treatment. It will also allow the regulatory authority to prepare a better cumulative hydrologic impact assessment, which could lead to prevention measures or changes in the mining plan to avoid the creation a post-closure discharge that would cause material damage to the hydrologic balance outside the permit area in violation of section 510(b)(3) of SMCRA.[548]

One commenter also questioned the statutory support for paragraph (a)(7). Section 516(d) of SMCRA states that the permitting provisions of Title V of the Act are applicable to ''surface operations and surface impacts incident to an underground coal mine with such modifications to the permit application requirements, permit approval or denial procedures, and bond requirements as are necessary to accommodate the distinct difference between surface and underground coal mining.'' [549] This section establishes requirements for the probable hydrologic consequences determination, which is required by section 507(b)(11) of SMCRA.[550] The probable hydrologic consequences determination and the cumulative hydrologic impact assessment must address impacts of the proposed operation on surface and groundwater systems, both within and outside the proposed permit area. As discussed above, the information required by paragraph (a)(7) is necessary to assess the potential impacts of the underground mining operation on both surface water and groundwater. Thus, the information is within the scope of section 507(b)(11) of SMCRA.[551] In addition, because water accumulating in mine voids is a circumstance unique to underground mines, we are only requiring this information for proposed underground mining operations, which is consistent with section 516(d) of SMCRA,[552] which requires modification to the SMCRA section 507 permitting requirements as ''necessary to accommodate the distinct difference between surface and underground coal mining.'' [553]

Section 784.21: What requirements apply to preparation and review of the cumulative hydrologic impact assessment (CHIA)?

We have modified this section; however, these modifications are discussed in final rule § 780.21, which is the surface mining counterpart to § 784.21.

Section 784.22: What information must I include in the hydrologic reclamation plan and what information must I provide on alternative water sources?

Section 784.22 sets out the information the operator must include in the hydrologic reclamation plan and the information that it must provide about alternative water sources. Although many aspects of this section are substantively identical to the surface mining counterpart found at § 780.22, there are several differences that resulted in unique comments from industry and the public, discussed below. In response to these comments we have made modifications to the final rule.

[548] 30 U.S.C. 1260(b)(3).

[549] 30 U.S.C. 1266(d).

[550] 30 U.S.C. 1257.

[551] *Id.*

[552] 30 U.S.C. 1266(d).

[553] 30 U.S.C. 1257.

Final Paragraph (a): Hydrologic Reclamation Plan

As discussed in more detail in the preamble to § 784.28, the final rule at § 784.22(a)(2)(ii) has been revised to indicate that the hydrologic reclamation plan ''must include remedial measures for any predicted diminution of streamflow or loss of wetlands as a result of subsidence'' and ''must discuss the results of past use of the proposed remedial measures in the vicinity of the proposed mining operation and under similar conditions elsewhere.'' In order to assess the likelihood that those remedial measures will be effective to correct subsidence-related stream dewatering, this provision requires the operator and the regulatory authority to consider actual results that the proposed remedial measures have achieved in similar conditions, where available information exists. If streams in similar conditions have not been adequately restored, the regulatory authority may choose to prohibit planned subsidence mining techniques that would result in subsidence to streams within the adjacent area overlying the underground workings in order to ensure the prevention of material damage to the hydrologic balance outside the permit area.

Final Paragraph (b): Alternative Water Source Information

One commenter was concerned about proposed paragraph (b)(1), asserting that the discussion of alternative water source information should specifically include extension of and connection to public water supply lines. We direct the commenter to the definition of ''replacement of water supply'' in our existing regulations and the preamble discussion to the final rule [554] implementing this definition which specifically identifies hooking-up a replacement water supply to a public or private water supply system as a cost to be paid by the permittee. We are not accepting the commenter's suggestion to incorporate this requirement here as it would be redundant.

Proposed and final (b)(1) require the applicant to demonstrate that alternative water sources are both ''available and feasible to develop.'' The same commenter opined that we should define the terms ''available'' and ''feasible.'' Instead of defining these terms, we have added paragraph (b)(1)(ii) which, for all uses protected under § 817.40, requires the applicant to submit, a water supply replacement plan that includes construction details, costs, and an implementation schedule. This water supply replacement plan will indicate whether the alternative water sources are ''available'' and ''feasible.''

Another commenter opined that an operator should be required to demonstrate in the permit application that a firm plan for a permanent replacement water supply system exists, that the plan should include details to support the furtherance of the plan, and that it should indicate that the permanent replacement water supply system will be installed and successfully operating no less than three years following water diminution. The commenter suggested that we implement a maximum three year period to resolve issues such as surface property access, pipeline rights-of-way concerns, as well as permitting and construction. It is more appropriate to require such a time limit in § 817.40 which describes the responsibility of the operator to replace water supplies. In the proposed rule at paragraph (c)(3) of section 817.40,[555] we required the operator to provide a permanent replacement water supply within two years of the date of receiving notice of an unanticipated loss or damage to a protected water supply impacted by subsidence. The three years suggested by the commenter is too long a period for the user or owner to go without a permanent water supply. However, we added text in final rule § 817.40(c)(3) that gives the regulatory authority the discretion to grant an extension if the operator has made a good faith effort to meet the deadline, but has been unable to do so for reasons beyond its control.

Section 784.23: What information must I include in plans for monitoring of groundwater, surface water, and the biological condition of streams during and after mining?

As discussed in the preamble to the proposed rule,[556] § 784.23 describes what the operator must include in plans for monitoring of groundwater and surface water, and the biological condition of streams during and after mining. After evaluating the comments that we received exclusive to the impacts of underground mining, we are not making and changes to the final rule not that were not addressed in the preamble discussion of § 780.23.

Final Paragraph (c): Biological Condition Monitoring Plan

This paragraph describes the biological condition monitoring plan. Commenters alleged that we do not have the statutory authority to require biological monitoring requirements for underground mining operations, and asked that we clarify the source of our authority. Our authority to require biological monitoring for underground mining operations is detailed in section 516(b)(11) of SMCRA.'' [557] Without biological monitoring for underground mining, the regulatory authority cannot reliably determine if disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values have been minimized or enhanced. Through biological monitoring, the regulatory authority gains a better understanding of the requirements necessary to minimize disturbance and adverse impacts and enhance, where practicable, fish, wildlife, and related environmental values.

Further, these commenters stated that the cause-effect relationships between nutrient stressors and biological responses, from which the designated use criteria are derived, can be highly uncertain and recommended that, before corrective action is assigned, the regulatory authority should consider natural annual variation of biological indices, as well as establish methods to evaluate these potential effects to better address regional conditions and experience and state-wide water quality criteria. The final rule in § 784.19(c)(6)(vii) states that the operator must adhere to a bioassessment protocol approved by the state or tribal agency responsible for preparing the water quality inventory required under section 305(b) of the Clean Water Act,[558] or other scientifically-defensible bioassessment protocol accepted by agencies responsible for implementing the Clean Water Act. This final rule language allows the regulatory authority to consider, if they choose, natural, annual variation of biological indices when approving the biological condition monitoring plan. While bioassessments will be required, the regulatory authority has discretion to address regional conditions and experience and state-wide water quality criteria.

Section 784.24: What requirements apply to the postmining land use?

We have modified this section; however, these modifications are discussed in final rule § 780.24, which is the surface mining counterpart to § 784.24.

[554] 60 FR 16672, 16676 (Mar. 31, 1995).

[555] 80 FR 44436, 44676–44677 (Jul. 27, 2015).

[556] 80 FR 44436, 44626 (Jul. 27, 2015).

[557] 30 U.S.C. 1266(b)(11).

[558] 33 U.S.C.1315(b).

Section 784.25: What information must I provide for siltation structures, impoundments, and refuse piles?

We have modified this section; however, these modifications are discussed in final rule § 780.25, which is the surface mining counterpart to § 784.25.

Section 784.26: What information must I provide if I plan to return coal processing waste to abandoned underground workings?

As proposed,[559] we are removing previous § 784.26 and redesignating previous § 784.25 as § 784.26 in revised form. We received several comments on the proposed rule that resulted in revisions to proposed § 784.26. One commenter urged us to be more consistent in our implementation of plain language principles, including application of those principles to provisions for which we proposed no substantive revisions. In response to this comment, we revised and restructured proposed § 784.26 to improve its clarity and organization, to streamline its contents, and to eliminate redundancies and ambiguities. Among other things, we combined proposed paragraphs (b) and (c) into a single paragraph (c) in the final rule because both proposed paragraphs (b) and (c) specified content requirements for the plan to return coal processing waste to abandoned underground mine workings.

In the preamble to proposed § 784.26, we invited comment on whether we should adopt similar requirements that would apply to backstowing of coal processing waste in abandoned underground mines when that activity occurs in connection with either a surface coal mine or a coal preparation plant regulated under 30 CFR 785.21. *See* 80 FR 44528 (Jul. 27, 2015). One commenter responded in the affirmative. Previous § 816.81(f) required that disposal of coal mine waste in underground mine workings as part of a surface mining operation were to be conducted in accordance with a plan approved under previous § 784.25. Final § 816.81(h), which corresponds to previous § 816.81(f), contains a similar requirement for disposal in accordance with final § 784.26, which replaces previous § 784.25. In addition, both previous § 827.12 and the version of § 827.12 that we are adopting as part of this final rule require that coal preparation plants comply with § 816.81. Therefore, previous § 827.12 already required that disposal of coal mine waste in underground mine workings in connection with a coal preparation plant be conducted in accordance with a plan approved under previous § 784.25, while final § 827.12 contains a similar requirement for disposal in accordance with final § 784.26. We revised paragraph (a) of proposed § 784.26 for consistency with these requirements. Specifically, final § 784.26(a) clarifies that, as provided in final §§ 816.81(h) and 817.81(h), the permittee may return coal processing waste from either surface-mined coal or underground-mined coal to abandoned underground mine workings for disposal only if the regulatory authority and the Mine Safety and Health Administration first approve the disposal plan. We also added a reference to § 816.41 to final § 784.26(b)(15) to accompany the existing reference to final § 817.41.

Proposed paragraph (b)(2) required that each plan for the return of coal processing waste to abandoned underground mine workings include a description of all chemicals used to process the coal, the quantity of those chemicals remaining in the coal processing waste, and the likely impact those chemicals would have on groundwater and any persons, aquatic life, or wildlife using or exposed to that groundwater. One commenter objected to the addition of this paragraph because many chemicals used to process coal are nonhazardous or nontoxic. The commenter also questioned whether monitoring of nonhazardous chemicals would be required under this rule.

Final paragraph (b)(2) retains the proposed requirement because information about the additives to coal processing waste is necessary to properly evaluate the potential of the injected material to affect water resources. The regulatory authority will determine whether the permittee must monitor groundwater for the presence of those chemicals. The commenter further alleged that the requirement to characterize these chemicals prior to their injection into underground workings would interfere with regulatory programs governing these discharges under laws other than SMCRA. We do not agree with the commenter because final paragraph (b)(2) simply requires disclosure of constituents and analyses of how those chemicals will impact the hydrologic balance. It does not establish discharge limits for those chemicals, although the final rule would prohibit approval of the permit application if the cumulative hydrologic impact assessment determines that disposal of coal processing waste in underground mine workings would result in material damage to the hydrologic balance outside the permit area.

One commenter misconstrued proposed paragraph (e) as allowing the regulatory authority to exempt pneumatic backstowing operations from compliance with the requirements of proposed paragraphs (a) through (d). According to the commenter, the regulatory authority cannot make a determination that backstowing will not have an adverse impact on hydrology without the information required by those paragraphs. Final paragraph (d) eliminates this ambiguity and clarifies that the regulatory authority may only waive the monitoring requirements of final paragraph (c), not the information requirements of final paragraphs (a) and (b). We anticipate that the regulatory authority will use the information submitted under paragraphs (a) and (b) in determining whether the applicant has adequately demonstrated that the proposed pneumatic backstowing operation will not adversely impact surface water, groundwater, or water supplies.

Section 784.27: What additional permitting requirements apply to proposed activities in or through ephemeral streams?

In the preamble to the proposed rule we discussed the unique characteristics of ephemeral streams and the vital importance of headwater streams, including ephemeral streams, in maintaining the ecological health and function of streams down gradient of headwater streams.[560] In the preamble to § 701.5 of the final rule, we discussed the revisions of the proposed definition of ''ephemeral stream.'' As revised, the final definition of ''ephemeral stream'' now includes those conveyances receiving runoff from snowmelt events and that have both a bed-and-bank configuration and an ordinary high water mark. The final rule also revises our definition of ''intermittent stream'' so that it no longer automatically includes streams draining a watershed of at least one-square mile. This change may result in a number of streams that were classified as ''intermittent'' under the previous regulations being categorized as ''ephemeral'' under the final rule. This is significant because permitting requirements for ephemeral streams differ from those for perennial and intermittent streams.

Because of the distinctions between ephemeral streams and other types of streams, we have added § 784.27 to the final rule to specifically address the permitting requirements for

[559] 80 FR 44436, 44528 (Jul. 27, 2015).

[560] 80 FR 44436, 44451–44453 (Jul. 27, 2015).

underground mining activities in or through ephemeral streams. Creating this distinct section also addresses commenters' concerns that it was difficult to discern when regulations applied strictly to ephemeral streams or applied to all streams.

Several commenters asserted that avoiding impacts to ephemeral streams would create an unnecessary and heavy financial burden that effectively curtails longwall mining and will result in stranded coal reserves. Further, these commenters contend that protecting ephemeral streams exceeds SMCRA authority because SMCRA does not contain a provision requiring avoidance of impacts to these streams. We direct commenters to our discussion of the financial burden of the final rule found within the accompanying RIA and the general comments in Part IV, F., above. However, as discussed within this preamble we are not affording the same protections to ephemeral streams as we do for intermittent and perennial streams. As this comment centers on the impacts from underlying underground operations due to subsidence, further discussion about subsidence and material damage to the hydrologic balance outside the permit area can be found in the discussion of general comments in Part IV, K of this preamble. Also, for further discussion on the protections afforded ephemeral streams versus intermittent and perennial streams, please refer Part IV, O of this preamble.

Final Paragraph (a): Clean Water Act Requirements

Similar to final rule § 780.27(a), if the proposed permit area includes waters subject to the jurisdiction of the Clean Water Act, including some ephemeral streams, the regulatory authority must condition the permit to prohibit initiation of mining-related activities in or affecting waters subject to the jurisdiction of the Clean Water Act before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act.[561]

Final Paragraph (b): Postmining Surface Drainage Pattern and Stream-Channel Configuration

Unlike the requirements for intermittent and perennial streams addressed in § 784.28, final rule paragraph (b) of this section only requires the restoration of a postmining surface drainage pattern that is *similar* to the premining drainage pattern, relatively stable, and in dynamic near-equilibrium and postmining stream-channel configurations that are *similar* to the premining ephemeral streams and relatively stable—*i.e.,* the form. It does not require the reestablishment of hydrologic or ecological function as required for perennial and intermittent streams. Paragraph (b)(2) also allows the regulatory authority to approve or require a drainage pattern or stream-channel configuration that differs from the premining pattern if appropriate to ensure stability, prevent or minimize downcutting of reconstructed stream channels, promote enhancement of fish and wildlife habitat, accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation, accommodate the construction of excess spoil fills, coal mine waste piles, or impounding structures, replace previously channelized or severely altered streams with a more natural and ecologically sound drainage pattern or configuration or reclaim a previously mined area. The drainage pattern and stream-channel configuration requirements need only be similar to the premining patterns and configurations. Some differences are allowable. You are not required to reconstruct all of the ephemeral streams that existed prior to mining to the same premining configuration.

These requirements ensure establishment of a postmining drainage pattern that is functionally equivalent to the premining pattern, while affording the regulatory authority the discretion to alter the drainage pattern in certain situations that would be better for the hydrologic balance. Under paragraph (b)(2), the regulatory authority may allow a variance from the requirements in paragraph (b)(1) for certain express purposes: To ensure stability; prevent or minimize downcutting or widening of reconstructed stream channels and control meander migration; promote enhancement of fish and wildlife habitat; accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation; accommodate the construction of excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures; replace a stream that was channelized or otherwise severely altered prior to submittal of the permit application with a more natural, relatively stable, and ecologically sound drainage pattern or stream-channel configuration; or reclaim a previously mined area.

Final Paragraph (c): Streamside Vegetative Corridors

As discussed previously in this preamble, throughout the final rule we have replaced the term ''riparian corridor'' as used in the proposed rule with ''streamside vegetative corridor''; this change is also incorporated into this section. The final rule is based on the current understanding of the contributions made by streamside vegetative corridors along ephemeral streams. As discussed above, although a permittee is not required to reconstruct all of the ephemeral streams mined in or through, those ephemeral streams that are reconstructed must include streamside vegetative corridors constructed in accordance with § 817.56 of the final rule.

Section 784.28: What additional permitting requirements apply to proposed surface activities in, through, or adjacent to perennial or intermittent streams?

Some commenters recommended that § 784.28(b) and (c) and § 817.57 be revised to require that streams be protected from dewatering by longwall and other high-extraction underground mining methods, and that, if dewatering does occur, corrective action should be taken to restore streamflow and protect the biological integrity of the dewatered stream. We agree with the commenters that streams should not be permanently dewatered by subsidence caused by underground mining operations; however, we decline to make changes to § 784.28(b) and (c) and § 817.57 as a result. Those sections do not regulate subsidence from underground mining activities; instead, those sections address direct surface impacts to streams from underground mining activities, such as placement of coal refuse within the 100 foot stream buffer zone. These surface facilities of an underground mine will impact streams and lands on the surface in much the same manner as a surface coal mining operation in that areas are disturbed directly by activities such as topsoil removal, grading of the existing surface to facilitate construction of buildings and other support facilities, construction of ventilation shafts and other entries, coal processing facilities, roads and disposal of coal refuse. Otherwise known as the disturbed area, the surface facilities of an underground mine are subject to the provisions of section 515(b)(10) of SMCRA,[562] which requires disturbances to the hydrologic balance to be minimized. Because surface facilities of underground mines are permitted as part of the permit area, which is defined at existing § 701.5 as ''the area of land, indicated on the approved map . . . required to be covered by the operator's performance

[561] 33 U.S.C. 1251 *et seq.*

[562] 30 U.S.C. 1265 (b)(10).

bond under subchapter J of this chapter and which shall include the area of land upon which the operator proposes to conduct surface coal mining and reclamation operations under the permit, including all disturbed areas;'' mining activities within this disturbed area are not subject to the provisions of section 510(b)(3) [563] where material damage to the hydrologic balance outside the permit area must be prevented. (See our general comment discussions about this topic at Part IV).

While it is true that the changes that commenters suggest to these regulations, which relate to surface facilities of underground mines, would be inappropriate, it is also true that SMCRA directs us to take into consideration the distinct differences between surface and underground mining operations.[564] One of these distinctions is the impacts from subsidence. Whereas the impacts from surface facilities of underground mines within the permit area are similar to the impacts of surface mines, subsidence impacts within the adjacent area of underground mines are distinctly different. These impacts to areas overlying the underground workings of an underground mine (the adjacent area) that are not otherwise disturbed to facilitate mining range from virtually indiscernible to a host of adverse impacts and damages to land and water resources, water supplies, and structures. These impacts can vary due to the local geology and mining method (room and pillar versus longwall). Subsidence impacts do not typically require conventional reclamation, such as large scale backfilling, grading, replacement of soil, and revegetation because the topsoil and overburden is not removed to access the coal. Yet, subsidence damages must be repaired in accordance with the subsidence provisions of SMCRA and the existing subsidence control regulations, which are found at §§ 784.20 (probable hydrologic consequences), 784.22 (hydrologic reclamation plan), and 817.121 (performance standards for the repair of lands and waters damaged by subsidence). In order to clarify that these provisions apply to streams, wetlands, and other bodies of water on the surface that may be impacted by subsidence, we have made changes to these regulations. These specific changes are discussed in greater detail at the preamble to those provisions.

[563] 30 U.S.C. 1260(b)(3).

[564] 30 U.S.C. 1266(a).

Section 784.29: What information must I include in the surface-water runoff control plan?

We have modified this section; however, these modifications are discussed in final rule § 780.29, which is the surface mining counterpart to section 784.29.

Section 784.30: When must I prepare a subsidence control plan and what information must that plan include?

Consistent with our revisions to the definition of material damage (in the context of the subsidence control provisions of §§ 784.30 and 817.121), our final rule has been revised at § 784.30(a) to require that the pre-subsidence survey include mapping of wetlands, streams, or water bodies and a narrative description indicating whether subsidence could cause material damage to or diminish the value or reasonably foreseeable use of such features. In addition, as explained in the discussion of general comments in Part IV.K. of this preamble, we have revised the requirements for subsidence control plans at § 784.30(c) to include wetlands, streams, or water bodies when describing the anticipated effects of planned subsidence and measures to be taken to mitigate or remedy any subsidence-related material damage to such features, whenever the pre-subsidence survey indicates the presence of wetlands, streams and water bodies that could be materially damaged by subsidence. These provisions are intended to ensure that subsidence related material damages to streams, and other water resources regulated in accordance with section 516 of SMCRA,[565] are effectively addressed in the applicants subsidence control plan.

Final Paragraph (a): Pre-Subsidence Survey

When previous 30 CFR 784.20(a)(3) was issued in 1995, it required a pre-subsidence survey of the condition of all noncommercial buildings or occupied residential dwellings and related structures that might be materially damaged by subsidence or have their reasonably foreseeable value diminished by subsidence, within the area encompassed by the angle of draw. 60 FR 16729–16730, 16748 (Mar. 31, 1995). This provision, however, was vacated by a court and has been suspended since December 22, 1999 (64 FR 71652–71653). *See also* 80 FR 44528 (citing *Nat'l Mining Ass'n* v. *Babbitt,* 173 F.3d 906 (D.C. Cir. 1999)). In an effort to remove regulations that had been suspended for over 15 years, we proposed to remove the previously suspended language.

We received comments concerning this proposed nonsubstantive change to previous 30 CFR 784.20(a)(3), which has been redesignated as 30 CFR 784.30(a)(3). These commenters requested that, instead of removing the suspended language, we should revise it consistent with the Court's decision. Although we agree with the commenters that we could correct the deficiency the court identified and require a pre-subsidence survey documenting the condition of all noncommercial buildings or occupied residential dwellings and related structures that might be materially damaged by subsidence or have their reasonably foreseeable value diminished, we decline to do so at this time because it is not related to the primary purpose of this rule (*i.e.,* protection of streams and related environmental values). Substantive changes of the type recommended by the commenters are better addressed in a potential future rulemaking.

[565] 30 U.S.C. 1266.

Section 784.31: What information must I provide concerning the protection of publicly owned parks and historic places?

We are finalizing § 784.31 as proposed. We received no comments on this section.

Section 784.33: What information must I provide concerning the relocation or use of public roads?

We are finalizing § 784.33 as proposed. We received no comments on this section.

Section 784.35: What information must I provide concerning the minimization and disposal of excess spoil?

We have modified this section; however, these modifications are discussed in final rule § 780.35, which is the surface mining counterpart to § 784.35.

Section 784.37: What information must I provide concerning access and haul roads?

We have modified this section; however, these modifications are discussed in final rule § 780.37, which is the surface mining counterpart to § 784.37.

Section 784.38: What information must I provide concerning support facilities?

We are finalizing § 784.38 as proposed. We received no comments on this section.

Section 784.40: May I submit permit application information in increments as mining progresses?

Please refer to the preamble for § 783.26 for a discussion of this part of the final rule and the comments that led to its adoption.

Previous § 784.200: Interpretative Rules Related to General Performance Standards

We have removed and reserved § 784.200 for the reasons discussed in the preamble to the proposed rule.[566]

J. Part 785—Requirements for Permits for Special Categories of Mining

Section 785.10: Information Collection

Section 785.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 785.

Section 785.14: What special provisions apply to mountaintop removal mining operations?

This section implements section 515(c) of SMCRA,[567] which contains special performance standards related to mountaintop removal operations. Section 701.5 of this rule generally defines mountaintop removal operations as ''surface mining activities in which the mining operation extracts an entire coal seam or seams running through the upper fraction of a mountain, ridge, or hill . . . by removing substantially all overburden above the coal seam and using that overburden to create a level plateau or a gently rolling contour, with no highwalls remaining, that is capable of supporting one or more of the postmining land uses . . . .''

The majority of commenters expressed concern about how we proposed to give effect to section 515(c)(4)(D) of SMCRA.[568] Specifically, many commenters requested that we specifically require mountaintop removal operations to ensure that ''no damage will be done to natural watercourses'' as required by that section. These commenters alleged that our proposed rule did not go far enough and requested that the final rule contain an absolute prohibition on mining activities, including forbidding excess spoil fills and mining through streams, because these could result in damage to a natural watercourse.

We decline to adopt this suggestion. If we were to interpret section 515(c)(4)(D) of SMCRA in the manner suggested by the commenters, it would effectively ban mountaintop removal mining operations because streams could neither be filled with excess spoil nor mined through to recover the underlying coal. This is so, because, by definition, mountaintop removal mining operations remove all of the overburden overlying the coal beneath a mountain or ridgetop with the resultant creation of a level plateau or gently rolling contour in accordance with section 515(c)(2) of the Act,[569] necessarily damaging some streams or parts of streams in the process. Such a ban, however, would effectively nullify section 515(c)(2) of the Act,[570] which explicitly allows such operations. A ban would also be inconsistent with SMCRA and effectively nullify section 515(c)(4)(E),[571] which specifically provides that excess spoil not retained on the mountaintop must be placed in accordance with section 515(b)(22).[572] Section 515(b)(22)(E), in turn, allows the placement of this spoil in ''springs, natural water courses or wet weather seeps'' as long as ''lateral drains are constructed from the wet areas to the main underdrains in such a manner that filtration of the water into the spoil pile will be prevented.''

At paragraph (b)(9), we proposed to reconcile these potentially conflicting statutory sections by requiring the applicant to demonstrate that the proposed mountaintop removal mining operation has been designed to meet three criteria to ensure that natural watercourses mined by a mountaintop removal mining operation are affected no more than natural watercourses mined by other surface mining methods and restored to approximate original contour under our other regulations. We are adopting this approach as proposed, with a few changes discussed below, because, by explaining what damage to natural watercourses means in the context of mountaintop removal mining operations, it reconciles the potentially conflicting requirements of SMCRA and gives effect to sections 515(c)(2), 515(c)(4)(D), and 515(c)(4)(E) of SMCRA.

Although we are generally adopting this section as proposed, in the preamble to the proposed rule, we invited comment on whether we should adopt a different approach to reconciling these provisions; *i.e.,* a rule that would allow the approval of mountaintop removal mining operations that would damage natural watercourses within the permit area if the applicant can demonstrate that the damage will be fully offset by implementation of the fish and wildlife enhancement measures proposed under section 780.16.[573] We received two comments on this topic, one supporting the alternative and one opposing it.

The commenter opposing the alternate approach opined that there is no good evidence that fish and wildlife enhancement measures can offset the damage caused by mining through streams. The commenter further alleged that ''numerous studies have demonstrated a lack of success in fully restoring the biological condition of streams once they have been damaged by coal mining or other activities, even when their physical conditions have been restored.'' The commenter cited several references allegedly supporting this assertion. The commenter in support of the alternate approach recommended that we adopt it within the final rule because it provides flexibility and allows a permittee may either to cause no net damage or allows for offsets.

As discussed above, we decline to adopt this approach in the final rule. In section 780.16 of the final rule, however, we allow fish and wildlife enhancement measures to offset other permanent impacts to wetlands and to intermittent and perennial streams, such as those resulting from the placement of excess spoil, provided that the scope of the enhancement measures is commensurate with the magnitude of the long-term adverse impacts of the proposed operation. The proposed permanent adverse impacts to wetlands and streams cannot be approved if the regulatory authority determines that the proposed enhancement measures will not meet this standard because of a lack of demonstrated ability to actually achieve the necessary commensurate enhancement. Because the final rule requires the use of fish and wildlife enhancements to offset specific damage to streams, we decided that we do not need to adopt another similar provision with regard to mountaintop removal mining operations.

Final Paragraph (b): Application and Approval Requirements

As proposed, final paragraph (b)(9) requires that, for mountaintop removal mining operations that seek a variance from approximate original contour restoration requirements, the applicant demonstrate that the proposed operation will not damage natural watercourses

[566] 80 FR 44436, 44528 (Jul. 27, 2015).

[567] 30 U.S.C. 1265(c).

[568] 30 U.S.C. 1265(c)(4)(D).

[569] *Id.*

[570] 30 U.S.C. 1265(c)(2).

[571] 30 U.S.C. 1265(c)(4)(E).

[572] 30 U.S.C. 1265(b)(22).

[573] 80 FR 44436, 44530 (Jul. 27, 2015).

within the permit or adjacent areas. Further, the paragraph specifies at least four criteria—final paragraphs (b)(9)(i) through (iv)—that must be met for a regulatory authority to determine that no damage will occur to natural watercourses. Together, these four criteria ensure that a mountaintop removal mining operation will not damage watercourses any more than a surface mining operation without an approximate original contour variance. In essence, they define ''damage'' in the context of section 515(c)(4)(D) of SMCRA.

While it is true that some commenters indicated that the approach taken in paragraph (b)(9) is not restrictive enough, it is also true that our proposed and final regulations address this issue and correct several deficiencies in our previous regulations, which did not require prevention of damage to natural watercourses above the lowest coal seam mined. First, we removed the limitation to watercourses below the lowest coal seam mined because the underlying statutory provision at section 515(c)(4)(D) of SMCRA does not contain such a limitation. The applicant now must demonstrate that the proposed operation will not damage natural watercourses within the proposed permit and adjacent areas, regardless of where the watercourse is located. Second, even for watercourses below the lowest coal seam mined, the previous regulations did not contain any criteria for determining whether an operation is likely to cause damage. To correct this deficiency, the proposed and final rules contain criteria that provide protection from the most likely adverse impacts that could occur within the watershed of the natural watercourses on the permit and adjacent areas.

While we discussed overall adverse impacts to aquatic and terrestrial ecology from surface mining operations in the preamble to the proposed rule,[574] mountaintop removal mining operations might create additional adverse impacts to streams because they often completely remove headwater streams within the mined-out area, extensively restructure the surface configuration and drainage patterns, bury additional stream segments below the mined-out area with significant quantities of excess spoil that is not being used to restore the approximate original contour, and remove expansive areas of native, typically forested, vegetation and replace it with an intensely modified, often pasture-like landscape. These drastic disturbances from mountaintop removal mining operations can result in the discharge of increased levels of pollutants to surface water or groundwater; changes in peak flows from the permit area that would cause an increase in flooding; and increased flow volumes that could adversely affect actual uses of surface water, designated uses of surface water under section 303(c) of the Clean Water Act,[575] or premining uses of groundwater outside the permit area. The criteria in final paragraph (b)(9) are designed to prevent adverse impacts to surface water and groundwater resources within the permit and adjacent areas of a mountaintop removal mining operation that would be greater than if the area was restored to approximate original contour.

To be consistent with SMCRA and other sections of the final rule, we added two criteria to the three included in the proposed rule. The first criterion we added is final paragraph (b)(9)(ii), and was also recommended by a commenter. That paragraph specifies that the regulatory authority must also consider the overall additional adverse impacts to the aquatic and terrestrial ecology that could result from granting a variance to approximate original contour restoration requirements. We also added final paragraph (b)(9)(v), which allows the regulatory authority to require additional demonstrations as necessary to determine that no damage to natural watercourses will occur. We agree with the commenter that suggested these additional requirements because they should provide adequate minimum standards that will allow the regulatory authority to determine whether damage to natural watercourses will in fact be prevented.

In addition to these new criteria, we have revised proposed paragraph (b)(9)(iii) so that final paragraph (b)(9)(iii) refers to changes in the size or frequency of peak flows that would cause an increase in ''flooding'' rather than an increase in ''damage from flooding'' as in the proposed rule. We made this change because determination of whether there would be an increase in flooding is easier and less speculative than a determination of whether there would be an increase in damage from flooding. Under the latter standard, the applicant would have to project future development downstream of the proposed permit area, which could be difficult and conjectural.

We divided proposed paragraph (b)(9)(iii), now final paragraph (b)(9)(iv), into an introductory paragraph and two separate subparagraphs. Paragraph (b)(9)(iv)(A) addresses surface flow and paragraph (b)(9)(iv)(B) addresses groundwater. Final paragraph (b)(9)(iv)(A) also differs from its counterpart in the proposed rule in that we removed references to ''reasonably foreseeable uses'' of surface water and groundwater. The final rule no longer includes the term ''reasonably foreseeable uses'' in contexts other than protection of reasonably foreseeable surface land uses from the adverse impacts of subsidence. Our reasons for deletion of this term are twofold. First, the term appears in SMCRA only in section 516(b)(1), which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. Section 717(b) of SMCRA establishes water supply replacement requirements for surface mines, including mountaintop removal mining operations. The regulations implementing section 717(b) of SMCRA [576] are found at 30 CFR 816.40. Second, we generally agree with the numerous commenters who opposed inclusion of the term ''reasonably foreseeable uses'' on the basis that it is too subjective, difficult to determine, and open to widely varying interpretations, which could result in inconsistent application throughout the coalfields.

We also revised proposed paragraph (b)(9)(iv)(A) to track more closely the language in our final definition of ''material damage to the hydrologic balance outside the permit area'' at section 701.5 about designated uses of surface water under the Clean Water Act. Finally, in response to comments from the U.S. Environmental Protection Agency, we replaced the term ''existing'' when referring to uses of surface water with ''any premining use of surface water outside the permit area.'' This change is intended to avoid any confusion or conflict between the terms we use in our regulations and the term ''existing uses'' under the regulations implementing the Clean Water Act.

Commenters also expressed concern that our proposal to remove the ''no damage to natural watercourses'' provision from the performance standards in section 824.11 and make it a permitting requirement does not comport with section 515 of SMCRA. We agree that this requirement should also be a performance standard, so the final rule restores that requirement to § 824.11, with revisions to refer to the new permitting provisions in § 785.14(b)(9).

[574] 80 FR 44436, 44439–44447 (Jul. 27, 2015).

[575] 33 U.S.C. 1313(c).

[576] 30 U.S.C. 717(b).

We received comments on proposed paragraph (b)(11), which would have required posting of a bond amount sufficient to restore the site of a mountaintop removal mining operation to approximate original contour if the approved postmining land use has not been implemented before expiration of the revegetation responsibility period under § 816.115. Commenters thought this requirement to be illogical because mountaintop removal mining operations are designed and approved to facilitate higher and better postmining land uses, which the Act limits to industrial, commercial, residential, public facility (including recreational facilities) and agricultural postmining land uses). Commenters were concerned that, with the exception of agricultural and some recreational postmining land uses, revegetation responsibility periods are inconsistent with implementation and attainment of the higher and better land uses proscribed by the other potential uses.

In response, we note that the intent of this provision is to ensure that mountaintop removal mining operations are approved only for legitimate immediate postmining land use needs. We find the 5-year revegetation responsibility period provides sufficient time for initiation of implementation of the approved postmining land use.

The preamble to proposed paragraph (b)(11) stated that we were considering an alternative to requiring that the amount of bond initially posted include an amount equal to the cost of restoring the area to the approximate original contour in the event the proposed land use is not implemented. That alternative would prohibit release of any bond amount for the entire permit until the approved postmining land use has been implemented. Upon further consideration, we decided to adopt this alternative as final paragraph (c)(2). We recognize that requiring that the amount of bond equal to the cost of restoring the area to the approximate original contour may be unduly burdensome and inconsistent with the principle under section 509 of SMCRA that the bond amount should be based upon the cost of completing the approved reclamation plan in the event of default. Therefore, final rule paragraph (c)(2) instead requires that the permit include a condition prohibiting the release of any part of the bond posted for the permit until substantial implementation of the approved postmining land use is underway. The rule specifies that the condition must provide that the prohibition does not apply to any portion of the bond that is in excess of an amount equal to the cost of regrading the site to its approximate original contour and revegetating the regraded land in the event that the approved postmining land use is not implemented.

Final Paragraph (c): Additional Requirements for Permit Issuance

One commenter expressed concern that the proposed paragraph (c) would draw attention to mountaintop removal mining operations and would subject them to increased scrutiny because they would be more readily identifiable by outside interest groups. The existing regulations already require that mountaintop removal mining operations be clearly identified as such. The regulations finalized today merely add a requirement that, as proposed, the permit identify the acreage and location of the lands within the permit area upon which mountaintop removal mining operations will occur. We are adding this requirement because some permits combine mountaintop removal mining operations with other types of mining, such as area or contour mining. Because we are only adding additional detail to the existing identification already required, we do not agree that this additional information will subject the permit to additional scrutiny by outside interests. Furthermore, this type of information is in the public interest and only makes clear the location and the extent of the lands to which the approximate original contour variance applies within the permit.

Section 785.16: What special provisions apply to proposed variances from approximate original contour restoration requirements for steep-slope mining?

As discussed in the preamble to the proposed rule, we proposed to modify section 785.16.[577] After evaluating the comments that we received, we are adopting the section as proposed, with the following explanations and exceptions.

Final Paragraph (a): Application and Approval Requirements

We divided proposed paragraph (a)(9)(iii) into two separate paragraphs. Paragraph (A) addresses surface flow and paragraph (B) addresses ground water. Final paragraph (a)(9)(iii)(A) differs from the language of the proposed rule in that we have removed references to reasonably foreseeable uses of surface water and groundwater. The final rule no longer includes the term ''reasonably foreseeable uses'' in contexts other than protection of reasonably foreseeable surface land uses from the adverse impacts of subsidence. Our reasons for deletion of this term are twofold. First, the term appears in SMCRA only in section 516(b)(1), which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. Second, numerous commenters opposed inclusion of the term ''reasonably foreseeable uses'' on the basis that it is too subjective, difficult to determine, and open to widely varying interpretations, which could result in inconsistent application throughout the coalfields.

We have also revised paragraph (a)(9)(iii)(A) to track more closely the language in our definition of ''material damage to the hydrologic balance outside the permit area'' at § 701.5 concerning designated uses of surface water under the Clean Water Act. Finally, in response to comments from the U.S. Environmental Protection Agency, we have replaced the term ''existing'' when referring to uses of surface water with ''any actual use of surface water outside the permit area before mining.'' This change is intended to avoid any confusion or conflict between the terms we use in our regulations and the term ''existing uses'' under the regulations implementing the Clean Water Act.

As a result of a comment on a similar proposed rule provision at § 780.24(a)(6)(ii), we have deleted language in proposed paragraph (a)(10)(iii) of this section, which would have prohibited the surface owner from receiving any compensation for requesting a variance from approximate original contour. As discussed above, that comment stated that the proposed rule would not be effective in addressing the core issue, which is the failure of regulatory authorities to make an independent and fact-based determination that the proposed change in land use meets statutory requirements. This concern is germane here as well. We revised the final rule to require a copy of the landowner request.

In connection with paragraph (a)(13) of the proposed rule, we invited comment on whether we should prohibit release of any bond amount for the entire permit area until the postmining land use for which the approximate original contour variance was granted has been implemented.[578] In response to this invitation for comment, one commenter opined that bond should be retained and released as

[577] 80 FR 44436, 44530–32 (Jul. 27, 2015).

[578] 80 FR 44436, 44531 (Jul. 27, 2015).

it is currently done and that phased release of bonds should be allowed when those aspects of performance responsibility are satisfied. Another commenter suggested that bond release on approximate original contour variances should be based on the restoration of capability for the postmining land use and not implementation of that use because the permittee frequently has no control over implementation. Another commenter indicated that the approach suggested in the proposed rule is illogical because most of the postmining land uses involved in the approximate original contour variance would be higher or better uses. Another commenter recommended that, for both mountaintop removal mining operations and steep slope variances, no bond be released until the postmining land use has been successfully achieved on the area subject to the approximate original contour variance or exception.

We received a comment about paragraph (a)(13) of § 785.16 similar to a comment we received in response to proposed § 785.14(b)(11) about the requirement to post a bond sufficient to restore approximate original contour in areas that have been previously granted variances if the approved postmining land use has not been implemented before expiration of the revegetation responsibility period under § 816.115. Commenters thought this requirement to be illogical because these variances are granted in order to facilitate higher and better postmining land uses. Commenters were concerned that, with the exception of agricultural and some recreational postmining land uses, revegetation responsibility periods are inconsistent with implementation and attainment of the higher and better land uses proscribed by the other potential uses.

In response, we note that the intent of proposed paragraph (a)(13), which we are adopting in revised form as final paragraph (b)(2), was to ensure that the permittee made firm arrangements for implementation of the approved postmining land use and did not seek a variance just to avoid the higher cost of restoring the approximate original contour or to satisfy landowner desires. As discussed in the environmental impact statement for this rule, the proposed land uses used to justify approximate original contour variances have in some cases never materialized. Under our existing rules, land within the approximate original contour variance area must be revegetated and is subject to a period of responsibility, which usually varies from 5 to 10 years depending upon average annual precipitation. It is during this time, after the area has been backfilled and graded, and after vegetation has been established, that we expect the land use to actually be implemented. Five to ten years is a more than adequate time to actually implement the land use, and indeed that use may often be implemented in a shorter time.

We recognize that requiring that the amount of bond initially posted include an amount equal to the cost of restoring the variance area to the approximate original contour in the event the proposed land use is not implemented within the revegetation responsibility period, as we proposed, may be unduly burdensome and inconsistent with the principle under section 509 of SMCRA that the bond amount should be based upon the cost of completing the approved reclamation plan in the event of default. Therefore, the final rule instead requires that the permit include a condition prohibiting the release of any part of the bond posted for the permit until substantial implementation of the approved postmining land use is underway. The rule specifies that the condition must provide that the prohibition does not apply to any portion of the bond that is in excess of an amount equal to the cost of regrading the site to its approximate original contour and revegetating the regraded land in the event that the approved postmining land use is not implemented.

Regarding phased bond release, the bond for any area subject to an approximate original contour variance, and therefore not restored to approximate original contour, cannot be released using the same process as for conventional reclamation, because this process would not result in retention of bond that can be used to return the land to its approximate original contour in the event the approved postmining land use is never implemented. With regard to employing land use capability as the standard for final release rather than actual implementation of the approved use, that standard does not protect against the needless drastic alteration of the landscape and associated environmental impacts. As discussed in the preamble to section 785.14, these provisions are intended to prevent abuses that have resulted in radical departures from conventional reclamation and to ensure that lands not actually used in accordance with the approved variance are restored to approximate original contour.

Final Paragraph (b): Additional Requirements for Permit Issuance

For clarity, we decided to split proposed paragraph (b) into three separate paragraphs (b) through (d). We are adopting paragraph (b)(1) as proposed. We are adopting proposed paragraph (a)(13) in revised form as paragraph (b)(2), as discussed above, because the provisions of proposed paragraph (a)(13) concern bond release, not the permit application, and thus are a better fit in paragraph (b). We are adopting proposed paragraphs (b)(2) and (3) as final paragraphs (c)(1) and (2) without change. We are adopting proposed paragraph (b)(4) as final paragraph (d) without change. Finally, we are not adopting proposed paragraph (b)(5) because that paragraph is subsumed within § 773.15(h), which requires a finding by the regulatory authority that the permit applicant has satisfied the requirements of Part 785.

Section 785.25: What special provisions apply to proposed operations on lands eligible for remining?

We received two comments on our proposed revisions [579] to § 785.25. One commenter supported proposed § 785.25 by emphasizing the value of remining in improving the health of streams and the aquatic community. The other commenter questioned the value of remining sites that currently support productive forestland as a result of natural revegetation over time. According to the commenter, remining those sites could be more environmentally disruptive than environmentally beneficial.

Section 701(34) of SMCRA [580] and 30 CFR 701.5 define ''lands eligible for remining'' as those lands that would otherwise be eligible for abandoned mine land reclamation program expenditures under section 404 or section 402(g)(4) of SMCRA.[581]'' In relevant part, those sections of SMCRA generally require that the land be affected by coal mining, that the land be left in an inadequate reclamation status before August 3, 1977, and that there be no continuing reclamation responsibility under state or federal laws. As a matter of law, permit applicants may avail themselves of the benefits available to operations on lands eligible for remining if the proposed permit area meets these criteria. Benefits are limited to a reduced revegetation responsibility period, reduced monitoring requirements, and qualification for the permit eligibility

[579] 80 FR 44436, 44529–30 (Jul. 27, 2015).

[580] 30 U.S.C. 1291(34).

[581] 30 U.S.C. 1234 and 1232(g)(4).

provisions of section 773.13 if unanticipated events or conditions occur.

K. Part 800—Performance Bond, Financial Assurance, and Insurance Requirements for Surface Coal Mining and Reclamation Operations

Section 800.1: Scope and Purpose

We are finalizing section 800.1 as proposed. We received no comments on this section.

Section 800.4: Regulatory Authority Responsibilities

Section 800.4 describes a regulatory authority's responsibilities with respect to bonding and liability insurance requirements for surface coal mining operations. As proposed, we added a reference to financial assurances to paragraphs (a) and (b) of § 800.4, consistent with our revision of part 800 to include criteria for financial assurances for long-term treatment of discharges and to clarify which provisions of part 800 apply to financial assurances. Final paragraphs (a) and (b) require that the regulatory authority prescribe and furnish forms for performance bonds and financial assurances and prescribe terms and conditions for performance bonds, financial assurances, and liability insurance policies.

Similarly, as proposed, we added a sentence to paragraph (c) to specify that the regulatory authority must determine the amount of financial assurance required under § 800.18 and adjust that amount as needed. In response to a comment, final paragraph (c) includes a requirement that the regulatory authority also monitor trust performance under a financial assurance.

Final paragraph (d) provides that the regulatory authority may accept a self-bond if the requirements of § 800.23 and any additional requirements in the regulatory program are met. Final paragraph (d) differs from the proposed rule in that it does not specify that the permittee itself must meet self-bonding requirements. We made this change because § 800.23 allows for third-party guarantors. For clarity, we also added a sentence reminding readers that state regulatory programs need not include provisions authorizing the use of self-bonds.

We adopted final paragraphs (e) and (f), which pertain to regulatory authority responsibilities for bond release and bond forfeiture, as proposed. We received no comments on those paragraphs.

As proposed, final paragraph (g) provides that the regulatory authority must require in the permit that adequate bond and financial assurance coverage be in effect at all times. It also specifies that, except as provided in § 800.30(b), operating without adequate bond or financial assurance is a violation of both the regulations and the terms and conditions of the permit. We revised the latter provision from the proposed rule, which erroneously referred to a violation of a condition of the rules. Conditions are established in the permit, not the rules.

Section 800.5: Definitions

Section 800.5 contains definitions of certain terms that appear in Part 800. We are adopting § 800.5 as proposed, with the exception of minor editorial revisions to the definitions of ''collateral bond'' and ''surety bond'' and one substantive revision to the definition of ''financial assurance.'' Some commenters found the proposed rule confusing because various provisions of proposed part 800 and the preambles to those provisions were inconsistent as to whether a financial assurance was a type of alternative bonding system or a funding mechanism distinct from the alternative bonding systems discussed in § 800.9. One commenter urged us to revise the definition to clearly specify that financial assurances are a type of alternative bonding system. We agree. Therefore, the final definition of ''financial assurance'' describes a financial assurance as a type of alternative bonding system. This change from the proposed rule is consistent with the preamble to our approval of the financial assurance provisions in the Tennessee federal program. *See* 72 FR 9616, 9618–9619 (Mar. 2, 2007). It also is consistent with the preamble to a decision notice for a Pennsylvania regulatory program amendment that included the use of treatment trusts, which correspond to financial assurances. We approved the use of those trusts as a type of alternative bonding system and responded favorably to a comment that treatment trusts could be approved only as an alternative bonding system. *See* 75 FR 48526, 48533–48535, 48536, 48537–48541 (Aug. 10, 2010).

One commenter recommended that financial assurances not be subject to the alternative bonding system requirements of § 800.9 and that we instead classify them as a hybrid of an alternative bonding system and a collateral bond. We do not agree. Under SMCRA, each performance bond instrument must be either a surety bond or collateral bond under section 509(b) [582] or an alternative bonding system or self-bond under section 509(c).[583] The alternative bonding system requirements are much more flexible and better-suited to financial assurance instruments than are the collateral bond requirements, as discussed in the preamble to our approval of the financial assurance provisions in the Tennessee federal program.[584]

One commenter expressed the opinion that, because annuities typically make payments at fixed intervals, an annuity, by itself, likely could not guarantee that funds always would be available immediately when needed to continue long-term treatment of a discharge, particularly if unexpected repair or replacement work must be performed without delay to keep the treatment system operational. For that reason, the commenter suggested that we revise our rules to allow use of an annuity only in combination with another mechanism that is able to cover all potential variations in treatment expenses. We did not revise our rules in the manner suggested by the commenter because we do not want to foreclose the possibility that an annuity could be structured to address the situation that the commenter describes. However, we revised the proposed definition of ''financial assurance'' to clarify that a financial assurance is a type of alternative bonding system, which means that it must meet the criteria of final § 800.9(a). Section 800.9(a)(1) provides that the alternative bonding system must assure that the regulatory authority will have available sufficient money to complete the reclamation plan for any areas which may be in default at any time. Furthermore, final § 800.18 establishes other criteria for financial assurances to ensure the availability of the funds needed for long-term treatment of discharges.

One commenter requested that we clarify whether existing treatment trusts would automatically be reclassified as financial assurances upon publication of this final rule. This rule is not retroactive, so it will not operate as an automatic reclassification of existing treatment trusts as financial assurances. However, nothing in this rule would prohibit the regulatory authority from using the criteria in this rule to reevaluate the adequacy of existing trusts.

Finally, a commenter recommended that we use the term ''trust'' in place of

[582] 30 U.S.C. 1259(b).

[583] 30 U.S.C. 1259(c).

[584] 72 FR 9616, 9618–9619 (Mar. 2, 2007).

''trust fund'' because the trust fund is only a part of a trust. We made the recommended change in the definition of ''financial assurance.''

Section 800.9: What requirements apply to alternative bonding systems?

Section 800.9 sets forth the requirements for creating an alternative bonding system, such as a bond pool or long-term treatment trust. As proposed, final paragraph (a) provides that we may approve an alternative bonding system as part of a state or federal regulatory program if the alternative will assure that the regulatory authority will have available sufficient money to complete the reclamation plan for any areas which may be in default at any time, except as provided in paragraphs (c) and (d), and if the alternative provides a substantial economic incentive for the permittee to comply with all reclamation provisions.

We revised and reorganized proposed paragraph (b) to improve clarity and adherence to plain language principles and to avoid creating the impression that financial assurances need not necessarily comply with final section 800.18, which sets forth special provisions that apply to all financial guarantees (including financial assurances) for long-term treatment of discharges. Specifically, final paragraph (b)(1) provides that the alternative bonding system will apply in lieu of the requirements of §§ 800.12 through 800.23 ''with the exception of those provisions of § 800.18 of this part that apply to financial assurances,'' to the extent specified in the regulatory program provisions establishing the alternative bonding system and the terms under which we approved the system. As proposed, final paragraph (b)(2) provides that the alternative bonding system must include appropriate conforming modifications to the bond release provisions of §§ 800.40 through 800.44 and the bond forfeiture provisions of final § 800.50.

Final paragraph (c) provides that an alternative bonding system may be structured to include only certain phases of mining and reclamation under § 800.42, provided that the other phases of mining and reclamation are covered by one of the types of bond listed in § 800.12. Final paragraph (c) differs from proposed paragraph (c) in that we replaced ''forms'' with ''types'' for consistency with revisions to § 800.12.

Proposed paragraph (d)(1) would have prohibited alternative bonding systems from covering restoration of the ecological function of a perennial or intermittent stream through which a permittee mines. One commenter supported the proposed prohibition. Other commenters opposed proposed paragraph (d)(1) for reasons that included an alleged lack of justification, alleged inappropriate meddling in, and unnecessary disruption of, existing alternative bonding systems, and a desire to take advantage of the added security of an alternative bonding system. One commenter noted that the preamble to proposed paragraph (d)(1) provided little information on the time needed to restore the ecological function of a stream and did not explain the statement that the time needed to restore that function makes coverage of that obligation by an alternative bonding system inappropriate. The preamble to the proposed rule states that an alternative bonding system should not be allowed to cover restoration of the ecological function of streams because that cost was not anticipated when the alternative bonding system was established. The commenter did not find this argument compelling because the same rationale would apply to other stream restoration costs that could be covered by alternative bonding systems under the proposed rule. Similarly, the commenter found unpersuasive the statement in the preamble that proposed paragraph (d)(1) was justified because restoration of the ecological function of a stream is the responsibility of the entity doing the mining, not the alternative bonding system. The commenter noted that, under SMCRA, the permittee always is responsible for reclamation obligations, regardless of the nature of those obligations. Overall, the commenter argued that the proposed prohibition had no basis because there are no data to support the conclusion that alternative bonding systems cannot satisfactorily cover the obligation to restore the ecological function of streams.

After considering the arguments raised by commenters, we decided not to adopt proposed paragraph (d)(1). Thus, alternative bonding systems may provide coverage for restoration of the ecological function of a stream unless the state amends the regulations governing its alternative bonding system to provide otherwise. Once reconstruction of the form of the stream and restoration of hydrologic function are achieved, restoration of ecological function likely will involve few, if any, discrete activities or expenditures, with the possible exception of transplanting macroinvertebrates or fish to the re-established stream. As one commenter on the proposed rule observed, restoration of the ecological function of a stream for which the form and hydrologic function have been restored primarily means waiting for the streamside vegetation to mature and provide nutrients, habitat, and thermal regulation to the stream. We agree with that comment, with the exception of situations in which water quality problems resulting from the mining operation exist. In those cases, the permittee would be required to take measures to correct the water quality problem under other provisions of the final rule. Failure to correct the source of any water quality issue would result in the need for long-term treatment, in which case final paragraph (d)(2) would prohibit posting of a self-bond.

Thus, after further consideration, we anticipate that the direct cost of restoring the ecological function of a stream will be minimal, which means that the financial exposure of the alternative bonding system as a result of allowing use of self-bonding to guarantee restoration of ecological function is minimal. In addition, an alternative bonding system is a permanent entity, so the time required to document restoration of ecological function is not an issue. Therefore, we find that allowing an alternative bonding system to provide coverage for restoration of the ecological function of a stream poses little risk to the viability or financial health of the system.

Proposed paragraph (d)(2)(i) prohibited alternative bonding systems from covering long-term treatment of discharges that come into existence after the effective date of this final rule unless, upon discovery of the discharge, the permittee makes a cash contribution to the alternative bonding system in an amount that the regulatory authority determines would be sufficient to cover all future treatment costs. The proposed rule also required that the contribution be maintained in a separate account available only for treatment of the discharge for which the contribution was made.

Proposed paragraph (d)(2)(ii) specified that long-term treatment of discharges that came into existence before the effective date of the rule would continue to be covered by the alternative bonding system unless the state amends its alternative bonding system to provide otherwise. However, proposed paragraph (d)(2)(ii) also required that the permittee make a contribution to the alternative bonding system in an amount sufficient to cover all costs that the alternative bonding system will incur to treat the discharge in perpetuity.

Several commenters alleged that proposed paragraph (d)(2) was confusing because, on one hand, it

prohibited alternative bonding systems from covering long-term treatment of discharges, while, on the other hand, it listed financial assurances, which are a type of alternative bonding system, as an acceptable method of guaranteeing long-term treatment. In response, we revised proposed paragraph (d)(2), which is now paragraph (d)(1) of the final rule, to specify that financial assurances under section 800.18 may be used for long-term treatment of discharges, thus clarifying that the limitations in final paragraph (d)(1) on coverage of long-term treatment of discharges by alternative bonding systems do not apply to financial assurances.

One commenter expressed concern that proposed paragraph (d)(2) did not address either sites for which forfeiture occurs before the applicable regulatory program is amended to implement the final rule or sites for which bond forfeiture occurs after the effective date of the program amendment but before the permittee makes a contribution to the alternative bonding system fully covering the estimated costs of long-term treatment or replaces the alternative bonding system coverage with a collateral bond or financial assurance. The commenter noted that the scope of coverage of an existing alternative bonding system can only be changed through the submission and approval of a regulatory program amendment and even then can only be changed prospectively.

The commenter further expressed concern that proposed paragraph (d)(2)(ii) could allow the elimination of all alternative bonding system coverage of treatment obligations dating back to when the state attained primacy because the proposed rule would require continued coverage under the existing alternative bonding system ''unless the regulatory authority amends its program to specifically establish an earlier effective date.'' According to the commenter, this clause would enable a state to exclude all existing discharges requiring long-term treatment from coverage under the alternative bonding system by specifying the date of approval of the permanent regulatory program for the state as the ''earlier effective date'' to which proposed paragraph (d)(2)(ii) refers.

To cure these perceived defects in the proposed rule, the commenter recommended that the final rule specify that:

- The permittee's treatment obligation remains fully covered by any existing alternative bonding system unless and until a regulatory program amendment implementing section 800.9 takes effect and any existing (*i.e.,* pre-program amendment) coverage under the alternative bonding system is replaced by a sufficient site-specific financial guarantee or contribution.
- The alternative bonding system remains liable for the cost of treating the discharge for as long as necessary if the regulatory authority forfeits the permittee's bond before replacement of coverage occurs.
- The alternative bonding system remains liable for the amount of the shortfall if the permittee's bond, financial assurance, or cash contribution to the alternative bonding system proves adequate to cover only part of the cost of treating the discharge.

We extensively revised proposed paragraph (d)(2) to address the issues that the commenter identified. Paragraph (d)(1) of the final rule that we are publishing today, which is the primary successor to proposed paragraph (d)(2), applies uniform requirements to all discharges regardless of whether the discharge was discovered before or after the effective date of this final rule. Final paragraph (d)(1) provides that a discharge requiring long-term treatment is not eligible for coverage under an alternative bonding system, other than a financial assurance under section 800.18, unless the permittee contributes cash in an amount equal to the present value of all costs that the regulatory authority estimates that the alternative bonding system will incur to treat the discharge for as long as the discharge requires active or passive treatment, taking into account the expenses listed in section 800.18(c)(2)(i) through (v). Final paragraph (d)(1) also provides that, if the alternative bonding system will receive interest or other earnings on the cash contribution, the regulatory authority may deduct the present value of those estimated earnings from the present value of all estimated expenses when calculating the amount of the required cash contribution. Proposed paragraph (d)(2) required submission of a cash contribution ''sufficient'' to cover treatment costs, but it did not define or otherwise explain the meaning of ''sufficient.'' Final paragraph (d)(1) clarifies the meaning of ''sufficient,'' both by specifying the costs that must be included in the calculation and by specifying how those costs are to be used to determine the amount of the cash contribution.

We added paragraph (d)(2) to the final rule in response to the comment summarized above. Final paragraph (d)(2)(i) provides that the regulatory authority must amend an alternative bonding system (other than a financial assurance) that we approved as part of a regulatory program before the effective date of this final rule to specify that any permittee responsible for an existing discharge requiring long-term treatment must provide a cash contribution to the alternative bonding system to cover anticipated future treatment costs if the permittee elects to retain coverage of discharge treatment under the alternative bonding system. Final paragraph (d)(2)(i) differs from proposed paragraphs (d)(2)(i) and (ii) in that it would require use of the state program amendment process under 30 CFR 732.17 to establish the requirement that participants in alternative bonding systems make a cash contribution to the alternative bonding system to cover long-term treatment costs. The proposed rule would have bypassed the state program amendment process and imposed this requirement on all alternative bonding systems as of the effective date of the final rule. We agree with the commenter that use of the state program amendment process is more consistent with the principle of state primacy and part 732 of our regulations.

Final paragraph (d)(2)(ii) provides that an alternative bonding system (other than a financial assurance) that we approved as part of a regulatory program before the effective date of this final rule must continue to provide coverage for long-term treatment of discharges until we approve the program amendment to which final paragraph (d)(2)(i) refers and until the permittee either makes the cash contribution required by the state program counterpart to final paragraph (d)(1) or posts a separate financial assurance, collateral bond, or surety bond to cover treatment costs. Final paragraph (d)(2)(iii) provides that an alternative bonding system (other than a financial assurance) that we approved as part of a regulatory program before the effective date of this final rule must continue to provide coverage for long-term treatment of discharges if the permittee does not make the cash contribution required by the state program counterpart to final paragraph (d)(1), unless the permittee posts a separate financial assurance, collateral bond, or surety bond to cover treatment costs. Final paragraphs (d)(2)(ii) and (iii) should avoid any gap in coverage of discharges that require long-term treatment.

Final paragraph (d)(2)(iv) provides that final paragraphs (d)(2)(i) through (iii) do not apply to an alternative bonding system that we approved as part of a regulatory program if the system that we approved includes an

exclusion for coverage of discharges that require long-term treatment. Under those circumstances, the permittee is already required to provide separate coverage for treatment costs.

We decline to adopt the commenter's recommendation that the rule provide that the alternative bonding system remains liable for the amount of the shortfall if the financial assurance or bond posted by the permittee, or the cash contribution that the permittee makes to the alternative bonding system in lieu of posting a financial assurance or bond, proves inadequate to cover the full cost of treating the discharge. In the case of a cash contribution, the alternative bonding system already is responsible for treatment costs for all covered discharges in the event that the permittee defaults on that obligation. However, when the permittee posts a separate financial assurance or bond, the alternative bonding system would no longer be responsible for treatment costs because it no longer covers that discharge. As specified in final paragraph (d)(3), the alternative bonding system may elect to provide secondary coverage for a discharge covered by a separate financial assurance or bond, but it is not required to do so. It would be neither equitable nor legal to require that the alternative bonding system cover a shortfall for an obligation for which it is has neither provided coverage nor received revenue. If the permittee defaults on a discharge treatment obligation covered by a financial assurance or bond, the bond forfeiture provisions of section 800.50 would apply as they would in the case of default on any other reclamation obligation covered by a conventional bond. However, we anticipate that shortfalls would be rare, given the periodic adequacy reviews and adjustments required by §§ 800.15 and 800.18.

Another commenter observed that one consequence of adopting the proposed prohibition on alternative bonding system (other than financial assurances) coverage of long-term treatment of discharges would be to prevent the regulatory authority from relying on a statewide bond pool or similar mechanism for the limited purpose of bearing certain risks associated with a site-specific financial assurance (trust fund or annuity), such as the unpredicted failure of the treatment system or lower-than-expected returns. According to the commenter, the absence of a secondary risk-bearing mechanism means that the regulatory authority must require site-specific trust funds and annuities to hold conservative, low-risk investment portfolios, which would both reduce the expected rate of return and increase the amount of money that the permittee must deposit to establish the trust fund or annuity. As discussed in the preamble to final section 800.18, we agree with the commenter that site-specific trust funds and annuities should hold conservative, low-risk investment portfolios and we have revised section 800.18 to include that requirement. As discussed above, it would not be equitable to require bond pools and similar communal alternative bonding systems to provide secondary coverage for long-term treatment of discharges from operations that never participated in the alternative bonding system and never provided revenue to the system. However, in response to this comment, we added final paragraph (d)(3), which specifies that an alternative bonding system to which final paragraphs (d)(1) and (2) apply may elect to provide secondary coverage for long-term treatment of discharges when the permittee posts a financial assurance, collateral bond, or surety bond to cover estimated treatment costs instead of making the cash contribution required by paragraph (d)(1) to retain or obtain primary coverage under the alternative bonding system. Final paragraph (d)(3) also provides that the regulatory authority must establish terms and conditions for the secondary coverage to ensure that the coverage is consistent with the financial structure of the alternative bonding system.

One commenter asked why proposed paragraph (d)(2)(i) required that cash contributions for discharges discovered after the effective date of the final rule be in an amount sufficient to cover the cost of treating the discharge ''to meet Clean Water Act standards or the water quality requirements of this chapter,'' while proposed paragraph (d)(2)(ii) required that cash contributions for existing discharges be in an amount sufficient ''to treat the discharge in perpetuity.'' Some commenters opposed the language in proposed paragraph (d)(2)(ii), arguing that not all discharges require perpetual treatment and that the rule should be sufficiently flexible to accommodate advances in science and different treatment horizons.

Final paragraph (d)(1) addresses these concerns by replacing both of the proposed standards for duration of treatment with language requiring use of the cost calculation methodology set forth in section 800.18(c). Final paragraph (d)(1) provides that the amount of the cash contribution to the alternative bonding system must be in an amount equal to the present value of all costs that the regulatory authority estimates that the alternative bonding system will incur to treat the discharge for as long as the discharge requires active or passive treatment, taking into account the expenses listed in § 800.18(c)(2)(i) through (v). Final paragraph (d)(1) further provides that, if the alternative bonding system will receive interest or other earnings on the cash contribution, the regulatory authority may deduct the present value of those estimated earnings from the present value of all estimated expenses when calculating the amount of the required cash contribution. This approach also clarifies the meaning of ''sufficient'' in the proposed rule in a manner consistent with final section 800.18(d) for financial assurances and final section 800.18(c)(2) for collateral bonds and surety bonds posted for this purpose.

We did not adopt the provision in proposed paragraph (d)(2)(i) that would have required that the alternative bonding system place cash contributions in a separate account available only for treatment of the discharge for which the contribution is made. Some commenters alleged that this provision would be inconsistent with state accounting requirements and practices, as well as the pooling principle underlying most alternative bonding systems, other than financial assurances. After considering these arguments, we decided against adoption of the proposed provision because the alternative bonding system remains responsible for treatment of all discharges covered by the system, as well as completion of all other reclamation obligations of participating operations, in the event of permittee default, regardless of the method of accounting.

One commenter alleged that requiring participants in existing alternative bonding systems to make a cash contribution to the system or post separate financial assurances or bonds to cover treatment costs for discharges requiring long-term treatment was unfair because participants in alternative bonding systems have already paid entry fees and continue to pay whatever assessment is required to maintain participation in the system. According to the commenter, the proposed requirement would force participants to pay twice. We do not agree. The regulatory authority should not issue a permit for a proposed operation that would result in a discharge requiring long-term treatment. Therefore, typically, alternative bonding systems, like conventional bonds, are structured on the presumption that no such discharges will occur. If

unanticipated discharges requiring long-term treatment do occur, treatment costs could threaten the viability of the alternative bonding system or require increased assessments on participants with operations that do not result in discharges of that nature. Thus, a requirement that individual permittees bear the cost of treating unanticipated discharges requiring long-term treatment, either by posting a separate financial assurance, collateral bond, or surety bond or by making a cash contribution to the alternative bonding system, is the most equitable arrangement to avoid unfairly burdening other participants in the alternative bonding system. To the extent that an existing alternative bonding system may already require individual payments for future treatment of discharges of that nature, those payments may be deducted from the amount of the cash contribution.

Section 800.10: Information Collection

Section 800.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 800.

Section 800.11: When and how must I file a performance bond?

Section 800.11 discusses when and how a permit applicant or permittee must file a performance bond. We are adopting section 800.11 as proposed, with one revision. Proposed paragraph (c)(3) required that a permittee using incremental bonding file additional bond or bonds with the regulatory authority to cover each succeeding increment before initiating and conducting surface coal mining operations on that increment. However, proposed paragraph (c)(3) was silent on whether bonds for increments other than the initial increment must comply with proposed paragraph (b), which provided that the bond must be in an amount determined under section 800.14, be on a form prescribed and furnished by the regulatory authority, be made payable to the regulatory authority, and be conditioned upon the faithful performance of all the requirements of the regulatory program and the permit, including the reclamation plan. Section 509(a) of SMCRA [585] requires that performance bonds posted before permit issuance comply with requirements substantively identical to those contained in section 800.11(b) of this final rule. It further states that the permittee must file bonds for future increments ''in accordance with this section.'' Therefore, to ensure consistency with section 509(a) of SMCRA and to correct the ambiguity in the proposed rule, final paragraph (c)(3) provides that the bond or bonds for successive increments must comply with paragraph (b) of this final rule.

Section 800.12: What types of performance bond are acceptable?

In this final rule, we are revising the section heading to refer to the type of performance bond allowed, rather than the form of the bond as in the proposed and previous rules. This revision corrects an error in the proposed and previous rules and removes an inconsistency with section 509(a) of SMCRA,[586] in which the term ''form'' refers to the document that constitutes the bond, not the various types of bonding mechanisms. For the same reason, the final rule replaces the term ''form'' in section 800.12 with ''type'' wherever the former term appeared in the proposed rule.

Similarly, we are not adopting proposed paragraph (a), which corresponds to the first sentence of previous § 800.12. That sentence stated that the regulatory authority must prescribe the form of the performance bond. Section 509(a) of SMCRA does indeed require that the bond be filed ''on a form prescribed and furnished by the regulatory authority,'' but § 800.11(b)(2) of this final rule already includes a counterpart to that requirement and there is no need to repeat it in § 800.12.

One commenter argued that section 800.12 should not include any mention of alternative bonding systems or financial assurances because the section heading refers only to performance bonds and readers might draw the erroneous conclusion that financial assurances are something other than a type of alternative bonding system. We disagree. Section 509 of SMCRA,[587] which contains provisions governing both conventional bonds and alternative bonding systems, is simply entitled ''Performance Bonds.'' Therefore, all types of bonding mechanisms, both conventional and alternative, are considered performance bonds for purposes of section 509 of SMCRA. The heading for § 800.12 of this final rule merely follows the statutory lead. Section 800.12 of this final rule is intended to provide a complete picture of available bonding options under 30 CFR part 800 and section 509 of SMCRA. We revised the definition of ''financial assurance'' in section 800.5 to specify that it is a type of alternative bonding system, so there should be no confusion as to which provisions of part 800 apply to financial assurances.

Final paragraph (a), like paragraph (b) of the proposed rule, lists the types of performance bonds that the regulatory authority may accept; *i.e.,* a surety bond, a collateral bond, a self-bond, or a combination of those types of bond. The final rule differs from the proposed rule in that the final rule replaces ''form'' with ''type'' and updates cross-references. The regulatory authority has the discretion to allow posting of fewer types of bond as part of its approved regulatory program. For example, the regulatory authority may decide not to include self-bonds as an allowable type of bond under its regulatory program.

Final paragraph (b), like proposed paragraph (c), specifies that an alternative bonding system approved under § 800.9 of this rule may accept either more or fewer types of bond than those listed in paragraph (a) of the final rule. Final paragraph (b) differs from proposed paragraph (c) in that the final rule replaces ''form'' with ''type'' and updates cross-references.

Proposed paragraph (d) would have allowed the regulatory authority to accept only a financial assurance or a collateral bond to guarantee treatment of a long-term discharge under § 800.18 of this rule. Several commenters opposed this limitation. One regulatory authority requested that we revise proposed paragraph (d) to also allow the use of surety bonds because the regulatory authority had long relied upon surety bonds for coverage of some discharges requiring long-term treatment. According to the commenter, when a surety bond is forfeited, the surety typically establishes a fully-funded trust rather than paying the bond amount to the state. We confirm that, as stated in the preamble to the proposed rule,[588] surety bonds are not the best means of guaranteeing treatment of postmining discharges because surety bonds are not designed to provide the income stream needed to fund ongoing treatment. However, based on the assertion by the regulatory authority, we have added surety bonds to the list of acceptable instruments for guaranteeing long-term treatment. Paragraph (c) of the final rule, which corresponds to paragraph (d) of the proposed rule, provides that the regulatory authority may accept a financial assurance, collateral bond, or surety bond to guarantee long-term treatment of discharges.

[585] 30 U.S.C. 1259(a).

[586] 30 U.S.C. 1259(a).

[587] 30 U.S.C. 509.

[588] 80 FR 44436, 44533 (Jul. 27, 2015).

One commenter alleged that the proposed rule provides no supporting evidence for provisions that would restrict financially sound companies from using the entire panoply of financial mechanisms, including self-bonding mechanisms consistent with the requirements of section 509(c) of SMCRA.[589] The commenter noted that state and federal bonding regulations require that the regulatory authority examine a company's finances at the time of permit renewal to ascertain if the company continues to qualify to self-bond and that the regulatory authority also may conduct this evaluation as part of the midterm permit review. According to the commenter, these reviews provide sufficient protection to the regulatory authority. We do not agree that the periodic review requirement for self-bonds provides a satisfactory level of assurance that the funds needed for treatment will be available if the permittee ceases treatment. The periodic reviews cited by the commenter may be too late to ensure that a self-bonded company in rapidly deteriorating financial health has either the resources to post the required replacement bond or the ability to complete the reclamation work itself. Under final section 800.23(g), a self-bonded permittee must notify the regulatory authority whenever it no longer meets self-bonding eligibility criteria. The permittee then has 90 days to post a replacement surety or collateral bond. However, a financially distressed company may be unable to obtain replacement bond coverage, especially the large sums required to guarantee long-term treatment of discharges.

In addition, the final rule does not allow posting of a self-bond to cover long-term treatment of discharges because self-bonds provide none of the tangible financial resources afforded by financial assurances, collateral bonds, or surety bonds. Financial assurances provide the income stream needed to fund treatment. Collateral bonds require the deposit of letters of credit, cash accounts, certificates of deposit, bonds, or real property, all of which can be used to fund treatment if the permittee fails to do so. Surety bonds provide a guarantee of payment of a sum certain from an independent company.

Proposed paragraph (e) provided that the regulatory authority may accept only a surety bond, a collateral bond, or a combination thereof to guarantee restoration of the ecological function of a perennial or intermittent stream under proposed §§ 780.28(c), 784.28(c), 816.57(b), and 817.57(b). Many commenters opposed this proposed rule and the underlying requirement to post a bond to guarantee restoration of the ecological function of perennial and intermittent streams through which the permittee mines. The reasons for opposition included uncertainty on how to determine the amount of the bond or the duration of the bond, a belief that the bond amount would be astronomical and financially ruinous, and concerns that this requirement would dry up the remaining sources of surety bonds for the reclamation of coal mines. An organization representing the surety industry noted that a surety bond covering this obligation might not be widely available in the market because, typically, there must be certainty regarding the scope and nature of the obligation and the duration of the obligation must be reasonable. According to the commenter, a surety would have great difficulty underwriting the new obligation because that obligation lacks an objective standard and appears susceptible to wide variability based on circumstances beyond the permittee's control. The commenter further explained that, when underwriting a bond, the surety makes a judgment about the operational and financial viability of the permittee—a judgment that becomes less certain and more risky as the obligation extends further into the future. In this case, according to the commenter, the duration of the obligation would be too long for the surety industry to underwrite.

We recognize that there are uncertainties associated with restoration of the ecological function of streams. We also recognize that some in the surety industry may be unwilling to underwrite bonds for this reclamation obligation. However, surety bonds are not the only available option. Collateral bonds are a possibility under final paragraph (d), as are alternative bonding systems under final § 800.9 in states that have those systems. Once reconstruction of the form of the stream and restoration of hydrologic function have been accomplished, we anticipate that subsequent restoration of ecological function likely will involve few, if any, discrete activities or expenditures, with the possible exception of transplanting macroinvertebrates or fish to the re-established stream.

One commenter on the proposed rule observed that restoration of the ecological function of perennial and intermittent streams, which the permittee must achieve prior to Phase III bond release, primarily means ensuring the performance standards for the streamside vegetation have been satisfied consistent with final section 816.115, ensuring the streamside vegetation has matured sufficiently to provide nutrients, habitat, and thermal regulation to the stream. The commenter is largely correct, because under our regulations most of the physical reconstruction necessary to reestablish the ecological function of the stream will have been completed at earlier phrases. Specifically, pursuant to final section 800.42(b)(1), the *form* of a stream, as defined in final § 701.5, must be restored prior to achieving Phase I bond release, while pursuant to final § 800.42(c)(1)(ii), the *hydrologic function* of the stream must be restored prior to achieving Phase II bond release. Also, prior to achieving Phase II bond release, revegetation, including successfully establishing the streamside vegetative corridor, pursuant to final § 800.42(c)(1)(iii) must occur. For these reasons, the final rule does not require that costs associated with reconstructing the stream channel and floodplain be included in the cost of restoring ecological function; those reconstruction costs are specifically included as part of the costs of some other element of the reclamation plan—most likely the cost of final grading and reestablishment of the surface drainage pattern and stream-channel configuration, which must be accomplished before Phase I bond release. Similarly, the final rule does not require that costs associated with establishment of the streamside vegetative corridor be included in the cost of restoring ecological function, because those costs are specifically included as part of the cost of implementing the revegetation plan approved in the permit, which must identify the type of vegetation and planting techniques required for establishment of streamside vegetative corridors, typical of Phase II bond release.

However, the commenter's point about revegetation should not be taken too far. Compliance with the performance standards for a streamside vegetative corridor is not the only consideration when regulatory authorities assess whether the permittee has restored the ecological function of perennial and intermittent streams. Restoration of ecological function includes restoration of the species richness, diversity, and extent of organisms for which the stream provides habitat, food, water, and shelter. Nonetheless, most of the reclamation work necessary to establish conditions favorable to restoration of

[589] 30 U.S.C. 1259(c).

these organisms will have occurred during Phase I or Phase II reclamation. We thus anticipate that the direct cost of Phase III reclamation, including restoring the ecological function of a perennial or intermittent stream, will be minimal in comparison to those incurred in connection with Phase I and Phase II reclamation. This means in turn that the amount of bond required to guarantee restoration of ecological function should be minimal. The regulatory authority may allow the permit applicant or permittee to post any type of performance bond for reclamation obligations other than restoration of the ecological function of a stream. However, the permit applicant or permittee must post a type of bond other than a self-bond to guarantee restoration of the ecological function of a stream. To be consistent with final § 800.42(c)(2), when determining the amount of bond that should be held to ensure restoration of ecological function, the regulatory authority must consider the amount of work necessary to facilitate restoration. Furthermore, mining companies can avoid this problem entirely if they do not mine through perennial or intermittent streams. Therefore, we are adopting proposed paragraph (e) as paragraph (d) of the final rule. Final paragraph (d), which is substantively identical to proposed paragraph (e), provides that the regulatory authority may accept any type of performance bond listed in paragraph (a) other than a self-bond to guarantee restoration of the ecological function of a perennial or intermittent stream under §§ 780.28(e) and (g), 784.28(e) and (g), 816.57(g), and 817.57(g).

One commenter alleged that eliminating self-bonding for mining through ephemeral streams would severely limit the ability to mine in the Powder River Basin because of the prevalence of self-bonds in that region. Our final rule does not require the restoration of ecological function for ephemeral streams. Therefore, the final rule would not have the effect alleged by the commenter.

Some commenters argued that there is no basis under SMCRA to limit the types of bond that the applicant or permittee may post to cover this obligation. According to another commenter, the preamble to the proposed rule did not justify the exclusion of self-bonds because it did not discuss regulatory authority experience with self-bonds or identify the time required for restoration of ecological function. The implication is that we have not shown that self-bonds cannot satisfactorily guarantee restoration of ecological function.

We do not agree with the commenters' assertion that we have no legal basis under SMCRA to prohibit the use of self-bonds to guarantee restoration of the ecological function of streams. Section 509(b) of SMCRA [590] grants the applicant or permittee the right to post a surety or collateral bond. However, language of section 509(c) of SMCRA [591] differs from that of section 509(b) in that section 509(c) provides that the regulatory authority ''may'' accept a self-bond. The term ''may'' is discretionary, which means that the regulatory authority has the authority to decline to accept a self-bond. In this case, we find it prudent to prohibit the use of self-bonds to guarantee restoration of the ecological function of streams because the requirement is new, the time needed to accomplish restoration of ecological function is uncertain, and there is little industry or other experience available for comparison.

Section 800.13: What is the liability period for a performance bond?

Proposed § 800.13(a)(1) provided that liability under the performance bond will be for the duration of the surface coal mining and reclamation operation and for a period coincident with the period of extended responsibility for successful revegetation under § 816.115 or § 817.115 or until achievement of the reclamation requirements of the regulatory program and the permit, whichever is later. We received no comments on this provision and are adopting it as proposed.

Proposed paragraph (a)(2) provided that, with the approval of regulatory authority, the applicant or permittee may post a performance bond to guarantee specific phases of reclamation within the permit area, provided that the sum of the phase bonds posted equals or exceeds the total amount required under §§ 800.14 and 800.15. We received no comments on this provision and are adopting it as proposed with minor editorial revisions.

Proposed paragraph (b) provided that isolated and clearly defined portions of the permit area that require extended liability may be separated from the original area and bonded separately with the approval of the regulatory authority. Proposed paragraph (b)(1) specified that these areas must be limited in extent and not constitute a scattered, intermittent, or checkerboard pattern of failure, while proposed paragraph (b)(3) provided that the regulatory authority must include any necessary access roads or routes in the area under extended liability. We received no comments on those proposed provisions. For the reasons discussed below, we are adopting proposed paragraph (b)(3) as final paragraph (b)(2). Otherwise, we are adopting paragraph (b) as proposed, with minor editorial revisions.

Proposed paragraph (b)(2) provided that the introductory text of proposed paragraph (b) and proposed paragraphs (b)(1) and (3) apply to the amount of bond posted to guarantee restoration of the ecological function of perennial and intermittent streams. We are not adopting proposed paragraph (b)(2) because it is unnecessary. The introductory text of final paragraph (b) and final paragraphs (b)(1) and (2) have no limitations in terms of applicability. Thus, there is no need to include language that merely identifies one situation (restoration of a stream's ecological function) that may require extended liability under the bond.

Proposed paragraph (c) provided that, if the regulatory authority approves a long-term, intensive agricultural postmining land use, the revegetation responsibility period specified under § 816.115 or § 817.115 will start on the date of initial planting for the long-term agricultural use. We received no comments on this paragraph and are adopting it as proposed.

Proposed paragraph (d)(1) provided that the bond liability of the permittee includes only those actions that the permittee is required to perform under the permit and regulatory program to complete the reclamation plan for the area covered by the bond. We received no comments on paragraph (d)(1) and are adopting it as proposed.

Proposed paragraph (d)(2) provided that the performance bond does not cover implementation of an alternative postmining land use approved under § 780.24(b) or § 784.24(b) when implementation of the land use is beyond the control of the permittee. It also specified that, except as provided in §§ 785.14(b)(11) and 785.16(a)(13), the permittee is responsible only for restoring the site to conditions capable of supporting the approved postmining land use. Upon further evaluation, we determined that proposed paragraph (d)(2) is not consistent with our previous, proposed, and final postmining land use regulations in §§ 816.133 and 817.133, all of which require that the permittee restore all disturbed areas in a timely manner to conditions that are capable of supporting either the uses they were

[590] 30 U.S.C. 1259(b).

[591] 30 U.S.C. 1259(c).

capable of supporting before any mining or higher or better uses. Our postmining land use regulations are based upon section 515(b)(2) of SMCRA,[592] which contains a substantively identical requirement. Two court decisions have held, in a slightly different context, that a requirement to implement the postmining land use is inconsistent with section 515(b)(2) of SMCRA and its legislative history, which only require that the permittee demonstrate the capability of the land to support the postmining land use and demonstrate restoration of premining productivity.[593]

The first sentence of proposed paragraph (d)(2) provided that the bond does not cover implementation of an approved alternative postmining land use that is beyond the control of the permittee. That language is inconsistent with the court decisions summarized above, which, in effect, held that SMCRA does not require that the permittee implement any approved postmining land use, regardless of whether that use is an alternative postmining land use. Therefore, we are not adopting the rule as proposed. The first sentence of final paragraph (d)(2) simply provides that the performance bond does not cover implementation of the approved postmining land use or uses.

For similar reasons, we are not adopting the second sentence of proposed paragraph (d)(2), which provided that the permittee is responsible only for restoring the site to conditions capable of supporting the approved postmining land use. As discussed above, section 515(b)(2) of SMCRA and §§ 816.133 and 817.133 of our final rule require restoration to a condition capable of supporting either the uses it could support before any mining or higher or better uses. Proposed paragraph (d)(2) is less stringent than those provisions because it specifies that the permittee's bond liability is limited to restoration of the land to a condition in which it is capable of supporting the approved postmining land use. Thus, it does not extend bond coverage to full restoration of the site's premining capability, which is, in part, what section 515(b)(2) of SMCRA and §§ 816.133 and 817.133 of our final rule require. In addition, the introductory clause of the second sentence of proposed paragraph (d)(2) created an exception for mountaintop removal mining operations and steep-slope variances from approximate original contour restoration requirements. Sections 515(c)(3) and (e)(2) of SMCRA [594] authorize approval of mountaintop removal mining operations and steep-slope variances only for certain types of postmining land uses, but SMCRA does not require that the permittee actually implement those uses as part of surface coal mining and reclamation operations. Therefore, we are not adopting the introductory clause of the second sentence of proposed paragraph (d)(2) as part of final paragraph (d)(2), which now simply states that the permittee is responsible only for restoring the site to conditions capable of supporting the uses specified in § 816.133 or § 817.133.

Finally, proposed paragraph (d)(4) provided that bond liability for treatment or abatement of long-term discharges is specified in § 800.18. However, while final § 800.18(b) allows the use of collateral and surety bonds to cover long-term treatment of discharges, it focuses on the use of financial assurances for that purpose. Financial assurances are a type of alternative bonding system. Therefore, final paragraph (d)(4) does not include the term ''bond.'' It simply provides that § 800.18 specifies the liability for long-term treatment or abatement of discharges.

Section 800.14: How will the regulatory authority determine the amount of performance bond required?

Proposed § 800.14(a) provided that the regulatory authority must determine the amount of the performance bond required for the permit or permit increment based upon, but not limited to, the requirements of the permit; the probable difficulty of reclamation, giving consideration to the topography, geology, hydrology, and revegetation potential of the permit area and the biological condition of perennial and intermittent streams within the permit and adjacent areas; and the estimated reclamation costs submitted by the permit applicant. Proposed paragraph (a) was substantively identical to previous paragraph (a) with the exception that proposed paragraph (a)(2) added the biological condition of perennial and intermittent streams within the permit and adjacent areas to the list of factors upon which the bond amount must be based. One commenter alleged that this addition would require that the bond cover impacts to adjacent areas, not just the permit area. This was not our intent. Upon reconsideration, we decided not to adopt the added phrase. Paragraph (a)(1), which requires consideration of the requirements of the permit, already covers costs associated with mining through and restoring perennial and intermittent streams, including restoration of the ecological function of those streams, as well as any measures taken to protect streams. Therefore, there is no need for specific mention of the biological condition of perennial and intermittent streams in paragraph (a)(2).

One commenter observed that the term ''probable difficulty of reclamation'' in proposed paragraph (a)(2) is not defined and is otherwise vague. The commenter recommended that we delay adoption of this provision until after we convene a panel of experts to consider this matter and develop the needed factors and methods. We do not agree. Section 509(a) of SMCRA [595] provides that ''[t]he amount of the bond required for each bonded area * * * shall reflect the probable difficulty of reclamation giving consideration to such factors as topography, geology of the site, hydrology, and revegetation potential.'' Previous § 800.14(a)(3) included an equivalent requirement. Calculation of bond amounts under these provisions has rarely been an issue in recent years. In practice, the regulatory authority typically calculates the amount of bond required by determining what it would cost the regulatory authority to complete the reclamation plan in the event of forfeiture. This method indirectly includes consideration of the listed factors. Therefore, we find that convening a panel of experts to flesh out the meaning of this statutory requirement is neither necessary nor an efficient use of resources.

Proposed paragraph (b)(1) provided that the amount of the performance bond must be sufficient to assure the completion of the reclamation plan if the work has to be performed by a third party under contract with the regulatory authority in the event of forfeiture. We received no comments on proposed paragraph (b)(1) and are adopting it as paragraph (b) of the final rule.

We are not adopting proposed paragraph (b)(2), which required that the calculations used to determine the

[592] 30 U.S.C. 1265(b)(2).

[593] *See In re: Permanent Surface Mining Regulation Litigation,* 14 Env't Rep.Cas. (BNA) 1083, 1106 (SMCRA does not require actual grazing or mandatory crop production on the reclaimed area to demonstrate that the land has been restored to a condition in which it is capable for use as pasture land or prime farmland), and 1108 (''The Act only requires an operator to demonstrate a reasonable likelihood of sustaining higher or better use.'' It does not support a requirement for letters of commitment or a firm written commitment from third parties to implement the use.) (D.D.C. Feb. 26, 1980). *see also In re Permanent Surface Mining Regulation Litigation* (Consolidated Action), 620 F. Supp. 1519, 1563 (D.D.C. 1985).

[594] 30 U.S.C. 1265(c)(3) and (e)(2).

[595] 30 U.S.C. 1259(a).

amount of bond required for the permit specifically identify the amount of bond needed to guarantee restoration of the ecological function of a perennial or intermittent stream under proposed §§ 780.28 and 816.57 or proposed §§ 784.28 and 817.57. Proposed paragraph (b)(2) further provided that the permittee must post either a separate bond for that amount or incorporate that amount into the bond posted for the entire permit or increment. Some commenters expressed concern about how to monetize costs for restoring the ecological function of a stream, which, one commenter noted, primarily involves waiting for the streamside vegetative corridor to mature. We agree that restoration of the ecological function of a stream, as opposed to reconstruction of the stream channel and planting of the streamside vegetative corridor, involves few, if any, discrete costs, with the possible exception of transplants of macroinvertebrates and fish. Therefore, we decided not to require a separate calculation of the cost of restoration of the ecological function of a stream.

Proposed paragraph (c) provided that, when the permit includes a variance from approximate original contour restoration requirements under section 785.16, the amount of the performance bond must be sufficient to restore the disturbed area to the approximate original contour if the approved postmining land use is not implemented by the end of the applicable revegetation responsibility period under § 816.115 or § 817.115. We are not adopting proposed paragraph (c) or its counterpart in section 785.16 for the reasons discussed in the preamble to proposed § 785.16(a)(13) and final § 785.16(b)(2). In lieu of proposed §§ 785.16(a)(13) and 800.14(c), final § 785.16(b)(2) provides that a permit that contains a variance from restoration of approximate original contour must include a condition prohibiting the release of any part of the bond posted for the permit until substantial implementation of the approved postmining land use is underway. The prohibition on bond release does not apply to any portion of the bond that is in excess of an amount equal to the cost of regrading the site to its approximate original contour and revegetating the regraded land in the event that the approved postmining land use is not implemented.

Proposed paragraph (d) provided that the amount of financial assurance required for long-term treatment of discharges must be determined in accordance with section 800.18. Commenters recommended that we apply similar requirements to the determination of the amount of performance bond required when the permittee elects to post a collateral bond or surety bond instead of a financial assurance for this purpose. We agree and have added those bond calculation requirements to final section 800.18(c). We revised proposed paragraph (d) to reference collateral bonds and surety bonds to be consistent with this change. We also redesignated proposed paragraph (d) as final paragraph (c) to reflect our decision not to adopt proposed paragraph (c). Final paragraph (c) provides that the amount of financial assurance, collateral bond, or surety bond required to guarantee long-term treatment of discharges must be determined in accordance with § 800.18.

Proposed paragraph (e) provided that the total performance bond initially posted for the entire area under one permit may not be less than $10,000. Proposed paragraph (f) provided that the permittee's financial responsibility under § 817.121(c) for repairing or compensating for material damage resulting from subsidence may be satisfied by the liability insurance policy required under § 800.60. We received no comments on these proposed paragraphs and are adopting them as proposed, with the exception that we redesignated them as final paragraphs (d) and (e), respectively, to reflect our decision not to adopt proposed paragraph (c).

Section 800.15: When must the regulatory authority adjust the performance bond amount and when may I request adjustment of the bond amount?

Proposed § 800.15 contained procedures and criteria for adjustment of bond amounts after permit issuance. Final § 800.15 is substantively identical to proposed § 800.15, but, in the final rule, we revised and reorganized the paragraphs to improve clarity and to correct an inadvertent error in the proposed rule. With the exception of proposed paragraphs (a)(2)(ii) and (iii), proposed paragraph (a) applied only to situations in which the regulatory authority *must* adjust the bond amount. Proposed paragraph (a)(2)(ii) identified the circumstances under which the permittee *may* request a bond adjustment. To better distinguish between these two scenarios, we are adopting proposed paragraph (a)(2)(ii) as final paragraph (b). Proposed paragraph (a)(2)(iii) provided that the regulatory authority may not use the bond adjustment process to reduce the amount of the performance bond to reflect changes in the cost of reclamation resulting form completion of activities required under the reclamation plan. We are adopting proposed paragraph (a)(2)(iii) as paragraph (d) in the final rule because it applies to both adjustments initiated by the regulatory authority and adjustments initiated by the permittee.

Proposed paragraph (b) provided that the regulatory authority must notify the permittee, the surety, and any person with a property interest in collateral who has requested notification under § 800.21(f) of any proposed adjustment to the bond amount. It also specified that the regulatory authority must provide the permittee an opportunity for an informal conference on the adjustment. We are adopting proposed paragraph (b) as paragraph (e) in the final rule because it applies to both adjustments initiated by the regulatory authority and adjustments initiated by the permittee. We also are adding an introductory clause to final paragraph (e) to clarify that the paragraph sets forth notice and procedural requirements that the regulatory authority must follow before making any bond adjustment.

Proposed paragraph (c) provided that bond reductions under proposed paragraph (a) are not subject to the bond release requirements and procedures of §§ 800.40 through 800.44. We received no comments on this paragraph and are adopting it as proposed, with one conforming revision. Final paragraph (c) refers to bond reductions under paragraphs (a) and (b) to reflect the reorganization discussed above in which we revised proposed paragraph (a) to include just those provisions that pertain only to bond adjustments required by the regulatory authority in final paragraph (a) and moved those provisions of proposed paragraph (a) that pertain only to bond adjustments requested by the permittee to final paragraph (b).

The final rule redesignates proposed paragraphs (d), (e), and (f) as paragraphs (f), (g), and (h), respectively. Proposed paragraph (d) provided that, in the event that an approved permit is revised in accordance with subchapter G, the regulatory authority must review the bond amount for adequacy and, if necessary, require adjustment of the bond amount to conform to the permit as revised. It also included a reminder that the bond adjustment process may not be used to reduce bond amounts on the basis of completion of reclamation activities. We received no comments on proposed paragraph (d), which we are adopting as final paragraph (f), with minor editorial revisions for clarity.

Proposed paragraph (e) provided that the regulatory authority must require that the permittee post a bond or financial assurance in accordance with § 800.18 whenever a discharge that will require long-term treatment is identified. We received no comments on proposed paragraph (d). Final paragraph (g) is substantively identical to proposed paragraph (e), with minor changes to conform to plain language principles and to clarify that the bond must be either a collateral bond or a surety bond.

Proposed paragraph (f) provided that the regulatory authority may not reduce the bond amount when the permittee does not restore the approximate original contour as required or when the reclamation plan does not reflect the level of reclamation required under the regulatory program. We received no comments on proposed paragraph (f), which we are adopting as final paragraph (h).

Section 800.16: What are the general terms and conditions of a performance bond?

We are adopting section 800.16 as proposed. We received no comments on this section.

Previous § 800.17: Bonding Requirements for Underground Coal Mines and Long-Term Coal-Related Surface Facilities and Structures

We removed and reserved previous § 800.17 for the reasons discussed in the preamble to the proposed rule.[596] We received no comments specifically opposing our proposed removal of this section.

Section 800.18: What special provisions apply to financial guarantees for long-term treatment of discharges?

We received a wide range of comments on proposed § 800.18. Some commenters challenged the validity of the proposed rule on legal grounds, while others supported it, sometimes with caveats.

One commenter asked how the length of time that a financial assurance or bond must remain in place under § 800.18, which could be in perpetuity, is consistent with section 509(b) of SMCRA.[597] That section of the Act provides that ''[l]iability under the bond shall be for the duration of the surface coal mining and reclamation operation and for a period coincident with [the] operator's responsibility for revegetation requirements in section 515.'' Section 509(b) establishes a minimum liability period for a bond, not a maximum. Section 509(b) must be read in conjunction with section 519(c)(3),[598] which provides for ''the release of the remaining portion of the bond, but not before the expiration of the period specified for operator responsibility in section 515.'' Section 519(c)(3) further specifies that ''no bond shall be fully released until all reclamation requirements of this Act are fully met.''

One commenter noted that ''trust funds generally are [the] appropriate mechanism for guaranteeing indefinite and variable operation and maintenance expenses and periodic outlays for refurbishing or replacing capital equipment or improvements.'' We agree with this commenter's assessment because trusts are structured to provide the revenue stream needed to fund long-term treatment of discharges.

Another commenter recommended that we use the term ''trust'' in place of ''trust fund'' because the trust fund is only one element of a trust. We revised the rule as recommended.

We discuss other comments below in the context of the specific provisions to which they apply.

Final Paragraph (a): Applicability

Proposed paragraph (a)(1) provided that § 800.18 applies whenever surface coal mining operations, underground mining activities, or other activities or facilities regulated under SMCRA result in a discharge to surface water or groundwater that requires treatment and that continues or may reasonably be expected to continue after the completion of mining, backfilling, grading, and the establishment of revegetation. We received no comments specific to proposed paragraph (a)(1), which we are adopting as final with a few nonsubstantive editorial revisions to improve clarity. Final paragraph (a)(1) provides that § 800.18 applies to any discharge resulting from surface coal mining operations, underground mining activities, or other activities or facilities regulated under SMCRA whenever both the discharge and the need to treat the discharge continue or may reasonably be expected to continue after the completion of mining, backfilling, grading, and the establishment of revegetation. Consistent with proposed paragraph (a)(1), final paragraph (a)(1) also provides that the term ''discharge'' includes both discharges to surface water and discharges to groundwater.

Proposed paragraph (a)(2) provided that § 800.18 also applies whenever information available to the regulatory authority documents that a discharge of the nature described in paragraph (a)(1) will develop in the future, provided that the quantity and quality of the future discharge can be determined with reasonable probability. We are adopting proposed paragraph (a)(2) as final without change.

One commenter urged that final § 800.18 include language clarifying that it does not authorize approval of a permit application for a proposed operation that anticipates creating a discharge for which long-term treatment would be required. The commenter expressed concern that, otherwise, proposed paragraph (a)(2) could be interpreted as allowing approval and issuance of a permit with a predicted discharge of this nature. The commenter notes that approval of a permit application of this nature would be inconsistent with proposed § 773.15(n), which prohibits the regulatory authority from approving a permit application unless it finds that the proposed operation has been designed to prevent discharges requiring long-term treatment.

We agree with the commenter that a permit applicant may not circumvent § 773.15(n) and receive a permit for a site that is predicted to develop a discharge requiring long-term treatment by posting a financial assurance under § 800.18 to cover treatment costs. In response to this concern, we added paragraph (a)(3) to the final rule. That paragraph provides that § 800.18 applies only to discharges that are not anticipated at the time of permit application approval. It further states that nothing in § 800.18 authorizes approval of a permit application for a proposed operation that anticipates creating a discharge for which long-term treatment would be required.

Finally, we are adding paragraph (a)(4) to the final rule as a reminder that, under final § 800.18(g), the regulatory authority must require adjustment of the bond amount whenever it becomes aware of a situation described in paragraph (a)(1) or (2).

Final Paragraph (b): Type of Financial Instruments Allowed

Proposed paragraph (b)(1) provided that, except for permits covered by an alternative bonding system, the permittee must post a financial assurance instrument or a collateral bond to guarantee treatment or abatement of postmining discharges. One commenter opposed adoption of proposed paragraph (b)(1), alleging that ''[t]he record is devoid of any basis for restricting financially sound companies from using the entire panoply of financial mechanisms, including self-

[596] 80 FR 44436, 44537 (Jul. 27, 2015).

[597] 30 U.S.C. 1259(b).

[598] 30 U.S.C. 1269(c)(3).

bonding mechanisms consistent with the requirements of Section 509(c) of SMCRA.'' [599] The commenter noted that state and federal bonding regulations require that the regulatory authority examine a company's finances at the time of permit renewal to ascertain if the company continues to qualify to self-bond. The commenter further noted that the regulatory authority also can review a company's eligibility to self-bond at the time of the midterm permit review. Therefore, according to the commenter, there is neither a legal basis nor a need for proposed paragraph (b)(1).

We do not agree with the commenter that periodic review of a permittee's eligibility to self-bond provides a satisfactory level of assurance that the funds needed for treatment will be available if the permittee ceases treatment. The periodic reviews cited by the commenter may be too late to ensure that a self-bonded company in rapidly deteriorating financial health has either the resources to post the required replacement bond or the ability to complete the reclamation work itself. Under 30 CFR 800.23(g), a self-bonded permittee must notify the regulatory authority whenever it no longer meets self-bonding eligibility criteria. The permittee then has 90 days to post a replacement surety or collateral bond. However, a financially distressed company may be unable to obtain replacement bond coverage, especially the large sums required to guarantee long-term treatment of discharges.

In addition, the final rule does not allow posting of a self-bond to cover long-term treatment of discharges because self-bonds provide none of the tangible financial resources afforded by financial assurances, collateral bonds, or surety bonds. Financial assurances provide the income stream needed to fund treatment. Collateral bonds require the deposit of letters of credit, cash accounts, certificates of deposit, stocks, bonds, or real property, all of which can be used to fund treatment if the permittee fails to do so. Surety bonds provide a guarantee of payment of a sum certain from an independent company.

One regulatory authority requested that we revise the rule to also allow the use of surety bonds because it had long done so with success. As stated in the preamble to the proposed rule,[600] we continue to believe that surety bonds are not the best means of guaranteeing treatment of a postmining discharge because a surety bond is not designed to provide the income stream needed to fund ongoing treatment. However, based on the assertion of successful usage by the regulatory authority for this purpose, we have added surety bonds to the list of acceptable instruments for guaranteeing long-term treatment.

Another commenter suggested that we avoid use of the term ''financial assurance instrument'' because a financial assurance always consists of more than one instrument. At a minimum, according to the commenter, a financial assurance that relies upon a trust will include the indemnity agreement describing the terms of the assurance and the trust agreement governing the trust. We agree with the commenter's recommendation and rationale and revised proposed paragraph (b)(1) accordingly. Final paragraph (b)(1) uses the term ''financial assurance'' in place of ''financial assurance instrument.''

After the revisions discussed above, final paragraph (b)(1) provides that, except for discharges covered by alternative bonding systems other than financial assurances, the permittee must post a financial assurance, a collateral bond, or a surety bond to guarantee treatment or abatement of discharges that require long-term treatment. We replaced the term ''postmining discharges'' in proposed paragraph (b)(1) with ''discharges that require long-term treatment'' to improve clarity and to be consistent with the terminology used elsewhere in our regulations in this context.

Proposed paragraph (b)(2) provided that the amount of a collateral bond posted to guarantee treatment of a discharge must include the cost of treating the discharge during the time required to collect and liquidate the bond and convert the proceeds to a financial instrument that will generate funds in an amount sufficient to cover future treatment costs and associated administrative expenses. We extensively revised proposed paragraph (b)(2) in response to comments and incorporated it as part of final paragraph (c)(2). The preamble to final paragraph (c) discusses the comments received and the revisions made.

Proposed paragraph (b)(3) provided that operations with discharges in states with an approved alternative bonding system must comply with the requirements of proposed § 800.9(d)(2), which pertains to alternative bonding systems other than financial assurances. We received no comments specific to proposed paragraph (b)(3). We are adopting proposed paragraph (b)(3) in revised form as final paragraph (b)(2). We revised this paragraph for consistency with our revisions to section 800.9(d). We also added language to clarify that final paragraph (b)(2) does not apply to financial assurances, consistent with the intent of the proposed rule. Final paragraph (b)(2) provides that operations with discharges in states with an alternative bonding system (other than a financial assurance) approved under subchapter T must comply with the requirements of the applicable alternative bonding system.

Proposed Paragraph (c): Discharge Treatment Standards for Cost Calculation Purposes

Proposed paragraph (c) provided that calculation of the amount of financial assurance or collateral bond required must include the cost of treating the discharge to meet any applicable numerical standards or limits that are in effect at the time that the regulatory authority issues an order requiring posting of a financial assurance or bond, provided that the numerical standards or limits are established in the SMCRA permit, a permit or authorization issued under the Clean Water Act, or regulations implementing the Clean Water Act. Some commenters objected to this provision, alleging that a SMCRA permit cannot establish water quality standards or discharge limits. According to the commenters, only the U.S. Environmental Protection Agency and states with delegated authority under the Clean Water Act have the authority to set water quality standards. Nothing in the proposed rule was intended to imply that the SMCRA regulatory authority may establish water quality standards of the nature specified in the Clean Water Act. Upon further evaluation, we determined that proposed paragraph (c) is unnecessary. Therefore, the final rule does not include it. The regulatory authority will determine when a discharge requires long-term treatment, and we will not attempt to define all potential sources of treatment requirements in this rule.

One commenter on proposed paragraph (c) urged us to allow the use of cost data from the operation of existing water treatment facilities to project likely future costs of long-term treatment of discharges. No rule change is needed because nothing in section 800.18 prohibits the use of data from existing water treatment facilities to predict future treatment costs.

Final Paragraph (c): Calculation of Amount of Financial Assurance or Performance Bond

As discussed above, we did not adopt proposed paragraph (c). Instead, final paragraph (c) specifies how to

[599] 30 U.S.C. 1259(c).

[600] 80 FR 44436, 44533 (Jul. 27, 2015).

determine the amount of financial assurance or performance bond required to guarantee long-term treatment of a discharge. Proposed paragraph (d) already contained provisions governing calculation of the amount of financial assurance required, so final paragraph (c)(1) specifies that, if the permittee elects to post a financial assurance, the regulatory authority must calculate the amount of financial assurance required in the manner provided in final paragraph (d).

As also discussed above, we are adopting proposed paragraph (b)(2) in revised form as final paragraph (c)(2). Final paragraph (c)(2) establishes how the regulatory authority must calculate the amount of collateral bond or surety bond that a permittee electing that option must post. One commenter on proposed paragraph (b)(2) observed that the regulatory authority may not have the legal authority under state law to convert the bond forfeiture proceeds to a financial instrument that will generate funds. According to the commenter, a collateral bond may not be an appropriate mechanism for securing long-term treatment obligations if the applicable state law requires the regulatory authority to deposit bond forfeiture proceeds in an account that earns little or no interest. The commenter recommended that we revise proposed paragraph (b)(2) to provide that, in determining the amount of the collateral bond, the regulatory authority must account for how the moneys obtained by collecting and liquidating the bond will be managed.

We do not agree that a collateral bond may not be an appropriate mechanism for guaranteeing long-term treatment obligations. A collateral bond does not generate a revenue stream for treatment, but that does not matter as long as the permittee continues to treat the discharge and the amount of the bond is sufficient to cover future treatment costs in the event of forfeiture. Nor do we agree with the commenter's recommendation that we revise proposed paragraph (b)(2) to provide that, in determining the amount of the collateral bond, the regulatory authority must account for how the moneys obtained by collecting and liquidating the bond will be managed. Regulatory authorities have extensive experience managing bond forfeitures under SMCRA and we have no reason to believe that they are not capable of managing collateral bonds posted to guarantee long-term treatment of discharges.

Final paragraph (c)(2) requires that the amount of the bond be no less than the present value of the funds needed to pay for treatment of the discharge in perpetuity, together with related administrative, maintenance, renovation, replacement, and land reclamation expenses. In response to the commenter's concerns with respect to bond forfeiture and the handling of bond forfeiture proceeds, we revised our bond forfeiture regulations to clarify that, if the permittee defaults on treatment obligations, the regulatory authority must forfeit an amount of bond that is no less than the estimated total cost of achieving the reclamation plan requirements with respect to the discharge. We also revised our bond forfeiture regulations to specify that the regulatory authority must calculate the estimated total cost of achieving the reclamation plan requirements for long-term treatment of a discharge in a manner consistent with final § 800.18(c). *See* final § 800.50(a)(1)(ii). In addition, final § 800.50(b)(2) requires that the regulatory authority use the funds collected from bond forfeiture to complete the reclamation plan, or the portion of the reclamation plan covered by the bond, on the permit area or increment to which the bond applies. To further address the commenter's concerns, we replaced the phrase ''complete the reclamation plan, or portion thereof,'' in previous § 800.50(b)(2) with ''complete the reclamation plan, or the portion thereof covered by the bond,'' to clarify that the regulatory authority may not choose to ignore any element of the reclamation plan that is covered by the bond.

The commenter also recommended that we revise the provisions governing use of collateral bonds to guarantee long-term treatment to include provisions similar to those that apply to financial assurances under proposed paragraph (d). Most provisions of proposed and final paragraph (d) are specific to financial assurances and, thus, are not suitable for collateral bonds. However, we agree that certain provisions of proposed and final paragraph (d) that govern calculation of the amount of financial assurance that the permittee must post are transferable to determinations of the amount of collateral or surety bond that the permittee must post to ensure future treatment. (As previously discussed, in response to a different comment, we are adding surety bonds to the list of acceptable financial instruments to guarantee long-term treatment of discharges.)

Proposed paragraph (b)(2) envisioned that, after forfeiting a collateral bond, the regulatory authority would ''convert the proceeds to a financial instrument that will generate funds in an amount sufficient to cover future treatment costs and associated administrative expenses.'' As the commenter pointed out, state law may not allow this conversion, which means that the premise in the proposed rule for calculation of the bond amount is not correct. Even in those cases where state law may allow conversion of bond forfeiture proceeds into a financial instrument equivalent to a financial assurance, proposed paragraph (b)(2) did not specify how the regulatory authority must calculate the amount of bond that the permittee must post to be ''sufficient to cover future treatment costs and associated administrative expenses.'' We agree with the commenter that the method of calculation should be consistent with the method prescribed for financial assurances to ensure that the amount posted will be adequate to fully fund future treatment needs and associated costs.

In response to this comment, final paragraph (c)(2) establishes criteria for calculation of the amount of collateral bond or surety bond required. It provides that, if the permittee elects to post a collateral bond or surety bond, the bond amount must be no less than the present value of the funds needed to pay for—

(i) Treatment of the discharge in perpetuity, unless the permittee demonstrates, and the regulatory authority finds, based upon available evidence, that treatment will be needed for a lesser time, either because the discharge will attenuate or because its quality will improve. This paragraph corresponds to the first sentence of final paragraph (d)(1)(i) for financial assurances.

(ii) Treatment of the discharge during the time required to forfeit and collect the bond. This paragraph corresponds to and replaces proposed paragraph (b)(2).

(iii) Maintenance, renovation, and replacement of treatment and support facilities as needed. This paragraph corresponds to final paragraph (d)(1)(ii) for financial assurances.

(iv) Final reclamation of sites upon which treatment facilities are located and areas used in support of those facilities. This paragraph corresponds to final paragraph (d)(1)(iii) for financial assurances.

(v) Administrative costs borne by the regulatory authority. This paragraph corresponds to final paragraph (d)(1)(iv) for financial assurances.

The present value requirement reflects the fact that, unlike financial assurances, collateral and surety bonds do not provide an income stream to offset future treatment costs, nor do they

accrue interest or other earnings that are available to the regulatory authority, so the initial bond amount posted must be adequate to fund all future costs related to long-term treatment of discharges, which is why the rule requires the present value of those expenses as opposed to the net present value.

Final Paragraph (d): Requirements for Financial Assurances

For the reasons discussed below and in the preamble to the proposed rule, we are adopting proposed paragraph (d)(1)(i) as final with minor editorial revisions, the most significant of which replaces ''permit'' with ''permit or permit increment'' in recognition of the fact that permits may be bonded in increments, in which case the provisions of this paragraph apply only to the bond for the permit increment.

Proposed paragraph (d)(1)(i) provided that the trust fund or annuity must be established in a manner that guarantees that sufficient moneys will be available when needed to pay for treatment of discharges in perpetuity, unless the permittee demonstrates, and the regulatory authority finds, based upon available evidence, that treatment will be needed for a lesser time, either because the discharge will attenuate or because its quality will improve. A number of commenters opposed proposed paragraph (d)(1)(i) on the basis that there is insufficient evidence to justify an assumption that discharges will require treatment in perpetuity. We disagree. The preamble discussion of this issue in the proposed rule [601] explains that the prediction of future discharge quality is an imprecise science. This lack of precision and the variability in discharge quality, together with the potentially serious environmental impacts of toxic mine drainage on water quality and aquatic life, justify use of a worst-case scenario when establishing financial assurance requirements to ensure that adequate funds are available.

Some commenters misinterpreted the studies cited in the preamble to proposed paragraph (d)(1)(i). Those studies found that discharge quality improves over time for surface mines and below-drainage underground mines—and even for some above-drainage underground mines. According to the commenters, those studies demonstrate that the need for discharge treatment has an endpoint. However, the studies do not support the commenters' conclusion. While discharge quality improved, it did not necessarily improve to the point that the discharge no longer required treatment.

One commenter objected to the provision in proposed paragraph (d)(1)(i) that placed the burden on the permittee to demonstrate that a discharge will not continue to require treatment in perpetuity. The commenter asserted that the rule should establish the nature and level of proof needed to make that demonstration. We are not aware of any methodology that can reliably predict a precise endpoint for treatment of a particular discharge. Furthermore, section 510(a) of SMCRA [602] provides that the permit applicant ''shall have the burden of establishing that his application is in compliance with all the requirements of the applicable State or Federal program.'' In addition, including prescriptive provisions of the nature recommended by the commenter might be counterproductive in that they could prevent permittees from taking advantage of innovative technological and scientific advances.

The commenter also asserted that paragraph (d)(1)(i) should expressly state that software packages such as AMD Treat and data from existing water treatment facilities can be used to calculate total treatment costs over time. We see no need to include this statement in the rule. Nothing in the final rule precludes use of either data from existing treatment facilities or the AMD Treat software. However, the software inputs and assumptions must be consistent with the requirements of this final rule. As another commenter noted, the AMD Treat software uses a default value of 75 years for the life of the trust. That default value is inconsistent with this rule, which requires a default value of perpetuity in the absence of a demonstration that a shorter treatment period will be sufficient. We agree with the commenter's observation that spreadsheets can be created that rely upon the same formula as the AMD Treat software, but that replace the 75-year default value when performing the recapitalization cost present value calculations with an assumption that the treatment period will be of infinite duration.

Proposed paragraph (d)(1)(i) also provided that the regulatory authority may accept arrangements that allow the permittee to build the amount of the trust fund or annuity over time, provided that the permittee continues to treat the discharge during that time and the regulatory authority retains performance bonds posted for the permit until the trust fund or annuity reaches a self-sustaining level as determined by the regulatory authority. One commenter alleged that this provision of proposed paragraph (d)(1)(i) implies that the regulatory authority may withhold the release of a surety bond for the permit until a trust or annuity is fully funded. According to the commenter, this action represents a fundamental misunderstanding of surety law because it requires the surety to guarantee the permittee's financial performance, which effectively converts the surety bond to a financial guarantee. The commenter is concerned that this requirement will result in a great deal of difficulty in obtaining surety bonds. The commenter also alleged that the provision runs afoul of §§ 800.13 and 800.14, which, according to the commenter, provide that separate bonds may be written not only for ecological restoration, but for any other specific matter that a surety does not wish to cover.

Final paragraph (d)(1)(i)(B) expressly requires that the regulatory authority retain all performance bonds posted for the permit or permit increment until the trust or annuity reaches a self-sustaining level as determined by the regulatory authority. This provision is a logical implementation of section 509(a) of SMCRA,[603] which requires that the performance bond be conditioned upon ''faithful performance of all the requirements of this Act and the permit.'' Part IX.K.1. of the preamble to the proposed rule contains an extensive explanation of why long-term treatment of discharges is a requirement of SMCRA. *See* 80 FR 44436, 44532–44534 (Jul. 27, 2015). We acknowledge that the rule may decrease the willingness of the surety industry to underwrite performance bonds for the coal mining industry, but both SMCRA and the regulations authorize other types of bonds, such as collateral bonds. We reject the commenter's assertion that § 800.18(d) runs afoul of §§ 800.13 and 800.14, as well as the commenter's allegation that §§ 800.13 and 800.14 authorize separate bonds for any specific reclamation obligation that the surety does not wish to cover. The comment implies that the surety can unilaterally decide that its bond does not cover certain obligations under the permit, which has never been the case under any version of our regulations. The regulatory authority may, but is not required to, accept a bond that covers only certain reclamation obligations under the permit, provided that a different bond covers the other

[601] 80 FR 44436, 44532 (Jul. 27, 2015).

[602] 30 U.S.C. 1260(a).

[603] 30 U.S.C. 1259(a).

reclamation obligations. Final § 800.20 specifies that surety bonds are non-cancellable during their terms.

One commenter recommended that we add the following sentence after the first sentence of proposed paragraph (d)(1)(i): ''If the regulatory authority does not find that treatment will be needed for a lesser time, all calculations of the dollar amount of the financial assurance, or any component of that overall amount, must be based on an infinite treatment period.'' We find that the revision recommended by the commenter is unnecessary because, as proposed, paragraph (d)(1)(i) of the final rule provides that the regulatory authority must calculate the amount needed for the trust or annuity using an assumption that the discharge will require treatment in perpetuity, unless the permittee can demonstrate otherwise.

Proposed paragraph (d)(1)(ii) provided that the trust or annuity must be established in a manner that guarantees that sufficient moneys will be available when needed to pay for maintenance, renovation, and replacement of treatment and support facilities as needed. We are adopting proposed paragraph (d)(1)(ii) as final without change.

One commenter asserted that we should revise proposed paragraph (d)(1)(ii) to require that the financial assurance include a component to account for unpredicted events, including possible catastrophic failure of the treatment system or components of it, because the assumption of a zero risk of premature system failure is unreasonably rosy. According to the commenter, treatment systems, even passive ones, fail more often than we would hope, sometimes catastrophically, and sometimes far earlier than the predicted life cycle of the failed components. The commenter suggested that, in calculating the amount of financial assurance or bond required, the regulatory authority must account for not only predicted events but also the risks posed by unpredicted events, including premature failure of the treatment system or its components. According to the commenter, the regulatory authority may not rely on the permittee to provide additional funding over the long term because there is no guarantee that the permittee will be in existence for the long term.

We are aware of no realistic means of predicting the cost of unpredicted and unpredictable events. Therefore, we are not revising our rules in the manner sought by the commenter. Nothing in section 509 of SMCRA requires that the bond amount include a component for unpredicted events. Instead, section 509(e) of SMCRA and its implementing regulations at 30 CFR 800.15 require that the regulatory authority adjust the bond whenever the cost of future reclamation changes. Section 800.18(f) of the final rule includes similar requirements for financial assurances. Furthermore, final paragraph (f)(1) requires that the regulatory authority conduct an annual review of the adequacy of the trust or annuity and the assumptions upon which the trust or annuity is based. Final paragraph (f)(2) specifies that the regulatory authority must require that the permittee provide additional resources to the trust or annuity whenever the review conducted under paragraph (f)(1) or any other information available to the regulatory authority at any time demonstrates that the financial assurance is no longer adequate to meet the purpose for which it was established. The combination of these two requirements should be sufficient to address the commenter's concerns in most cases.

Proposed paragraph (d)(1)(iii) provided that the trust or annuity must be established in a manner that guarantees that sufficient moneys will be available when needed to pay for final reclamation of the sites upon which treatment facilities are located and areas used in support of those facilities. We received no comments specific to proposed paragraph (d)(1)(iii), which we are adopting it as final without change.

Proposed paragraph (d)(1)(iv) provided that the trust or annuity must be established in a manner that guarantees that sufficient moneys will be available when needed to pay for administrative costs borne by the regulatory authority or trustee to implement paragraphs (d)(1)(i) through (iii). We received no comments specific to proposed paragraph (d)(1)(iv), which we are adopting it as final without change.

Proposed paragraph (d)(2) provided that the regulatory authority must specify the investment objectives of the trust or annuity. One commenter asserted that a financial assurance that is not backstopped by some other form of treatment guarantee must demonstrate that it will be self-sustaining forever to provide a solid guarantee of treatment in perpetuity. The commenter alleged that increasing the risk level of the financial assurance's investment portfolio decreases the likelihood that the financial assurance will be self-sustaining forever. Therefore, according to the commenter, we must revise proposed paragraph (d)(2) to expressly require that a financial assurance hold a conservative, low-risk investment portfolio.

The commenter noted that proposed paragraph (d)(2) did not define ''investment objectives.'' According to the commenter, preceding provisions of proposed § 800.18(d) establish that the primary objective of the trust or annuity is to guarantee treatment of the discharge for as long as necessary, presumptively in perpetuity. Therefore, the commenter reasoned, any subsidiary objectives must serve that primary objective and the composition of the investment portfolio likewise must reflect the primary objective.

The commenter provided additional explanation, which we paraphrase as follows: Risk tolerance is at its lowest when a trust provides the only source of funding for an essential product or service. For example, a trust established to provide funding for a regular course of treatment like kidney dialysis in a setting where there is no secondary mechanism (*e.g.,* health insurance or a charitable hospital) that will provide the treatment if the trust comes up short would have an extremely low tolerance for risk. Three factors make mine drainage treatment trusts or annuities especially intolerant of risk. First, the liabilities they cover are both continuous and perpetual. As in the kidney dialysis example, even temporary interruptions are unacceptable, but the difference is that for the mine drainage trusts, the ''patient'' is assumed to live and need treatment forever. Second, they must supply a firm guarantee; *i.e.,* sufficient treatment funds must be immediately available whenever needed. Third, they must be self-sustaining because the permittees that establish them will not be around forever. By its nature, a guarantee is supposed to eliminate or minimize risk, not invite it. Accepting significant risk of underperformance or failure in exchange for higher potential returns on investment may be a reasonable decision in some circumstances, but not when the assets must provide a guarantee, and especially not when the guarantee is for a perpetual obligation. Greater risk in the investment portfolio also would be acceptable where there is some secondary financial guarantee immediately available to shield the public from the risk. However, the proposed rule would allow the permittee to establish a financial assurance as the lone guarantee of long-term treatment. As a result, according to the commenter, the risk tolerance of the financial assurance is extremely low.

The commenter asserted that proposed paragraphs (d)(2) and (3)

would allow the regulatory authority to specify that a trust invest exclusively in high-risk securities (*e.g.,* junk bonds), as long as it assigned a conservative anticipated rate of return to that high-risk portfolio. The commenter argued that no matter how conservative the predicted rate of return, the high-risk nature of the portfolio would be inappropriate for a financial assurance required to provide a solid guarantee of uninterrupted, perpetual treatment. The commenter recommended that we revise proposed paragraph (d)(2) to provide that the regulatory authority must require that the investment portfolio held by the financial assurance prudently account for (i) the expected duration of the treatment obligation; (ii) the need to provide a guarantee of uninterrupted treatment; and (iii) whether any other financial guarantee covers the treatment obligation. As an alternative, the commenter suggested that we revise proposed paragraph (d)(2) to provide that the regulatory authority must require that the investment portfolio held by the financial assurance prudently account for the risk tolerance of the trust fund or annuity. The commenter further asserted that under both alternatives, the final paragraph (d)(2) must specify that, if the financial assurance will provide the only financial guarantee of treatment, the regulatory authority must require that the financial assurance hold a low-risk investment portfolio.

We concur with the commenter that proposed paragraph (d)(2) is in need of revision for the reasons set forth in the comments submitted, as summarized above. After evaluating the two alternatives that the commenter provided, we determined that the first alternative provides more guidance and is less subjective and easier to understand than the second alternative. Therefore, as the commenter recommended, final paragraph (d)(2) provides that the regulatory authority must require that the investment portfolio held by the financial assurance prudently account for (i) the expected duration of the treatment obligation; (ii) the need to provide a guarantee of uninterrupted treatment; and (iii) whether any other financial guarantee covers the treatment obligation.

We also revised proposed paragraph (d)(2) to eliminate the reference to ''investment objectives.'' As the commenter noted, there is only one primary objective, which is to guarantee treatment of the discharge in perpetuity or for as long as treatment is necessary, as paragraph (d)(1) requires. Instead of simply requiring that the regulatory authority specify the objectives of the trust or annuity, as in proposed paragraph (d)(2), final paragraph (d)(2) establishes criteria for the composition of the investment portfolio to ensure attainment of that objective, as the commenter recommended. Specifically, final paragraph (d)(2) provides that the regulatory authority must require that the investment portfolio held by the trust or annuity prudently account for the expected duration of the treatment obligation, the need to provide a guarantee of uninterrupted treatment, and whether any other financial guarantee covers a portion of the treatment obligation. As the commenter recommended under either alternative, final paragraph (d)(2) also provides that, if the financial assurance will provide the only financial guarantee of treatment, the regulatory authority must require that the trust or annuity hold a low-risk investment portfolio.

Proposed paragraph (d)(3) provided that, in structuring the trust or annuity, the regulatory authority and the permittee must base calculations on a conservative anticipated rate of return on the proposed investments that is consistent with long-term historical rates of return for similar investments. One commenter expressed concern that the proposed rule did not address how the proposed investments would be proposed, reviewed, and approved.

We do not intend for these rules to be overly prescriptive. The regulatory authority may establish additional procedural requirements if it desires to do so, but we do not find that level of detail necessary or appropriate for this rule. Final paragraph (d)(2) establishes the three basic factors that the regulatory authority must consider in reviewing the investment portfolio of the trust fund or annuity; that requirement should be sufficient for purposes of this rule.

The commenter recommended that we revise proposed paragraph (d)(3) to expressly require that determination of the amount that the permittee must post for a trust fund or annuity be based on present value calculations. Present value calculations account for inflation, which means that they are based on real rather than nominal rates of return. According to the commenter, present value calculations also must account for any fees paid to the trustee or manager. The commenter notes that proposed § 800.18 does not specifically mention inflation or management fees and that proposed paragraph (d)(3) does not specify whether the anticipated rate of return to which it refers is real (reflecting adjustments for inflation) or nominal, net (reflecting a reduction for management fees) or gross. The commenter asserted that final paragraph (d)(3) must require that the calculation of the amount of the trust fund or annuity include adjustments for inflation and management fees; *i.e.,* the anticipated rate of return must be both real and net of management fees.

We agree with the commenter. Section 509(a) of SMCRA provides that the amount of a performance bond must be sufficient to assure the completion of the reclamation plan if the regulatory authority has to perform the work in the event of forfeiture. The revisions that the commenter recommends are necessary to ensure that sufficient funds will be available. Under section 509(c) of SMCRA, an alternative bonding system, which includes a financial assurance, must achieve the objectives and purposes of the bonding of the bonding program, of which the provision of section 509(a) described above is one. Therefore, final paragraph (d)(3) provides that, in determining the required amount of the trust or annuity, the regulatory authority must base present value calculations on a conservative anticipated real rate of return on the proposed investments. Final paragraph (d)(3) also specifies that the rate of return must be net of management or trustee fees.

The commenter also opposed the provision of proposed paragraph (d)(3) that would require that the anticipated rate of return used in calculating the amount of a financial assurance be ''consistent with long-term historical rates of return for similar investments.'' The commenter observed that historical rates of return are not necessarily predictive of future rates of return, which means that the only rates of return that matter are those that the investment portfolio will earn in the future. Therefore, the commenter argued, the rule should require use of the best objective forecast of future long-term rates of return on a given class of assets, even if that forecast is significantly below the historical average rate of return. The commenter suggested that we either delete all mention of historical rates of return from paragraph (d)(3) or require that the regulatory authority afford ''whatever consideration is appropriate'' to historical rates of return. We concur with the commenter's arguments against the proposed requirement that the anticipated rate of return be consistent with historical long-term rates of return. Final paragraph (d)(3) does not include that provision.

A commenter expressed concern about how regulatory authorities will determine whether a trust or annuity is fully funded when the trust includes

assets with contingent value; *e.g.,* coal reserves that can be converted to cash only if there is a willing purchaser or lessee. The commenter cited an example in which more than $3 million of a $7 million trust consisted of coal reserves pledged to the trust, but for which a purchaser or lessee never materialized, leaving the trust severely under-funded. Based on this example, the commenter asserted that final § 800.18(d) must ensure that the dollar value assigned to the assets held by a trust or annuity is properly discounted for any contingency. The commenter recommended that final § 800.18 include a provision that financial assurances may only hold assets that are immediately marketable and readily converted into cash. Alternatively, according to the commenter, final § 800.18 could specify that a financial assurance that holds assets that are not immediately marketable or readily convertible into cash may not be considered fully funded until those asserts are converted into either cash or assets that are immediately marketable and readily converted into cash (*i.e.,* until the contingency on their valuation is removed). Finally, the commenter suggested that final section 800.18(d) could include a provision similar to § 800.21(e)(1) governing collateral bonds. That provision draws a distinction between the bond value and the market value of the posted collateral, with the former taking into account the ''legal and liquidation fees, as well as value depreciation, marketability, and fluctuations that might affect the net cash available to the regulatory authority to complete reclamation.''

We agree with the commenter that real estate, including coal reserves, is an inappropriate element of a trust or annuity unless that real estate is of an income-producing nature. However, we see no need to adopt any of the rule changes that the commenter recommends. The investment portfolio criteria that we adopted as part of final § 800.18(d)(2) and the requirement in final § 800.18(d)(3) that the required amount of the trust fund or annuity be based upon present value calculations using a conservative anticipated real rate of return for investments should preclude a recurrence of the example cited by the commenter.

Proposed paragraph (d)(4) provided that the trust or annuity must be in a form approved by the regulatory authority and contain all terms and conditions required by the regulatory authority. One commenter requested that we clarify in the final rule how the trust will hold personal and real property associated with long-term treatment facilities because it will be difficult if not impossible for the trustee to ensure the continuation of treatment operations when the permittee ceases treatment if the trustee is not provided rights to the personal and real property involved. The commenter explained that it had encountered the need to transfer ownership of treatment facilities and equipment to the trustee so that if the permittee ceases to treat water at the site, the trustee can take possession of the personal property needed to continue the treatment operations. The commenter noted that it had seen state regulatory authorities require that permittees transfer treatment equipment to the trustee to hold in the event the trustee needs to take over water treatment. In the commenter's experience, a bill of sale of the treatment equipment to the trustee with a license back to the operator for use in water treatment operations worked successfully. The commenter recommended that we revise the final rule to provide a mechanism whereby the regulatory authority can require the permittee to grant the trustee the real and personal property rights necessary to continue water treatment in the event the permittee goes out of business or ceases water treatment for other reasons.

We agree with the commenter for the reasons set forth in the comment. Final paragraph (d)(4)(ii) provides that, when appropriate, the terms and conditions of the financial assurance must include a mechanism whereby the regulatory authority may require the permittee to grant the trustee the real and personal property rights necessary to continue treatment in the event that the permittee ceases treatment. These rights include, but are not limited to, access to and use of the treatment site and ownership of treatment facilities and equipment.

Proposed paragraph (d)(5) provided that the trust or annuity must irrevocably establish the regulatory authority as the beneficiary of the trust or of the proceeds from the annuity for the purpose of treating mine drainage or other mining-related discharges to protect the environment and users of surface water. We received no comments specific to proposed paragraph (d)(5), which we are adopting as final paragraph (d)(5) with minor editorial revisions.

Proposed paragraph (d)(6) specified that the trust or annuity must provide that disbursement of money from the trust or annuity may be made only upon written authorization from the regulatory authority or according to a schedule established in the agreement accompanying the trust or annuity. We received no comments specific to proposed paragraph (d)(6), which we are adopting as final paragraph (d)(6) with minor editorial revisions.

Proposed paragraph (d)(7) provided that a financial institution or company serving as a trustee or issuing an annuity must be a national bank chartered by the Office of the Comptroller of the Currency, an operating subsidiary of a national bank chartered by the Office of the Comptroller of the Currency, a bank or trust company chartered by the state in which the operation is located, an insurance company licensed or authorized to do business in the state in which the operation is located or designated by the pertinent regulatory body of that state as an eligible surplus lines insurer, or any other financial institution or company with trust powers and with offices located in the state in which the operation is located. With the exception discussed below, we are adopting proposed paragraph (d)(7) as part of the final rule.

One commenter opposed the mandate in proposed paragraph (d)(7)(v) that the financial institution or company be required to have an office located in the state in which the operation is located. According to the commenter, this provision is arbitrary, capricious, and an unconstitutional restraint on interstate commerce. The commenter also alleged that this provision would be an unwise policy choice because not every state that has long-term water treatment issues will have sufficient mine discharge problems for a company to justify the establishment of a physical office in that state. The commenter further alleged that the requirement for an office located in the state does not appear to be reasonably related to the goal of proposed paragraph (d)(7), which is to ensure that only competent and reliable companies are allowed to be trustees. According to the commenter, adoption of proposed paragraph (d)(7)(v) would run counter to this goal because it would likely to make it more difficult for competent and reliable companies that do not happen to have a physical office in a state to serve as a trustee. The commenter suggested that we revise proposed paragraph (d)(7)(v) by replacing the requirement for an office located in the state with a requirement that the company be authorized to do business in the state, have trust powers satisfactory to the regulatory authority, and be examined or regulated by a state or federal agency. We agree with the commenter's arguments and suggested revisions. Final paragraph (d)(7)(v)

incorporates all of the commenter's recommendations.

The commenter further recommended that the final rule clarify that the SMCRA regulatory authority may function as a ''state or federal agency'' under paragraph (d)(7)(v), which provides that the trustee must be a financial institution or company whose ''activities are examined or regulated by a state or federal agency.'' The commenter noted that the SMCRA regulatory authority provides the primary regulatory oversight in every state in which the commenter has established long-term treatment trusts. We decline to adopt this recommendation because final paragraph (d)(7)(v) applies to financial institutions and companies, which the SMCRA regulatory authority has neither the expertise nor the authority to oversee or regulate. However, adoption of this rule will not necessarily interfere with the commenter's operations because the commenter is a not-for-profit organization, which means that it is not subject to final paragraph (d)(7). Instead, it must meet the criteria for not-for-profit organizations under final paragraph (d)(8).

The commenter requested that the final rule clarify that a long-term treatment trust can consist of both a trustee and a separate custodian of the financial assets in the trust. According to the commenter, this approach works well for long-term treatment trusts because it provides an extra level of protection and separation between the purely financial aspects of the trust and management of the other aspects of trusts. We have no objection to this arrangement, but no rule change is necessary because nothing in the final rule prohibits this arrangement.

One commenter noted that adoption of proposed paragraph (d)(7) would prevent a not-for-profit organization from serving as a trustee, even though, at present, at least one such organization is successfully operating as a trustee for discharge treatment trusts. In response, we have added paragraph (d)(8), which provides that the regulatory authority may allow a not-for-profit organization under section 501(c)(3) of the Internal Revenue Code to serve as a trustee if the organization maintains appropriate professional liability insurance coverage and if the regulatory authority determines that the organization has demonstrated the financial and technical capability to manage trust funds and assume day-to-day operation of the trust and treatment facility in the event of a default.

Final paragraph (d)(9) is the counterpart to proposed paragraph (e)(4). A commenter recommended deletion of proposed paragraph (e)(4), which provided that the regulatory authority could terminate a trust or annuity upon a determination that the trustee's administration of the trust or annuity is unsatisfactory to the regulatory authority. According to the commenter, state law and trust instruments can make provision for changing trustees if trust performance is an issue. The commenter explained that termination of the trust may have unintended results, such as triggering disposition of the trust assets outside the trust, which means that they would no longer be available to cover treatment costs. The commenter further explained that trust instruments used by regulatory authorities have provisions for continuing the trust while obtaining a new trustee. Finally, the commenter noted that paragraph (e)(4) does not belong in paragraph (e) because paragraph (e)(4) pertains to replacement of the trustee, while paragraph (e) pertains to termination of the trust.

We concur with the commenter that proposed paragraph (e)(4) was improperly located, but we do not agree that the provision itself should be deleted entirely. We find merit in retaining a provision that requires replacement of the trustee when the regulatory authority determines that the trustee's performance is unsatisfactory. Therefore, while we are not adopting proposed paragraph (e)(4), we are adopting a similar provision as final paragraph (d)(9). Final paragraph (d)(9) provides that the permittee or the regulatory authority must procure a new trustee when the trustee's administration of the trust fund or annuity is unsatisfactory to the regulatory authority.

Final Paragraph (e): Termination of a Financial Assurance Instrument

Proposed paragraph (e) provided that termination of a trust or annuity may have occurred only upon the demise of the trustee or the company issuing the annuity or as specified by the regulatory authority upon a determination that one of the four situations described in paragraphs (e)(1) through (4) exists. Those situations are: (1) No further treatment or other reclamation measures are necessary; (2) a satisfactory replacement financial assurance or bond has been posted in accordance with paragraph (g); (3) the terms of the trust or annuity establish conditions for termination and those conditions have been met; and (4) the trustee's administration of the trust or annuity is unsatisfactory to the regulatory authority, in which case the permittee or the regulatory authority must procure a new trustee.

One commenter recommended that we delete the phrase ''demise of the trustee or the company issuing the annuity'' in the introductory text of proposed paragraph (e) because state law and trust instruments address substitution of trustees in the event of the demise of a trustee and that, thus, there is no need for the rule to address this situation. The commenter explained that, in her experience, a clause terminating the trust upon the demise of the trustee likely would create problems for the regulatory authority because it would terminate the authority of the regulatory authority to keep the assets of the trust within the trust, which means that the regulatory authority would lose the income-generating advantages of the trust. The commenter stated that a trust is intended to be as close to a perpetual instrument as is possible under current law. Therefore, according to the commenter, termination should be limited to situations in which there is no longer any need for the trust. The commenter explained that the trust instruments should cover all other situations. The commenter also asserted that, with respect to annuities, a regulatory authority may run the risk of compromising a claim against the liquidating underwriter of an annuity if the regulatory authority terminates that annuity.

Based on the information and explanation provided by the commenter, we did not include the phrase ''demise of the trustee or the company issuing the annuity'' in the introductory text of final paragraph (e). As previously discussed in the preamble to final paragraph (d)(9), we also are not adopting proposed paragraph (e)(4) because it concerns termination of the trustee rather than the trust. We are adopting paragraphs (e)(1) through (3) as proposed because termination of a trust or annuity under those circumstances is appropriate and will not have any adverse impacts. Final paragraph (e)(1) allows termination when no further treatment or other reclamation measures are necessary. Final paragraph (e)(2) allows termination when a satisfactory replacement financial assurance or bond has been posted. And final paragraph (e)(3) allows termination when the terms of the trust fund or annuity establish conditions for termination and those conditions have been met.

Final Paragraph (f): Regulatory Authority Review and Adjustment of Amount of Financial Assurance

Proposed paragraph (f)(1) provided that the regulatory authority must

establish a schedule for reviewing the performance of the trustee, the adequacy of the trust or annuity, and the accuracy of the assumptions upon which the trust or annuity is based. The proposed rule specified that this review must occur on at least an annual basis. Proposed paragraph (f)(2) provided that the regulatory authority must require that the permittee provide additional resources to the trust or annuity whenever the review conducted under paragraph (f)(1) or any other information available to the regulatory authority at any time demonstrates that the financial assurance is no longer adequate to meet the purpose for which it was established. We received no comments specific to proposed paragraphs (f)(1) and (2), which we are adopting in final form as proposed, with minor editorial revisions.

Final Paragraph (g): Replacement of Financial Assurance

Proposed paragraph (g) provided that a financial assurance may be replaced in accordance with the provisions of § 800.30(a), with the approval of the regulatory authority. We received no comments specific to this paragraph, which we are adopting in final form as proposed.

Final Paragraph (h): Release of Liability

Proposed paragraph (h) provided that release of reclamation liabilities and obligations under financial assurances is subject to the applicable bond release provisions of §§ 800.40 through 800.44. We received no comments specific to this paragraph, which we are adopting in final form as proposed.

Final Paragraph (i): Effect of Financial Assurance on Release of Bond

Proposed paragraph (i) provided that the permittee may apply for, and the regulatory authority may approve, release of any bonds posted for the permit or permit increment for which the regulatory authority has approved a financial assurance under this section, provided that the permittee and the regulatory authority comply with the bond release requirements and procedures in §§ 800.40 through 800.44. The proposed rule specified that this provision applies only if the financial assurance is both in place and fully funded; the permit or permit increment fully meets all applicable reclamation requirements, with the exception of the discharge and the presence of associated treatment and support facilities; and the financial assurance will serve as the bond for reclamation of the portion of the permit area required for postmining water treatment facilities and access to those facilities. We received no comments specific to this paragraph, which we are adopting in final form as proposed, with minor editorial revisions.

Section 800.20: What additional requirements apply to surety bonds?

Section 800.20 implements and fleshes out section 509(b) of SMCRA,[604] which specifies that ''[t]he bond shall be executed by the operator and a corporate surety licensed to do business in the State where such operation is located.'' Proposed paragraph (a) provided that a surety bond must be executed by the permittee and a corporate surety licensed to do business in the state where the operation is located. We received no comments specific to this paragraph, which we are adopting in final form as proposed.

Proposed paragraph (b) provided that surety bonds must be noncancellable during their terms, except that surety bond coverage for undisturbed lands may be cancelled with the prior consent of the regulatory authority. The proposed rule further provided that, within 30 days after receipt of a notice to cancel bond, the regulatory authority will advise the surety whether the bond may be cancelled on an undisturbed area. We received no comments specific to this paragraph, which we are adopting in final form as proposed, with minor editorial revisions. Final paragraph (c) consists of proposed § 800.30(a)(2) in revised form. We are adopting proposed § 800.30(a)(2) as part of final § 800.20 rather than as part of final § 800.30 because it pertains to sureties and, therefore, should apply to all surety bonds, regardless of whether they are proffered as replacement bonds. Proposed § 800.30(a)(2) provided that the regulatory authority may decline to accept a proposed replacement surety bond if, in the judgment of the regulatory authority, the new surety does not have adequate reinsurance or other resources sufficient to cover the default of one or more mining companies for which the surety has provided bond coverage. A few commenters expressed concern about the lack of criteria that the regulatory authority could use in determining whether to reject a surety. Another commenter found this provision problematic because regulatory authorities generally lack the expertise to review reinsurance contracts. According to the commenter, if a state department of insurance has licensed a surety to conduct business, that license should suffice and the regulatory authority should accept the surety bond.

In response to these comments, final § 800.20(c) no longer contains any mention of the adequacy of reinsurance. Our decision not to adopt this proposed provision should not be interpreted as a prohibition on regulatory authorities conducting an analysis of the adequacy of reinsurance if they have the ability to do so. We have instead revised the proposed rule to focus on our primary intent, which was to emphasize that the regulatory authority has the discretion to establish limits on its exposure to a single surety or the default of one or more companies bonded by a single surety.

Final § 800.20(c) provides that the regulatory authority may decline to accept a surety bond if, in the judgment of the regulatory authority, the surety does not have resources sufficient to cover the default of one or more mining companies for which the surety has provided bond coverage. This provision is completely discretionary and the criteria that the regulatory authority would use in deciding whether to accept a surety bond also are totally at the regulatory authority's discretion.

Section 800.21: What additional requirements apply to collateral bonds?

Proposed § 800.21 set forth the requirements that apply to various types of collateral that may be posted as a performance bond. Except as discussed below, we received no comments on proposed § 800.21. We are adopting proposed § 800.21 in final form as proposed, with minor editorial revisions, unless otherwise noted below.

The second sentence of proposed paragraph (b)(2) provided that the regulatory authority must forfeit and collect on a letter of credit used as security in areas requiring continuous bond coverage if the permittee has not replaced the letter with another letter of credit or other suitable bond at least 30 days before the letter's expiration date. According to a commenter with experience in the use of letters of credit as a collateral bond, forfeiture is not necessary because the regulatory authority can draw upon the letter and use the cash received to assure continuous bond coverage without forfeiting the bond. In response to this comment, we revised the second sentence of proposed paragraph (b)(2) and redesignated it as paragraph (b)(4) in the final rule. Final paragraph (b)(4) provides that, if the permittee has not replaced a letter of credit with another letter of credit or other suitable bond at least 30 days before the letter's expiration date, the regulatory authority

[604] 30 U.S.C 1259(b).

must draw upon the letter of credit and use the cash received as a replacement bond.

One commenter urged us to revise proposed paragraph (c) to clarify that, in determining the bond value of real property, the regulatory authority need not accept either the fair market value or the value placed on the property by the mining company, in keeping with previous preamble discussions that accord discretion to regulatory authorities in evaluating real estate posted as a collateral bond. The commenter noted that regulatory authorities have experienced great difficulty in collecting the bond value if a mining company defaults on a collateral bond guaranteed by real estate. She cited two instances in which the liquidation of real estate collateral yielded less than half of the bond value of the collateral. The commenter further explained that the administrative costs of liquidating real estate are high and frequently are accompanied by unanticipated costs such as unpaid taxes, maintenance issues, and the need to maintain insurance on the property. The commenter pointed out that appraisal principles recognize that forced sales will ordinarily not elicit a fair market value for real property because fair market value assumes both a willing buyer and a willing seller who are not under time constraints. Forced sales do not meet those conditions. Therefore, according to the commenter, the regulatory authority must discount the value of real estate posted as a collateral bond to account for administrative costs, property maintenance and insurance costs, and the potential adverse implications of a forced sale. Otherwise, the regulatory authority will not receive the funds necessary to complete reclamation under conditions of forfeiture.

To improve the probability that the regulatory authority will realize the bond value of real property under conditions of forfeiture, we revised proposed paragraph (c) to provide more specific safeguards when the permittee posts real property as a collateral bond. The revisions flesh out final paragraph (e)(1), which provides that the bond value of collateral is not the same as the market value and which requires that the bond value reflect legal and liquidation fees, as well as value depreciation, marketability, and fluctuations that might affect the net cash available to the regulatory authority to complete reclamation. Final paragraph (c)(4) details the meaning of final paragraph (e)(1) in the context of real property.

Specifically, final paragraph (c)(4) provides that the appraised fair market value of real estate, as determined under final paragraph (c)(2)(ii), is not the bond value of the real estate. Under final paragraph (c)(4), the regulatory authority must calculate the bond value of real estate by discounting the appraised fair market value to account for the administrative costs of liquidating real estate, the probability of a forced sale in the event of forfeiture, and a contingency reserve for unanticipated costs including, but not limited to, unpaid real estate taxes, liens, property maintenance expenses, and insurance premiums.

We also revised proposed paragraph (e)(1) in response to comments. Proposed paragraph (e)(1) required that a collateral bond be subject to a margin expressed as a ratio of bond value to market value. One commenter observed that this margin is not a ratio, but rather a premium or additional amount required to cover the costs to liquidate the collateral. The commenter requested that we eliminate the reference to a margin to improve accuracy and adherence to plain language principles. The final rule implements the commenter's recommendation. Final paragraph (e)(1) provides that the bond value (rather than the margin) of the collateral must reflect legal and liquidation fees, as well as value depreciation, marketability, and fluctuations that might affect the net cash available to the regulatory authority to complete reclamation.

Section 800.23: What additional requirements apply to self-bonds?

Under section 509 of SMCRA, a regulatory authority may accept the self-bond of an applicant, where the applicant demonstrates, among other things, a history of financial solvency and continuous operation sufficient for authorization to self-insure (self-bond).[605] The implementing federal regulations at 30 CFR 800.23 establish financial and other criteria for self-bonding as well as other requirements pertinent to self-bonding. Eighteen state regulatory programs allow self-bonding.

We proposed only one substantive revision to previous § 800.23—a revision of paragraph (b)(3)(i) to allow the use of any nationally recognized statistical rating organization registered with the Securities and Exchange Commission in determining eligibility to self-bond, rather than limiting acceptable rating agencies to Moody's Investor Service and Standard and Poor's. We received no comments in opposition to this proposed change, so we are adopting proposed § 800.23 as part of the final rule.

One commenter stated that there is a pressing need to reform the self-bonding rules more comprehensively, particularly in light of the dramatic decline of the western coal industry's financial stability and inadequacy of self-bonds in a time of major coal company bankruptcies. However, the commenter acknowledged that comprehensive changes to § 800.23 are beyond the scope of the present rulemaking. Another commenter urged us to revise § 800.23 to provide that no part of a corporation may qualify for a self-bond if any part of that corporation, including any subsidiary, does not meet the self-bonding eligibility requirements. As discussed below, we intend to address the issues raised by these commenters as part of a separate rulemaking because the proposed stream protection rule did not include or seek comment on changes of the nature that the commenters request.

As discussed in the final RIA and EIS, the energy industry is in the midst of a major transformation. Low domestic and global demand for coal, plentiful low-cost shale gas, the strong U.S. dollar, utility decisions to switch power plants from coal to natural gas, and coal power plant retirements by utilities have created significant challenges for the coal industry. Since the proposed stream protection rule was published in July 2015, several large coal companies with approximately $2.4 billion in self-bonds filed for bankruptcy protection.

On March 3, 2016, WildEarth Guardians filed a petition for rulemaking under 30 CFR 700.12 requesting that we amend our self-bonding regulations at 30 CFR 800.23 to ensure that companies with a history of financial insolvency, and their subsidiary companies, are no longer eligible to self-bond.[606] In its petition, WildEarth Guardians requested that we define ''ultimate parent corporation,'' specify that the total amount of existing and proposed self-bonds may not exceed 25 percent of the ultimate parent corporation's tangible net worth in the United States, require that both the self-bonding applicant and its parent corporation be eligible to self-bond, and prohibit self-bonding if either the applicant or its parent corporation filed for bankruptcy within the 5 years preceding the application to self-bond.

On September 7, 2016, we published a notice in the **Federal Register** granting the petition for rulemaking.[607] The

[605] 30 U.S.C. 1259(a).

[606] See 81 FR 31880–31881 (May 20, 2016).

[607] 81 FR 61612–61615 (Sept. 7, 2016).

notice stated that we do not intend to propose the specific rule changes identified in the petition because those changes did not address important issues such as the process for evaluating applications for self-bonds, monitoring the financial health of self-bonded entities, and providing a mechanism for replacing self-bonds with other types of financial assurances if the need arises. With respect to self-bonding, the notice provided that we anticipate reviewing the definitions in § 800.23(a) and the financial tests and documentation required under § 800.23(b) to ensure that the self-bond applicant is financially stable. The notice committed us to consider developing a systematic review process for ascertaining whether self-bonded entities remain financially healthy and for spotting any adverse trends that might necessitate replacing a self-bond with a different type of financial assurance. We also will consider if we need to provide an independent third party review of the self-bonding entity's annual financial reports and certification of the current and future financial ability of the self-bonding entity. We may propose additional procedures for replacing self-bonds in the event that a company no longer meets the financial tests and to clarify the penalties for an entity's failure to disclose a change in financial status. In addition, the notice stated that we are examining broader regulatory changes to part 800 to update our bonding regulations and ensure the completion of the reclamation plan if the regulatory authority has to perform the work in the event of forfeiture.

Final § 800.4(d) clarifies that regulatory authorities are under no obligation to include the self-bond option in their regulatory programs in the first instance. In addition, on August 5, 2016, the Director of OSMRE issued a policy advisory on self-bonding. The advisory states that ''regulatory authorities have discretion about whether to accept self-bonding,'' even if an applicant or permittee meets applicable eligibility criteria. According to the advisory, ''each regulatory authority should exercise its discretion and not accept new or additional self-bonds for any permit until coal production and consumption market conditions reach equilibrium, events which are not likely to occur until at least 2021.'' Consistent with that guidance, we encourage regulatory authorities to robustly evaluate the financial condition of self-bonded companies and parent or third-party guarantors on a regular basis and require replacement of self-bonds with surety or collateral bonds whenever a self-bonded entity no longer meets the financial or other criteria for self-bonding.

Section 800.30: When may I replace a performance bond or financial assurance and when must I do so?

Proposed paragraph (a) of this section contains requirements pertaining to replacement of performance bonds and financial assurances at the request of the permittee, while proposed paragraph (b) contains requirements pertaining to replacement of performance bonds and financial assurances by order of the regulatory authority. The preamble to proposed *§* 800.30 contains a discussion of how proposed §§ 800.30 differed from the previous rules.[608] Proposed paragraph (a) used the term ''financial assurance instruments.'' However, a commenter pointed out that it would be more accurate to refer to financial assurances, rather than to financial assurance instruments. We revised paragraph (a) in the manner that the commenter recommended because this paragraph concerns replacement of the entire financial assurance, not just one of the instruments associated with that assurance.

Proposed paragraph (a)(1) provided that the regulatory authority may allow the permittee to replace existing performance bonds and financial assurance instruments with other performance bonds and financial assurance instruments that provide equivalent coverage. We received no comments specific to this paragraph, which we are adopting as proposed, with the exception that final paragraph (a)(1) refers to ''financial assurances'' rather than ''financial assurance instruments'' for the reason discussed above.

Proposed paragraph (a)(2) provided that the regulatory authority may decline to accept a proposed replacement surety bond if, in the judgment of the regulatory authority, the new surety does not have adequate reinsurance or other resources sufficient to cover the default of one or more mining companies for which the surety has provided bond coverage. In this final rule, we moved proposed paragraph (a)(2) to final section 800.20(c) because there is no reason to limit its applicability to replacement bonds. The preamble to final § 800.20(c) discusses the comments that we received on proposed § 800.30(a)(2).

Proposed paragraph (a)(3) provided that the regulatory authority may not release any existing performance bond or financial assurance instrument until the permittee submits, and the regulatory authority approves, an acceptable replacement. We received no comments specific to proposed paragraph (a)(3), which we are adopting without change as final paragraph (a)(2), with the exception that final paragraph (a)(2) refers to a ''financial assurance'' rather than a ''financial assurance instrument'' for the reason discussed above.

Proposed paragraph (b) pertains to replacement of bonds by order of the regulatory authority. We received no comments specific to this paragraph. We are adopting paragraphs (b)(1) and (2) as proposed, with the exception that we revised proposed paragraph (b)(2) to clarify that the notification under § 800.16(e) to which that paragraph refers means a notification from a bank, surety, or other responsible financial entity. We also revised proposed paragraph (b)(3) as discussed below.

Proposed paragraph (b)(3) would have provided that, if the permittee does not post replacement bond or financial assurance coverage within the time established in an order issued under paragraph (b)(2), the regulatory authority must issue a notice of violation to the permittee requiring that the permittee post replacement bond or financial assurance coverage. Proposed paragraph (b)(3) also would have required that the notice of violation order a cessation of coal extraction and initiation of reclamation activities under §§ 816.132 or 817.132 if the permittee was actively conducting surface coal mining operations. However, upon further review, we realized that the proposed rule did not properly convey our intent, which was to require immediate cessation of all surface coal mining operations, not just coal extraction, followed by either posting of replacement bond or permanent reclamation of the site under §§ 816.132 or 817.132. We did not intend to require that the permittee both post a replacement bond or financial assurance and permanently reclaim the site. Therefore, we are not adopting the rule as proposed. Instead, final paragraph (b)(3) provides that, if the permittee does not post adequate bond or financial assurance by the end of the time allowed under final paragraph (b)(2), the regulatory authority must issue a notice of violation requiring that the permittee cease surface coal mining operations immediately. The notice of violation also must require that the permittee either post adequate bond or financial assurance coverage before resuming surface coal mining operations or reclaim the site in accordance with the provisions of §§ 816.132 or 817.132.

[608] 80 FR 44539 (Jul. 27, 2015).

Section 800.40: How do I apply for release of all or part of a performance bond?

Proposed § 800.40 corresponds to previous § 800.40(a). We are adopting § 800.40 as proposed, with the exception of minor editorial changes and the revisions discussed below.

Proposed paragraph (b)(1) required that the bond release application include the application form and information required by the regulatory authority. Final paragraph (b)(1) retains the requirement for an application form, but it further specifies that the application must be made on a form prescribed by the regulatory authority, consistent with other regulations. Specifically, final § 800.12(a) requires that the regulatory authority prescribe the form of the performance bond and final § 777.11(a)(3) requires that a permit application be filed in the format prescribed by the regulatory authority. We are extending this principle to applications for bond release.

Final paragraph (b)(2) is a combination of the part of proposed paragraph (b)(1) that required submittal of ''information required by the regulatory authority'' and the portion of proposed paragraph (b)(2)(vi) that requires a description of the results that the permittee has achieved under the approved reclamation plan and an analysis of the results of the monitoring of groundwater, surface water, and the biological condition of streams conducted under §§ 816.35 through 816.37 or §§ 817.35 through 817.37. In the proposed rule, the latter requirement appeared in paragraph (b)(2)(vi) as one of the elements of the newspaper advertisement. However, after evaluating the comments that we received, we determined that material of this nature is more appropriately considered to be part of the application than part of the newspaper advertisement.

In the final rule, we are adopting proposed paragraph (b)(2) as final paragraph (b)(3) because we divided proposed paragraph (b)(1) into final paragraphs (b)(1) and (2). The introductory text of proposed paragraph (b)(2) required that the application include a certified copy of an advertisement published at least once a week for four successive weeks in a newspaper of general circulation in the locality of the surface coal mining operation. The introductory text also provided that the permittee must submit the copy of the newspaper ad within 30 days after filing the application with the regulatory authority. The introductory text of final paragraph (b)(3) is nearly identical to the introductory text of proposed paragraph (b)(2), with two exceptions. In the first sentence, we replaced the term ''surface coal mining operation'' with ''surface coal mining and reclamation operation'' to reflect the fact that the site for which the application is filed is in reclamation and is no longer an active surface coal mining operation. In the second sentence, we replaced ''application'' with ''application form'' because final paragraph (b)(1) refers to the application form and because the application contains materials other than the form, including the copy of the advertisement required by final paragraph (b)(3), which does not need to be filed at the same time as the application form.

Proposed paragraphs (b)(2)(i) through (vii) required that the newspaper advertisement include the name of the permittee; the permit number and approval date; the number of acres and precise location of the land for which bond release is being requested; the type and amount of the bond filed and the portion for which release is being sought; the type and dates of reclamation work performed; a description of the results that the permittee achieved under the approved reclamation plan and an analysis of the results of the monitoring of groundwater, surface water, and the biological condition of streams conducted under §§ 816.35 through 816.37 or §§ 817.35 through 817.37; and the name and address of the regulatory authority. A few commenters suggested that the content requirements for the newspaper advertisement are excessive and ill-suited for a notice of that nature. According to the commenters, we should instead require that the advertisement refer readers to the location where the bond release application may be reviewed in detail. We acknowledge the merit of the comment, but, in general, we cannot adopt the recommendation because section 519(a) of SMCRA [609] specifically requires that the advertisement contain most of the elements listed in proposed paragraph (b)(2).

One exception is proposed paragraph (b)(2)(iv), which provided that, among the items that the permittee must include in an advertisement published in a local newspaper announcing submission of a bond release application was the type and amount of the bond filed and the portion for which release is sought. However, section 519(a) of SMCRA [610] requires only ''the amount of the bond filed and the portion sought to be released.'' We find that inclusion of the type of bond in the public notice would serve no useful purpose because the notice concerns an application for bond release, not an application for bond replacement. Therefore, final paragraph (b)(3)(iv) does not require that the notice include the type of bond.

Another exception is proposed paragraph (b)(2)(vi),which required that the public notice contain a description of the results achieved under the approved reclamation plan, including an analysis of the results of the monitoring conducted under §§ 816.35 through 816.37 or §§ 817.35 through 817.37. Several commenters opposed this proposed requirement, noting the expense of publishing what could be a very lengthy notice. One commenter asserted that publishing monitoring results might be beyond the capacity of local newspapers. Another commenter observed that the proposed rule did not specify how detailed this analysis should be or who determines what constitutes a sufficient analysis. The commenter recommended that we revise the notice requirement to simply refer readers to the regulatory authority for more information on the analyses. Another commenter urged deletion of proposed paragraph (b)(2)(vi) because the information required by that paragraph is inappropriate and unnecessary for a public notice. The commenter recommended that we move this provision to be a separate element of the bond release application. According to the commenter, this level of analysis is more appropriate for an application than for a public notice.

In response to these comments, we moved most of proposed paragraph (b)(2)(vi) to become part of the bond release application requirements of final paragraph (b)(2), with the level of detail to be determined by the regulatory authority. However, section 519(a) of SMCRA specifically requires that the public notice include ''a description of the results achieved as they relate to the operator's approved reclamation plan.'' Therefore, final paragraph (b)(3)(vi) retains a requirement that the public notice include a brief description of the results achieved under the approved reclamation plan. One commenter expressed concern that a resource issue may exist if the regulatory authority is responsible for determining the detail required for the analysis of monitoring results that the permittee must include in the bond release application. We do not agree. The regulatory authority can establish standard guidelines that all bond release applicants must follow. There is no need for a separate

[609] 30 U.S.C. 1269(a).

[610] 30 U.S.C. 1269(a).

determination of the analytical detail required for each application.

As discussed above, we agree that the information required by proposed paragraph (b)(2)(vi) is more appropriate for inclusion in the bond release application than in a public notice published in a newspaper. However, persons reading the notice should have sufficient contact information for the regulatory authority to enable them to readily make arrangements to review the application. To ensure that the reader has the information needed to make those arrangements, final paragraph (b)(3)(vii) includes a requirement that the public notice identify the location at which the application may be reviewed.

Section 800.41: How will the regulatory authority process my application for bond release?

Proposed § 800.41 corresponds to previous § 800.40(b)(1). We are adopting § 800.41 as proposed, with minor editorial changes to improve clarity. Specifically, we combined proposed paragraphs (a)(1) and (2) into final paragraph (a)(1) and redesignated proposed paragraph (a)(3) as final paragraph (a)(2). We received no comments on this section.

Section 800.42: What are the criteria for bond release?

Proposed § 800.42 corresponds to previous § 800.40(c). We have revised the proposed rule to improve clarity, to conform to other rule changes, and, as discussed below, in response to comments.

Some commenters opposed the proposed changes to our bond release criteria, especially those pertaining to restoring streams, alleging that the changes would create a vague and uncertain timeline for achievement of reclamation, which, in effect, would extend the bonding period, increase the regulatory and financial burden on permittees, decrease the availability of surety bonds, and delay return of full use of the reclaimed land to the landowner. We acknowledge that restoring the ecological function of perennial and intermittent streams as required by the final rule may take longer than the revegetation responsibility period and, thus, may result in a delay in final bond release for some time after the demonstration of revegetation success under § 816.116 or 817.116.[611] However, section 509(a) of SMCRA [612] requires that the bond amount be sufficient to assure completion of the reclamation plan approved in the permit. Stream restoration is part of that plan. Furthermore, permittees that avoid mining through perennial and intermittent streams should not experience these adverse impacts.

Many commenters opposed proposed paragraph (a)(2), which provided that the regulatory authority may not release any bond if, after an evaluation of the groundwater, surface water, and biological condition monitoring data submitted under §§ 816.35 through 816.37 or §§ 817.35 through 817.37, it determines that adverse trends exist that may result in material damage to the hydrologic balance outside the permit area. In general, commenters found the ''adverse trends'' standard in this paragraph to be too vague and undefined. They expressed concern that permittees would not be able to obtain timely bond release if this provision is adopted. One commenter alleged that this provision would give regulatory authorities unwarranted authority to halt the bond release process, with the practical result being that permittees would not be able to secure surety bonds because of the uncertainty involved with a subjective determination of whether adverse trends exist. The commenter noted that some companies are having increasing difficulty securing reclamation bonds because of bonding capacity limits. One regulatory authority noted that, to be defensible, regulatory authority decisions must be based upon known conditions rather than something that might happen. The commenter recommended deletion of this proposed requirement, or, in the alternative, replacement of the ''adverse trends'' standard with a statistically significant degradation standard based upon monitoring data.

Section 519(b) of SMCRA requires that, as part of the evaluation of each bond release application, the regulatory authority consider, among other things, whether ''pollution of surface and subsurface water is occurring, the probability of continuance of future occurrence of such pollution, and the estimated cost of abating such pollution.'' The analysis of monitoring results that proposed paragraph (b)(2) required is a logical extension of this statutory provision. Similarly, except as discussed below, the prohibition in proposed paragraph (b)(2) on the release of bond when the regulatory authority determines, based on a trend analysis of monitoring data, that adverse trends exist that may result in material damage to the hydrologic balance outside the permit area is a rational extension of section 510(b)(3) of SMCRA,[613] which prohibits the approval of a permit application unless the applicant demonstrates and the regulatory authority finds that the proposed operation had been designed to prevent material damage to the hydrologic balance outside the permit area. Release of any bond for an operation that is likely to result in material damage to the hydrologic balance outside the permit area in the future, would be irresponsible because the amount of bond remaining may be insufficient to remedy the problem when it ultimately occurs.

In response to the comments that we received, we revised proposed paragraph (a)(2) to remove the provision prohibiting bond release if the regulatory authority determines that ''adverse trends exist that may result in material damage to the hydrologic balance outside the permit area.'' We agree that ''may result'' is too subjective. Final paragraph (a)(2)(i) requires that the regulatory authority conduct a scientifically defensible trend analysis of the groundwater, surface water, and biological condition monitoring data submitted under §§ 816.35 through 816.37 or §§ 817.35 through 817.37 before releasing any bond amount. Each regulatory authority will determine what type of trend analysis is scientifically defensible. Final paragraph (a)(2)(ii) provides that the regulatory authority may not approve a bond release application if the analysis conducted under final paragraph (a)(2)(i) and other relevant information indicate that the operation is causing material damage to the hydrologic balance outside the permit area or is likely to do so in the future. We did not adopt the statistically significant degradation standard recommended by one commenter because we are not clear as to how such a standard would operate.

Proposed paragraph (a)(3) prohibited the release of any portion of the bond unless and until the permittee posts a financial assurance or collateral bond if a discharge requiring long-term treatment exists either on the permit area or at a point that is hydrologically connected to the permit area. One commenter opposed proposed paragraph (a)(3) based on a belief that surety bonds are not responsible for long-term treatment of discharges. The commenter characterized proposed paragraph (a)(3) as implying that the regulatory authority may forfeit a surety

[611] Karl Williard et al., *Stream-restoration—long term performance: A reassessment*. Final report for the Office of Surface Mining Cooperative Agreement S11AC20024 AS.

[612] 30 U.S.C. 1259(a).

[613] 30 U.S.C. 1260(b)(3).

bond to fund the long-term treatment obligations.

The principle that any type of bond may be forfeited to obtain the funds needed for long-term treatment of discharges has long been official OSMRE policy. See the discussion in the preamble to proposed paragraph (a)(3) at 80 FR 44540 (Jul. 27, 2015). The commenter also alleged that proposed paragraph (a)(3) conflicted with proposed *§* 800.12(d), which provides that the regulatory authority may only accept a financial assurance or collateral bond to guarantee treatment of a long-term discharge. Final section 800.12(c), which corresponds to proposed *§* 800.12(d), allows the use of surety bonds to guarantee long-term treatment of discharges. However, even in the absence of the revision, no conflict exists. Proposed *§* 800.12(d) and its successor, final section 800.12(c), apply to bonds specifically posted for long-term treatment after discovery of an unanticipated discharge, while § 800.42(a)(3) applies to the bond posted at the time of permit issuance or for a successive permit increment, at which time no discharges in need of long-term treatment would have been known or anticipated. However, if an unanticipated discharge requiring long-term treatment develops after permit issuance, the performance bond posted at the time of permit issuance or for a successive permit increment must cover all reclamation obligations, including long-term treatment of unanticipated discharges, unless and until the permittee posts a financial assurance, collateral bond, or surety bond to guarantee discharge treatment under final § 800.18.

Another commenter argued that proposed § 800.42(a)(3) improperly prohibited any bond release if the permittee incurs a long-term discharge treatment obligation. According to the commenter, this absolute prohibition fails to recognize the possibility that more than sufficient bond may be in place on a large mine site with a minimal impact discharge that requires long-term treatment. Final paragraph (a)(3) includes a provision that takes this possibility into account. Final paragraph (a)(3) also applies only to discharges for which the permittee is responsible. While not our intent, proposed paragraph (a)(3) applied to all discharges in need of long-term treatment, regardless of whether the permittee is responsible for the quality of the discharge. Final paragraph (a)(3) provides that a permittee responsible for a discharge that requires long-term treatment, regardless of whether the discharge emerges either on the permit area or at a point that is hydrologically connected to the permit area, must post a separate financial assurance or collateral or surety bond under final § 800.18 before any portion of the existing performance bond for the permit area may be released, unless the type and amount of bond remaining after the release would be adequate to meet the requirements of section 800.18 as well as any remaining land reclamation obligations. We added the reference to the type of bond remaining after the release because final § 800.18 does not allow the use of a self-bond to guarantee long-term treatment of a discharge. Therefore, if the type of bond remaining after the release is a self-bond, final paragraph (a)(3) requires that the permittee replace the self-bond with a financial assurance, collateral bond, or surety bond to provide coverage for long-term treatment.

Proposed paragraph (a)(4) provided that, if the permit area or increment includes a steep-slope variance from restoration of the approximate original contour under § 785.16, the portion of the performance bond described in § 785.16(a)(13) may not be released in whole or in part until the approved postmining land use is implemented or until the site is restored to the approximate original contour and revegetated. However, we did not adopt § 785.16(a)(13) as proposed. Instead, final § 785.16(b)(2) requires that the permit include a condition prohibiting the release of any part of the bond posted for the permit until substantial implementation of the approved postmining land use is underway. The rule specifies that the condition must provide that the prohibition does not apply to any portion of the bond that is in excess of an amount equal to the cost of regrading the site to its approximate original contour and revegetating the regraded land in the event that the approved postmining land use is not implemented. Therefore, we did not adopt the language that we proposed in § 800.42(a)(4) as part of the final rule.

Instead, final § 800.42(a)(4) provides that, if the permit area or increment includes mountaintop removal mining operations under § 785.14 or a variance from restoration of the approximate original contour under section 785.16, the amount of bond that may be released is subject to the limitation specified in § 785.14(c)(2) for mountaintop removal mining operations or the limitation specified in § 785.16(b)(2) for a variance from restoration of the approximate original contour. We inadvertently omitted a reference to § 785.14 in proposed § 800.42(a)(4), an omission that the final rule corrects. Final § 800.42(a)(4) includes a reference to § 785.14(c)(2) because final §§ 785.14(c)(2) (mountaintop removal mining operations) and 785.16(b)(2) (steep slope variances) contain identical restrictions on bond release, which should be reflected in final § 800.42 for consistency. The rationale for applying final § 800.42(a)(4) to mountaintop removal mining operations is the same as the rationale provided in the preamble to the proposed rule for applying that provision to steep-slope variances. *See* 80 FR 44540 (Jul. 27, 2015). The only difference is that the statutory basis for applying paragraph (a)(4) to mountaintop removal mining operations is section 515(c)(5) of SMCRA,[614] which is substantively identical to the steep-slope variance provisions in section 515(e)(5) of SMCRA.[615]

One commenter observed that proposed paragraph (a)(4) would be especially onerous because reestablishing approximate original contour on a site that was prepared for a postmining land use that requires a different surface configuration would be extremely expensive, much more so than restoration of approximate original contour in the normal course of contemporaneous reclamation. We acknowledge that the cost of restoring a site to approximate original contour after it was originally graded to a different configuration may be high. However, one of SMCRA's fundamental principles is to ensure restoration of the approximate original contour, with limited exceptions.[616] Therefore, we find that final paragraph (a)(4) provides an appropriate safeguard against abuse of the exceptions that SMCRA establishes to facilitate certain postmining land uses. Final paragraph (a)(4) should ensure that permittees propose mountaintop removal mining operations and steep-slope variances only in those situations in which attainment of the underlying postmining land use is certain, rather than speculative.

One commenter suggested that we revise proposed paragraph (a)(4) to allow bond release as soon as implementation of the postmining land use begins. The proposed rule required full implementation of the postmining land use as a precondition to bond release. We agree with the commenter that this approach is too stringent. At the same time, however, we conclude that the approach the commenter recommended is too vague and subject

[614] 30 U.S.C. 1265(c)(5).

[615] 30 U.S.C. 1265(e)(5).

[616] *See* 30 U.S.C. 1265(b)(3).

to abuse. Under such a standard, the regulatory authority could allow bond release after only minimal implementation of the postmining land use, such as posting of a sign announcing a future industrial park, which may or may not come to pass. Instead, final paragraph (a)(4) takes a middle ground. Specifically, we replaced the phrase ''until the approved postmining land use is implemented'' in proposed paragraph (a)(4) with ''until substantial implementation of the postmining land use is underway'' in final paragraph (a)(4). Thus, the final rule requires that substantial implementation be underway before the regulatory authority may approve any bond release for mountaintop removal mining operations under § 785.14 or a site with a variance from restoration of the approximate original contour under § 785.16.

Proposed § 800.42(a)(5) provides that the bond amount described in § 780.24(d)(2) or § 784.24(d)(2) may not be released either until the structure is in use as part of the postmining land use or until the structure is removed and the site upon which it was located is reclaimed in accordance with part 816 or part 817. Sections 780.24(d)(2) and 784.24(d)(2) require that the bond posted for a permit include an amount sufficient to cover the cost of removing mining-related structures (other than roads and impoundments) and reclaiming the land upon which the structures were located to a condition capable of supporting the premining uses, even when the regulatory authority has approved retention of the structure as part of the postmining land use. Otherwise, the risk is too great that the structure will never be used for the postmining land use, that it will deteriorate and become an attractive nuisance, and that no funds will be available for demolition and removal, as we explain the preamble to the proposed rule. *See* 80 FR 44540 (Jul. 27, 2015).

One commenter argued that the final rule must provide additional flexibility for unique property use situations; *e.g.,* situations in which the property owner, sub-lessee, or authorized postmining land user may only be partially using a structure after mine closure as part of the approved postmining land use. According to the commenter, the authorized postmining land user may not have sufficient funding to proceed with complete implementation of the postmining land use before final bond release or implementation of the postmining land use may no longer be economically feasible. Several commenters alleged that the proposed rule could unfairly penalize the permittee for changing economic conditions beyond its control. Another commenter opposed this provision as a possible violation of landowner rights.

We did not revise proposed paragraph (a)(5) in response to these comments because final paragraph (a)(5) does not prohibit bond release in situations in which the structure is only partially in use by the time the remainder of the site is ready for final bond release. Partial use signifies a reasonable probability of future full utilization. We do not agree with the commenter that we should allow retention of the structure if the structure remains unused for financial or economic reasons. Those are prime examples of situations in which structures should not be retained because there is no reasonable certainty of future use. We also do not agree with the comment that final paragraph (a)(5) would violate landowner rights. The structure was built for mining purposes by the mining company. Therefore, the mining company is in a position to structure any agreements with the landowner concerning future use in a manner that takes the requirements of this rule into account.

Proposed paragraph (b) contained the criteria for Phase I bond release. One commenter objected to our proposed addition of language specifying that restoration of the form of perennial and intermittent stream segments that the permittee mines through is part of Phase I reclamation, which consists of backfilling, grading, and establishment of drainage control. According to the commenter, this language unlawfully amends section 519(c)(1) of SMCRA,[617] which authorizes the release of 60% of the reclamation bond for a permit area ''when the operator completes the backfilling, regrading, and drainage control.'' For the same reason, the commenter objected to the proposed requirement to retain sufficient bond after Phase I release to cover restoration of the ecological function of streams and completion of the fish and wildlife enhancement measures required in the permit.

We do not agree with the commenter's rationale. First, restoration of the form of perennial and intermittent streams that the operation mines through is a part of regrading and establishment of drainage control. Second, nothing in section 519 of SMCRA overrides the requirement in section 509(a) of SMCRA [618] that the amount of bond ''be sufficient to assure the completion of the reclamation plan if the work had to be performed by the regulatory authority in the event of forfeiture.'' That requirement applies at all times, including after Phase I bond release.

We are adopting paragraph (b) as proposed, with minor editorial changes and the two revisions discussed in this paragraph. We improved the clarity of final paragraph (b)(1) by specifying that Phase I reclamation includes construction of the postmining drainage pattern and stream-channel configuration required by §§ 816.56(b), 816.57(c)(1), 817.56(b), and 817.57(c)(1). This addition is consistent with the description of Phase I reclamation in section 519(c)(1) of SMCRA, which provides that Phase I reclamation consists of ''backfilling, regrading, and drainage control.'' Construction of the postmining drainage pattern and stream-channel configuration is part of both regrading and drainage control. In addition, final paragraph (b)(2) specifies that the regulatory authority must retain sufficient funds after Phase I bond release to cover restoration of both the hydrologic function and ecological function of perennial and intermittent streams, not just ecological function as in proposed paragraph (b)(2). The addition of hydrologic function is responsive to our revision of proposed paragraph (c) to classify restoration of hydrologic function as part of Phase II reclamation.

Section 800.42(c) establishes criteria for Phase II bond release. Final paragraphs (c)(1) and (2) differ from proposed paragraphs (c)(1) and (2) in several respects, apart from assorted minor editorial revisions. First, final paragraph (c)(1)(i) specifies that redistribution of organic materials is a part of Phase II reclamation, consistent with final § 816.22(f), which requires salvage and redistribution or reuse of most organic materials. Second, final paragraph (c)(1)(ii) provides that Phase II reclamation includes restoration of the hydrologic function of perennial and intermittent streams that the permittee mines through. This revision resolves an ambiguity in the proposed rule, which never specified whether restoration of hydrologic function was a part of restoration of the form of the stream or part of restoration of the ecological function of the stream. Restoration of hydrologic function is not properly classified as a part of Phase I reclamation because it is not necessarily a part of backfilling, regrading, or drainage control. Nor is it properly classified as part of the restoration of the ecological function of a stream because restoration of the hydrologic function is a prerequisite for restoration of the ecological function. Therefore, we

[617] 30 U.S.C. 1269(c)(1).

[618] 30 U.S.C. 1259(a).

decided that restoration of hydrologic function is best classified as part of Phase II reclamation. Third, final paragraph (c)(1)(iii) clarifies that the requirement for successful establishment of revegetation applies to streamside vegetative corridors. We have no reason to believe that proposed paragraph (c)(1)(iii) would have been interpreted differently, but the revision should resolve any questions on that point.

Final paragraphs (c)(3) through (5) contain only minor editorial revisions from their counterparts in the proposed rule. The principal revision is the clarification that final paragraph (c)(4) applies only to prime farmland historically used for cropland. This restriction is consistent with § 785.17(a) of our existing rules.

In the preamble to proposed § 800.42(c), we invited comment on whether we should provide national standards for establishment of vegetation for the purposes of Phase II bond release or whether establishment of standards for this purpose is best left to the regulatory authority, based on local conditions. *See* 80 FR 44541 (Jul. 27, 2015). We received few comments on this question, but those that we did receive generally supported leaving establishment of standards to the regulatory authority. One commenter found establishment of standards unnecessary because §§ 816.116 and 817.116 already establish revegetation success standards in more detail.

We decided to retain the current arrangement in which there are no national standards. Regulatory authorities have established these standards as part of their approved regulatory programs in the past and they will continue to do so. These standards apply only for purposes of determining when revegetation has been successfully established for purposes of Phase II bond release. They differ from the revegetation success standards to which §§ 816.116 and 817.116 apply in that standards developed in compliance with §§ 816.116 and 817.116 include the revegetation responsibility period specified in §§ 816.115 and 817.115 and determine, in part, when the regulatory authority may approve Phase III bond release. The regulatory authority has the discretion to apply identical standards to both Phase II and III bond release, but doing so would have the effect of creating little distinction between Phase II and III bond release. Elimination of this distinction would be inappropriate for a national rule because section 519(c)(2) clearly contemplates a distinction between ''successful reclamation'' for purposes of Phase II bond release and completion of the revegetation responsibility period. The only exception is prime farmland historically used for cropland, in which case, section 519(c)(2) of SMCRA [619] prohibits Phase II bond release until soil productivity for prime farmlands has returned to equivalent levels of yield as non-mined land of the same soil type in the surrounding area under equivalent management practices.

Section 800.42(d) establishes criteria for Phase III bond release. Under final § 700.11(d)(2), Phase III bond release equates to termination of jurisdiction under SMCRA. We are adopting § 800.42(d) as proposed, with minor editorial changes to improve clarity and correct cross-references. We received few comments on proposed paragraph (d). One commenter observed that demonstrating full restoration of the ecological function of a stream segment is difficult to quantify for purposes of Phase III bond release because no clear standards exist. Sections 780.28(g) and 784.28(g) of this final rule require that the regulatory authority establish standards for determining when the ecological function of a perennial or intermittent stream has been restored. The commenter also asked what science or management tools exists to define restoration of ecological function. Sections 780.28(g)(3) and 784.28(g)(3) of this final rule identify, and require use of, the best technology currently available for this purpose. Finally, the commenter inquired as to how this requirement would apply to ephemeral streams. The answer is that this requirement applies only to perennial and intermittent streams that the permittee mines through. It does not apply to ephemeral streams.

Another commenter complained that the proposed rule is not clear regarding the consideration of pre-existing impacts in making a bond release determination. The commenter requested that the final rule clarify that the permittee will not be responsible for pre-existing impacts. The commenter also asserted that we should convene a group of bonding experts and state agencies to discuss the issue of pre-existing conditions and how to best address it during the bond release process. The commenter did not identify any pre-existing impacts or explain what the term means. However, under SMCRA, the permittee is responsible only for impacts resulting from the mining operation. Therefore, we do not see a need to convene a group of experts to discuss this topic.

[619] 30 U.S.C. 1269(c)(2).

Section 800.43: When and how must the regulatory authority provide notification of its decision on a bond release application?

We are adopting § 800.43 as proposed, with minor editorial and organizational changes to improve clarity. We received no comments on this section.

Section 800.44: Who may file an objection to a bond release application and how must the regulatory authority respond to an objection?

We are adopting § 800.44 as proposed, with minor editorial changes to improve clarity. We received no comments on this section.

Section 800.50: When and how will a bond be forfeited?

We are adopting § 800.50 as proposed with the exception of two revisions resulting from comments that we received on proposed § 800.18(b). We received no comments specific to § 800.50.

In response to the comments that we received on proposed § 800.18(b), as discussed in the preamble to § 800.18(b), we revised § 800.50(a)(1) to clarify that, if the amount of bond to be forfeited is less than the total amount of bond posted, the amount forfeited must be no less than the estimated total cost of achieving the reclamation plan requirements. We also revised § 800.50(a)(1) to specify that the regulatory authority must calculate the estimated total cost of achieving the reclamation plan requirements for long-term treatment of a discharge in a manner consistent with final § 800.18(c). *See* final § 800.50(a)(1)(ii). In addition, we revised § 800.50(b)(2) to require that the regulatory authority use the funds collected from bond forfeiture to complete the reclamation plan, or the portion of the reclamation plan covered by the bond, on the permit area or increment to which the bond applies. We replaced the phrase ''complete the reclamation plan, or portion thereof,'' in previous § 800.50(b)(2) with ''complete the reclamation plan, or the portion thereof covered by the bond,'' to clarify that the regulatory authority may not choose to ignore any element of the reclamation plan that is covered by the bond.

Section 800.60: What liability insurance must I carry?

We are adopting § 800.60 as proposed. We received no comments on this section.

Section 800.70: What special bonding provisions apply to anthracite operations in Pennsylvania?

We are adopting § 800.70 as proposed. We received no comments on this section.

L. Part 816—Permanent Program Performance Standards—Surface Mining Activities

Section 816.1: What does this part do?

With the exception of altering the title of this section for clarity, we are finalizing § 816.1 as proposed. We received no comments on this section.

Section 816.2: What is the objective of this part?

We are finalizing § 816.2 as proposed. We received no comments on this section.

Section 816.10: Information Collection

Section 816.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 816.

Section 816.11: What signs and markers must I post?

We are finalizing § 816.11 as proposed. We received no comments on this section.

Section 816.13: What special requirements apply to drilled holes, wells, and exposed underground openings?

We are finalizing § 816.13 as proposed. We received no comments on this section.

Section 816.22: How must I handle topsoil, subsoil, and other plant growth media?

As discussed in the preamble to the proposed rule,[620] we proposed to modify § 816.22 to require the salvage, protection, and redistribution of all soil materials to restore the site's capability to support the postmining land use and the uses that it supported before mining. After evaluating the comments that we received, we are adopting the section as proposed, with the following explanations and exceptions.

Many comments on proposed § 816.22 also cited or apply to the closely related provisions of proposed § 780.12(e), so we are including some discussion of those provisions here. Proposed § 780.12(e)(1)(i) required that the permit application include a plan and schedule for removal, storage, and redistribution of topsoil, subsoil, and other material to be used as a final growing medium in accordance with § 816.22. Proposed § 780.12(e)(1)(ii) specified that the permit application must include a plan requiring that the B horizon, C horizon, and other underlying strata, or portions thereof, be removed and segregated, stockpiled, and redistributed to achieve the optimal rooting depths required to restore premining land use capability or to comply with the revegetation requirements of §§ 816.111 and 816.116.

Final Paragraph (a): Removal and Salvage

Proposed § 816.22(a)(1) required that the permittee separately remove and salvage all topsoil and other soil materials identified for salvage and use as postmining plant growth media in the soil handling plan approved in the permit under § 780.12(e).

Some commenters claimed that there is no scientific support for the proposition that the recovery and redistribution of all topsoil and subsoil is necessary to achieve reclamation success in all situations. Another commenter alleged that some western soils do not contain multiple soil horizons. According to the commenter, topsoil is typically stripped as one layer down to unsuitable materials (bedrock or unsuitable soils, likely the C horizon). The commenter objected to the requirement to salvage and redistribute soil horizons separately because it would slow topsoil placement and complicate direct placement. The commenter urged us to revise the proposed rule to allow mixing of soil horizons. The commenter also argued that requiring additional segregation of horizons would increase costs, delay reclamation, and hinder long-term success because of increased handling and equipment traffic.

One commenter opposed the proposed requirement to salvage and redistribute all existing topsoil as scientifically and practically unsupported. According to the commenter, salvage and redistribution of topsoil in some areas, such as western North Dakota, would result in construction of a postmining soil that inhibits growth of many types of plants because of the high levels of sodium and other salts in that topsoil.

Another commenter expressed disappointment at the lack of a defined limit to the depths of soil horizons that the permittee must salvage and redistribute to construct a plant growth medium. The commenter explained that, in some regions, the proposed rule would require salvage and redistribution of soil to a greater depth than the previous rule allegedly required. According to the commenter, adoption of the proposed rule could lead to the need to stockpile substantially larger volumes of soil, which would involve added cost, both because of the increased volume of soil materials and because of the requirement to segregate the soil materials by horizon. The commenter noted that, in the Midwest, loess and drift soils can be more than 10 feet thick. The commenter questioned the benefit of salvaging that depth of soil. The commenter suggested that the rule should require the salvage and redistribution of additional topsoil and the B and C horizons only in those regions or states in which greater soil depth is required to establish a suitable plant growth medium.

The commenter further alleged that the rule may pose a problem for mining operations in the Southwest, because topsoil can be less than six inches thick. According to the commenter, the rule should allow the use of a topsoil-subsoil mixture in this situation.

We have made limited revisions to the proposed rule in response to these comments and other related comments on § 780.12(e). Final § 816.22(a)(1)(i), which we proposed as the first sentence of § 816.22(a)(1), no longer requires that soil horizons be separately removed and salvaged. Instead, we have added § 816.22(a)(1)(ii), which provides that the soil handling plan approved in the permit under § 780.12(e) will specify which soil horizons the permittee must separately remove and salvage. It also requires that the plan specify whether some or all of those soil horizons or other soil substitute materials may or must be blended to achieve an improved plant growth medium. The net effect is that the final rule allows for some flexibility in the removal, salvage, and use of topsoil and other soil materials, although it primarily relies upon the requirements for approval of soil substitutes and supplements in § 780.12(e)(2) in determining whether to allow the use of substitutes for existing soil horizons.

We also revised the second sentence of proposed § 816.22(a)(1), which is now final § 816.22(a)(1)(iii). We added an introductory phrase specifying that the requirement to complete removal and salvage of all soil materials before any drilling, blasting, mining, or other surface disturbance takes place in the area that is to be disturbed may be waived in the soil handling plan approved in the permit under final rule § 780.12(e). This change acknowledges the fact that in some cases where soil substitutes are approved for use in place

[620] 80 FR 44436, 44542–44543 (Jul. 27, 2015).

of the existing topsoil or subsoil, the substitute materials may not be available for salvage until later in the mining process. However, we do not anticipate that this situation will be commonplace.

In addition, as discussed in the preamble to § 780.12(e), we have revised the proposed requirements for soil handling plans in permit applications. Final § 780.12(e)(1)(ii) differs slightly from the proposed in that the final rule requires separate removal, stockpiling (if necessary), and redistribution of the B and C soil horizons and other underlying strata only ''to the extent and in the manner needed'' to achieve the optimal rooting depths required to restore premining land use capability and to comply with revegetation requirements. It does not require salvage and redistribution of ''all'' of those soil horizons and overburden strata.

New final § 780.12(e)(1)(iii) provides that the plan need not require salvage of soil horizons that the permittee demonstrates, to the satisfaction of the regulatory authority, are inferior to other soil horizons or overburden materials as a plant growth medium, provided that the permittee complies with the soil substitute requirements of paragraph (e)(2). We added this language in response to comments objecting to the proposed requirement for salvage, segregation, and redistribution of soil horizons when one or more of those horizons have physical or chemical characteristics that make them inferior to other overburden materials in creating a medium conducive to plant growth. We made this change in response to comments urging us to allow blending of soil horizons when experience has demonstrated that doing so results in a superior growing medium.

In response to comments supporting the blending of soil horizons, we added § 780.12(e)(1)(iv), which allows blending of the B horizon, C horizon, and underlying strata, or portions thereof, to the extent that research or prior experience under similar conditions has demonstrated that blending will not adversely affect soil productivity. In other words, blending of subsoil horizons does not require approval in accordance with the soil substitute and supplement requirements of paragraph (e)(2). However, any proposal to blend topsoil with other soil horizons must be approved as a topsoil substitute or supplement under paragraph (e)(2). We find that topsoil merits extra consideration because, in most areas, topsoil is uniquely valuable as a plant growth medium, with a structure and ecology that is difficult to restore or replicate.

Several commenters objected to the application of these requirements nationwide because, according to the commenters, salvage and redistribution of soil materials other than topsoil is only necessary to address conditions found in the Appalachian Region. One commenter alleged that the preamble to the proposed rule provided no rationale for the nationwide application of the rule except a research report from Appalachia and a guide to the reclamation of borrow sites used for transportation facilities in Alberta, Canada. According to the commenter, these two documents clearly do not represent the vast majority of mined and reclaimed lands throughout the United States. The commenter further alleges that the preamble fails to evaluate or discuss the postmining productivity of reclaimed lands on the tens of thousands of acres of mined and reclaimed land outside Appalachia where no subsoil has been salvaged.

We do not agree with these comments. A suitable growth medium, including an adequate root zone, is essential to establishing successful vegetation and demonstrating restoration of premining land use capability in every region. In those relatively rare cases in which restoration of a particular ecological community requires a shallow root zone or other specialized soil condition, § 816.22(e)(1)(v) authorizes variations in the depth of soil redistribution. See 71 FR 51684–51688 (Aug. 30, 2006) for an extensive discussion of this topic. Otherwise, as explained in the preamble to our proposed rule, scientific studies have determined that an adequate root zone is critical to plant growth and survival, and that topsoil alone typically does not provide an adequate root zone. See 80 FR 44436, 44488–44489 (Jul. 27, 2015). These studies, which are not limited to Appalachia, document that salvage and redistribution of topsoil alone will not necessarily restore the mine site to a condition in which it is capable of supporting the uses that it was capable of supporting before any mining, as required by section 515(b)(2) of SMCRA,[621] nor will it necessarily support the postmining land use. Therefore, salvage and redistribution of subsoil and other soil materials typically will be necessary to meet the requirements of section 515(b)(2) of SMCRA.

The Alberta publication to which the commenter refers contains a particularly cogent explanation of the importance of subsoil and an adequate root zone. We summarized that explanation in the preamble to the proposed rule, but it bears repeating here:

> Plant roots extend through the topsoil into the subsoil (root zone), which provides a substantial proportion of the plant's nutrient requirements. For example, field studies have shown that between 45 percent and 65 percent of nitrogen available to plants from the soil lies below a depth of 6 inches. During dry summer weather, many plants, especially deep-rooted plants like alfalfa and most trees, depend for their survival on moisture available in the subsoil. Alfalfa extracts 55 percent of its moisture requirements from soil materials deeper than one foot and is capable of extracting water from subsoil up to 6 feet in depth. Even medium-rooted crops like wheat and corn extract up to 40 percent of their moisture requirements from soil materials deeper than one foot. Finally, many plants depend on root penetration well into the subsoil for physical support, especially where topsoil is thin. If plant roots are unable to penetrate deeply into a reclaimed subsoil, soil capability for plant growth will be degraded.[622]

Alfalfa, corn, and wheat are widely grown crops, so the fact that this information appears in an Alberta publication in no way compromises its applicability throughout the coalfields.

Finally, the commenter did not provide references to studies on the postmining productivity of reclaimed lands outside Appalachia where no subsoil has been salvaged, and we are not aware of studies or data on this topic.

One commenter recommended that we revise proposed § 816.22(a)(1), which is now final § 816.22(a)(1)(iii), by removing the reference to drilling. According to the commenter, drilling may be necessary to install power poles and fence posts, the installation of which paragraph (a)(2)(i) exempts from soil salvage and removal requirements. We accepted this recommendation and made other revisions to the proposed rule to ensure consistency with final § 780.12(e) and other provisions of final § 816.22. Final paragraph (a)(1)(iii) now provides that, except as provided in the soil handling plan approved in the permit under § 780.12(e), the permittee must complete removal and salvage of topsoil, subsoil, and organic matter before any mining-related surface disturbance takes place on that area, other than the minor disturbances identified in paragraph (a)(2).

One commenter requested that we revise proposed paragraph (a)(2)(i) by

[621] 30 U.S.C. 1265(b)(2).

[622] 80 FR 44436, 44488–44489 (Jul. 27, 2015), citing Alberta Transp., *Alberta Transportation Guide to Reclaiming Borrow Excavations,* pp. 5–6 (Dec. 2015).

adding monitoring wells to the list of small structures that are considered minor disturbances and thus are exempt from the requirement to remove and salvage topsoil and other soil materials. According to the commenter, the extent of disturbance caused by the construction of monitoring wells is similar to the extent of disturbance caused by the construction of power poles, signs, and fence lines. We agree with this rationale and the commenter's recommendation. Final paragraph (a)(2)(i) provides that the removal and salvage of topsoil and other soil materials in advance of minor disturbances that occur at the site of small structures, such as power poles, signs, monitoring wells, or fence lines, is not necessary.

In addition, we restructured proposed paragraph (a)(2) to automatically exempt minor disturbances that meet the criteria of either paragraph (a)(2)(i) or paragraph (a)(2)(ii) from soil salvage requirements unless the regulatory authority specifies otherwise. Proposed paragraph (a)(2), like the previous rules, required affirmative regulatory authority approval as a prerequisite for exemption from the soil salvage requirements. This change will reduce burdens on both the permittee and the regulatory authority without any danger of environmental harm. Only very minor soil losses will occur from the construction of small structures like power poles, fence lines, signs, or monitoring wells under paragraph (a)(2)(i), while there will no soil loss at all under paragraph (a)(2)(ii), which applies only to activities that will not destroy the existing vegetation and will not cause erosion.

Final Paragraph (b): Handling and Storage

We revised proposed paragraph (b)(1) for clarity and consistency with other provisions of this section and § 780.12(e) concerning segregation of soil materials. Final paragraph (b)(1) now includes a new first sentence requiring that the permittee segregate and separately handle the materials removed under paragraph (a) to the extent required in the soil handling plan approved in the permit pursuant to § 780.12(e). Proposed paragraph (b)(1) required segregation of all soil materials, but final §§ 780.12(e) and 816.22 provide exceptions to that requirement under certain circumstances.

We received a number of comments on the provision in proposed paragraph (b)(2)(iii) requiring that stockpiled material ''[b]e protected from wind and water erosion through prompt establishment and maintenance of an effective, quick-growing, non-invasive vegetative cover or through other measures approved by the regulatory authority.'' One commenter alleged that many non-native, non-invasive plants can do a better job of protecting the stockpiles than native vegetation and suggested that we allow their use. Other commenters argued that it will be impossible to keep common non-native plants from colonizing the stockpiles. Another commenter noted that it may be impossible to keep stockpiles free of non-invasive species because stockpiles are often configured in a way that makes mowing, a common method of controlling non-invasive species, impractical.

We did not revise the proposed rule in response to these comments because we find that the rule already accommodates the commenters' concerns. When the permittee selects the vegetative cover method of controlling erosion, final paragraph (b)(2)(iii) requires the use of a ''non-invasive vegetative cover,'' which could include non-native plants that are non-invasive. Nothing in this paragraph would prohibit or require the control or eradication of volunteer non-native, non-invasive species that colonize the stockpiles. Finally, mowing is not the only means of controlling invasive species, nor is it necessarily the most effective. The permittee has the flexibility to implement other accepted control techniques when mowing is not practical. Finally, in the event that it is difficult or impossible to establish and maintain an effective, quick-growing, non-invasive vegetative cover, final paragraph (b)(2)(iii) allows the regulatory authority to approve the use of other measures to protect the stockpiles from wind and water erosion.

Final Paragraph (c): Soil Substitutes and Supplements

Paragraph (c) specifies that, if the soil handling plan approved in the permit in accordance with § 780.12(e) provides for the use of topsoil or subsoil substitutes or supplements, the permittee must salvage, store, and redistribute the overburden materials selected and approved for that purpose in a manner consistent with paragraphs (a), (b), and (e) of § 816.22. We discuss all comments received on the use of soil substitutes and supplements in the preamble to § 780.12(e).

Final Paragraph (d): Site Preparation

We did not adopt proposed paragraph (d)(1) because that paragraph pertained to backfilling and grading of spoil, which is the subject of § 816.102, not to the subject of § 816.22, which, in this context, is the placement and grading of soil materials. We adopted a revised version of proposed paragraph (d)(2) as final paragraph (d). In response to a comment, we added a reference to deep tillage as a method of alleviating compaction and preventing slippage between the spoil and the soil. We also replaced the reference to ''topsoil'' with a reference to ''soil materials'' in order to be consistent with the revisions to other provisions of this section that require the salvage and redistribution of both topsoil and subsoil, not just topsoil. Finally, we made assorted plain language changes and streamlined the rule text.

Final Paragraph (e): Redistribution

Final paragraph (e)(1)(ii) differs from proposed paragraph (e)(1)(ii) in that we replaced the word ''contours'' with the phrase ''final surface configuration.'' We made this change because the term ''contours'' could be interpreted as applying only to elevation differences, which is not our intent in this context. The phrase ''final surface configuration'' refers to the shape of the land surface and the features of that surface. This term is more encompassing, and thus more relevant, to soil redistribution. In addition, because the term ''general surface configuration'' appears as the core element of the definition of ''approximate original contour'' in section 701(2) of SMCRA [623] and 30 CFR 701.5, it is more appropriate for use in the context of redistribution of soil materials under final section 816.22(e). The term ''surface configuration'' or a variation thereof also appears in §§ 780.12(d), 780.20, 780.35, 816.102, 816.104, 816.105, 816.106, and 816.107, which lends support to replacement of ''contours'' with ''final surface configuration'' in the final rule.

We revised proposed paragraph (e)(1)(iii) to make that paragraph consistent with § 780.12(d)(2)(ii), which provides that the backfilling and grading plan must ''[l]imit compaction of topsoil and soil materials in the root zone to the minimum necessary to achieve stability.'' It also requires that the plan ''identify measures that will be used to alleviate soil compaction if necessary.'' Similarly, final paragraph (e)(1)(iii) requires that the permittee minimize compaction of the topsoil and soil materials in the root zone to the extent possible and alleviate any excess compaction that may occur. It further requires that the permittee limit use of measures that result in increased compaction to those situations in which added compaction is necessary to ensure stability. In response to a

[623] 30 U.S.C. 1291(2).

suggestion from the U.S. Environmental Protection Agency, we revised proposed paragraph (e)(1)(iv) by adding language clarifying that the standards referenced in the final rule are those that have been established under section 303(c) of the Clean Water Act, or other state or tribal water quality standards.

Final paragraph (e)(1)(v) requires redistribution of salvaged soil materials to achieve an approximately uniform and stable thickness when doing so is consistent with the approved postmining land use, the final surface configuration, surface-water drainage systems, and the requirement in § 816.133 that all disturbed areas be restored to conditions that are capable of supporting the uses they were capable of supporting before any mining or higher or better uses approved under final § 780.24(b) . Previous paragraph (d)(1)(i), which final paragraph (e)(1)(v) replaces, required redistribution of topsoil and topsoil substitutes and supplements to achieve an approximate uniform, stable thickness ''when consistent with the approved postmining land use, contours, and surface-water drainage systems.'' We inadvertently excluded the quoted language from the proposed rule. Final paragraph (e)(1)(v) incorporates the quoted language, with the exception that we replaced ''contours'' with ''the final surface configuration'' for the reasons discussed above in connection with final paragraph (e)(1)(ii). As explained in the preamble to the previous rule, the quoted language is intended to ''make clear that the uniform soil thickness provision is a function of the approved postmining land use, contours, and surface water drainage systems, and is not, in itself, an inflexible requirement.'' See 71 FR 51685 (Aug. 30, 2006).

We further revised the previous and proposed rules by adding language providing that the requirement to redistribute soil materials in a uniform thickness applies only when such redistribution is consistent with the requirement in section 816.133 to restore all disturbed areas to conditions that are capable of supporting the uses they were capable of supporting before any mining or higher or better uses approved under § 780.24(b). This additional proviso harmonizes this rule with our revised land use rules in final §§ 780.24 and 816.133 and with section 515(b)(2) of SMCRA, all of which require that the permittee restore mined land to a condition capable of supporting the uses that it was capable of supporting before any mining or higher or better uses of which there is reasonable likelihood. Soils are a critical element of restoration of land use capability. Without this provision, the requirement for uniform soil thickness would result in an inability to meet the postmining land use capability requirement on portions of the permit area where a reduction in soil thickness compared to premining conditions would result in diminished soil capability or productivity.

Final paragraph (e)(1)(v) also includes a provision allowing soil thicknesses to vary when those variations are necessary or desirable to achieve specific revegetation goals and ecological diversity. This provision is identical to corresponding provisions in both the proposed and previous rules.

One commenter suggested that we expressly provide an additional exception to allow for variability in underlying spoil quality, compatibility with the root zones, and land use. Except as discussed above, we have made no substantive changes to this provision because final paragraph (e)(1)(v) already allows for variations in thickness when such variations are consistent with the postmining land use and when variations are necessary or desirable to achieve specific revegetation goals and ecological diversity.

Final paragraph (e)(2) requires the use of a statistically valid sampling technique to document that soil materials have been redistributed in the locations and depths required by the soil handling plan approved in the permit in accordance with section 780.12(e). In the preamble to the proposed rule,[624] we encouraged the use of the U.S. Environmental Protection Agency's Data Quality Objectives seven-step method to statistically validate soil sampling techniques. Several commenters alleged that this technique is not necessary because state regulatory authorities have valid existing methods for documenting the redistribution of soil. The commenters urged us to provide regulatory authorities with the discretion to determine which statistical method to use. One commenter added that the U.S. Environmental Protection Agency's method is overly complex and intended for landfills, which, unlike mine sites, are highly controlled sites.

As in the proposed rule, final paragraph (e)(2) simply requires the use of a statistically valid sampling technique. It does not require use of the U.S. Environmental Protection Agency Data Quality Objectives method. We encourage use of the U.S. Environmental Protection Agency Data Quality Objectives method for the reasons discussed in the preamble to the proposed rule, but the permittee and the regulatory authority have the flexibility to choose another statistically valid technique.

Several commenters opposed proposed paragraph (e)(2) because it required the permittee to use a statistically valid technique to document that soil materials have been redistributed in the locations and depths required by the soil handling plan developed under § 780.12(e) and approved as part of the permit. According to the commenters, a requirement for soil depth mapping using statistically valid techniques is inappropriate because other means are available to verify soil replacement depths, including regulatory authority inspection reports that routinely document soil depths. We disagree with the commenters. Under the final rule, inspection reports are acceptable only if the inspectors use a statistically valid sampling technique and document the data in the reports. Because of the limited numbers of soil types likely to be present within the permit area, we do not anticipate the requirement in final paragraph (e)(2) to be onerous or expensive.

Final Paragraph (f): Organic Matter

Under the previous rules, permittees almost universally either burned or buried organic matter, which meant that the potential beneficial impacts of those materials on soil productivity were not realized. In addition, burning organic material releases greenhouse gases into the atmosphere. Proposed paragraph (f) required that the permittee salvage duff, other organic litter, and vegetative materials such as tree tops, small logs, and root balls. It also required that the permittee then redistribute those materials across the regraded surface or incorporate them into the soil to control erosion, promote growth of vegetation, serve as a source of native plant seeds and soil inoculants to speed restoration of the soil's ecological community, and increase the moisture retention capability of the soil. Proposed paragraph (f) banned the burying or burning of organic matter. However, as an alternative to redistribution, it allowed use of those materials for stream restoration purposes or to construct fish and wildlife enhancement features.

One commenter argued that topsoil and organic materials are frequently so closely integrated that separating the two into stockpiles and then subsequently distributing them separately is virtually impossible. We agree that segregation of topsoil and

[624] 80 FR 44436, 44543 (Jul. 27, 2015).

organic materials is not always easily accomplished. Therefore, we have added a sentence to final paragraph (f)(1)(i) to clarify that the permittee may salvage organic matter and topsoil in a single operation that blends those materials when doing so is practicable and consistent with the approved postmining land use.

Other commenters expressed concern about introducing weed seeds and root material which would complicate management of the site. One commenter opposed the use of organic materials from non-native species, such as Russian olive and Siberian elm, which may be present in windbreaks and shelterbelts, for stream restoration and fish and wildlife enhancement purposes. The commenter noted that adoption of the proposed rule, which would allow those uses, could spread invasive, non-native trees species.

In response to these comments, we reconsidered the impact of the proposed rule on the spread of invasive or noxious species. To reduce the potential impact, we have revised § 779.19(b)(3) to require that permit applicants identify those portions of the proposed permit area that support significant populations of non-native invasive or noxious species. This information will identify areas where the salvage of organic materials should be prohibited to prevent the spread of undesirable species. In concert with that requirement, we have added paragraph (f)(1)(ii) to the final rule. This new paragraph provides that the requirement to salvage organic materials does not apply to organic matter from areas identified under § 779.19(b) as containing significant populations of invasive or noxious non-native species. Final paragraph (f)(1)(ii) further provides that the permittee must bury organic matter from these areas in the backfill at a sufficient depth in order to prevent the regeneration or proliferation of undesirable species.

Numerous commenters opposed the proposed requirement to salvage, store, and redistribute organic materials. Many commenters alleged that this requirement would interfere with the use of mechanized equipment on cropland, land used for hay production, and some forestry plantations. Several commenters alleged that, while this practice may be applicable to reforestation of mined lands in Appalachia, it would definitely be detrimental to reclamation in other parts of the country. One commenter cited the example of the Northern Great Plains, where reclaimed lands are used for row crop and small grain production and where trunks, stumps, and brush from shelterbelts comprised mainly of non-native species planted decades ago are commonly piled and burned or buried to make way for improved crop production. Similarly, according to the commenter, the placement of tree tops, small logs and root balls on intensively grazed pastures on reclaimed land may not be appropriate and will likely be contrary to the private landowner's wishes. The commenter agreed that retention and replacement of the types of organic materials described in the proposed rule may enhance reclamation in many instances, especially in and near reclaimed streams, forests, and wildlife habitat. However, the commenter also asserted that we must recognize that this practice is not appropriate nationwide under all conditions and that it may, in fact, be unacceptable to the private surface owner. Therefore, the commenter recommended qualifying this requirement by requiring salvage and redistribution only ''where appropriate to enhance revegetation and fulfill the postmining land use.''

In response to these comments, we moved proposed paragraph (f)(3) to paragraph (f)(2)(ii) in the final rule. We then added a new paragraph (f)(3), which provides that the redistribution requirements for organic matter do not apply to those portions of the permit area identified in paragraphs (f)(3)(i)(A) through (C). Final paragraph (f)(3)(i)(A) creates an exception for those portions of the permit area upon which row crops will be planted as part of the postmining land use before final bond release. Final paragraph (f)(3)(i)(B) creates a similar exception for those portions of the permit area that will be intensively managed for hay production before final bond release. This exception does not extend to pasture land or other grazing land. Finally, as a technical clarification, we added final paragraph (f)(3)(i)(C), which creates an exception for lands upon which structures, roads, other impervious surfaces, or water impoundments have been or will be constructed as part of the postmining land use before final bond release.

We intend for these exceptions to be applied narrowly. Most sites with cropland or hayland postmining land uses have relatively little woody plant material present before mining, so there should be areas on the edge of fields or that are used for non-cropland purposes upon which those woody organic materials can be spread. We anticipate that non-woody organic materials can and would be salvaged and mixed with the topsoil for cropland and hayland in order to improve productivity without hampering the use of agricultural machinery. Therefore, we have added paragraph (f)(3)(ii) to the final rule. That paragraph provides that, when the circumstances described in paragraphs (f)(3)(i)(A) through (C) apply, the permittee must make reasonable efforts to redistribute the salvaged organic materials on other portions of the permit area or use them to construct stream improvement or fish and wildlife habitat enhancement features consistent with the approved postmining land use.

We recognize that there may be circumstances in which it is not reasonably possible to use all available organic materials for these purposes. Therefore, the last sentence of final paragraph (f)(3)(ii) allows the permittee to bury the remaining materials in the backfill, provided the permittee demonstrates, and the regulatory authority finds, that it is not reasonably possible to use all available organic materials. This provision also is responsive to other comments alleging that salvage of all available organic materials could result in a greater amount of material than can be reasonably and practically used. However, final paragraph (f)(4)(i) retains the proposed prohibition on burning of organic materials. Retention of this prohibition is appropriate because burial is a viable alternative method of disposal and because burial does not result in the greenhouse gas emissions produced by combustion.

Another commenter contended that the distribution of organic materials would make the use of mechanical tree planters impractical. As a result of this comment, we have added paragraph (f)(2)(iii) to the final rule. That paragraph allows the permittee to adjust the timing and pattern of the redistribution of large woody debris in order to accommodate the use of mechanized tree-planting equipment on sites with a forestry postmining land use.

Some commenters alleged that the requirement to salvage and redistribute organic materials conflicts with section 816.111(d)(2), which allows the use of suitable mulch as one method of stabilizing the surface and controlling erosion, but which requires that the mulch be free of weeds and noxious plant seeds. With respect to this last comment, we note that §§ 816.22(f) and 816.111(d)(2) serve different purposes. Section 816.111(d)(2) pertains to surface stabilization of newly planted areas. We do not anticipate that the organic materials to which § 816.22 pertains will be either suitable for or used for that purpose. Instead, they would either be mixed with the soil or redistributed on the surface separate from the mulch.

Another commenter argued that long-term storage of tree roots and logs can result in deterioration of those materials, rendering them of limited use. The commenter also alleged that segregating the organic material for storage would be costly and complex, while placement on temporary redistribution areas to prevent deterioration would cause reclamation costs to triple because the material would have to be moved three times. According to the commenter, the need for additional storage sites would result in increased disturbance. The commenter further noted that it is unlikely that this material could be shredded because of the presence of rocks in root balls.

We acknowledge that lengthy storage of organic materials is detrimental to their value as a source of seeds, mycorrhizae, fungi, and other forms of life that are important to soil ecology. For that reason, we encourage that an operation be designed so that organic material salvaged from one portion of the permit can be immediately redistributed as part of the reclamation of a different portion of the permit. Such a design would have the added benefit of reducing costs by requiring that the material be handled only once. However, when long-term storage is necessary, the stored materials would still be valuable as a soil additive in the form of compost or rotted organic matter that would improve the tilth of the soil. The final rule does not prescribe a storage method, so the permittee would not be required to use the most expensive method available.

Several commenters alleged that the removal, storage, and redistribution of organic matter would be very costly and argued that implementation of these measures is unnecessary to reconstruct productive postmining soil. Some commenters contended that reference to our Forest Reclamation Advisory No. 8,[625] which highlights the importance of re-spreading stumps, woody debris, and roots on the regraded area, is inappropriate because that document is not applicable outside Appalachia. The commenters acknowledge that Forest Reclamation Advisory No. 8 may serve as sound guidance for unique situations in which extreme measures are necessary, but assert that the approach outlined in this guidance does not represent the best technology currently available in other regions. Moreover, commenters claim that decades of data demonstrate that successful forest reclamation can be achieved without the handling of soils and organic matter as prescribed in the proposed rule.

We do not agree with the commenters that Forest Reclamation Advisory No. 8 serves as sound guidance only for unique situations in which extreme measures are necessary. The Advisory documents the importance of organic materials and native soils in supporting reforestation and forestry postmining land uses. However, we recognize that it will not apply in all situations nationwide. Therefore, our reference in the preamble to the proposed rule to the practices set out in the Forest Reclamation Advisory No. 8 should not be interpreted as a mandate to implement those practices in situations where it would be inappropriate to do so, as set forth in paragraphs (f)(3)(i)(A) through (C) of the final rule.

Several commenters asserted that the storage and redistribution of undecomposed organic material will hinder plant growth because bacteria responsible for decomposition often rob the soil of nutrients essential to plant growth. We agree with the commenter that, initially, the carbon-to-nitrogen ratio will rise, making less nitrogen available to plants. However, this rise is only temporary. Ultimately, the carbon-to-nitrogen ratio will decrease, making more nitrogen available for plant growth.[626] Studies have confirmed that salvage and redistribution of organic matter will greatly increase nutrient availability in the long term.[627]

Some commenters also asserted that salvage, storage, and redistribution of organic materials will require the use of new equipment, which will result in additional mining costs. While permittees may incur some additional handling costs, the equipment needed for these operations is readily available to the industry and should not result in any significant additional cost. The environmental benefits of salvaging and redistributing organic matter should outweigh any added operational cost.

One commenter noted that well-documented research has shown that appropriate equipment and reduced soil handling is critical to long-term reclamation success on mine sites. Several commenters alleged that the requirements for salvage and redistribution of organic matter will result in additional handling of soil materials and more equipment traffic over re-soiled sites, which could result in greater soil compaction. While increased soil compaction may be a possibility if redistribution occurs while soils are wet, the permittee can avoid excessive compaction by choosing to use proper equipment and by timing redistribution to avoid equipment traffic over wet soils. This approach will allow the site to both benefit from redistribution of the organic matter and avoid adverse impacts associated with excessive compaction.

Section 816.34: How must I protect the hydrologic balance?

As discussed in the preamble to the proposed rule, we proposed to add new § 816.34 to incorporate, consolidate, and reorganize portions of previous § 816.41, previously entitled, ''Hydrologic-balance protection.'' [628] We received comments expressing concern about the proposed rule that resulted in changes to the final rule, as discussed below. Additionally, we received comments supporting this new section, including one from another federal agency supporting proposed paragraph (a)(5) about the protection of existing water rights under state law. We have finalized paragraph (a)(5) as proposed.

One commenter questioned the use of the phrase ''best technology currently available'' as proposed in paragraphs (a)(8) and (a)(10) and suggested that we change this phrase to ''best management practices.'' The commenter asserted that at most mining operations the implementation of ''best management practices,'' such as minimizing the disturbed area, specially handling and placing acid and toxic materials, and ensuring timely revegetation, are sufficient to prevent the formation of acid and toxic drainage. We agree with the commenter and have replaced the term ''best technology currently available'' with the term ''best management practices'' for several reasons. First, the actions described above often require the use of earth moving equipment, and the term ''best management practice'' is typically used by those in the profession of backfilling and grading. Secondly, upon further review of these paragraphs, we have determined that this change will help eliminate confusion. The term ''best technology currently available'' is used

[625] J.C. Skousen, et al, *Forest Reclamation Advisory No. 8: Selecting Materials for Mine Soil Construction when Establishing Forests on Appalachian Mine Sites,* p. 2, (Jul. 2011). Available at: *http://arri.osmre.gov/FRA/Advisories/FRA_No.8%20Soil%20Materials.pdf* (last accessed Nov. 3, 2016).

[626] U.S. Dep't. of Agric., Natural Res. Conservation Serv., *Carbon to Nitrogen Ratios in Cropping Systems.* East National Technology Support Center, Greensboro, N.C., in cooperation with North Dakota NRCS. (2011). (This reference provides evidence for these temporary changes within crop fields; however, they also apply to reconstructed SMCRA soils as they are substantially altered by human activity).

[627] C.E. Zipper, et al., *Rebuilding Soils on Mined Land for Native Forest in Appalachia.* Soil Sci. Soc. Am. J. (77:337–349), p. 347 (2012).

[628] 80 FR 44436, 44543–45 (Jul. 27, 2015).

in SMCRA,[629] but in a context that is inapplicable to this section of the rule.

We also made additional changes to paragraphs (a)(8) and (a)(10) in response to this comment. Paragraph (a)(8) now states, ''The regulatory authority will determine the meaning of the term ''best management practices'' on a site-specific basis. At a minimum, the term includes equipment, devices, systems, methods, and techniques that are currently available anywhere, as determined by the Director determines to be best management practices.'' Paragraph (a)(10) requires the permittee to ''[p]rotect the surface-water quality by using best management practices, as described in paragraph (a)(8) of this section to handle earth materials, ground water discharges, and runoff . . . .''

These additions provide the regulatory authorities with discretion to determine the meaning of the term ''best management practices'' on a site-specific basis. This is important because methods for groundwater and surface water protection may vary by region. Consequently, the best management practices should be determined by the regulatory authorities. We have provided some guidance to help regulatory authorities in making this determination. At a minimum, the term includes equipment, devices, systems, methods and techniques that are currently available anywhere, even if they are not widely utilized.

A regulatory authority commenter expressed concern with the requirement at paragraph (a)(10)(i) that runoff be handled in a manner to ''avoid the formation'' of acid or toxic mine drainage. We agree with the commenter. Recognizing that the formation of acid or toxic mine drainage cannot be wholly avoided, we have revised the final rule to be clear that surface water quality must be protected in a manner that ''prevents postmining discharges of acid or toxic mine drainage.'' This revision more appropriately conforms to section 515(b)(10)(A) of SMCRA [630] which requires the operator to minimize the disturbances to the prevailing hydrologic balance at the mine site and associated offsite areas and to minimize the disturbances to the quality and quantity of water in surface water and groundwater systems during and after mining by avoiding acid and toxic mine drainage. The postmining *discharge* of acid mine drainage is what paragraph (a)(10)(i) was meant to address. This change to the final rule should clarify commenter's concern.

We have modified paragraph (a)(10)(ii) by adding the term ''best technology currently available'' to clarify that the operator should prevent contributions of suspended solids to surface stream flow using ''best technology currently available'' instead of ''best management practices.'' We made this change to be consistent with the language of SMCRA at section 515(b)(10)(B)(i).[631]

One commenter opined that the previous regulations were sufficient and proposed paragraph (a)(11) is unnecessary. We added this paragraph for informational purposes. It helps the regulated community locate other provisions in our regulations that protect surface-water quality and flow rates and reminds them of their obligations under those provisions. We are retaining it in the final rule because it provides a service in this regard to both to the regulated community and the public.

Paragraph (b)(1) requires that to the maximum extent practicable, operators must use mining and reclamation practices that minimize water pollution, changes in flow, and adverse impacts on stream biota rather than relying upon water treatment. We received many comments in support of this modification. However, one commenter questioned our authority to make this change. Section 515(b)(24) of SMCRA provides the authority to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values, such as protecting the hydrologic balance.[632] In addition, section 515(b)(10) [633] of SMCRA requires the operator to minimize the disturbances to the prevailing hydrologic balance at the mine site and associated offsite areas and to the quality and quantity of water in surface water and groundwater systems. These sections provide us with the statutory authority to make the changes discussed in paragraph (b)(1).

Another commenter suggested that we revise ''maximum extent practicable'' to allow for greater permitting flexibility; however, the commenter did not explain why additional flexibility was necessary. Additional flexibility would weaken this requirement, making it more difficult to enforce mining and reclamation practices that minimize water pollution, changes in flow, and adverse impacts to stream biota. We have not accepted the suggestion and are adopting paragraph (b)(1) as proposed.

Final paragraph (d) establishes examination and reporting requirements for the surface runoff control structures identified in the surface water runoff control plan approved in the permit under section 780.29. To be consistent with final section 780.29, we modified proposed paragraphs (d)(1) and (d)(2), by changing the term ''hydraulic structures'' to ''runoff-control structures.'' Runoff control structures are any man-made structures designed to control or convey stormwater runoff on or across a mine site. As discussed in the preamble to § 780.29, this term encompasses the entire surface water control system and includes diversion ditches, drainage benches or terraces, drop structures or check dams, all types of conveyance channels, downdrains, and sedimentation and detention ponds and associated outlets. It does not include swales or reconstructed perennial, intermittent, or ephemeral stream channels.

Proposed paragraph (d)(1) required that after each occurrence of certain precipitation events, the permittee must examine the structures identified under § 780.29, and submit a report certified by a registered, professional engineer to the regulatory authority within 48 hours. Several commenters indicated that it might not be possible to inspect all structures and report upon the conditions within 48 hours because of the number of applicable structures or because of the difficulty in achieving access if the precipitation event created deteriorated site conditions. In consideration of these comments, we have modified paragraph (d)(1) to require the operator to examine all structures identified under § 780.29, within 72 hours of cessation of each occurrence of certain precipitation events.

Proposed paragraph (d)(1)(i) required the examination of runoff control structures after each occurrence of the 2-year recurrence interval, or greater flow event, in areas with an average annual precipitation of more than 26.0 inches. In the preamble to the proposed rule, we invited comment on whether a precipitation event with a 2-year recurrence interval is an appropriate threshold for requiring examination of sediment control systems in mesic regions or whether we should allow variations based upon differences in terrain, storm frequency, the nature of sedimentation control structures, and the frequency with which discharges from sedimentation control structures

[629] 30 U.S.C. 1265(b)(10) and (24) and 1266(b)(11).

[630] 30 U.S.C. 1265(b)(10).

[631] 30 U.S.C. 1265(b)(10)(B)(i).

[632] 30 U.S.C. 1265(b)(24).

[633] 30 U.S.C. 1265(b)(10).

occur.[634] Some commenters opined that the requirement for an inspection after every 2-year event was unnecessary. Other commenters asserted that the regulatory authority should have discretion to determine the inspection frequency because it should be based on experience and local conditions. After consideration we have retained the 2-year recurrence interval requirement of proposed paragraph (d)(1)(i). Regardless of the region, sediment control, flood potential, and flood-related damage remain a concern. Bankfull flow in a stream in any area generally occurs in response to a precipitation event with an average recurrence interval of 1.5 years.[635] Because a majority of sediment transport over time is accomplished at moderate flow rates,[636] we chose to require inspection of the sediment control structures following occurrence of a 2-year event in areas where precipitation is greater than 26 inches per year.

One regulatory authority commenter stated that it currently receives reports of significant precipitation events when there is a discharge or failure at a runoff control structure. Waiting until there has been a discharge or failure does not satisfy our intent in promulgating paragraph (d)(1). The final rule seeks to prevent discharges or failures that could harm the public, environment, or private property by specifying the threshold at which a precipitation event rises to the level of significance and the time when the mine operator must take action. Consequently, we have retained paragraph (d)(1)(i) as proposed.

In areas with an average annual precipitation of 26.0 inches or less, paragraph (d)(1)(ii) requires an examination after a significant flow event of a size specified by the regulatory authority. We invited comment on whether we should establish more specific criteria for examination of runoff control structures in arid and semiarid regions.[637] One commenter from a Western state regulatory authority claimed that the storm event should not be less than the 10-year recurrence interval. We recognize that there are limited discharges from runoff control structures in areas with an average annual precipitation of 26.0 inches or less, but the commenter provided no rationale for using a minimum recurrence interval of ten years. We are retaining in the final rule, proposed paragraph (d)(1)(ii), which gives the regulatory authority the responsibility to specify the size of a significant event for inspection in areas with an average annual precipitation of 26.0 inches or less because the regulatory authority is in the best decision to make determinations about their specific region.

Proposed paragraph (d)(2) required that within 48 hours of cessation of certain precipitation events, a report certified by a registered, professional engineer, must be submitted to the regulatory authority. One commenter noted that all precipitation events are reported on a monthly basis and are addressed by the field inspector as needed. Another commenter suggested that if a reporting requirement is retained, a more reasonable reporting requirement would be 14 days. We agree with commenters that although it is important to perform the inspection as soon as possible (but not longer than within the allotted 72 hours), it is not critical that the report be submitted immediately. Therefore, in consideration of these comments, we modified paragraph (d)(2)(i) to require that a report be submitted by the operator to the regulatory authority within 30 days of cessation of the applicable precipitation event.

To account for situations where a series of precipitation events occur in a short timeframe, we have added paragraph (d)(2)(ii) to allow the submission of one report to cover all precipitation events that occur within a 30-day period.

In response to proposed paragraph (d)(2), one commenter suggested that if the reporting requirement is retained as proposed, a professional engineer certification should not be required because an inspection by any qualified person should be sufficient. We disagree. For the same reasons discussed in the preamble of section 780.25, the examination report addressing the performance of the runoff control structures should be certified by a registered, professional engineer because it affords a strict level of accountability. This increased accountability is necessary given the hazard potential in the event of failure and it is imperative that these structures be in sound condition at the time the certification is made.

Section 816.35: How must I monitor groundwater?

As discussed in the preamble to the proposed rule, we proposed to modify groundwater monitoring requirements for surface mining.[638] After evaluating the comments that we received, we are adopting § 816.35 as proposed, with several modifications.

Numerous commenters expressed concern with proposed paragraph (a)(2). This proposed paragraph required groundwater monitoring throughout mining and reclamation until final bond release. Several regulatory authority commenters questioned the feasibility of the proposed monitoring requirements because proposed § 800.42(d) required that, among other requirements, monitoring wells be removed before an applicant can apply for final bond release.

The requirements for closing monitoring wells are found in § 816.39, which require a permittee to permanently seal exploratory and monitoring wells in a safe and environmentally sound manner in accordance with § 816.13 before the regulatory authority may approve final bond release. Commenters are correct that it would be impossible to continue groundwater monitoring until final bond release while simultaneously closing monitoring wells. Therefore, we have modified final paragraph (a)(2) to require that groundwater monitoring, at a minimum, must continue through mining, reclamation, and the revegetation responsibility period as prescribed by 816.115 of this part. Additionally, monitoring must continue beyond the minimum time frame, as necessary, for the monitoring results to meet the criteria required in 816.35(d)(1) and (2), as determined by the regulatory authority. These modifications ensure that groundwater monitoring will continue until the regulatory authority determines that requirements prescribed in this section are satisfied. Permittees may seek revisions to their monitoring plans, in certain circumstances, through the permit revision procedures contained in § 774.13.

We have modified paragraph (d)(2)(iii) to clarify that the permittee must demonstrate that the operation has preserved or restored the biological condition of the stream within the permit and adjacent areas to the biological condition determined during baseline data collection. We made this change to establish that the baseline conditions of the stream serve as the standard for stream preservation or restoration.

In paragraph (d)(2), we have replaced the terms ''existing'' and ''reasonably foreseeable'' with ''approved postmining land uses within the permit

[634] 80 FR 44436, 44545 (Jul. 27, 2015).

[635] Dave Rosgen. *Applied River Morphology,* Wildland Hydrology, Pagosa Springs, Colorado (1996).

[636] *Id.*

[637] *Id.*

[638] 80 FR 44436, 44545–46, 44650 (Jul. 27, 2015).

area.'' We evaluated our use of the term ''existing use'' throughout the rule and were concerned that, because the term ''existing use'' is also used in a Clean Water Act context, it might cause confusion. In response we deleted the term from the final rule. We deleted the term ''reasonably foreseeable uses'' from the final rule except in connection with the protection of reasonably foreseeable surface lands uses from the adverse impacts of subsidence. The term appears only in SMCRA in section 516(b)(1), which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. It is not appropriate for a more general context. Further, many commenters objected to the usage of ''reasonably foreseeable'' asserting that it is too subjective, difficult to assess, and open to varying interpretations, which could result in inconsistent application. Therefore, in a groundwater context we have replaced ''reasonably foreseeable use'' with the phrase ''approved postmining land uses within the permit area'' to avoid confusion with Clean Water Act terminology.

Several commenters requested that we allow a regulatory authority to discontinue monitoring when the regulatory authority determines it is no longer needed. Similarly, several commenters indicated that paragraph (d) should allow the regulatory authority the discretion to modify monitoring requirements based on the site specific knowledge and experience of the regulatory authority. As discussed above, paragraph (d) allows permittees to request revisions to a groundwater monitoring plan by using the permit revision procedures of § 774.13. The requested revision may include changes to the parameters covered and the sampling frequency. However, our obligation is to ensure that the monitoring requirements are applied consistently and objectively, and recognizing the difficulty in detecting and predicting impacts to groundwater, only permits which have demonstrated the required conditions as stated in paragraph (d) may be revised by a regulatory authority. Allowing monitoring modifications based on such subjective factors as a regulatory authority's experience and/or site knowledge would defeat this obligation.

Commenters stated that paragraph (e), which prescribes when the regulatory authority must require additional groundwater monitoring, should be modified to permit regulatory authorities to use their discretion regarding additional monitoring. Other commenters suggested that paragraph (e) is unnecessary as regulators already possess the inherent authority to require additional monitoring. Two coal organizations noted that additional monitoring is already done in many states and only enforcement of our previous rules is necessary. While we acknowledge that some states require additional monitoring, this is not a universal practice throughout all states and there are no regulations currently in place that require regulatory authorities to uniformly impose additional monitoring. Therefore, we have retained paragraph (e), with no change to the final rule.

Finally, one commenter stated that paragraph (f) does not allow the transfer of wells and may be inconsistent with landowner desires. The commenter is incorrect because our regulations expressly provide for the transfer of wells. Paragraph (f) states that the requirement to install, maintain, operate, and, when no longer needed, remove all equipment, structures, and other devices used in conjunction with monitoring groundwater should be consistent with §§ 816.13 and 816.39. Section 816.13 allows for retention and transfer of a drilled hole or groundwater monitoring well for use as a water well under the conditions set forth in § 816.39. Therefore, we have not modified paragraph (f) of the final rule.

Section 816.36: How must I monitor surface water?

As discussed in the preamble to the proposed rule, we proposed to modify the surface water monitoring requirements.[639] A commenter asserted that surface water monitoring and associated data collection need not continue indefinitely. The commenter opined that collecting water quality data long after reclamation is complete amounted to collecting and analyzing ambient stream flow conditions and is a waste of time, especially for large western surface mines. We declined to change the requirement that requires the operator to monitor surface water until final bond release. However, we have revised final paragraph (a)(2) to clarify that monitoring must continue through mining and reclamation until the regulatory authority approves release of the entire bond amount for the monitored area as required in §§ 800.40 through 800.43. This change ensures that the regulatory authority conducts the necessary steps outlined in §§ 800.40 through 800.43 related to the bond release criteria before surface water monitoring ceases. This requirement is important because hydrologic impacts can take years to develop given the slow movement of groundwater and its potential impact on surface water. Our experience has shown numerous instances where hydrologic issues develop after a site has reached Phase 1 or Phase 2 of reclamation and associated bond release. Also, discontinuing the data collection requirements prior to final bond release is contrary to the objectives found in SMCRA section 508(a)(13).[640]

We made several modifications to paragraph (d), which allows the permittee to use the permit revision procedures section 774.13 to request a modification of the surface-water monitoring requirements, provided that certain demonstrations are made. First, we modified paragraph (d)(2)(iii) to clarify that the operation must demonstrate that it has preserved or restored the biological condition of the stream to the condition determined during baseline data collection. We made this change to make clear the link between baseline conditions and the restoration or preservation standard, and to ensure the regulatory authority considers any baseline changes in advance of modifying the monitoring plan.

Second, we modified paragraph (d)(2)(iv) to remove the phrase ''reasonably foreseeable uses.'' The final rule no longer includes the term ''reasonably foreseeable uses'' in contexts other than protection of reasonably foreseeable surface land uses from the adverse impacts of subsidence. We have several rationales for removal of this term. First, the term appears in SMCRA only in section 516(b)(1),[641] which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. Sections 717(b) and 720(a)(2) of SMCRA [642] separately protect certain water uses. Additionally, numerous commenters opposed inclusion of the term ''reasonably foreseeable uses'' on a basis that is subjective, difficult to determine, and open to widely varying interpretations, which could result in inconsistent application throughout the coalfields. We also wanted to avoid any potential conflicts with the Clean Water Act authority in determining the applicability of reasonably foreseeable use(s).

[639] 80 FR 44436, 44546–47, 44650–51 (Jul. 27, 2015).

[640] 30 U.S.C. 1258(a)(13).

[641] 30 U.S.C. 1266(b)(1).

[642] 30 U.S.C. 1307(b) and 1309a(a)(2).

In paragraph (d)(2)(iv), we also added a requirement to demonstrate that the surface water availability and quality are maintained or restored to the extent necessary to support the approved postmining land uses within the permit area. This change was made to ensure that the regulatory authority does not approve a monitoring plan modification that would prevent a determination that the surface water retains the ability to support the postmining land use, as well as any actual uses of the surface water prior to mining. The previous rule at § 816.41(e)(3)(i) required a demonstration that the water quantity and quality are suitable to support approved postmining land uses. Proposed § 816.36(d)(2)(iv) would have replaced this provision with a requirement for a demonstration that the operation has maintained the availability and quality of surface water in a manner that can support existing and reasonably foreseeable uses of the water. However, as explained above, we have now decided not to include the reference to reasonably foreseeable uses in the final rule. Therefore, our rationale for deletion of the requirement in the proposed rule pertaining to postmining land uses, as set forth at 80 FR 44436, 44546–44547 (Jul. 27, 2015), no longer applies and we are retaining that requirement as part of our final rule.

Additionally, we have created two separate paragraphs to help clarify that there are two distinct requirements: One relating to support of the approved postmining land use (paragraph (d)(iv)) and the other relating to maintenance of all designated uses (paragraph (d)(v)). These paragraphs delineate the two related but distinctly different concepts. In paragraph (d)(v) we have added the word ''any'' before the words ''designated uses'' to address situations where more than one designated use applies to a stream.

One commenter responded to our solicitation for comments on whether we should place restrictions on the regulatory authority's ability to modify the approved monitoring plan. The commenter asserted that the regulatory authority should be able to modify the parameter list after a permit has been issued because it needs to consider the physical, climatological, and other characteristics of the site when making regulatory decisions on SMCRA sites. The commenter also opined that allowing the regulatory authority the discretion to make permit modifications to the monitoring plan allows the regulatory authority to adopt new testing methods as they become available without having to promulgate a state program regulatory change.

With respect to regulatory authority discretion to modify the monitoring plan, paragraph (d) allows permit revisions that include such modifications as long as the requirements of paragraphs (d)(2)(i) through (vi) are met. This latitude helps the regulatory authorities meet changing conditions in a watershed due to mining and non-mining related changes. To both protect the operator and to delineate the source of water quality changes that may occur in a watershed, we consider it vital to be able to modify the parameter list to ascertain impacts from all sources.

Section 816.37: How must I monitor the biological condition of streams?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.37[643] to require monitoring of the biological condition of perennial and intermittent streams in the manner specified in the monitoring plan approved under proposed § 780.23(c).[644] After evaluating the comments that we received, we have revised the final rule. As discussed in the preamble to final § 780.19(c)(6), the requirements for assessing biological condition of intermittent streams apply only if a scientifically defensible bioassessment protocol has been established for assessment of intermittent streams in the state or region in which the stream is located. For all other intermittent streams the best control technology currently available consists of the establishment of standards that rely on restoring the ''form,'' ''hydrologic function,'' and water quality of the stream and the reestablishment of streamside vegetation as a surrogate for the biological condition of the stream. Therefore, in final rule § 816.37(a)(ii) we make clear that you must use the bioassessment protocol that complies with final rule § 780.19(c)(6)(vii).

Some commenters suggested that the regulatory authority should be granted discretion to modify or terminate monitoring based on site conditions, such as geology, hydrology, anticipated future water use, public need, or other natural resource management considerations. Section 780.23(d) of the final rule makes clear that the regulatory authority may waive or modify the biological condition monitoring plan requirements in two scenarios: (1) When lands are eligible for remining, and (2) for operations that avoid streams. As detailed in paragraph (a)(1)(i) of § 816.37, these exceptions also apply within this section of the final rule.

We are declining to adopt the commenters' suggestion. The exceptions discussed above are the only exceptions that are consistent with the purposes of SMCRA, as described in section 102 of the Act.[645] SMCRA section 102 (d) sets out the goal of ''assur[ing] that surface coal mining operations are so conducted as to protect the environment.''[646] Section 102(h) of SMCRA sets out a goal to ''promote the reclamation of mined areas left without adequate reclamation prior to August 3, 1977, and which continue, in their unreclaimed condition, to substantially degrade the quality of the environment, prevent or damage the beneficial use of land or water resources, or endanger the health or safety of the public.''[647] We do not agree with the commenter that biological monitoring should be modified or terminated based on site conditions, or other issues such as anticipated future water use, natural resource management decisions, and public need. The biological condition monitoring plan requires the establishment of a sufficient number of appropriate monitoring locations up gradient and down gradient of the mine site and adjacent areas to provide the regulatory authority with the necessary data to determine the impacts of the operation upon the hydrologic balance. These measurements allow the regulatory authority to have the data necessary to make an informed decision as to whether a trend, emanating from the operation, may result in material damage to the hydrologic balance outside the permit area and whether the streams are trending toward ecological success. Further modifications or waivers to the monitoring of biological conditions of streams of the type that the commenters suggest would reduce the amount of data available to make informed decisions and would thus, reduce the effectiveness of monitoring. Therefore, we are not providing any further exceptions or waivers in §§ 816.37 or 780.23(d). For additional information on the exceptions for remining and operations that avoid streams, refer to the preamble discussion of § 780.23(d).

Several commenters objected to the requirement at paragraph (a)(2) that the permittee must continue monitoring throughout mining and during reclamation until the regulatory authority release the entire bond amount for the monitored area. Specifically, commenters stated that there is no need to monitor biological

[644] 80 FR 44436, 44547 (Jul. 27, 2015).

[645] 30 U.S.C. 1202(d).

[646] *Id.*

[647] 30 U.S.C. 1202(h).

activity in stream channels during the various phases of bond release for well-functioning streams, newly reclaimed streams, or until full reclamation has been achieved because the resources spent on such monitoring would be better allocated to other reclamation tasks. These commenters further suggest that the focus should be upon monitoring in other areas which the operator and the regulatory authority agree are of higher importance.

After careful consideration of these comments, we are retaining the final rule as proposed. We have determined that monitoring is important in all phases of mining and reclamation through final bond release, as required by §§ 800.40 through 800.43 of the final rule. Regulatory authorities cannot assess whether ecological function has been restored without biological monitoring. A snapshot sample after reclamation presents an incomplete picture and cannot demonstrate whether or not ecological success has been achieved. Annual, long-term monitoring of all restored perennial and intermittent stream channels is necessary to ensure the restoration of ecological function as required by the final rule. Long-term monitoring is also necessary to determine if the restoration is trending toward success and to give operators time to correct any negative trends before bond release is scheduled. The early identification of negative trends will allow the regulatory authority and the operator to identify and correct any negative trends before they present larger and more significant issues that could delay bond release, increase costs, or result in further corrective actions. In addition, we note that the final rule affords the regulatory authority discretion in determining how to assess restoration of ecological function, and the regulatory authority can use this discretion in considering the establishment of monitoring locations and sampling frequency as noted in § 780.23(c)(2)(ii) and (iii).

Other commenters expressed concern that there is currently insufficient scientific data to determine suitable timing for initiating the required monitoring in reclaimed streams. Still other commenters maintained that biological data are not reliable for determining trends toward reclamation success because biological data is overly influenced by seasonal conditions which render sampling methods imprecise. One commenter recommended that water quality parameters and stream form are valid indicators of the ability of a stream to support the necessary biota long-term.

While we acknowledge the variable nature of biological data, we find that it is necessary and appropriate to use this data to document the restoration of ecological function in perennial and intermittent streams, especially when the data is consistently collected before mining, during mining, and during reclamation, until the regulatory authority releases the entire bond amount for the monitored area under §§ 800.40 through 800.43. Rigorous quality assurance and quality control methods will reduce the imprecision associated with sampling. In addition, the monitoring required in this paragraph is just one part of the water monitoring requirements in this rule. Other parts of the water monitoring requirements, such as the groundwater and surface water monitoring requirements of §§ 816.35 and 816.36, will allow the operator and the regulatory authority to determine, in a timely manner, whether ecological function will be successful. Moreover, sampling of only water quality parameters and or stream form will suffice to determine the success of ecological condition. For these reasons, we have not changed the final rule in response to these comments.

A final commenter objected to paragraph (c), which, if the sample analysis demonstrates noncompliance, requires a permittee to notify the regulatory authority, take any actions required under § 773.17(e), and implement any applicable remedial measures required by the hydrologic reclamation plan. The commenter suggested that these requirements duplicate the reporting requirements of the Clean Water Act and that, as a result, they are burdensome. In the final rule, we have deleted proposed paragraph (c).

Sections 816.38: How must I handle acid-forming and toxic-forming materials?

As discussed in the preamble,[648] we proposed to modify § 816.38 to more completely implement two sections of SMCRA: Section 515(b)(14) of SMCRA,[649] which requires that all acid-forming materials and toxic materials be ''treated or buried and compacted or otherwise disposed of in a manner designed to prevent contamination of ground or surface waters,'' and section 515(b)(3) of SMCRA,[650] which provides that ''overburden or spoil shall be shaped and graded in such a way as to prevent slides, erosion, and water pollution.'' After evaluating the comments, we made several modifications and additions to the final rule. As discussed in the preamble to § 780.12(n), we determined that the requirements of proposed paragraphs (a) through (d)[651] of this section were more appropriately located in the permitting standards than in the performance standards. Therefore, we have moved these paragraphs to new paragraph (n) in § 780.12, which describes what should be included in the reclamation plan if the baseline data indicates the presence of acid-forming and toxic forming materials. We retained in § 816.38 the requirements related to performance standards for handling of acid-forming and toxic-forming materials and have combined and organized them into two paragraphs, (a) and (b). We have addressed all comments about the paragraphs moved to § 780.12 in the preamble to that section.

In final paragraph (a), to ensure that the permittee is taking all appropriate action to prevent the formation of acid or toxic mine drainage, we have specified that the permittee must use the best technology currently available to avoid the creation of acid or toxic mine drainage into surface water or groundwater. We have added nonsubstantive language to paragraph (a) to conform to plain language principles. In addition we require that the permittee comply with the reclamation plan approved in the permit in accordance with § 780.12(n). In addition, we incorporated proposed paragraph (f), about adhering to disposal, treatment, and storage practices, into final paragraph (a) with no changes. In proposed paragraph (e), now paragraph (b), we have replaced the term ''biological condition'' with ''biology'' in the final rule to conform to other provisions of the final rule. Specifically, we are no longer assessing the biological condition of all intermittent streams. However, as explained in the preamble discussion of final § 780.19(c)(6), we are requiring the cataloging and monitoring of the biology of those intermittent streams for which a biological condition assessment is not required. The term ''biology'' is sufficiently broad to encompass both streams for which assessment of the biological condition is required under § 780.19(c)(6) (all perennial streams and certain intermittent streams) and those streams for which assessment of the biological condition is not required.

In the preamble to the proposed rule, we invited comment on whether the

[648] 80 FR 44436, 44547–44548 (Jul. 27, 2015).

[649] 30 U.S.C. 1265(b)(14).

[650] 30 U.S.C. 1265(b)(3).

[651] 80 FR 44436, 44651 (Jul. 27, 2015).

final rule should require use of specific generally-accepted tests for identification of potential acid-forming and toxic-forming materials in the overburden strata.[652] Commenters did not identify any specific tests. Several commenters noted that the regulatory authority should have the discretion to determine the tests that are best suited for their region. Based in part on this response, we have decided not to include specific tests in the final rule. This decision also allows permit applicants and regulatory authorities to avail themselves of advances in technology without the need for a rule change.

Section 816.39: What must I do with exploratory or monitoring wells when I no longer need them?

To accommodate renumbering and final rule changes in part 800, we have renumbered references to part 800 in this section. With the exception of this renumbering, we are finalizing § 816.39 as proposed. We received no comments on this section.

Section 816.40: What responsibility do I have to replace water supplies?

We proposed to modify our regulations by adding a new § 816.40 to replace water supply definitions and requirements previously located in §§ 701.5, paragraphs (a) and (b) and 816.41(h).[653] Some commenters suggested that we delete this proposed section because it is unnecessary while other commenters supported the modifications. We considered the comments and determined that this section is necessary because it more fully implements the requirements of section 717(b) of SMCRA [654] by establishing performance standards for situations when damage to water supplies is anticipated (as allowed in paragraph (b) of final rule § 780.22) or when unanticipated damage to protected water supplies occurs.

We received one comment requesting that this section apply only to valid water rights existing at the time of permitting. However, this comment is outside the scope of the proposed rule because neither the proposed rule nor the final rule address or determine the validity of water rights. The final rule ensures that if a water right has been adversely impacted, there will be a mechanism to replace the adversely impacted water supply. Consequently, we are not modifying the final rule in response to this comment.

We are the adopting this section of the rule as proposed except for a minor, non-substantive word change in paragraph (a)(3) and a clarifying statement in paragraph (c)(3).

Final Paragraph (c): Measures To Address Unanticipated Adverse Impacts to Protected Water Supplies

In paragraph (c)(3), we added the following statement to the final rule, ''[t]he regulatory authority may grant an extension if you have made a good-faith effort to meet this deadline, but have been able to do so for reason beyond your control.'' Although we did not receive any comments on this section, we determined upon further review of the proposed rule that it would be appropriate for the regulatory authority to grant an extension of time to comply with water replacement requirements if the deadline for compliance cannot be met for reasons beyond the control of the operator, despite the operator's good-faith efforts.

Section 816.41: Under what conditions may I discharge water and other materials into an underground mine?

As discussed in the preamble to the proposed rule, we proposed to modify and expand previous § 816.41 [655] to set out the conditions under which an operator of a surface mine may discharge water and other materials into an underground mine and to more fully implement section 510(b)(3) of SMCRA,[656] which prohibits approval of a permit application unless the applicant demonstrates, and the regulatory authority finds, that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The U.S. Forest Service provided comments in support of the proposed rule. We are adopting the rule, as proposed, with minor modifications. We discuss these changes and responses to relevant comments below.

We have replaced the term ''biological condition'' with ''biology'' in paragraph (a)(1)(iii) to conform to other changes within the final rule. Specifically, we are no longer assessing the biological condition of all intermittent streams. However, as explained in the preamble discussion of final rule § 780.19(c)(6), we are requiring the cataloging and monitoring of the biology of intermittent streams.

In addition, we have modified paragraph (a)(2) by replacing ''result in'' with the ''cause or contribute to'' to better conform to language used in section 303(c) of the Clean Water Act.[657] This modification will improve implementation of the rule and provide increased clarity for the regulated public.

We proposed in paragraph (a)(3)(i) to require a demonstration that the discharge be at a known rate and of a quality that will meet the effluent limitations for pH and total suspended solids referenced in § 817.42. One commenter asserted that this provision appears to usurp the allowance and permit limits that would be approved under a Safe Drinking Water Act Underground Injection Control permit and conflicts with paragraph (b). The commenter's vague assertion that the section ''appears to usurp allowance and permit limits'' does not provide enough information to fully understand commenter's concern. The commenter recommended that the regulatory jurisdiction of the Safe Drinking Water Act Underground Injection Control program be recognized. We recognize the jurisdiction of the Safe Drinking Water Act and we emphasize again that our regulations do not supersede other federal laws. Paragraph (a)(3)(i) does not ''usurp'' the allowance and permit limits approved under commenter's Underground Injection Control permit. Rather, the provision implements section 510(b)(3) of the Act [658] which prohibits approval of a permit application unless the applicant demonstrates, and the regulatory authority finds, that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.[659] We have determined that paragraph (a)(3)(i) helps to prevent material damage to the hydrologic balance outside the permit area because exceeding pH and total suspended solid effluent limitations of section 816.42 can cause material damage to the hydrologic balance outside the permit area. The commenter has not provided any information suggesting that it does not, nor has the commenter provided any information to clarify how this provision conflicts with the Safe Drinking Water Act. Thus, based on our expertise and on the vagueness of the comment, we reject the commenter's assertion. Paragraph (a)(3)(i) fits within the context of the authority that the Act provides and complements Safe Drinking Water Act standards. We also address commenter's attention to Part IV of this preamble

[652] 80 FR 44436, 44547 (Jul. 27, 2015).
[653] 80 FR 44436, 44548 (Jul. 27, 2015).
[654] 30 U.S.C.1307(b).
[655] 80 FR 44436, 44549 (Jul. 27, 2015).
[656] 30 U.S.C. 1260(b)(3).
[657] 33 U.S.C. 1313(c).
[658] 30 U.S.C. 1260(b)(3).
[659] 30 U.S.C. 1260(b)(3).

discussing the relationship between the Act and other statutes.

Furthermore, the commenter has not provided a cogent argument as to why it believes that paragraph (3)(i) conflicts with paragraph (b). Paragraph (3)(i) provides for a demonstration that the discharge will be at a known rate and of a quality that will meet the effluent limitations for pH and total suspended solids referenced in § 816.42. Paragraph (b) provides that discharges are limited to the following materials: Water; coal processing waste; fly ash from a coal-fired facility; sludge from an acid-mine-drainage treatment facility; flue-gas desulfurization sludge; inert materials used for stabilizing underground mines; and underground mine development waste. The commenter merely asserts, without explanation or support, that these two provisions conflict and does not provide any information demonstrating how our regulations governing the rate and quality of discharge conflict with our regulations limiting the materials that can be discharged.

We proposed in paragraph (a)(5) to require the permittee to obtain written permission from the owner of the mine into which a discharge is to be made and provide a copy of the authorization to the regulatory authority. A regulatory authority commented that this is a contentious issue in Virginia and has been the subject of recent litigation. This regulatory authority opined that the application of paragraph (a)(5) to existing permits may cause problems. We appreciate the commenter's concern and understand the need to avoid disruptions. In the final rule § 701.16, we have clarified that the stream protection rule, with enumerated exceptions, does not apply retroactively to existing or approved permits and permit applications. The applicability criteria adopted in final rule § 701.16 increase regulatory certainty and address commenters' concerns about potential problems from the application of paragraph (a)(5) to existing permits.

Section 816.42: What Clean Water Act requirements apply to discharges of my operation?

This section requires discharges from surface coal mining operations to be in compliance with water quality standards and effluent limitations established in NDPES permits and that any discharges of overburden or fill material must be made in compliance with permits issued pursuant to section 404 of the Clean Water Act. As discussed in the preamble to the proposed rule, we proposed to re-designate and modify previous § 816.42.[660] We also proposed to replace the reference to the effluent limitations in 40 CFR part 434 with reference to the effluent limitations established in the NDPES permit for a specific operation. Many commenters, including one from another federal agency, supported the modifications because these changes make our regulations consistent with the policy and practice of the U.S. Environmental Protection Agency.

Several commenters requested that we modify the final rule to clarify that an operator must comply with the effluent limitations established in the NPDES permit and all other water quality standards. We agree that this distinction is necessary. In response to comments received, and to clarify who will enforce Clean Water Act requirements applicable to discharges associated with surface and underground mining activities, we have added new rule text at § 816.42(a)(1), (a)(2), (b), (c) and (d). These sections are discussed in more detail in the general comments found in Part IV.G., of this preamble. The language added to final rule § 816.42(d) requires the SMCRA regulatory authority to coordinate with the appropriate Clean Water Act authorities to determine whether there have been violations of the Clean Water Act. The SMCRA regulatory authority must take enforcement or other action as appropriate in accordance with the terms of the SMCRA permit. This section does not preclude the SMCRA regulatory authority from performing the statutory obligation to initiate immediate enforcement action when any ''permittee is in violation of any requirement of this Act, which condition, practice, or violation also creates an imminent danger to the health or safety of the public, or is causing, or can reasonably be expected to cause significant, imminent environmental harm to land, air or water resources . . . .'' [661]

Additionally we have modified paragraph (g) to better track the language of section 303(c) of the Clean Water Act.[662]

Section 816.43: How must I construct and maintain diversions?

As discussed in the preamble to the proposed rule, we proposed to modify our previous regulation at § 816.43.[663] After evaluating the comments that we received, we have made significant modifications to the final rule to categorize and clarify the specific requirements for each of the three different types of diversions. These changes and relevant comments are discussed below. Furthermore, as a result of these changes we have re-designated many of the proposed paragraphs within the final rule.

Additionally, we have added ''tribal'' to the list of laws and regulations at final paragraph (a)(5)(iv).

Final Paragraph (a): Classification

Several commenters expressed confusion about the relationship between § 816.43(a) and the provisions of §§ 780.28 and 816.57. Commenters' confusion appears to stem from the fact that ''diversion'' as it is defined in our existing regulations covers a variety of different types of water conveyance structures. ''Diversion'' is defined in § 701.5 of the existing regulations as a ''channel, embankment, or other manmade structure constructed to divert water from one area to another.'' This broad definition includes channels designed to keep water from entering the disturbed area, known as ''diversion ditches'' within the regulated community. Our definition also includes the internal drainage system conveyances and channels within the disturbed area that act to transport water for sedimentation control and surface water runoff control. Furthermore, still other diversions, including those discussed in §§ 780.28 and 816.57, are streams that have been relocated from their original position to allow for mining. All of these types of diversions may be further subdivided as ''permanent diversions'' or ''temporary diversions.'' In final rule § 701.5, we define ''temporary diversions'' to mean ''a channel constructed to convey streamflow or overland flow away from the site of actual or proposed coal exploration or surface coal mining and reclamation operations. The term includes only those channels not approved by the regulatory authority to remain after reclamation as part of the approved postmining land use.''

Because the definition of ''diversion'' under our regulations includes many types of manmade structures constructed to transport water, we have added paragraphs (a)(1), (2), and (3) to specifically categorize diversions. This should eliminate the confusion expressed by the commenters.

- In final paragraph (a)(1), we prescribe the requirements for diversion ditches. Diversion ditches may be temporary or permanent ditches that convey water not impacted by the mining operation around disturbed areas, bypassing siltation structures.

[660] 80 FR 44436, 44549 (Jul. 27, 2015).

[661] 30 U.S.C. 1271(a)(2).

[662] 33 U.S.C. 1313(c).

[663] 80 FR 44436, 44549–44550 (Jul. 27, 2015).

• In final paragraph (a)(2), we prescribe the requirements for stream diversions. Stream diversions are temporary or permanent stream relocations. Temporary stream diversions may be further characterized consistent with the requirements of § 780.28(f), which sets out specific requirements for temporary stream diversions in place for more than three years.

• In final paragraph (a)(3), we prescribe the requirements for conveyances or channels within the disturbed area. These diversions include all other conveyances, temporarily or permanently constructed, within the disturbed area to convey surface water runoff and other flows from or across disturbed areas to siltation structures during mining. Following mining and reclamation, permanent conveyances and channels that are retained to support the postmining land use will remain, but the siltation structures will be removed as required by the reclamation plan.

To clarify further, we have described the differences between temporary and permanent diversions for each of the three types of diversions. Paragraph (a) classifies each of the types of diversions, contains regulations applicable to all three types of diversions, the two subsets of each type—temporary and permanent diversions—and, as specified in paragraph (a)(2), references the additional requirements that apply if the diversion involves a perennial or intermittent stream, consistent with the requirements of final §§ 780.28 and 816.57.

As part of the clarification and classification, we have moved proposed paragraph (c) and divided it into two parts: Final paragraph (a)(1) entitled ''Diversion Ditches'' and final paragraph (a)(3), entitled ''Conveyances or Channels within the Disturbed Area.'' We did this because the conveyances or channels identified in proposed paragraph (c) included both flows diverted from disturbed areas as well as impacted flows from within the disturbed area. As commenters pointed out, discussing both types of diversions was confusing. In the final rule, by setting out the three categories of diversions in paragraph (a), we clearly distinguish between the various types of diversions based upon their specific functions. As commenters have asserted, it is important for us to make such distinctions so that the regulatory community can confidently identify the standards that apply to each type of diversion.

Several commenters claimed that using the term ''diversions'' of perennial and intermittent streams in proposed paragraph (b) was confusing because there is an alleged overlap and potential conflict between § 816.43 and proposed §§ 780.28 and 816.57, which prescribe requirements for stream relocations, also known as stream diversions. These commenters advocated removing references to stream relocations from this section. Our response is two-fold. First, the diversion classification system established in our final rule should eliminate the commenters' confusion. Second, there is no need to remove the requirements for stream relocations from this section. Final § 816.43 is broad in scope and sets out specific requirements for the design, location, construction, maintenance, and use of all the various types of diversion, including stream relocations. As discussed above, we identified three categories of diversions, each with two subsets: Temporary or permanent. Many of the requirements in this section apply to all or most of these categories. Therefore, it is logical for us to place these requirements in one section. In contrast, the relevant portions of §§ 780.28 and 816.57 that deal with stream diversions set forth additional permitting and performance standards that apply exclusively to perennial and intermittent streams. Paragraph (a)(2) of § 816.43 specifies that when a permittee diverts perennial and intermittent streams, it must satisfy not only the requirements of this section but also those of §§ 780.28 and 816.57.

Some commenters recommended that we consolidate proposed § 816.57(b)(3) and previous § 816.43(b)(4) which required a qualified professional engineer to certify that the stream diversion has been constructed in accordance with the design approved in the permit and to certify that it meets all the engineering-related requirements of the regulations. The commenters identified proposed § 816.43(b) as an appropriate place to do this. Similarly, another commenter asked for assurance that we require a qualified professional engineer to certify all diversions, especially diversions affecting streams. It is not necessary to incorporate redundant regulations in multiple locations. Because the requirements for engineer certification of diversions apply only to stream diversions, we have retained those requirements in final § 816.57(c)(2). Although we incorporate the requirement by reference in paragraph (a)(2) of final § 816.43, we do not repeat it. We also decline to require the certification of all diversions as one commenter suggested. As discussed more fully in the preamble to final rule § 816.57(c), we intend for the certification of stream diversions to verify that the permittee has re-established the ''form'' of the stream. Such a certification is essential for stream diversions because restoration of ''form'' is critical to the return of hydrologic function and ecological function. In contrast, we are not requiring restoration of hydrologic function and ecological function for diversion ditches and conveyances and channels within the disturbed area because these two types of diversions are not intended to serve as a surrogate for an existing intermittent and perennial stream. Rather, they are designed either to divert un-impacted water away from the disturbed area or to capture and transport water through the disturbed area to a siltation structure. Thus, the normal inspection process should adequately verify that diversion ditches and conveyances or channels within the disturbed area have been constructed and maintained as designed. We decline, consequently, to require engineer certification of diversion ditches and internal conveyances and channels.

As part of the classification and explanation of the three types of diversions we have moved and re-designated proposed paragraphs (a)(2) and (a)(7) to final paragraphs (c) and (d), respectively, because these requirements apply to all types of diversions.

Final Paragraph (b): Design Criteria

Several commenters maintained that the requirements related to design criteria for temporary diversions should not apply to existing or already approved, but not yet constructed, diversions. These commenters asserted that immediate imposition of these requirements will result in numerous permit revisions and will place a tremendous, unnecessary burden upon regulatory authorities, particularly in states that are currently implementing design criteria where no problems have occurred. In the final rule § 701.16, we have clarified that the stream protection rule, with enumerated exceptions, does not apply retroactively to existing or approved permits and permit applications. As discussed elsewhere in this preamble, the applicability criteria adopted in final rule § 701.16 increase regulatory certainty and address commenters' concerns about disruptions and costs for permit applicants and the regulatory authority.

Some commenters recommended that some of the design criteria imposed in

proposed § 816.43(a), now paragraph (b), should apply only to regions that are experiencing diversion failures. As discussed in the preamble to the proposed rule,[664] past diversion failures have significantly contributed to failures of larger structures downstream—such as siltation structures. In the past, the cumulative effect of a failure of a diversion followed by a failure of larger structures downstream has resulted in adverse social, economic, and environmental effects. Thus, the potential for diversion failures is a threat to the environment and surrounding communities absent reasonable regulation, such as the design criteria in final paragraph (b). Therefore, we proposed, and are finalizing, design criteria that reasonably minimize the potential for diversion failure, regardless of the location of the diversion. Minimizing the potential for diversion failure will reduce the possibility of failures to downstream siltation structures, and the resulting possibility of offsite impacts that could lead to material damage to the hydrologic balance outside the permit area. Commenters' suggestions that the criteria should apply only if diversion failures occur in a specific region is unreasonable and inconsistent with the purposes of the Act[665] because waiting for a failure to occur in an area before addressing failures is not an appropriate response to a known and demonstrated hazard. Aside from speculative comments that these events are purely regional issues, commenters did not attempt to demonstrate that the likelihood of diversion failures in their regions is so remote that these regulatory changes are unnecessary. Thus, with the exception of re-designation of the paragraphs and plain language modifications, we have finalized the design criteria as proposed.

As discussed in the preamble to proposed § 816.43(c),[666] we made two requests for comment. First, we asked for comment on whether we should revise proposed paragraph (c) to apply the same design criteria for temporary and permanent diversions of miscellaneous flows as we apply to temporary and permanent diversions of perennial and intermittent streams. This would result in temporary diversions of miscellaneous flows being designed and constructed to safely pass the peak runoff from a 10-year, 6-hour precipitation event, rather than a 2-year, 6-hour precipitation event. Additionally, this would require permanent diversions of miscellaneous flows to be designed and constructed to safely pass the peak runoff from a 100-year, 6-hour precipitation event as opposed to a 10-year, 6-hour precipitation event.

Several commenters opposed adopting increased design criteria for miscellaneous flows, and no commenters supported the change. We have eliminated references to ''miscellaneous flows'' in the final rule because this general term is now subsumed by the distinct categories of diversions we defined in paragraph (a) of the final rule. Final paragraph (b) prescribes a single set of design criteria to all three categories with one important distinction. That difference is that the flow capacity for stream diversions includes flow in the flood-prone area, while flow capacity for diversion ditches and conveyances or channels within the disturbed area includes only in-channel flow, with sufficient freeboard to prevent out-of-channel flow. This distinction is necessary because only stream diversions are intended to function as natural streams. We are also adopting separate design criteria standards for temporary and permanent diversions as proposed. Therefore, the design event for all temporary diversions will be the 2-year, 6-hour precipitation event and the design event for all permanent diversions will be a 10-year, 6-hour precipitation event.

We also invited comment on whether the design event for a temporary diversion should be raised from a 10-year, 6-hour precipitation event to a 25-year, 6-hour precipitation event to provide an added margin of safety. Many commenters opposed raising the design event. One commenter opined that a 25-year, 6-hour design event will result in larger channels, additional riprap, and higher costs. Another commenter stated that a typical diversion will result in a wider channel requiring increased cut and fill volumes for construction. The commenter added that it has not experienced any failures or breaches of temporary diversions designed for the 10-year 6-hour event and thus argued that altering the design criteria would not provide any additional environmental protection or benefit. Another commenter asserted that the regulatory authority should retain discretion to increase design standards based on sufficient local or regional data demonstrating the need. Some commenters argued that the increasing unpredictability of precipitation events necessitates a 25-year, 6-hour precipitation design event. However, precipitation events have been, and remain, inherently unpredictable.

After reviewing and considering all the comments we received in response, we have determined that the 10-year, 6-hour precipitation event is a sufficient minimum design criterion. We concur that a 25-year, 6-hour precipitation design event is not necessary to provide a sufficient added margin of safety. The final rule imposes new and more protective design and performance criteria for temporary diversions. Furthermore, sediment control measures within the permit area will may capture additional surface runoff. These additional measures will provide an added margin of safety without raising the design event.

We replaced the term ''biological condition'' with ''biology'' in paragraph (b)(1)(ii) of the final rule to conform to other changes within the final rule. Specifically, we are no longer assessing the biological condition of all intermittent streams. However, as explained in the preamble discussion of final rule § 780.19(c)(6), we are requiring the cataloging and monitoring of the biology of intermittent streams.

Section 816.45: What sediment control measures must I implement?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.45[667] about the sediment control measures an operator must implement within the disturbed area of the permit. After evaluating the comments that we received, we are adopting the section as proposed, with the following explanations and exceptions.

Final paragraph (a) requires the use of the best technology currently available in the design, construction, and maintenance of sediment control measures. We have modified proposed paragraph (a)(2) by deleting the phrase ''more stringent of'' and replaced it with the phrase ''the applicable effluent limitations.'' This change renders the regulation consistent with paragraph (a) of § 816.42, which requires compliance with applicable water quality standards and effluent limitations.

In final paragraph (b), we listed seven potential sediment control methods. We made a minor word change in the introductory paragraph (b) to remove the phrase ''and adjacent to'' that could be misinterpreted to apply to undisturbed areas. This change makes it clear that sediment control measures are carried out only on the disturbed areas, unless otherwise provided.

[664] 80 FR 44436, 44549–44550 (Jul. 27, 2015).

[665] *See* 30 U.S.C. 1202(a).

[666] 80 FR 44436, 44550 (Jul. 27, 2015).

[667] 80 FR 44436, 44550 (Jul. 27, 2015).

We modified final paragraph (b)(4) by adding ''surface'' and ''from undisturbed areas'' to clarify that this paragraph refers only to surface runoff from undisturbed areas. Likewise, we revised paragraph (b)(5) to clarify that surface runoff from undisturbed areas is what is being conveyed.

As proposed, paragraph (b)(7) stated that ''treating with chemicals'' is allowed. This statement could have been misconstrued as allowing treatment of entrained sediment and suspended solids to occur outside of sediment ponds. Therefore, we have added language to clarify that this type of treatment of surface runoff must occur in sediment ponds and that treatment cannot be carried out by other means, such as by broadcasting chemicals on the ground, or within other conveyances. We have also revised this paragraph to allow the use of flocculants, as well as other types of chemicals.

We received comments that proposed paragraph (b)(8), ''treating mine drainage in underground sumps,'' is considered processing waste water and would not be subject to oversight under this section. We agree and deleted paragraph (b)(8) from the final rule.

Section 816.46: What requirements apply to siltation structures?

Final Paragraph (a): Scope

Paragraph (a) sets out the scope of the section. It provides specific exceptions to the requirements which follow. As proposed, paragraph (a) used the term ''disturbed areas'' to describe the areas subject to these exceptions. However, the term ''disturbed areas'' did not appear anywhere else in the section. Rather, as proposed, this section described the activities subject to the requirements of this section as activities that will ''disturb the land surface.'' For this reason in paragraph (a) of the final rule, we have substituted the phrase ''disturb the land surface'' for ''disturbed areas.''

Final Paragraph (c): Sediment Ponds

Paragraph (c)(1) includes a requirement that permittees locate sediment ponds as near as possible to the disturbed area and outside perennial or intermittent stream channels unless the regulatory authority approves of the location in accordance with §§ 780.28 and 816.57(h). In all cases, operators must construct sediment ponds as closely as possible to the downstream limit of the disturbed areas they serve. These requirements minimize, to the extent possible, adverse impacts to streams, particularly intermittent and perennial streams. Typically, sediment laden water is directed to the sediment ponds, and treated water is returned to the stream by constructed channels. Placing these structures as closely as possible to the outlet of the disturbed area will limit the length of these channels and help minimize any adverse effects. Shorter channels, moreover, require less maintenance, and are therefore, less susceptible to failure. Impacts to streams will also be minimized if sediment ponds are constructed outside perennial or intermittent channels. However, because it is not always possible to construct out-of-stream structures due to local topography, §§ 780.28 and 816.57(h) of this rule provide that the regulatory authority can approve construction in stream channels.

One commenter suggested that this paragraph be removed because the Clean Water Act, and not SMCRA, governs the location of sedimentation ponds. The commenter pointed out that the Environmental Protection Agency's recent Clean Water Rule: Definition of ''Waters of the United States'' [668] provides for locating structures of this type in these areas. The commenter implied that the Clean Water Act permit will be adequate for governing the placement of sediment ponds and alleged that this section supersedes the Clean Water Act authority, violates section 702 of SMCRA,[669] and must be removed from the final rule. We disagree. Section 507(b)(10) of SMCRA [670] requires operators to provide the name and location of the surface stream or tributary into which surface drainage will be discharged in the permit application. Since authorizations, certifications, and permits required under the Clean Water Act may be obtained during or after completion of the SMCRA application review process, it is necessary in many cases that locations of these structures be identified *before* the Clean Water Act authority has made a determination. The requirements of this paragraph ensure that, subject to subsequent approval by the Clean Water Act authority, impacts to the stream will be minimized. Alternatively, the applicant can postpone submittal of the permit application until siltation structure locations have been approved by the Clean Water Act Authority.

Final Paragraph (e): Exemptions

Paragraph (e) sets out conditions under which the regulatory authority may grant an exemption from the requirements of this section. The exemption applies when the area is small, and the operator can demonstrate that drainage from the disturbed area will comply with section 816.42. For small disturbed areas, more damage may be done by attempting to construct siltation structures than if the land was left undisturbed. Construction of siltation structures requires disturbance of land and, until vegetated, they contribute small amounts of sediment. As noted, the exemption does not apply if the drainage will not comply with section 816.42.

Section 816.47: What requirements apply to discharge structures for impoundments?

To conform to plain language principles we have made minor, nonsubstantive changes to final rule § 816.47. Otherwise, we are finalizing 816.47 as proposed. We received no comments on this section.

Section 816.49: What requirements apply to impoundments?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.49, which set out the requirements for permanent and temporary impoundments.[671] After evaluating the comments we received, we are adopting the section as proposed, with the following exceptions: First, we are basing the requirements in paragraph (a) on Mine Safety and Health Administration requirements and guidance instead of upon a Natural Resource Conservation Service publication; second, we are moving the design certification requirement set out in proposed paragraph (a) to the permitting section; third, we have added a table to § 816.49(a)(3) to define the minimum freeboard hydrograph criteria for the design precipitation event and further clarified what adequate freeboard is; fourth, in response to comments from another federal agency we have modified the requirements for foundation investigations at paragraph (a)(4) and clarified that this includes abutments; and finally we have added the word ''features'' to paragraph (b)(9). These changes and relevant comments are discussed below.

[668] 80 FR 37054 (June 29, 2015).

[669] 30 U.S.C. 1292. (''Nothing in this chapter shall be construed as superseding, amending, modifying, or repealing the . . . Federal Water Pollution Control Act . . ., the State laws enacted pursuant thereto, or other Federal laws relating to preservation of water quality.'').

[670] 30 U.S.C. 1257.

[671] 80 FR 44436, 44551–52 (Jul. 27, 2015).

Final Paragraph (a): Requirements That Apply to Both Permanent and Temporary Impoundments

We proposed to update the reference to the Natural Resource Conservation Service publication 210–VI–Technical Reference 60.[672] One commenter noted that these requirements are duplicative of those required by the Mine Safety and Health Administration. The commenter claimed that duplicative requirements could create conflict between the operator and regulating authorities and result in increased permitting delays and costs. We agree that there should be a clear demarcation of requirements between the regulatory authority and other federal agencies. In connection with our review of this comment, we have also determined that the Federal Emergency Management Administration has applicable guidance that pertains specifically to these kinds of impoundments and that the Mine Safety Health Administration references that Federal Emergency Management Administration guidance in the administration of its program. For that reason, we have deleted references to 210–VI–Technical Reference 60, added references to the Mine Safety and Health Administration regulations at 30 CFR 77.216, and added language to clarify that an impoundment that includes a dam with a significant or high hazard potential classification under § 780.25(a) of the final rule must comply with the requirements set forth by the Mine Safety and Health Administration. These changes will clearly distinguish between the requirements imposed by the SMCRA regulatory authority and those that are imposed by other federal agencies and ensure that the permittee follows all of the most recent and appropriate technical guidance. Although, as discussed above, we have deleted references to Technical Reference 60, we have added a table to § 816.49(a)(3) that defines the minimum spillway freeboard criteria for the design precipitation event based on Table 2–5 of Technical Reference 60 as those requirements are considered the minimum standard for such structures. We also require that impoundment embankments must have adequate freeboard to resist overtopping by waves in conjunction with a typical increase in water elevation at the downwind edge of any body of water, by sudden influxes of surface runoff from precipitation events, or by any combination of these effects.

To increase clarity, we have moved the design certification requirements of proposed paragraph (a)(3) to the permitting regulations at § 780.25(c)(1)(i). The design certification requirements at § 780.25(c)(1)(i) are substantively unchanged from proposed paragraph (a)(3).

At the suggestion of another federal agency and to improve clarity we have modified final paragraph (a)(4) about foundations. We have added ''abutments'' to the requirement to ensure precautions are taken to fully prevent failure of impounding structure foundations. Additionally, we have added the phrase ''and control of underseepage'' at final paragraph (a)(4)(ii) to ensure that seepage failures of the dam foundation are prevented. This would include the potential for piping failures.

Final Paragraph (b): Requirements That Apply Only to Permanent Impoundments

With the exceptions of changes to paragraphs (b)(2) and (b)(9), we have finalized paragraph (b) as proposed.

Upon further evaluation and in consultation with the U. S. Environmental Protection Agency, we modified paragraph (b)(2) by replacing ''meet'' with the phrase ''not cause or contribute to a violation of'' and referenced the applicable section of the Clean Water Act to better conform with language used in section 303(c) of the Clean Water Act.[673] Similar changes have been made throughout the final rule.

One commenter maintained that the requirements of proposed paragraphs (b)(7), (b)(8), and (b)(9) could delay reclamation or could make contemporaneous reclamation difficult because of an alleged additional need to haul large amounts of material at the end of mining. The commenter is mistaken because these provisions impose requirements that are merely clarifications and outgrowths of existing requirements. Paragraph (b)(7) requires a demonstration that approval of the impoundment will not result in retention of spoil piles or ridges that are inconsistent with the definition of approximate original contour. This demonstration adds no additional burden because § 816.102 already requires disturbed areas to be backfilled and graded to the approximate original contour. Paragraph (b)(8) requires a demonstration that approval of the impoundment will not result in the creation of an excess spoil fill elsewhere within the permit area. This provision is an outgrowth of existing § 816.71 which requires the permittee to demonstrate that it has minimized excess spoil and requires that the final configuration of a fill must be suitable for the approved postmining land use. It is also consistent with the practice followed by the vast majority of the regulatory authorities located in mining areas that generate excess spoil. Paragraph (b)(9) requires a demonstration that the impoundment has been designed with dimensions, features, and other characteristics that will enhance fish and wildlife habitat to the extent that doing so is not inconsistent with the intended use. This demonstration adds no additional burden because it is consistent with the requirements at § 780.16 to prepare, using the best technology currently available, a fish and wildlife protection and enhancement plan and § 816.97(a) to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values to the extent possible and achieve enhancement of those resources where practicable. Thus, these three provisions merely clarify existing requirements. Any burden on the operator would result from its failure to comply with previous regulations and not the effect of finalized paragraphs (b)(7), (b)(8), and (b)(9). Significantly, the commenter has provided no information to support its claim that these criteria would delay reclamation or make reclamation or contemporaneous reclamation difficult or impossible. Nor has the commenter provided any information to substantiate the claim that these criteria will create a need, which did not exist prior to the rule, to haul large amounts of material. Finally, backfilling and reclamation plans as required in § 780.12(d) must contain contour maps, models, and cross-sections that show in detail the final configuration of the permit area by proper planning and spoil handling. If the operator has complied with this provision and properly planned its operation it should be able to minimize any costs associated with haulage.

We have clarified paragraph (b)(9) by adding the word ''features'' so that this provision now reads ''[t]he impoundment has been designed with dimensions, features, and other characteristics that will enhance fish and wildlife habitat to the extent that doing so is not inconsistent with the intended use.'' This addition helps assure that the demonstration includes design features that promote habitat enhancement. As noted in the discussion of the definition of approximate original contour at § 701.5, we fully appreciate the value of

[672] *Id.*

[673] 33 U.S.C. 1313(c).

impoundment features but not at the loss of restoring the postmining surface configuration to its approximate original contour.

Some commenters claimed that § 816.49 inappropriately focuses upon Appalachia. We disagree. The construction of permanent impoundments postmining is conducted outside Appalachia as frequently, if not more frequently, than inside Appalachia. For example, in the Illinois Basin where the water table lies near the surface, permanent impoundments are commonly used as a fish and wildlife enhancement. Thus, § 816.49 will apply to all mining regions where permanent final pit impoundments are permitted.

Several commenters expressed concern that these regulations may affect local water rights. We disagree and do not anticipate any infringement of local water rights as a result of this rule. The demonstrations required in this section require an analysis of the impact that the impoundment would have on post mining land use. The regulatory authority, which is in the best position to make this decision, will have the final authority to determine if any impact to local water rights may occur. Furthermore, aside from vague suggestions that revisions to § 816.49 may affect water rights, commenters have provided no information, evidence, or analysis to indicate how revisions to § 816.49 would affect water rights.

Section 816.55: What must I do with sedimentation ponds, diversions, impoundments, and treatment facilities after I no longer need them?

In the previous and proposed rules, this regulation appeared in § 816.56, but we are redesignating it as § 816.55 in the final rule to accommodate the addition of a new § 816.56, which concerns ephemeral streams, adjacent to § 816.57, which concerns perennial and intermittent streams. One commenter asked us to draft more plain language revisions to our regulations in sections where we are making few or no substantive revisions. We have restructured and revised § 816.55 to implement that recommendation.

In addition, we have made three substantive revisions to the proposed rule. First, we removed language that could have been interpreted to allow abandonment of the permit as an alternative to seeking bond release. Abandonment of a permanent program permit before final bond release would be inconsistent with both the termination of jurisdiction provisions of § 700.11(d)(2) and the intent of section 519 of SMCRA [674] and §§ 800.40 through 800.44, which establish bond release procedures and criteria to ensure compliance with the reclamation requirements of SMCRA and the applicable regulatory program.

Second, we have replaced an ambiguous reference to ''bond release'' in the previous and proposed rules with a reference to final bond release under § 800.42(d). This revision is appropriate because § 816.55 requires the removal of temporary structures and the renovation of permanent structures to meet program requirements for retention. Clearly, these requirements could not apply to applications for Phase I and II bond release.

Third, we removed language that would have allowed retention of treatment facilities after final bond release. This language is inconsistent with final § 800.18, which requires reclamation of the sites upon which treatment facilities are located and areas used in support of those facilities. In particular, § 800.18(i)(3) specifies that the financial assurance will serve as the bond for reclamation of the portion of the permit area required for postmining water treatment facilities and access to those facilities.

Section 816.56: What additional performance standards apply to mining activities conducted in or through an ephemeral stream?

Several commenters suggested that we should make clear which requirements in the rule apply to which types of streams. Specifically, these commenters noted proposed § 816.57, which would have applied to activities in, through, or adjacent to perennial or intermittent streams, also contained cross-references to proposed § 780.28(b)(3), which would have addressed the establishment of riparian corridors for ephemeral streams. In response, we have added new § 816.56 that sets out the requirements specific to ephemeral streams, including the requirement to establish a 100-foot streamside vegetative corridor that complies with the standards in § 816.57(d)(1)(iv) through (4) if activities are conducted through an ephemeral stream. The comparable requirements for the streamside vegetative corridors for intermittent and perennial streams are still found in § 816.57.

In the proposed rule, we invited comment on whether we should extend to ephemeral streams all the protections we give to perennial and intermittent streams. We received a variety of comments advocating equal protection of all stream types and many comments opposing the extension to ephemeral streams of the protections we give to intermittent and perennial streams. After review of the comments, we have decided not to extend the same protections to ephemeral streams that we do to intermittent and perennial streams. However, consistent with Part VII of the preamble to the proposed rule,[675] in response to scientific literature about the benefits of headwaters to essential biological and ecological functions, we are extending some additional protections (postmining surface drainage pattern and stream-channel configuration and establishment of streamside vegetative corridors) to ephemeral streams that our previous rules do not afford.

Another commenter raised a concern that requiring uniform restoration of biological components in ephemeral streams is not feasible and asked for a clarification that this requirement does not apply to ephemeral streams. This commenter is correct that we did not propose to require the operator to restore the ecological function of ephemeral streams. For additional information as to the protections extended to ephemeral streams, you may review the preamble to the proposed rule at Part VII, B, ''What specific rule changes are we proposing with respect to ephemeral streams?'' [676]

One commenter suggested that a valid reason for not providing the same protection to ephemeral streams is the increased cost associated with protection and reconstruction to the same standard as intermittent and perennial streams. As previously stated, we are not affording the same protections to ephemeral streams as intermittent or perennial streams. Also we note that changes in the definitions of intermittent and ephemeral streams in the final rule, specifically the removal of the one square mile watershed criteria, will result in many streams, particularly those in the western region of the country, that were previously characterized as intermittent under the current definition being reclassified as ephemeral under the final rule. In circumstances where this occurs and where a stream is no longer defined as intermittent, the level of protection for that stream may be reduced, which could also reduce the cost necessary to protect or reconstruct it.

One commenter suggested that, if we did not extend the same protections to ephemeral streams that we do to intermittent and perennial streams, we

[674] 30 U.S.C. 1269.

[675] 80 FR 44436, 44451–44453 (Jul. 27, 2015).

[676] 80 FR 44436, 44452–44453 (Jul. 27, 2015).

should alternatively consider providing more stringent protections for ephemeral streams that are located within watersheds that are relatively undisturbed, diverse, part of functioning systems, or watersheds that support federally-protected aquatic species. Although we understand the commenter's concerns, the protections we have added for ephemeral streams will provide better protection than under the previous rule. In particular, scientific literature supports the protections that we are extending to ephemeral streams, particularly the reestablishment of the streamside vegetative corridor: These streams, along with their naturally occurring vegetation provide significant exports to the downstream habitat and higher order biomass that includes leaf litter breakdown and biomass production.[677] To the extent the commenter is concerned with aquatic species protected under the Endangered Species Act, this rule does not supersede the requirements of the Endangered Species Act. Compliance with that law may result in additional protections if a threatened or endangered species is present.

Section 816.57: What additional performance standards apply to mining activities conducted in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream?

We have changed the structure of § 816.57 in the final rule. In order to make it easier to track the responses to various comments received on proposed § 816.57, we are providing the following summary of the changes to this final section:

- We have clarified the title of § 816.57 to specify that this section applies only to mining activities conducted in, through, or on the surface of land within 100 feet of a *perennial* or *intermittent* stream.
- We have moved the general prohibition on mining within 100 feet of a perennial or intermittent stream from proposed paragraph (a)(1) to final paragraph (b), changed the title of final paragraph (b) to reflect the substance of the prohibition, and changed the term ''bankfull'' to ''ordinary high water mark'' in the same paragraph.
- We have moved the ''Clean Water Act requirements'' from proposed paragraph (a)(2) to final paragraph (a)(1), clarified the title of final paragraph (a)(1) to reflect plain language principles, and added final subparagraph (a)(2) to clarify that compliance with the Clean Water Act under final subparagraph (a)(1) requires compliance with applicable water quality standards.
- We have split the requirements of proposed paragraph (b) among multiple paragraphs. Proposed paragraph (b)(1) has been deleted in the final rule because it simply stated that you must comply with specific provisions of your permit, which goes without saying. Proposed paragraph (b)(2) is split among final paragraphs (d), (e), (f), and (g). Specifically, proposed paragraph (b)(2)(i) is final paragraph (e), part of proposed paragraph (b)(2)(ii) is final paragraph (d), part of proposed paragraph (b)(2)(ii)(A) is final paragraph (f), and proposed paragraphs (b)(2)(ii)(B) through (D) now form parts of final rule paragraphs (f) through (g).
- Because we have split paragraph (b) over multiple paragraphs, we have moved the prohibition on placement of sedimentation control structures from proposed paragraph (c) to final paragraph (h).
- We have changed the terms ''sedimentation control'' and ''sedimentation pond'' to ''siltation structure'' throughout final paragraph (h).
- We have added final paragraph (h)(1)(ii) in response to comment.
- We have modified final paragraph (h)(2), which was proposed paragraph (c)(2), in multiple places: First, we have added the requirement that the exceptions from the prohibitions only apply if approved in the permit; second, we have added coal mine waste refuse piles and coal mine waste impounding structures in steep slope areas as an exception; and third, we have added a demonstration requirement and a requirement that the regulatory authority make a written finding.
- We have added the term ''coal mine waste refuse pile'' to final paragraph (h)(3)(ii), which was proposed paragraph (c)(3)(ii).
- We have changed the term ''coal mine waste disposal structure'' to ''coal mine waste impounding structure'' in final paragraph (h)(3)(ii), which was proposed paragraph (c)(3)(ii).
- We have changed the phrase ''coal mine waste disposal structure'' in proposed paragraph (c)(3)(iii) to ''coal mine waste structure'' in final paragraph (h)(3)(iii).
- We have added final paragraph (h)(3)(iii)(A).
- We corrected cross-references as needed.

Before addressing some of these more specific changes, we address general comments about the section below.

Many commenters requested that we clarify what standards apply to perennial and intermittent streams and what standards apply to ephemeral streams. As discussed in the preamble to new § 816.56, we have removed the standards for ephemeral streams that were found in proposed § 816.57. As finalized, therefore, § 816.57 describes only additional performance standards that apply to activities in, through, or within 100 feet of a perennial or intermittent stream. Furthermore, we clarified in the title of § 816.57 that applies only to mining activities conducted in, through, or within 100 feet of a perennial or intermittent stream. We also changed the title of final paragraph (b) to reflect the substance of the prohibition in § 816.57: This section is a prohibition on mining in or within 100 feet of a *perennial* or *intermittent* stream. Commenters can now easily determine the standards applicable to perennial and intermittent streams and the standards applicable to ephemeral streams by reviewing the respective sections on each.

Some commenters requested that we clarify which stream types require the establishment of the 100-foot streamside vegetative corridor. This corridor is required for all stream types: Section 816.56(c) contains the requirements for ephemeral streams, and § 816.57(d) contains the requirements for intermittent and perennial streams.

Likewise, a commenter specifically asked for clarification as to which streams require restoration of ecological function. The restoration of ecological function is only required for perennial and intermittent streams; therefore, it is discussed only in §§ 816.57 (performance standards) and 780.28 (permit application requirements). Similarly, the requirements to restore or improve the form, hydrologic function (including flow regime), streamside vegetation, and ecological function of the stream after you have mined it apply to affected stream segments of perennial and intermittent streams.

One commenter claimed that this rulemaking does not reduce the destruction of streams or improve stream restoration, as allegedly demonstrated by the most recent assessment of the impacts from underground coal mining and mine subsidence on streams in Pennsylvania. We appreciate this comment as it highlights the fact that there is a real need to better protect streams because, under the *previous* regulations, streams are being impacted. This rulemaking

[677] Ralphael D. Mazor, et al., *Integrating intermittent streams into watershed assessments: Applicability of an index of biotic integrity.* Freshwater Science, 33.2. (2014) pgs. 459–474.

will address situations such as those cited by the commenter in a number of ways. First, final § 780.28(e)(1) requires that an operator make one or more of thirteen demonstrations to better ensure that the hydrologic function and ecological function of stream segments can be restored if the operator plans to mine though or permanently divert a stream, construct an excess spoil fill, coal mine waste refuse pile, or impounding structure, or conduct any other activity within or near a perennial or intermittent stream. Second, paragraphs (e), (f), and (g) requires an operator to demonstrate that physical form, hydrologic function, and ecological function of perennial or intermittent streams have been adequately restored after mining and reclamation are complete. These complementary requirements—increased planning to protect streams before they are affected and stronger reclamation standards for those that are affected—strike a balance that allows mining while ensuring that restoration of affected streams can be, and is being achieved.

A commenter argued that this section takes an unnecessary one-size-fits-all approach and that biological components of perennial, intermittent, and ephemeral streams differ significantly. For similar reasons, another commenter claimed that requiring the same protections for all streams, including ephemeral ones, is not practical. As noted above, we agree with these commenters only to the extent that the protections for ephemeral streams should be different than for perennial and intermittent streams and have clarified the different requirements by adding § 816.56, which specifies the requirements for ephemeral streams, and by revising this section to clarify that it applies to perennial and intermittent streams. These differing requirements are one example of why this rule does not approach the regulation of streams in a one-size-fits-all manner. More importantly, however, this section and § 780.28 do not create one-size-fits-all requirements for perennial or intermittent streams; instead, they incorporate site specific requirements and demonstrations when mining is planned in or near an intermittent or perennial stream, allowing for differences in topography, geology, and climate in the various regions of the country. For instance, paragraphs (c) and (d) of § 780.28 require that plans for individual mines be designed to restore the surface drainage patterns and stream channel configurations and establish vegetative corridors, and paragraphs (c) and (d) of this section require that these features actually be constructed consistent with these plans. Specific drainage patterns and vegetative corridors will vary and this rule allows for appropriate tailoring to individual circumstances while reducing adverse impacts to streams.

Several commenters questioned the requirement of this section to achieve ecological function. As support, these commenters often cited judicial decisions, such as *Ohio Valley Environmental Coalition (OVEC)* v. *Hurst,*[678] which they characterize as disallowing agencies' reliance on ''unproven and speculative mitigation measures.'' In *OVEC,* an agency issued a finding of no significant impact under the National Environmental Policy Act in reliance, in part, on a finding that mitigation measures would reduce the environmental impacts to an insignificant level. The court determined that this agency's consideration of mitigation measures as part of its cumulative impact analysis was inadequate because the agency did not support its claims that those mitigation measures would actually mitigate the impacts as claimed by the agency, or be successful. To the extent that this district court decision is even instructive to this rulemaking, we have adequately supported our approach and included measures to ensure its success. Notably, the final rule at paragraph (b) contains a general prohibition against mining through intermittent and perennial streams unless the permittee makes certain demonstrations prior to mining related to its ability to restore those streams. If the permittee cannot make those required demonstrations, the general prohibition on mining through those streams applies. This approach is supported by ample scientific literature that concludes that the most appropriate approach for protecting streams is a general prohibition of mining through perennial or intermittent streams but that exceptions can be made when streams can be restored to a certain level of stream health.[679] The same general approach existed in our previous rules, but the measures in the previous rules for ensuring successful reclamation to ensure stream health were general in nature and lacking in effectiveness, as evidenced by our own oversight reports.[680] The final rule clarifies and closely mirrors the requirements of sections 515(b)(10), (16), and (24) of SMCRA which require, among other things, the use of the best technology currently available to minimize disturbances and adverse impacts to fish and wildlife and other environmental values.

A commenter claimed that the proposed rule failed to address damage to the hydrologic balance from backfilling with coal combustion residues and that this constitutes a glaring omission. The commenter recommended that we establish a new part in the final rule text that addresses the placement of coal combustion residues in surface and underground mines. We did not include specific rule language addressing the placement of coal combustion residues because that activity is already indirectly covered in this rulemaking in sections such as § 780.12(d)(2)(iii), handling of acid-forming and toxic-forming materials to prevent the formation of acid or toxic drainage and to protect groundwater and surface water; § 780.20, determination of the probable hydrologic consequences; and § 780.21, preparation and review of the cumulative hydrologic impact assessment. However, in order to comprehensively address this issue, additional direct regulation of the placement of coal combustion residues on active and abandoned coal mines is better addressed in a separate rulemaking. Such a rulemaking is one of our priorities.[681]

Final Paragraph (a): Compliance With Federal, State, and Tribal Water Quality Laws and Regulations

Proposed paragraph (a)(2), now final paragraph (a)(1), requires permittees to conduct surface mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act only if they first obtain all necessary authorizations, certifications, and permits under the Clean Water Act. In the final rule, we have split proposed paragraph (a)(2) into two parts. Paragraph (a)(1) in the final rule is

[678] 604 F. Supp. 2d 860 (S.D. W. Va. 2009).

[679] Colleen E. Bronner, et al., *An Assessment of U.S. Stream Compensatory Mitigation Policy: Necessary Changes to Protect Ecosystem Functions and Services.* Journal of the American Water Resources Association (JAWRA) 49(2):449- 462. DOI: 10.1111/jawr.12034. (2013) *See also* Palmer, Margaret A., and Kelly L. Hondula, *Restoration as mitigation: Analysis of stream mitigation for coal mining impacts in southern Appalachia.* Environmental science & technology 48.18 pgs.,10552–10560 (2014).

[680] Assessment of the WVDEP Trend Station 071, West Fork of Pond Fork Watershed, Boone County, West Virginia, September 21, 2011.

[681] 80 FR 77709, 77803 (Dec. 15, 2015). (Unified Agenda of Federal Regulatory and Deregulatory Actions); *see also* 72 FR 12026 (Mar. 14, 2007). (Advance Notice of Proposed Rulemaking, Placement of Coal Combustion Byproducts in Active and Abandoned Coal Mines).

substantively the same as proposed paragraph (a)(2), and specifies that all necessary authorizations, certifications, and permits required under the Clean Water Act must be obtained prior to conducting surface mining activities in or affecting an intermittent or perennial stream. For clarity, we added paragraph (a)(2) which requires that surface mining activities must comply with all applicable or state and tribal laws and regulations concerning surface water and groundwater. The use of the word applicable is important because these standards are not applicable to segments of streams that are buried, such as under an excess spoil fill, in accordance with the Clean Water Act and SMCRA. Additionally, in response to comments from other federal agencies we accounted for situations when states and tribes achieve primacy and implement laws or regulations related to surface water or groundwater.

Together, final paragraphs (a)(1) and (a)(2) make clear that the operator must obtain all necessary authorizations, certifications, and permits under the Clean Water Act and conduct the mining activities in a way that meets the approved water quality standards required under the Clean Water Act. Paragraph (a)(2) is an outgrowth of the requirement under final paragraph (a)(1) that was proposed in paragraph (a)(2). Thus, the addition of final paragraph (a)(2) in the final rule is a clarification of the proposed requirement.[682]

Final Paragraph (b): Prohibition on Mining in or Within 100 Feet of a Perennial and Intermittent Stream

As discussed above, in the final rule, we moved the general prohibition on mining in or within 100 feet of a perennial and intermittent stream from proposed paragraph (a)(1) to final paragraph (b), changed the title of final paragraph (b) to reflect the substance of the prohibition, and changed the term ''bankfull'' to ''ordinary high water mark'' in the same paragraph. Proposed paragraph (a)(1), now final paragraph (b), prohibits surface mining activities in or through a perennial or intermittent stream or that would disturb the surface of land within 100 feet of a perennial or intermittent stream unless the regulatory authority authorizes that activity in the permit. We did not receive any comments on proposed paragraph (a)(1), and, we are adopting the section as proposed as final paragraph (b) with the two exceptions discussed below. First, in final paragraph (b), we have changed the title of proposed paragraph (a)(1) ''General prohibition'' to ''Prohibition on mining in or within 100 feet of a perennial or intermittent stream.'' This change reflects the now clear separation between § 816.56, which applies only to ephemeral streams, and § 816.57. Second, as discussed in the preamble discussion of ''ordinary high water mark'' in § 701.5 of the final rule, one commenter suggested that the term ''ordinary high water mark'' is more commonly accepted and more easily determined than the term ''bankfull.'' We agree and have revised references to ''bankfull'' throughout the final rule. We now require that the 100-foot distance be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

Final Paragraph (c): Postmining Surface Drainage Pattern and Stream-Channel Configuration

In section 780.28 of the proposed rule, we set out requirements for an application that proposes to mine through or divert a perennial, intermittent, or ephemeral stream.[683] In order to make the applicable requirements clearer for the regulated public, we have added final § 816.57(c)(1), which is similar to proposed § 780.28(c). Final § 816.57(c)(1) clarifies that if you mine through or permanently divert a perennial or intermittent stream, you must construct a postmining surface drainage pattern and stream-channel configurations that are consistent with the surface drainage pattern and stream channel configurations approved in the permit in accordance with section 780.28. The language of paragraph (c)(1) has, for clarity, been modified in that it specifically points out that construction of both the postmining surface drainage pattern and stream-channel configuration must meet the requirements approved in the permit under § 780.28(c). The proposed language referenced some of the permitting requirements in § 780.28(c) but not all. This revision clarifies that the construction or reconstruction of the stream channel must meet all standards set forth in the permit.

Proposed paragraph (b)(3), now final paragraph (c)(2), requires the certification by a professional, qualified engineer that a stream channel diversion or reconstructed stream channel has been constructed in accordance with the permit and that it meets all engineering requirements. One commenter claimed that this requirement will increase engineering review and other administrative tasks and costs. Also, the commenter alleged that previous regulations only required streams with drainage areas in excess of one square mile of drainage to be certified. While we recognize that additional effort will be required to obtain this certification, we have retained the requirement in the final rule as it ensures that the plan required under § 780.28(c) will be fully implemented. Proper implementation is integral to the successful ecological development of the stream. Certifications are routinely required for other hydrology structures, such as siltation structures, sedimentation ponds, and impoundments; thus, this additional requirement would not require significantly more effort than was required under the previous regulations. We did, however, revise this section slightly to clarify that the certification requirement may be limited to the location, dimension, and physical characteristics of the stream diversion or channel.

Final Paragraph (d): Establishment of Streamside Vegetative Corridors

Final paragraph (d) now contains the performance standards that we listed in proposed § 780.28(b)(3). We made this change to reduce redundancy within §§ 780.27(c) and 780.28(d) and provide one location for streamside vegetative corridor requirements. As discussed above, requirements for streamside vegetative corridors for *ephemeral* streams are now included in new § 816.56(c). To the extent that the comments we received about performance standards are duplicative of comments received about the permitting section, such as comments inquiring why we refer to streamside vegetative corridors instead of the proposed term ''riparian corridors'' or the use of ''ordinary high water mark'' instead of ''bankfull elevation,'' please refer to the prior preamble discussions related to § 701.5 and part 780. The performance standards at final § 816.57(d) are substantially identical to the proposed language provided in § 780.28(b)(3) with the exceptions described below.

As discussed in the preamble to §§ 780.27(c) and 780.28(d) of this final rule, several commenters alleged that we selected the 100-foot width for the vegetative corridor arbitrarily. In the preamble to the proposed rule at §§ 780.16 and 816.57(a), we explained the ecological and historical support for

[682] *See* 80 FR 44436, 44656 (Jul. 27, 2015). (''You may conduct surface mining activities in waters of the United States only if you first obtain all necessary authorizations, certifications, and permits *under the Clean Water Act, 33 U.S.C. 1251 et seq.*'') (emphasis added).

[683] 80 FR 44436, 44610.

selecting this buffer zone width.[684] As we explained, this width is based upon scientific literature substantiating that a vegetative filter strip width of 100 feet generally will reduce sediment, thus eliminating many harmful pollutants. Additionally, studies of effective buffer widths for wildlife generally recommend wider buffers than those required for sediment control and protection of water quality. The minimum 100-foot buffer width we adopt in the final rule lies within the lower end of the range of recommended minimum widths for wildlife habitat and flood mitigation, in the middle of the range for sediment and nitrogen removal, and exceeds the range recommended for water temperature moderation, bank stabilization, and aquatic food web maintenance. Therefore, this width is an appropriate compromise that accomplishes various environmental and stability objectives and is consistent with section 102(f) of SMCRA, which requires a balance between environmental protection and the need for coal production.[685] Similar to proposed § 780.28(b)(3)(iii), final paragraph (d)(4) recognizes that streamside vegetative corridors are not required under certain circumstances such as when the land is prime farmland historically used for cropland.

Proposed § 780.28(b)(3)(ii) would have required that the streamside vegetative corridor use only native species. A few commenters opined that revegetation within the streamside vegetative corridor using only native species may contradict what is recommended or requested by a Clean Water Act authority or the National Resources Conservation Service. We agree with these commenters in part. Final § 816.57(d)(2)(i) requires the use of appropriate native species adapted to the area unless an agency responsible for implementation of section 404 of the Clean Water Act, 33 U.S.C. 1344, requires the use of a non-native species. The National Resources Conservation Service only issues recommendations. So, to the extent that a Clean Water Act authority requires the use of a recommendation to use non-native species made by the National Resources Conservation Service, it is allowable under our regulations. This change satisfies our objectives for improving reclamation while ensuring there is no conflict with the Clean Water Act.

Final paragraph (d)(2)(ii) ensures that the species planted during reclamation are consistent with the revegetation plan approved in the permit. This new requirement is provided for clarity to ensure those species planted within the streamside vegetative corridor are those approved in the permit and are consistent with final § 780.12 (g)(1)(v).

Many commenters argued that the proposed rule was too rigid and did not provide sufficient flexibility within the streamside corridor vegetation requirements to allow for differences in streams, soil, and climate conditions across the country. In response, final paragraph (d)(2)(iii) clarifies that the streamside vegetative corridors must include appropriate native hydrophytic vegetation, vegetation typical of floodplains, or hydrophilic vegetation characteristic of riparian areas and wetlands to the extent that the corridor contains suitable habitat for those species and the stream and the geomorphology of the area are capable of supporting vegetation of that nature. Similarly, paragraph (d)(3) waives the requirement of planting hydrophytic or hydrophilic species within those portions of streamside corridors where the stream, soils, or climate are incapable of providing the moisture or other growing conditions needed to support and sustain hydrophytic or hydrophilic species. However, the applicant must plant the corridor with appropriate native species that are consistent with the baseline information concerning natural streamside vegetation, unless otherwise directed by an agency responsible for implementing section 404 of the Clean Water Act.[686] These additions will allow operators and regulatory authorities more flexibility to revegetate the streamside corridors to account for regional differences in hydrology, ecology, and climate while also imposing a uniform national standard.

A commenter also requested that we revise proposed § 780.28(b)(3), which required establishment of a riparian corridor at least 100 feet wide on each side of a perennial, intermittent, or ephemeral stream if mining activities were conducted in or within 100 feet of the stream, to better reflect premining land uses or landowner preferences. The commenter specifically referred to premining situations where crops are planted within 100 feet on either side of an ephemeral, intermittent, or perennial stream or where the landowner would like for crops to be planted within 100 feet of a stream after reclamation. We find that no change is necessary in response to this comment. Proposed § 780.28(b)(3)(iii)(A) and (B), which we are adopting as final § 816.56(c)(4) for ephemeral streams and § 816.57(d)(4) for perennial and intermittent streams, adequately addresses the commenter's concerns. Specifically, final §§ 816.56(d)(4) and 816.57(d)(4) provide that the requirement for a streamside vegetative corridor does not apply to prime farmland historically used for cropland or to situations in which establishment of a streamside vegetative corridor comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release. Therefore, a landowner desiring to grow crops on land within 100 feet of a stream may do so, provided the regulatory authority approves a cropland postmining land use and the landowner actually implements that land use before final bond release.

This commenter also suggested we consider adopting the protocol outlined in the U.S. Army Corps of Engineers permitting process for compensatory mitigation. We do not agree that adoption of the suggested protocol is appropriate. The final rule implements section 515(b)(24) of SMCRA,[687] while the protocol suggested by the commenter governs implementation of section 404 of the Clean Water Act.[688] Section 515(b)(24) of SMCRA requires that, ''to the extent possible using the best technology currently available,'' surface coal mining and reclamation operations must ''minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable.'' We find that adoption of a protocol intended for implementation of the Clean Water Act is not an appropriate means of implementing this provision of SMCRA, which does not mention compensatory mitigation. Moreover, our final rule is consistent with the Presidential Memorandum on Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment,[689] which mandates that the Department of the Interior, among other agencies, promote avoidance of impacts to ''land, water, wildlife, and other ecological resources (natural resources) caused by land and water-disturbing activities, and to ensure that any remaining harmful effects are effectively addressed, consistent with existing mission and legal authorities.'' [690]

[684] 80 FR 44436, 44494 and 44552 (Jul. 27, 2015).

[685] 30 U.S.C. 1202(f).

[686] 33 U.S.C. 1344.

[687] 30 U.S.C. 1265(b)(24).

[688] 33 U.S.C. 1344.

[689] Presidential Memorandum issued November 3, 2015. *See also* Secretarial Order No. 3330, Improving Mitigation Policies and Practices of the Department of the Interior (October 31, 2013); 600 DM 6.

[690] *Id.* at Section 1.

As proposed, § 780.28(b)(3)(iii) listed three situations in which the streamside vegetative corridor requirements would not apply. With the exception of proposed § 780.28(b)(3)(iii), this paragraph has now been redesignated as final § 816.56(c)(4) for ephemeral streams and final § 816.57(d)(4) for perennial streams. We did not adopt proposed § 780.28(b)(3)(iii)(C), which expressly stated that the streamside vegetative corridor requirement does not apply to stream segments buried beneath an excess spoil fill, a coal mine waste refuse pile, or a coal mine waste impounding structure. We did not adopt this provision because it is self-evident that requirements specifically applicable to reconstructed streams, such as the streamside vegetative corridor revegetation requirements, do not apply to segments of streams that no longer exist because they have been buried as allowed by our regulations.

The U.S. Fish and Wildlife Service recommended that we add additional criteria to proposed paragraph (b)(2)(ii), now final paragraph (d), to explicitly state that riparian zone plantings must meet applicable performance standards for stocking and survival. We did not adopt this recommendation because § 816.116 applies to riparian zone plantings and contains sufficient standards for determining vegetation success. Thus, inclusion of revegetation success standards in § 816.57 would be redundant.

As mentioned above, proposed paragraph (b)(2) has been split between multiple paragraphs of the final rule. Proposed paragraph (b)(2)(i) is final paragraph (e), part of proposed paragraph (b)(2)(ii)(A) has moved to final paragraph (f), and proposed paragraphs (b)(2)(ii)(B) through (D) now form parts of final rule paragraphs (f) through (g). As discussed below, we changed the structure and substance of proposed paragraph (b)(2) to respond to comments.

Proposed paragraph (b)(2) set forth the proposed requirements to restore the form and function of stream segments. Many commenters expressed their views of the relationship between the form and function of a stream. On one hand, many commenters claimed that restoration of the stream form should be considered adequate to achievement of ecological function. On the other hand, a commenter opined that a stream's form is generally not a proxy for its function. Another commenter recommended that the final rule require an operator to restore hydrologic function in addition to ecological function to ensure protection for this essential element of stream health. Similarly, several commenters opined that for bond release, the regulatory authority must consider whether the form, hydrologic function, and ecological function of intermittent or perennial stream segments have been appropriately restored or reconstructed because all three (form, hydrologic function, and ecological function) are integral to the demonstration of successful reclamation.

As described at length in the preamble to the proposed rule, restoration of form alone has not been shown to provide assurance that function will return, especially when considering the extreme nature of the impacts of mining within the stream buffer.[691] Thus, we are not removing the requirement for restoration of stream function. We do, however, agree with the commenters that restoration of stream function would be more clearly expressed by including separate requirements for hydrologic function and ecological function. Therefore, we have divided proposed paragraph (b)(2) into three paragraphs in which we include requirements to restore form in paragraph (e) and divide the requirement to restore stream hydrologic function into paragraph (f) and paragraph (g) about the restoration of ecological function. Notably, the restoration of form is a prerequisite for the restoration of hydrologic function and the restoration of hydrologic function is a prerequisite for restoration of ecological function.

Final Paragraph (e): Restoration of Form

''Form'' for purposes of this section is defined in § 701.5. We received no comments on proposed paragraph (b)(2)(i), now final paragraph (e), relating specifically to the restoration of form. As mentioned above, several commenters suggested that both form and ecological function need to be included as part of the evaluation of a stream before bond release is accepted. We agree and have modified the Phase I bond release criteria at § 800.42(b)(1) to require the restoration of form of perennial and intermittent stream segments. We are reiterating this requirement in final paragraph (e), which also serves to incorporate a similar provision that was proposed as § 816.57(b)(2)(iii)(C), which required restoration of form for Phase I bond release.

Final Paragraph (f): Restoration of Hydrologic Function

As discussed above, proposed paragraph (b)(ii) would have required the restoration of stream form and function. Although the proposed rule included provisions to measure the biological condition of a restored or reconstructed stream, it did not specifically discuss the hydrologic function of the stream except to note at proposed paragraph (b)(ii)(B) that the postmining function ''must be adequate to support the uses of that stream segment that existed before mining and it must not preclude attainment of the designated uses of that stream segment under section 101(a) or 303(c) of the Clean Water Act before mining.'' Several commenters suggested that we should expand the provisions relating to stream function to include more hydrological information, such as the material composition of stream beds, flow patterns, water chemistry, and stream water temperature because ultimately, restoring ecological function is dependent on restoring these hydrological parameters. We agree that we should expand our treatment of stream function in order to properly account for conditions prior to mining and, as discussed, have divided stream function into hydrologic and ecological function. We have added paragraph (f) to require the restoration of hydrologic function. ''Hydrologic function'' is discussed in more detail in the preamble to the definition of that term in § 701.5. In sum, hydrologic function includes total flow volume, seasonal variations in streamflow and base flow, and provision of the water needed to maintain floodplains and wetlands associated with the stream. Taken together, the restoration or reconstruction of the prerequisite ''form'' in paragraph (e) and ''hydrologic function'' in paragraph (f), means that the stream will have similar physical characteristics, pattern, profile, and dimensions as the stream in which mining activities were conducted in, through, or near. As explained in the preamble discussion of the definition of ''form'' this will include but not be limited to, a similar flood-prone area to bankfull width ratio (entrenchment), channel width to depth ratio, channel slope, sinuosity, bankfull depth, dominant in-stream substrate, and capacity for riffles and pools, as the stream in which mining activities were conducted.[692] These additions clarify that hydrologic function includes, but is not limited to the restoration of the flow regime, except as otherwise approved by the regulatory authority under § 780.28(e)(2). They provide sufficient

[691] 80 FR 44436, 44438–44453 (Jul. 27, 2015).

[692] *See also,* Dave Rosgen, *Applied River Morphology,* Wildland Hydrology, Pagosa Springs, Colorado (1996).

guidance on what is required to restore or reconstruct the form and hydrologic function of a stream.

Final paragraph (f) also specifies that you must demonstrate restoration of the hydrologic function of a stream segment that has been affected by mining activities before you qualify for Phase II bond release under § 800.42(c)(1). This language was added in response to comments that requested we consider what types of information should be considered for bond release relative to the restoration of ''stream function.'' As discussed in the preamble discussion of paragraph (e), Phase I bond release will not be permitted until reconstruction of the form of the stream is demonstrated and certified. We have also revised § 800.42(c)(1)(ii), which establishes the criteria for bond release to include the requirement for the restoration of hydrologic function as a condition of Phase II bond release in order to better guarantee that reestablishment of hydrologic function is achieved. We are therefore requiring in § 780.28(g) that the regulatory authority develop criteria for determining restoration of ecological function on a permit-specific basis. These criteria will help determine whether restoration is possible and whether the permit allowing mining through streams should move forward. These standards must also be in place to determine if ecological function has been restored during reclamation as required by final rule §§ 780.28(g) and 816.57(g).

Final Paragraph (g): Restoration of Ecological Function

Proposed paragraph (b)(2) required the restoration of stream form and function. Specifically it required the restoration of ecological function. In addition, proposed paragraph (b)(2)(ii) referred to specific provisions in the permitting requirements of proposed § 780.28(e)(1), related to the restoration of biological condition. As explained above, in the final rule, we have split the requirements pertaining to the restoration of stream form and function into three paragraphs—paragraphs (e) through (g). As revised, final paragraph (g) requires the restoration of the ecological function of a perennial or intermittent stream before final bond release may occur. As revised, paragraph (g) no longer contains a specific reference to biological condition or criteria for measuring ecological function. Instead, it cross-references § 780.28(g), which contains these criteria. Consequently, all comments received on proposed §§ 816.57(b)(2)(ii)(B) through (D) that are related to determining whether ecological function has been restored are discussed in the preamble to § 780.28.

Numerous commenters objected to any requirement to demonstrate the restoration of the ecological function of perennial and intermittent streams. Some commenters suggested that a separate requirement for the restoration of ecologic function is not necessary because some western mines are already restoring the hydrologic form using geomorphic reclamation methods and some midwestern mines are restoring stream channels based on the U.S. Army Corps of Engineers permit requirements. These commenters allege that these practices should be sufficient to restore the stream to its form and function under SMCRA. We recognize that the techniques voluntarily employed in some western mines in the application of geomorphic reclamation principles and some midwestern mines that employ natural stream channel design for reconstructed or permanently diverted streams are the type of best technology currently available that this rule seeks to implement across all mining regions. We also understand that the frequency of mines using geomorphic reclamation is increasing and has been shown to result in more stable streams and facilitates reestablishment of ecological function. Even so, we do not have reliable evidence that reconstruction of the physical form or hydrologic function is common across all mining regions or that such reconstruction will necessarily result in successful restoration of ecological function. Thus, these voluntary techniques are not sufficient to negate the need for a separate requirement to demonstrate the restoration of ecological function. This requirement will also ensure consistency across the nation and provide guidance to the regulatory authorities on implementing measures to improve stream health.

Other commenters asserted that the requirement is too subjective. As an example, a commenter expressed concern with the allegedly subjective interpretation of the language in proposed paragraph (b)(2)(ii)(B) that biological condition of a stream must be restored to a level ''adequate to support the uses that existed prior to mining.'' They also opined that there is not sufficient consensus within the scientific community that ecological function after mining-related disturbances can be fully restored. Several commenters criticized the proposed rule because it would require that the regulatory authority establish standards for determining when ecological function has been restored; yet, according to the commenters, experts in the discipline of stream restoration, including some cited by us in the preamble to the proposed rule, have not been able to agree on the metrics of ecological function or whether such function can be restored. They also cite to a purported lack of agreement on how the baseline and the restored ecological function should be measured. Some commenters also cited this requirement as an example of flawed science and reasoning that they allege permeates the proposed rule because the proposed definition of ecological function relies on a draft U.S. Army Corps of Engineers document that, in addition to not being final after five years, is geared toward Appalachia. Although the specifics on establishing successful ecological function vary throughout the scientific community, it is generally accepted that ecological function is an essential ingredient in stream health.[693] However, the definition of ''ecological function'' neither mandates specific metrics nor is the definition specific to Appalachia. For example, U.S. Environmental Protection Agency publication discussing streams in the Southwest United States advocates for the restoration of ecological function by focusing on the importance of ''maintain[ing] water quality, overall watershed function or health, and provisioning of the essential and biological requirements of clean water.[694] Prescribing protocols, as we have done here, is the first step in achieving ecological function.[695]

Moreover, adopting the suggestion of the scientific community to retain the requirements to restore the ecological function of these streams will ensure that SMCRA is implemented more fully nationwide. For instance, section 515(b)(10) of SMCRA requires permittees to minimize disturbances to the prevailing hydrologic balance at the mine-site and in associated offsite areas and to the quality and quantity of water in surface and ground water systems both during and after surface coal

[693] Margaret A. Palmer, *Standards for ecologically successful river restoration.* Journal of Applied Ecology. Vol. 42, pgs. 208–217 (2005).

[694] L. Levick, et al.,*The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest.* U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R–08/134, ARS/233046, pg.116 (2008).

[695] *Id.* and Colleen E. Bronner, et al., *An Assessment of U.S. Stream Compensatory Mitigation Policy: Necessary Changes to Protect Ecosystem Functions and Services.* Journal of the American Water Resources Association (JAWRA) 49(2):449–462. DOI: 10.1111/jawr.12034 (2013).

mining operations.[696] Section 515(b)(10) of SMCRA,[697] therefore, requires adequate protection of the quality and quantity of water both on the permit and off the permit, which includes ensuring the water quality and quantity is sufficient to maintain the health of organisms within the waters of the stream. Likewise, section 515(b)(24) of SMCRA [698] requires that the best technology currently available should be used to minimize disturbances and adverse impacts to fish and wildlife. Despite these statutory requirements, it is beyond dispute that mining activities under the previous regulations have been directly linked to degradation of stream biological health.[699]

Although we understand commenters' concerns about consensus within the scientific community, the final rule adopts the best science currently available to provide a concrete definition of ecological function. Ecological function is defined in § 701.5 as ''the species richness, diversity, and extent of plants, insects, amphibians, reptiles, fish, birds, and mammals and other organisms for which the stream provides habitat, food, water or shelter. The biological condition of a stream is one way to describe its ecological function.'' The final rule also provides guidance on measuring the ecological function. As the preamble to the definition of ecological function explains, for purposes of measuring the restoration of ecological function of perennial and intermittent streams that are mined in or through, a regulatory authority may use the baseline data on the biology of the restored or reconstructed stream to determine the restoration success. The final rule also reasonably imposes several requirements, including the requirement for a streamside vegetative corridor and baseline sampling to measure ecological function of streams prior to mining so that restoration of ecological function following mining can be measured. The final rule also imposes several measures to ensure the use of the best technology currently available to minimize or prevent impacts. These provisions of the final rule provide clear guidance that ensures that a restored or reconstructed stream is not simply physically restored in form and hydrologic function but also it is restored to its position in the ecosystem. The provisions address the direct link between mining and the degradation of a stream's biological health and implement the requirements of SMCRA. Thus, we are including the requirement for restoration of ecological function in the final rule.

Final paragraph (g)—paragraph (b)(2)(iii)(D) of the proposal—also specifies that if a permittee cannot restore the ecological function of a reconstructed perennial or intermittent stream as established by the regulatory authority under § 780.28(g)(1), that permittee cannot achieve final bond release. Our regulations create a phased approach to stream restoration. Phase I bond release requires the demonstration of successful restoration of form; Phase II bond release requires the demonstration of successful restoration of hydrologic function as provided in paragraphs (e) and (f); and final bond release requires the restoration of ecological function. This approach makes the permittee accountable for the establishment of an acceptable level of ecological function.

Many commenters opposed the prohibition on final bond release until after the permittee has demonstrated the restoration of ecological function. They claim that it is impossible to determine the cost of restoring the ecological function and, because of this, it will be impossible to capture the cost of such restoration when calculating the bond, as required by proposed § 800.14(b)(2). Similarly, some commenters suggested that, because ecological function cannot be controlled, it is impossible to accurately predict when, if ever, such function will be restored, which would mean that bonds could be held for an indefinite amount of time. These commenters allege that the possibility of an indefinite bond would create a substantial new risk for sureties and make it difficult for operators to obtain a bond.

We agree that the restoration of ecological function may take a long time, particularly if this restoration requires establishment of substantial canopy cover over the stream, but we maintain that SMCRA does require bonding until that function is restored. There is a direct connection between SMCRA and inclusion of ecological function restoration in the performance bond. The reclamation plan in § 780.12(h) requires compliance with the stream protection, stream reconstruction, and functional restoration requirements of §§ 780.28 and 816.57 of this chapter for perennial and intermittent streams. SMCRA section 508(a)(13)(A) [700] requires that the reclamation plan have ''sufficient details of the description of the measures to be taken during the mining and reclamation process to assure the protection of the quality of surface and ground water systems.'' Further, section 509(a) SMCRA [701] requires a performance bond to be sufficient to assure the completion of the approved reclamation plan. These SMCRA provisions make clear that functional stream restoration is to be part of the performance bond. We do, however, point out that in § 780.28(g)(3)(ii)(A) the reconstructed stream segment does not have to have precisely the same biological condition or biota as the stream segment did before mining in order to demonstrate the restoration of ecological function. So the regulatory authority, which is in the best position to make that determination, can decide what constitutes an acceptable level of ecological function to satisfy the regulatory requirements. Although we are retaining the requirement for bond release, as discussed further in the preamble to Part 800, we agree with the commenters that raised concerns about potential for harm to the permitting process if we retained a proposed requirement to permit and bond streams separately. Therefore, we have removed the requirements in § 800.14(b)(2) that required a separate bond calculation for the restoration of stream's ecological function.

One commenter expressed concern that the requirement to return ecological function to intermittent and perennial streams would be misconstrued as also applying to ephemeral streams. The commenter further asserted that, because ephemeral streams only flow in response to precipitation events, the need to assess the biological component of ephemeral streams is unnecessary. We agree and, as discussed above, have clarified that section applies only to intermittent and perennial streams. Requirements for ephemeral streams, which do not include the restoration of ecological function, are now located in § 816.56.

A commenter noted that we did not propose to require that a stream segment have precisely the same biological condition as it had before mining and suggested that we should revise the rule to explicitly identify the acceptable level of variations in the parameters that are connected with the ecological function of stream segments. We have determined that the regulatory authority is in the best position to make that determination because they have the proper expertise with respect to the local ecological regimes and would, along with the Clean Water Act authority, be the best judge as to the

[696] 30 U.S.C 1265(b)(10).

[697] *Id.*

[698] 30 U.S.C. 1265(b)(24).

[699] 80 FR 44436, 44439–44441 (Jul 27, 2015).

[700] 30 U.S.C. 1258(a)(13).

[701] 30 U.S.C. 1259(a).

level of change that is permissible within the confines of SMCRA. For further information on how restoration of ecological function is measured in the final rule, please refer to the preamble discussion of § 780.28(g)(3)(ii).

Many commenters opined that streams are difficult to replace and that there is little scientific evidence that a stream can be successfully restored to its previous ecological function. As discussed in the preamble to the proposed rule,[702] we acknowledge that restoration of ecological function may be difficult, but as documented by successes in Illinois, it is possible.[703] We recognize the important role streams play in the ecosystem and the difficulties in restoring that role after mining activities have occurred in or through a stream; therefore, we are adopting what could be termed an avoidance and minimization policy. This approach is the best solution currently available to eliminate potential impacts to stream resources while satisfying the purposes of SMCRA found at sections 102(c) and (d).[704] Additionally, studies demonstrate that ''incentives for avoidance and minimization'' are the key to success and ''federal policy [being] revised to minimize the loss of stream functions and services'' [705] is paramount. Therefore, the regulations at § 780.28(g) and § 816.57(g) implement those recommendations made by scientists and other experts examining streams. Scientists consider the first step in restoring ecological function is to mandate that ecological function be restored, yet provide flexibility in how this will be achieved. Recommendations made by Bonner, et al. are consistent with our final regulations; in particular, ensuring that surface mining operations are conducted only where reclamation to the degree required by the Act is feasible.[706]

Final Paragraph (h): Prohibition on Placement of Siltation Structures in Perennial or Intermittent Streams

Proposed § 816.57(c), now § 816.57(h), prohibits construction of siltation structures in a perennial or intermittent stream or the use of perennial or intermittent streams as waste treatment systems to convey surface runoff from the disturbed area to a siltation structure except as provided in paragraphs (h)(1)(ii) and (h)(2).

In the proposed rule, the terms ''sedimentation pond'' and ''siltation structure'' were used interchangeably throughout § 816.57. To provide consistency and clarity, we have either changed the term ''sedimentation pond'' to ''siltation structure'' or added the term ''siltation structure'' to the applicable regulation. This makes it clear that the forms of siltation structures can vary; a sedimentation pond being only one type of siltation structure. These changes in terminology clarify that the rule covers all types of siltation structures and not just sedimentation ponds.

A commenter expressed concern that the general prohibition upon placement of siltation structures or the use of streams to convey surface runoff extends to ephemeral streams. Similarly, other commenters explained that ephemeral streams are prevalent in many areas of western mining operations, and the only way to effectively provide sediment control for those operations is to construct siltation structures downstream of the mine in various areas along minor native and reclaimed ephemeral draws. As previously discussed in this section, we have removed the provisions of proposed § 816.57 that applied to ephemeral streams and moved them to new § 816.56. As a result, § 816.57 applies only to perennial and intermittent streams. Notably, within § 816.56, there is no comparable provision to paragraph (h) of this section, which makes clear that we are not prohibiting the use of an ephemeral stream segment inside a mined area to be used to convey surface water.

Final paragraph (h)(1) contains the general prohibition, subject to exceptions, on the placement of siltation structures in perennial and intermittent streams. Many commenters disagreed with this general prohibition. Some commenters proffered that, in the arid west, wildlife use and opportunities for fish habitat can be created or increased if a sedimentation pond in perennial or intermittent streams is converted to a pond after mining and reclamation. Yet another commenter asserted that retaining siltation structures postmining is beneficial for habitat enhancement. Additional commenters indicated that a prohibition on sediment control ponds in perennial or intermittent streams may have the opposite effect of what we intended because it will result in more, not less, land disturbance since the diversions will have to be constructed on both sides of a stream. Similarly, another commenter noted that this proposed prohibition would significantly alter the typical drainage control practices currently in use, and the effect will be to require construction of many additional drainage control diversions and additional sediment basins with associated costs. Commenters further noted that allowing construction of a sedimentation pond or siltation structure in an intermittent or perennial stream is an efficient and cost effective way to control the flow of surface water within the mined area.

While retention of a siltation structure outside of an intermittent or perennial stream may be beneficial after mining, it is also true that a siltation structure situated in an intermittent or perennial stream segment would not protect the postmining stream habitat. Permanent retention of a pond in an intermittent or perennial stream requires significant long-term maintenance, which cannot be assured after final bond release and termination of jurisdiction. For this and other reasons, such as potential liability in the event of failure and impacts to stream health, the U.S. Army Corps of Engineers has historically shown reluctance to grant such retentions.

As long as it is not retained after reclamation, however, we agree that construction of a sedimentation pond in a stream during mining should be allowed provided that the fish and wildlife measures and enhancements required in § 780.16 are met. Therefore, we have added paragraph (h)(1)(ii) to allow siltation structures to be constructed in perennial and intermittent streams immediately downstream of a stream segment that has been mined through.

A commenter objected to the requirement in proposed paragraph (c)(1), now paragraph (h)(1), which prohibits the retention of siltation structures postmining. The commenter claimed that this requirement is not reasonable as sediment control structures, especially on ephemeral streams, are commonly left in place after mining and reclamation has been completed because they can be beneficial to wildlife habitat and water for livestock. As previously discussed, the prohibition on the construction of siltation structures within streams applies only to perennial and intermittent streams; thus, the situation described by the commenter would not be prohibited by this section because it concerns a siltation structure in an ephemeral stream. Moreover, we agree

[702] 80 FR 44436, 44440 (Jul. 27, 2015).

[703] J.W. Nawrot, and W.G. O'Leary, *Illinois stream restoration—opportunities or habitat enhancement: Policy and principles, and practices.* Proceedings of the 2009 Geomorphic Reclamation and Natural Stream Design at Cao Mines: A Technical Interactive Forum 28–30. Bristol, Virginia, pgs. 183–195 (2009).

[704] 30 U.S.C. 1202(c) and (d).

[705] Colleen E. Bronner, et al., *An Assessment of U.S. Stream Compensatory Mitigation Policy: Necessary Changes to Protect Ecosystem Functions and Services.* Journal of the American Water Resources Association (JAWRA) 49(2):449–462. DOI: 10.1111/jawr.12034. (2013).

[706] 30 U.S.C. 1202(f).

that siltation structures in intermittent or perennial streams can be beneficial and, as discussed above, have added paragraph (h)(1)(ii) to allow the construction of a siltation structure in a stream channel immediately downstream of a stream segment that is mined through. However, we are retaining the prohibition of retention of siltation structures postmining in the final rule.

As proposed in paragraph (c)(2), now paragraph (h)(2), the prohibition on placement of siltation structures in intermittent or perennial streams does not apply to siltation structures related to excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures in steep-slope areas. We have replaced the term, ''coal mine waste disposal facilities'' in paragraph (h)(2) with, ''coal mine waste refuse piles'' and, ''coal mine waste impounding structures'' to clarify that this exemption applies to siltation structures associated with both of these types of facilities. After the completion of construction and revegetation of the fill or coal mine waste refuse pile or impounding structure. However, new paragraph (h)(3)(iii)(A) requires that all accumulated sediment be removed from the siltation structure and any stream segment between the siltation structure and the toe of the fill or coal mine waste disposal structure. Once the siltation structure has served its treatment purpose, the permittee must remove it as required in paragraph (h)(3)(iii)(B) and restore the stream as required in paragraph (h)(3)(iii)(C) so as to achieve the higher functionality of the natural stream condition and eliminate the risks inherent in an unmaintained structure.

Final Paragraph (i): Programmatic Alternative

We have added § 816.57(i) to the final rule to clarify that paragraphs (b) through (h) of this section will not apply if a regulatory authority amends its program to expressly prohibit all surface mining activities, including the construction of stream-channel diversions, that would result in more than a de minimis disturbance of land in or within 100 feet of a perennial or intermittent stream. We have added this alternative in response to comments advocating a complete ban on activities within 100 feet of any stream as the most stream protective course of action. Thus, we are granting the regulatory authority the option to enact such a prohibition.

Section 816.59: How must I maximize coal recovery?

We are finalizing § 816.59 as proposed. We received no comments on this section.

Section 816.61: Use of Explosives: General Requirements

Final Paragraph (d): Blast Design

We are adopting this section as proposed except to correct an inadvertent error in paragraph (d)(2). Previous paragraph (d)(2) stated that the blast design ''may be presented as part of a permit application or at a time, before the blast, approved by the regulatory authority.'' The proposed rule interpreted this language as meaning that the regulatory authority must approve the blast design either as part of the decision on the initial permit application or at a later time before the blast. However, the preamble to the previous rule explains that we never intended to require regulatory approval of blast designs:

> The intent of the design is not primarily for public or regulatory review; rather it serves as a tool for the operator, blaster, and the blasting crew to understand the blast layout and implementation and for the regulatory authority to be advised of the blast parameters and timing, to initiate monitoring, if appropriate, and to ensure compliance with performance standards.[707]

Therefore, we are not adopting paragraph (d)(2) in the form in which it was proposed. Instead, final paragraph (d)(2) returns to the intent of the previous (1983) rule, but without the ambiguity of the previous rule. Among other things, the last sentence of final paragraph (d)(2) reads: ''Regulatory authority approval of the blast design is not required, but, as provided in paragraph (d)(5) of this section, the regulatory authority may require changes to the design.''

Section 816.62: Use of Explosives: Preblasting Survey

We are finalizing § 816.62 as proposed. We received no comments on this section.

Section 816.64: Use of Explosives: Blasting Schedule

We are finalizing § 816.64 as proposed. We received no comments on this section.

Section 816.66: Use of Explosives: Blasting Signs, Warnings, and Access Control

We are finalizing § 816.66 as proposed. We received no comments on this section.

Section 816.67: Use of Explosives: Control of Adverse Effects

Final Paragraph (b): Airblast.—(1) Limits

The published version of the proposed rule inadvertently omitted the second column in the table in section 816.67(b)(1)(i), which meant that the table included no airblast limits. Final paragraph (b)(1)(i) restores that column and the airblast limits to the table.

One regulatory authority noted the error and recommended restoration of the airblast limits. However, the commenter also stated that the table and the airblast limits are no longer needed because of standardization of microphones. The commenter recommended that we consider replacing the table with a 133 dB (linear peak) maximum limit on airblast levels. Linear peak is the maximum level of air pressure fluctuation measured in decibels without frequency weighting to ensure the measured parameter is indicative of the level experienced by the human auditory system. Frequency weighting is not applied to airblast measurements because much of the sound from an airblast is at inaudible frequencies and would therefore be excluded.

We commend the commenter for suggesting this update, but we cannot adopt it as part of this final rule because our proposed rule did not give sufficient notice that we might revise the airblast limits and the suggested revision is not a logical outgrowth of other rule changes, a correction of an error, or a nonsubstantive editorial change.

Section 816.68: Use of Explosives: Records of Blasting Operations

We are finalizing § 816.68 as proposed. We received no comments on this section.

Section 816.71: How must I dispose of excess spoil?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.71.[708] After evaluating the comments that we received, we are adopting the section as proposed, with the following modifications.

A commenter noted that this section does not distinguish between excess spoil and fill placed in, near, or outside a stream. No real distinction exists in this context. Fill placed in, near, or outside of a stream, is considered excess spoil. The standards in this section, however, ensure that the design and placement of any excess spoil fill

[707] 48 FR 9792 (Mar. 8, 1983).

[708] 80 FR 44436, 44555–61 (Jul. 27, 2015).

satisfies the minimum performance standards, generally related to stability, which are necessary to ensure the safety of an excess spoil fill wherever it is located. The permitting requirements in §§ 780.27 and 780.28, which minimize adverse impacts to streams, apply to all excess spoil fills that encroach upon any part of a stream.

A commenter alleged that the process of restoring streams to their original elevations and enhancing the flood plain widths in their approximate original locations will increase the generation of additional spoil and elevations of spoil in the graded reclamation areas. Although specifically referencing proposed rule § 816.71, about disposal of excess spoil, the commenter appears to be referring to § 780.28(c) about the permitting requirements for restoring the approximate premining surface drainage pattern and stream-channel configuration of intermittent and perennial streams and § 816.57, which includes associated performance standards. Nevertheless, we are addressing the comment in this section because of the impacts on spoil handling. We do agree that implementing the requirements of §§ 780.28 and 816.57 may result in a different handling plan than currently used because the reestablishment of stream channels will require additional blending of spoil material into the backfilled areas than is currently performed. We disagree with the comment that excess spoil will be created when the stream drainage patterns are restored because the volume of spoil generated is dependent on the mining scenario (depth to the coal seam, bulking factors, blasting patterns, etc.). However, we do agree that additional spoil handling will be required to restore the drainage pattern, including additional grading and blending necessary to create stream drainage patterns that are consistent with form. Nevertheless, we are not modifying the final rule in response to this comment our clarification here and explanations in final rule §§ 780.28 and 816.57 are sufficient.

The same commenter alleged that restoring wetlands at grade could result in the generation of additional spoil because spoil has to be relocated to keep wetland elevations low in the reclaimed area. We decline to make any changes as a result of this comment. It appears that this issue would, for the most part, affect areas with shallow groundwater, such as occurs in parts of the midcontinent region. It also appears that restoring wetlands at grade would tend to result in more spoil being placed in the backfilled area, rather than generation of additional excess spoil. Final paragraph (h)(3)(ii), discussed in more detail below, allows the final elevation of the backfilled area to exceed the premining elevation, so, in cases where maintenance of wetlands would be an issue it is more likely that displaced spoil will be placed in the backfilled area rather than an excess spoil fill.

This commenter also alleged that the proposed rule would increase the need for additional spoil storage and increase mining costs to the point where many areas will not be practical to mine. We decline to make any changes as a result of this comment. The required volume of spoil storage is dependent on the volume and nature of overburden that the operator must remove to access the coal, and will not be affected by the rule. Section 780.35(b) requires that the operator demonstrate how you will minimize generation of excess spoil. Therefore, the rule should decrease the need to develop additional spoil storage sites.

Finally, this commenter alleged that many of these backfilling requirements are not feasible or necessary in regions outside of Appalachia. It is true that excess spoil is generated predominantly in Appalachia; however, it is generated, and should be minimized, in other regions as well. The requirements of this section do not apply at sites where excess spoil is not generated.

Another commenter noted that dry valleys are common in the arid and semi-arid West and suggested that excess spoil placement should be allowed in those areas where there are no streams to impact. In response, we note that none of the requirements in this section would preclude the placement of material in dry valleys as suggested by the commenter, as long as the other requirements of the section are satisfied. Specifically, paragraphs (a)(3), (h)(1), and (h)(3) require that the final configuration be compatible with the postmining land use and be capable of supporting appropriate vegetation, that the topography blend with the surrounding terrain, and that the drainage pattern be similar to the premining pattern.

Final Paragraph (a): General Requirements

We modified paragraph (a)(1) by clarifying that the permittee must minimize the adverse effects of a coal mine waste disposal facility on groundwater and aquatic life, in addition to surface water. The specific reference to ''aquatic life'' will more thoroughly implement section 515(b)(24) of SMCRA,[709] which requires operators to minimize adverse impacts on fish, wildlife, and related environmental values.

Additionally, in paragraph (a)(5), in response to comments, we have deleted the language ''damage from'' as it pertains to flooding. As explained more fully above in connection with final § 780.21(b)(9)(ii), we have made this change in order to clarify that we are not requiring an investigation of premining flood events in order to assess the potential for damage from flooding. This revision focuses the assessment upon peak flows that could result in flooding and not damage from flooding.

Further, in paragraph (a)(6), we have replaced the terms ''existing uses'' with the term ''premining uses'' and removed the term ''reasonably foreseeable uses'' when referencing foreseeable uses of groundwater. We replaced the term ''existing use'' with ''premining use'' because the U.S. Environmental Protection Agency expressed concern about our use of the term ''existing use'' throughout the proposed rule and suggested that, because the term ''existing use'' is also used in a Clean Water Act context, it might cause confusion to use it in this context. In response we have deleted the term from the final rule. We have deleted the term ''reasonably foreseeable uses'' from the final rule except in connection with the protection of reasonably foreseeable surface lands uses from the adverse impacts of subsidence. The term appears only in SMCRA in section 516(b)(1), which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. It is not appropriate for a more general context. Further, many commenters objected to the usage of ''reasonably foreseeable'' asserting that it is too subjective, difficult to assess, and open to varying interpretations, which could result in inconsistent application.

We have removed the reference to ''surface water'' from paragraph (a)(6) because we address surface water in final paragraph (a)(7). In the proposed rule we used the terms ''exceedance'' and ''violation'' interchangeably. We determined that we should select one term for consistency. Therefore, in paragraph (a)(7), we have replaced the word ''exceedance'' with the word ''violation'' to be consistent with the terminology used throughout the final rule. In addition, we added the phrase ''adopted under the authority of section

[709] 30 U.S.C. 1265(b)(24).

303(c) of the Clean Water Act,[710] for surface water downstream of the toe of the fill'' to paragraph (a)(7). We added this language to paragraph (a)(7), to clarify, that water emanating from the toe of the fill should not violate any applicable water-quality standards adopted under the authority of section 303(c) of the Clean Water Act.

Final Paragraph (d): Requirements for Handling Organic Matter and Soil Materials

This section requires that a permittee remove all vegetation, other organic matter, and soil materials from the disposal area prior to placement of the excess spoil. A commenter requested that the final rule include a provision allowing the regulatory authority to waive the requirement of this paragraph for the removal of topsoil and organic matter in areas of steep slopes. According to the commenter, this requirement could present safety concerns in steep slope areas. We are not including such an exemption in the rule because, in our experience, steep slope areas used for disposal of excess spoil are usually no greater in slope than the location where coal extraction occurs. If the permittee is able to safely remove this soil and organic material from the mined area, it should also be able to do so from the disposal area. Furthermore, if left in place, this matter may decompose and form a weak zone that is likely to fail in steep areas.

Final Paragraph (e): Surface Runoff Control Requirements

In the preamble to proposed § 816.71(e)(1), we stated that we do not consider surface runoff channels constructed under § 816.71(e)(1) to be stream channel diversions or restored streams and thus, these structures would not qualify as fish and wildlife enhancement measures.[711] One commenter alleged that this statement is contrary to the U.S. Army Corps of Engineers' past position that some diversions may qualify as mitigation. We decline to make any changes as a result of this comment. Because these structures are designed channels to convey only surface water flow, within the channel, with no flood-prone area or specifically planned vegetative corridor, they do not qualify as a type of enhancement that would fully and permanently offset the long-term adverse effects of the placement of excess spoil or coal mine waste facilities, which is required to meet the permittee's obligations pursuant to final §§ 780.16 and 780.28.

Final Paragraph (f): Control of Water Within the Footprint of the Fill

Final paragraph (f) prescribes the requirements for constructing underdrains and temporary diversions to control erosion, prevent water infiltration, and ensure stability of the excess spoil disposal fill. Paragraph (f)(3)(iii) sets forth the criteria that must be used to select rock that is resistant to weathering for underdrain construction. Our rule requires use of the Los Angeles Abrasion test and the Sulfate Soundness test for choosing rock. One commenter asserted that these two tests are more elaborate and expensive testing methods than the Slake Durability Index Test, which is commonly used under the existing regulations. This commenter alleged that the proposed tests do not provide any added value. We are not modifying the final rule as a result of this comment. Our previous regulations allowed for end dumped durable rock fills and the Slake Durability Index test was appropriate because it can be used to determine the percentage of material in an excess spoil fill that is ''durable.'' The final rule at § 816.71(g)(2), however, prohibits durable rock fills and instead at 816.71(f)(1) requires that the permittee ''design and construct underdrains and temporary diversions as necessary to control erosion, prevent water infiltration into the fill, and ensure stability.'' Because of this change, we are requiring the use of tests that are more appropriate for evaluating the materials that will be used in excess spoil fill underdrains. The two tests specified in the final rule are designed to assess the resilience of rock used to construct underdrains. The primary mechanisms that cause breakdown of material used in excess spoil fill underdrains are abrasion due to truck traffic and freezing and thawing, both of which can occur before the underdrain is adequately covered. The tests we are requiring specifically address these mechanisms. The Los Angeles Abrasion test is used to evaluate rock material breakdown resulting from abrasion, and the Sulfate Soundness test is used to evaluate the resistance of rock materials due to breakdown resulting from freezing and thawing.

Another commenter recommended that only the Los Angeles Abrasion test should be required in circumstances where the underdrain rock is placed in interior or deep portions of an excess spoil fill and would not be subjected to freeze and thaw cycles, as well as in warm climates where freezing conditions are unlikely to occur. As we acknowledged in the preamble to the proposed rule, freezing of water in rocks and soil does not occur in all climates and is limited to a relatively shallow depth below the surface.[712] Therefore, freezing and thawing are not processes that would affect most underdrains after they are buried. However, during construction, the underdrains are exposed to the surface and, in some cases, multiple freeze-and-thaw cycles occur before they are covered sufficiently to prevent freezing. Moreover, an underdrain is only as good as its weakest point, and failure of an underdrain could have catastrophic consequences, which could occur years after bond release. Finally, we note that, excess spoil fills are primarily found in the states of West Virginia, Kentucky, and Virginia, with a few fills constructed in Alaska. All of these mining regions experience freeze and thaw cycles. The use of the Sulfate Soundness test is both appropriate and necessary in these regions. Therefore, we decline to make any changes as a result of this comment.

Final Paragraph (g): Placement of Excess Spoil

Final paragraph (g) specifies the requirements for proper transport and placement of excess spoil in a controlled manner in horizontal lifts not exceeding four feet in thickness. The spoil must be concurrently compacted to ensure mass stability and to prevent mass movement during and after construction. Finally, the paragraph prescribes grading techniques to ensure that surface and subsurface drainage is compatible with the natural surroundings. A commenter requested that we revise this paragraph to allow the regulatory authority to allow an excess spoil fill that involves the placement of material in lifts greater than four feet when supported by an alternative engineering design. Another commenter indicated that the proposed provision is unworkable and unrealistic in mining operations where the spoil can include single boulders that exceed four feet in diameter. The commenter further stated that it has successfully created excess spoil fills without this provision for decades and should be allowed to continue to do so. As we explained in the preamble for section 816.71(g) of the proposed rule, the purpose of this provision is to minimize voids in the fill and thus, reduce impacts to fish and wildlife resources.[713] The commenter appears to

[710] 33 U.S.C. 1313(c).

[711] 80 FR 44436, 44556–44557 (Jul. 27, 2015).

[712] 80 FR 44436, 44559 (Jul. 27, 2015).

[713] 80 FR 44436, 44687 (Jul. 27, 2015)

equate ''successful'' excess spoil fill construction strictly based on stability. Although lifts greater than four feet may be stable, allowing this exemption would be contrary to the purpose of this rulemaking, which is to better protect streams. Therefore, we decline to make any changes as a result of this comment.

Paragraph (g)(2), as mentioned above, contains a prohibition on so-called ''durable rock fills.'' It forbids any excess spoil transport and placement techniques that do not involve the controlled placement of spoil, including end-dumping, wing-dumping, cast-blasting, gravity placement, or casting spoil downslope. A commenter expressed concern that under the rule, the use of trucks for spoil transport would not be considered to be controlled placement under section 515(b)(22)(A) of SMCRA because the spoil would be dumped from the back of a truck, which the commenter interpreted as ''end dumping''.[714] The commenter stated that a strict interpretation of this provision could render entire truck fleets un-usable for excess spoil transport, even if the spoil was subsequently spread and compacted. In response to this comment, we note that we do not intend to prohibit the mechanical transport of spoil. The use of trucks to transport and place material, via dumping, from the bed of the truck is permissible under the final rule. This final rule simply prohibits the dumping of material down the face of a fill to its final location.

Final Paragraph (h): Final Configuration

Paragraph (h) identifies the requirements for final fill configuration. Specifically, paragraph (h)(3)(i) requires that geomorphic reclamation principles be used to establish the final surface configuration of the fill. Specifically, the permittee must grade the top surface of the fill to create a topography that includes ridgelines and valleys with varied hillslope configurations when such configurations are practicable, compatible with stability and postmining land use considerations, and generally consistent with the topography of the area before any mining. One commenter questioned the rationale for requiring the use of geomorphic reclamation principles. In paragraph (h) we are requiring a final surface configuration that not only promotes greater erosional stability but also has more ecological benefits than other techniques. Although section 816.71 includes other requirements to ensure long term stability and to minimize discharges, we are encouraging the geomorphic reclamation technique, where appropriate, because of its demonstrated success. This technique has resulted in less maintenance than traditional reclamation techniques. It has enabled the creation of a diverse and natural-looking wildlife habitat and similar natural drainage patterns. However, we recognize that the geomorphic reclamation technique is not appropriate for all sites. We encourage the use of geomorphic reclamation techniques ''when practicable'' and grant discretion to the regulatory authority to determine the extent to which this requirement can be implemented on a site specific basis. Therefore, we decline to make any changes as a result of this comment.

Final Paragraph (k): Inspections and Examinations

This paragraph prescribes the inspection and documentation required during construction of the excess spoil fill. We modified paragraph (k)(1) to clarify that inspections will occur at least quarterly during construction, with additional complete inspections conducted during critical construction periods. We invited comment on whether the final rule should require additional specific oversight by a qualified engineer when segregated, graded, natural material is used to construct the filter system.[715] In response, one commenter noted that additional inspection is not necessary and should not be included in the final rule. The commenter added that the requirement to perform daily inspections during placement of excess spoil material is onerous and requested we remove it. This commenter further asserted that because construction of excess spoil fills is time intensive and may occur 24 hours per day, daily inspections and recordkeeping for spoil placement and compaction are unnecessary, costly, and especially unwarranted when the postmining land use is range land. The commenter makes a valid point that, as proposed, numerous inspections of the excess spoil placement in four-foot lifts would be required. It is true that placement in the lower portions of the fill may result in more than one lift completed every day. In response, we have revised the final rule to provide an alternative to the daily inspection requirement. In final paragraph (k)(2)(i), the permittee may choose to have inspections conducted by a qualified engineer or specialist on a weekly basis rather than a daily basis, provided that daily photographic evidence is captured by a mine representative. These photographs must clearly verify that the requirement for the four-foot lift thickness has been achieved and document the elevation and location of the photograph. An example of visual evidence of the location can be a global positioning system-tagged photograph with latitude, longitude, and elevation clearly displayed as well as a map with these photographs embedded and tagged. Also, this photographic documentation, along with the weekly examination reports, must be included in the quarterly report required under section (k)(3) of this section.

A regulatory authority stated that the daily inspections required by § 816.71(k)(2)(i) would result in more report reviews and place additional resource burdens on regulatory authorities. While it is true that the quarterly reports required under final paragraph (k)(3) will be more extensive, they will also provide a more comprehensive record than is currently required. Further, these records will be available on-site for regulatory authority inspection. Since the time interval between an inspection, partial or complete, may be several weeks or longer, a significant volume of excess spoil can be placed in a fill during that time period. The only way for the inspector to be certain that the lift requirement has been fulfilled is through the documentation supplied by this provision. Thus, the additional review time that this provision will require is ancillary to the benefit of attaining better oversight of the operation by the regulatory authority. The regulatory authority also referenced proposed §§ 780.19(k) and 784.19(k) which provided that a permit will be void from the date of issuance if it is issued on the basis of what the regulatory authority later determines to be substantially inaccurate baseline information. The regulatory authority alleged that daily inspections could increase the likelihood of permit nullifications, especially if the term ''substantially inaccurate'' is too broadly interpreted. In response we note first that, as discussed in the preamble to final rule §§ 780.19 and 784.19, we have removed the two paragraphs that the commenter referenced. Second, however, the scenario described does not seem plausible; we fail to see how an increased frequency of inspection of excess spoil placement could lead a regulatory authority to determine that the baseline information a permittee submitted at the time of permit

[714] 30 U.S. 1265(b)(22)(A).

[715] 80 FR 44436, 44560 (Jul. 27, 2015).

application was substantially inaccurate.

Final Paragraph (l): Coal Mine Waste

Final paragraph (l)(1) allows disposal of coal refuse in an excess spoil fill, subject to specific requirements. As proposed, paragraph (l)(1) required the permittee to demonstrate that no credible evidence existed that the disposal of coal mine waste in an excess spoil fill will cause or contribute to a violation of applicable water quality standards as prescribed by section 303(c) of the Clean Water Act or effluent limitations. Furthermore, the disposal of the waste must not result in material damage to the hydrologic balance outside the permit area. A commenter stated that the term ''credible evidence'' is too vague and suggested we adopt ''weight of the evidence'' as a better standard. At the suggestion of another commenter, we have removed any reference to a standard of evidence and now require that you demonstrate, and the regulatory authority find in writing, that the disposal of coal mine waste in the excess spoil fill will not cause or contribute to a violation of applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), other state or tribal water quality standards, or effluent limitations or result in material damage to the hydrologic balance outside the permit area.

Why did we remove the provision for rock-core chimney drains in previous 30 CFR 816.72(b)?

As we proposed in the preamble to the proposed rule,[716] we have removed previous § 816.72(b) because mine operators are no longer constructing fills with rock-core chimney drains. We received no comments in response to our proposal to remove this abandoned practice.

A rock-core chimney drain is a vertical wall of durable rock within the fill, extending along the centerline from the toe of the fill to the head of the fill and from the base of the fill to the surface of the fill. To clarify, our removal of this paragraph will not prohibit construction of head-of-hollow or valley fills. However, applications for fills including rock-core chimney drains will not be approved. Any proposed excess spoil fills must satisfy the permitting requirements of §§ 780.28 and 780.35. If approved, excess spoil fill disposal must comport with the performance standards of § 816.71.

Why did we remove the provisions for durable rock fills in previous 30 CFR 816.73?

This section of the existing regulations was deleted as part of this rulemaking. As explained in the preamble to § 816.71(g) of the proposed and final rules, we are removing this section as proposed.

Section 816.74: What special requirements apply to the disposal of excess spoil on a preexisting bench?

We are finalizing § 816.74 as proposed. We received no comments on this section.

Section 816.79: What measures must I take to protect underground mines in the vicinity of my surface mine?

We are finalizing § 816.79 as proposed. We received no comments on this section.

Section 816.81: How must I dispose of coal mine waste?

As discussed in the preamble to the proposed rule,[717] we proposed to modify our regulations at § 816.81. We are adopting the section as proposed with some minor language modifications for clarity, consistency with other sections of the final rule, and the requirements of SMCRA.

Final Paragraph (b): Basic Performance Standards

We have modified paragraph (b)(1) by clarifying that the permittee must minimize the adverse effects of a coal mine waste disposal facility on groundwater, surface water, and aquatic life. We have replaced ''biological condition'' with ''aquatic life'' to be more comprehensive as only certain streams are assessed using bioassessment protocols associated with biological condition. The specific reference to ''aquatic life'' will more thoroughly implement section 515(b)(24) of SMCRA,[718] which requires minimal adverse impacts on fish, wildlife, and related environmental values.

In paragraph (b)(6) we have deleted the language ''damage from'' as it pertains to flooding to ensure that the occurrence and extent of flooding should be minimized, not just the resulting damage.

In paragraph (b)(7), we have replaced the terms ''existing'' and ''reasonably foreseeable'' use of groundwater and replaced it with any ''premining'' use of groundwater. The U.S. Environmental Protection Agency expressed concern about our use throughout the rule of the term ''existing use'' and suggested that, because the term ''existing use'' is also used in a Clean Water Act context, in relationship to surface water, it might cause confusion for us to use it here. In response we have deleted the term from the final rule. We have deleted the term ''reasonably foreseeable uses'' from the final rule except in connection with the protection of reasonably foreseeable surface lands uses from the adverse impacts of subsidence. The term appears only in SMCRA in section 516(b)(1), which requires that operators of underground mines adopt subsidence control measures to, among other things, maintain the value and reasonably foreseeable use of surface lands. It is not appropriate for a more general context. Further, many commenters objected to the usage of ''reasonably foreseeable'' asserting that it is too subjective, difficult to assess, and open to varying interpretations, which could result in inconsistent application. Therefore, in a groundwater context we have replaced ''reasonably foreseeable use ''with the term ''premining use'' to avoid confusion with Clean Water Act terminology.

Finally, in paragraph (b)(7) we have removed ''surface water'' because we address surface water in final paragraph (8). In paragraph (b)(8), we have clarified that a coal mine waste disposal facility may not cause, or contribute to a violation of section 303(c) of the Clean Water Act,[719] of the surface water downstream of the facility.

Final Paragraph (e): Foundation Investigations

Similar to the modifications we made at final §§ 816.49(a)(4), about foundations, at the suggestion of another federal agency and to improve clarity we have modified final paragraph (e) about foundation investigations. We have added ''abutment'' to the requirement to ensure precautions are taken to fully prevent failure of impounding structure foundations. Additionally, we have added the phrase ''and control of underseepage'' to ensure that seepage failures of the dam foundation are prevented. This would include the potential for piping failures.

Section 816.83: What special requirements apply to coal mine waste refuse piles?

We are finalizing § 816.83 as proposed. We received no comments on this section.

[716] 80 FR 44436, 44561 (Jul. 27, 2015).

[717] 80 FR 44436, 44562–44563 (Jul. 27, 2015).

[718] 30 U.S.C. 1265(b)(24).

[719] 33 U.S.C. 1313(c).

Section 816.84: What special requirements apply to coal mine waste impounding structures?

We are finalizing § 816.84 as proposed. We received no comments on this section.

Section 816.87: What special performance requirements apply to burning and burned coal mine waste?

We are finalizing § 816.87 as proposed. We received no comments on this section.

Section 816.89: How must I dispose of noncoal mine wastes?

We are finalizing § 816.89 as proposed. We received no comments on this section.

Section 816.95: How must I protect surface areas from wind and water erosion?

Section 816.95 explains the additional performance standards that apply to protect topsoil from erosion and air pollution attendant to erosion. We proposed to revise § 816.95 from the previous regulation to replace the references to topsoil with the terms soil and soil substitutes.[720] This change is consistent with §§ 780.12(e) and 816.22(c) which allow for the use of topsoil and subsoil substitutes.

In response to the proposed rule we did not receive any specific comments about this section. However, in response to general comments made by the U.S. Environmental Protection Agency, we modified paragraph (b)(1)(ii) referencing applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act.[721] This addition was necessary to maintain consistency with changes made elsewhere in the final rule.

Section 816.97: How must I protect and enhance fish, wildlife, and related environmental values?

One commenter on this section recommended that we require permittees to avoid impacts to the extent possible instead of requiring the minimization of impacts. The commenter pointed out that using an avoidance standard is guaranteed to prevent impacts, whereas there is a risk of failure associated with minimization, even if it is followed by restoration and enhancement. We are not accepting this suggestion. As we described in the preamble to our proposed rule, our substantive revisions to § 816.97[722] are intended to more fully implement section 515(b)(24) of SMCRA,[723] which provides that, ''to the extent possible using the best technology currently available,'' surface coal mining and reclamation operations must be conducted so as to ''minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable.'' Thus, SMCRA only requires minimization, not avoidance, of adverse impacts to fish, wildlife, and related environmental values. Congress was very specific when it selected the phrase ''minimize disturbances and adverse impacts'' in section 515(b)(24) of SMCRA as opposed to using the term ''avoid'' as it did in other environmental protection performance standards such as section 515(b)(10)(A) and (E) of SMCRA.[724] Clearly, it was the intent of Congress to allow a degree of impact, not the greatest possible reduction of impact as the commenter presupposes.

A few commenters requested that we ensure that our fish and wildlife enhancement measures do not interfere, contradict, or incorporate conservation measures contained in voluntary conservation programs as approved by state or federal agencies. These commenters further explain that incorporating voluntary conservation program agreements into a SMCRA permit would impinge on the ''voluntary'' status of the conservation measures and potentially render these voluntary conservation agreements ineligible for mitigation credits. We are not changing the rule in response to this request. We recommend that these measures be discussed during coordination with the appropriate state and federal agencies during the permitting process described in §§ 779.20(b) and 783.20(b).

Final Paragraph (b): Requirements Related to Federal, State, and Tribal Endangered Species Laws

As proposed, paragraph (b) prohibited surface mining activities that are likely to jeopardize the continued existence of threatened or endangered species listed by the Secretary of the Interior or proposed for listing, or that are likely to result in the destruction or adverse modification of designated critical habitat in violation of the Endangered Species Act. One commenter recommended that we modify the language to prohibit operations that ''may affect'' listed species instead of jeopardizing their continued existence. We recognize that jeopardy is too low of a standard because it allows for more impacts than SMCRA 515(b)(24)[725] intends. On the other hand, the ''may affect'' standard is too stringent because there are situations in which a mining operation may affect a listed species, but as a result of protective measures designed during consultation, material damage of the hydrologic balance is avoided. The commenter's suggested modification would also prohibit activities that may affect, but are not likely to adversely affect, species. In order to address these issues, we have modified the language in paragraph (b)(1)(i) to clarify that no surface mining activities may violate the Endangered Species Act and that nothing in our regulations authorizes the taking of a species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* unless the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as applicable, authorizes the taking under 16 U.S.C. 1536(b)(4). We also added reference to the National Marine Fisheries Service to this regulation in the event that a species under its jurisdiction may be impacted by mining activities. *See* 16 U.S.C. 1532(15).

One commenter stated that it is unclear what actions the regulatory authority would take in the event a species is unexpectedly found in the permit area or adjacent area, as described in paragraph (b)(1)(ii). The commenter also stated that such a discovery could conceivably shut down an ongoing operation at great expense. However, § 817.97(b) in the current regulations already requires operators to ''promptly report'' the presence of any listed or threatened species within the permit area when the operator becomes aware of it. This section of the current regulations also specifies that upon such notification, ''the regulatory authority shall consult with the appropriate State and Federal fish and wildlife agencies and, after consultation, shall identify whether, and under what conditions, the operator may proceed.'' Operators have not raised concerns about this existing requirement, and we are unaware of any instances where the requirement has been overly burdensome. Furthermore, the risk of unexpected occurrences of listed species can be minimized by gathering the best possible data and coordinating with the relevant agencies at the permit application and approval stages. *See* § 773.15(j)(1) (requiring operators to provide documentation that the proposed permit area and adjacent area

[720] 80 FR 44436, 44564 (Jul. 27, 2015).

[721] 33 U.S.C. 1313(c).

[722] 80 FR 44436 (Jul. 27, 2015).

[723] 30 U.S.C. 1265(b)(24).

[724] *Id.* and 30 U.S.C. 1265(b)(10)(A) and (E).

[725] 30 U.S.C. 1265(b)(24).

do not contain threatened or endangered species).

We invited comment on whether to limit the notification requirement of proposed paragraph (b)(1)(ii) to the active mining phase of the operation. Specifically, we sought comment on whether the final rule should explicitly state that the notification requirement expires at the time of Phase II bond release, since there is typically a lack of activity on the site after that stage of reclamation. We received comments in support of and in opposition to terminating the notification requirement at Phase II bond release. Those in favor of terminating the requirement argued that it would save government and industry resources, since impacts would be less likely after this stage and because habitat restoration is generally in place—or at least in process—at the time of Phase I bond release. These commenters stated that most of the major earth moving and planting operations are complete at that point, and no major activity would be taking place after Phase I bond release. Those who argued against terminating the requirement voiced concern that risks to listed species continue after active mining and require long-term treatment. The U.S. Fish and Wildlife Service recommended that we not limit the notification requirement because information about the new or increased occupancy of the site or adjacent area is useful in understanding the recovery of areas affected by the mining activity. After consideration of the comments, we have determined that continued notification after Phase II bond release is not a burdensome requirement as the notification requirement does not also require prescribed searches or assessments of the area and that there is continued value to these notices as it would allow the appropriate agencies to gather data on these species is data after Phase II; therefore, we have not limited the notification requirement. Furthermore, we note that the requirement is limited to notification. If the operation is unlikely to cause any harm to the newly found species, no action will be required. In contrast, not requiring disclosure could result in unquantified harm to species and expose operators to liability under the Endangered Species Act. Therefore, we have not limited the notification requirement.

Commenters supported the requirement in paragraph (b)(1)(iv), to comply with any species-specific protection measures required by the regulatory authority in coordination with the U.S. Fish and Wildlife Service. The only change we have made to this paragraph is to add a reference to the National Marine Fisheries Service in the event that a species under its jurisdiction may be impacted by mining activities.

Other commenters stated that our final rule at paragraph (b)(2) should not contain analogous requirements for state listed species. We decline to eliminate these requirements because they are necessary to comply with section 515(b)(24) of SMCRA, which requires operators to ''minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable.'' [726] In response to paragraph (b)(2), which requires operators to notify the regulatory authority of any state or tribal-listed, threatened or endangered species within the permit area or the adjacent area of which the permittee becomes aware, regardless of whether the species was listed before or after permit issuance, we received a comment that neither the SMCRA nor the Endangered Species Act provides protection for state-listed species. As stated in the proposed preamble,[727] paragraph (b)(2) was established to set forth the requirements for state listed species under state statutes protecting state listed, threatened, and endangered species. In addition, in *In re: Permanent Surface Mining Regulation Litigation,* No. 79–1144, slip op, at pp. 58–63 (D.C. Cir. 1984), a federal district court ruled that section 515(b)(24) of SMCRA [728] is not limited to Federally-listed species. Therefore, under SMCRA, operators are required to minimize disturbances to state, tribal, and federally-listed endangered or threatened species. We have made additional changes to final paragraphs (b)(2)(ii)(A) and (B) provide clarity on the process of coordination with the appropriate agencies, the process for proceeding with activities, and process for revising the permit when a state-listed species is found within the permitted site.

Final Paragraph (c): Bald and Golden Eagles

One commenter recommended that we remove § 816.97(c), which describes the process of protecting bald and golden eagles, their nests, and eggs, and the process of reporting and addressing the presence of bald and golden eagle nests. This commenter claimed that this provision would usurp the authority that Congress delegated to the U.S. Fish and Wildlife Service under the Bald and Golden Eagle Protection Act [729] and that this effort to expand our jurisdiction is unlawful. We disagree. This paragraph does not expand our jurisdiction; it merely describes the process of alerting the U.S. Fish and Wildlife Service of the presence of bald or golden eagles, their eggs, or nests and the responsibilities of the operator and the regulatory agency in this process. This requirement was present in the previous regulations and has been retained unedited in the final rule.

Final Paragraph (d): Miscellaneous Protective Measures for Other Species of Fish and Wildlife

In paragraph (d)(1), we proposed to delete the clause in our existing regulations that allowed regulatory authorities to waive, if they determined it was unnecessary, the requirement that electric power transmission lines and other transmission facilities used for, or incidental to, surface mining activities on the permit area be designed and constructed to minimize electrocution hazards to raptors and other avian species with large wingspans. We are not aware of any situations in which these precautions are not necessary or appropriate. We received comments supporting this change and are finalizing it as proposed.

One commenter requested that we delete paragraph (d)(4), which requires the exclusion of wildlife from ponds that contain hazardous concentrations of toxic or toxic-forming materials. This requirement has been part of our existing regulations since December 11, 1987. This provision was once deleted from the regulations, as we maintained that there was little evidence of harm to wildlife as a result of unprotected toxic ponds on the site of any mining operation. We stated at the time the requirements to minimize disturbances and adverse impacts on wildlife by utilizing the best technology currently available would be sufficient to protect wildlife from toxic ponds. But the court in *In re: Permanent Surface Mining Regulation Litigation,* No. 79–1144, slip op, at pp. 58–63 (D.C. Cir. 1984) rejected these arguments, stating that the absence of evidence of harm to wildlife supported the retention of the fencing requirement. The court believed the regulations specific to utilizing the best technology currently available did not provide regulatory authorities with sufficient guidance. Therefore, until we are further directed by the courts or presented with sufficient scientific evidence, we will keep this provision within the regulations.

[726] 30 U.S.C. 1265(b)(24).

[727] 80 FR 44436, 44465 (Jul. 27, 2015).

[728] 30 U.S.C. 1265(b)(24).

[729] 16 U.S.C. 668–668d.

Another commenter objected to proposed paragraph (d)(4) asserting that many ponds in the Appalachian and Illinois Basins are treated with chemicals because of acidity, iron, and manganese levels and some are being treated with a ''proprietary mix'' of treatment chemicals. The commenters assert that proposed paragraph (d)(4) is not fully protective because we have not stated the standard for ''toxic or toxic-forming materials.'' We disagree. In existing 30 CFR 701.5 we define toxic-forming materials as ''earth materials or waste which, if acted upon by air, water, weathering, or microbiological processes, are likely to produce chemical or physical conditions in soil or water that are detrimental to biota and or uses of water.'' The preamble to our 1979 implementing regulations explains the basis for the wording found in the definition.[730] Accordingly, we have not made any changes to the final rule based on this comment.

Another commenter objected to paragraph (d)(5) under the mistaken impression that it would require operators to reforest lands that were forested or that would have reverted to forest under conditions of natural succession at the time of permit application, regardless of the approved postmining land use. We have made no change in the final rule because the rule allows for non-forestry vegetation and other land uses, such as those described in § 816.97(g) for the cropland postmining land use.

Similarly, a commenter asked if we were deleting the fish and wildlife postmining land use category because proposed paragraph (d)(5) states that, ''to the extent possible,'' the operator must ''reclaim and reforest lands that were forested at the time of application and lands that would revert to forest under conditions of natural succession in a manner that enhances recovery of the native forest ecosystem as expeditiously as practicable.'' Fish and wildlife habitat land use is still a suitable post mining land use category. Section 701.5 defines both ''land use'' and ''fish and wildlife habitat'' land use. These definitions in § 701.5 are used in conjunction with §§ 780.24 and 784.24 to determine the requirements that apply to postmining land use. The requirements of § 816.97 and 817.97 provide additional protection and enhancement measures that should be implemented to the extent possible, using the best technology currently available. Therefore, we are not making any changes in response to this comment.

Final Paragraph (e): Wetlands

We proposed to redesignate § 816.97(f) of our previous regulations as paragraph (e) within the final rule and revise it for clarity and consistency with section 515(b)(24) of SMCRA.[731] The previous rule was not fully consistent with section 515(b)(24) of SMCRA,[732] which requires both minimization of disturbances and adverse impacts on fish, wildlife, and related environmental values to the extent possible and enhancement of those resources where practicable. Proposed paragraph (e) was drafted to align with 515(b)(24) of SMCRA [733] by requiring the permittee to avoid disturbances ''[t]o the extent possible, using the best technology currently available. . .'' and ''. . .where practical, enhance wetlands.'' One commenter objected to the proposed changes and interpreted the proposed rule to require all three actions, *i.e.,* avoidance, restoration or replacement, and enhancement, wherever wetlands exist on the permitted site. This is not an accurate reading of the requirements. If possible, the operator must avoid disturbances to wetlands. If this is not possible, then restoration or replacement of that affected wetland is required. Finally, in all instances, if it is practical, the operator is to enhance the wetlands within the permitted area. The previous regulations, as described within the preamble to the proposed rule,[734] allow the permittee to choose from one of these options, which, as described above, is inconsistent with 515(b)(24) of SMCRA. We did not make changes due to this comment, although to further align with SMCRA at 515(b)(24), we have added ''. . . using the best technology currently available . . .'' to the final rule within this paragraph.

For additional clarification and compliance with the Clean Water Act, 33 U.S.C. 1344, we have added an additional provision in paragraph (e)(2) stating that nothing in paragraph (e)(1) of this section authorizes destruction or degradation of wetlands in violation of section 404 of the Clean Water Act.[735]

Final Paragraph (f): Habitat of Unusually High Value for Fish and Wildlife

We have moved portions of proposed paragraph (e) related to habitat of unusually high value for fish and wildlife to final paragraph (f). This change was made to reduce confusion between wetlands and habitats of unusually high value for fish and wildlife. Paragraph (f) paragraph now requires operators to ''avoid disturbances to, restore or replace, and, where practicable, enhance riparian and other native vegetation along rivers and streams, lentic vegetation bordering ponds and lakes, and habitat of unusually high value for fish and wildlife, as described in § 779.20(c)(3) . . . .''

Final Paragraph (g): Vegetation Requirements for Fish and Wildlife Habitat Postmining Land Use

In proposed paragraph (f), now redesignated as paragraph (g) in the final rule, we proposed to require, among other things, the exclusive use of native vegetation where fish and wildlife habitat is a postmining land use. We received many comments in support of this requirement. As discussed elsewhere in the preamble, we have, within the final rule, made allowances for the use of non-natives that are both non-invasive and necessary to achieve the approved postmining land use.[736] In addition, § 780.12(g)(4) allows for the short-term use of non-natives when necessary to achieve a quick-growing, temporary, stabilizing cover on disturbed and regraded areas, as long as the species selected to achieve this purpose are consistent with measures to establish permanent vegetation. Several commenters stated that non-native annual crops can be used to supplement natural food sources for wildlife. We acknowledge that this is true. However, we do not agree that the use of non-native species is necessary to successfully reclaim the site to the ''fish and wildlife habitat'' land use category. This land use category is defined within § 701.5 as land that is ''dedicated wholly or partially to the production, protection, or management of species of fish or wildlife.'' This definition does not allow for a focus on game species to the detriment of other species, and there are no other aspects of this land use category that would necessitate the use of non-native plant species. Therefore, an exception for the use of non-natives for this land use category is not warranted.

Another commenter stated that exceptions should be made where native species are not commercially available. We do not find this argument persuasive for a number of reasons. First, the use of native species is a best practice in SMCRA and non-SMCRA regulated reclamation across the United States, and substantial progress

[730] 44 FR 14941 (Mar. 13, 1979).

[731] 30 U.S. 1265(b)(24).

[732] *Id.*

[733] *Id.*

[734] 80 FR 44436, 44566 (Jul. 27, 2015).

[735] 33 U.S.C. 1344.

[736] 30 CFR 780.12(g)(3)(i)

continues to be made in the availability and diversity of native species. Best practices also include contracting growers to produce seed from the premining vegetation or adjacent (and appropriate) areas for use in reclamation. This enhances the establishment and the survivability of the native species that are used. In § 780.12(g)(4), we have described circumstances under which the need to provide stabilization of disturbed and regraded areas makes it necessary for the regulatory authority to allow quick-growing, temporary, stabilizing cover on disturbed and regraded areas, provided that the species selected to achieve this purpose are consistent with measures to establish permanent vegetation. These requirements are consistent with section 515(b)(19) of SMCRA,[737] which provides that permanent vegetative cover must be of the same seasonal variety native to the area of land to be affected and capable of self-regeneration. This section of SMCRA allows for the use of introduced species in the revegetation process where desirable and necessary to achieve the approved postmining land use plan.[738]

Final Paragraph (h): Vegetation Requirements for Cropland Postmining Land Use

A commenter objected to proposed paragraph (g), now final paragraph (h), and requested it be amended to clarify that the operator and surface owner may determine whether trees, hedges, and fence rows are appropriate for planned postmining, crop-management practices. The proposed rule requirement applies only ''where appropriate for wildlife-management and crop-management practices.'' Given this exception, no revision is necessary to accommodate trees, hedges, and fence rows if they are appropriate for planned postmining, crop-management practices.

Final Paragraph (i): Vegetation Requirements for Forestry Postmining Land Uses

One commenter objected to our requirement within proposed paragraph (h), now final paragraph (i), to plant understory species on lands managed for forestry as the postmining land use. The commenter claimed that this requirement was ''not sensible,'' as the rationale for a forest post mine land use is to provide forest resources for wildlife and for potential future harvesting of these resources. We disagree that the requirement is ''not sensible'' and are finalizing it as proposed. Interspersion of high value trees and shrubs further enhances the function and resources of the site for wildlife and increases its overall environmental and aesthetic value. Through proper forestry management techniques, the inclusion of shrubs within a forestry post mining land use would improve implementation of the revegetation requirements of 515(b)(19) of SMCRA [739] and the provisions of section 515(b)(24) of SMCRA [740] concerning protection and enhancement of fish, wildlife, and related environmental values. The proposed, and now final regulations require this practice to the extent that it is not inconsistent with the type of forestry conducted as part of the postmining land use.

Final Paragraph (j): Vegetation Requirements for Other Postmining Land Uses

A commenter objected to the requirement in proposed paragraph (i)(1), now paragraph (j)(1), to intersperse greenbelts and plantings of non-invasive native plants that provide food or cover for wildlife in sites that are otherwise approved for residential, public service, commercial, industrial, or intensive recreational uses. These commenters expressed concern over the potential for conflicts between greenbelts and the features, for example power lines, of the selected land use. This concern is exaggerated. Pursuant to the requirements of § 780.12(g), the revegetation plan must be approved by the regulatory authority. The requirement in paragraph (j)(1) will be satisfied if this plan is followed. Moreover, the regulation states that greenbelts are not required if their use would be inconsistent with the approved postmining land use plan for that site. Even so, in most cases, greenbelts could be situated to avoid conflict with other necessary features of the approved land use.

Section 816.99: What measures must I take to prevent and remediate landslides?

We are finalizing § 816.99 as proposed. We received no comments on this section.

Section 816.100: What are the standards for conducting reclamation contemporaneously with mining?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.100 to add stream restoration to the list of reclamation activities that are subject to the contemporaneous reclamation requirement.[741] We received expressions of support for this change, including from the U.S. Forest Service; therefore, we are maintaining this addition in the final rule.

Section 816.102: How must I backfill the mined area and grade and configure the land surface?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.102.[742] We have amended the language of the proposed rule to reflect that there are allowable deviations from the general requirement to return all land disturbed by coal mining operations to its approximate original contour prior to any mining. Additionally, after evaluating the comments that we received, we have corrected and added citations to statutory and regulatory authority provisions; added § 816.102(a)(3)(iv)(B),(C),and (D); and deleted a provision in section 816.102(a)(5). We discuss these changes and responses to relevant comments below.

We proposed to revise the introductory language of paragraph (a) to clarify that the requirement to backfill applies only to mined areas.[743] We noted that, although the existing rule applies the backfilling requirement to the entire disturbed area, this is inappropriate because ''those portions of the disturbed area outside the mined area do not contain a pit or similar excavation that requires backfilling.'' [744] To support this statement, we referred the public to the preamble discussion of the proposed definition of ''backfill'' in 30 CFR 701.5 [745] which we derived from *A Dictionary of Mining, Mineral, and Related Terms* (U.S. Bureau of Mines, 1968). Specifically, we proposed to define ''backfill'' as ''the spoil and waste materials used to fill the void resulting from an excavation created for the purpose of extracting coal from the earth.'' We simultaneously proposed to define the action of ''backfilling'' as ''the process of filling that void.'' [746] In response, one commenter argued that our proposed definitions were inaccurate because many mining companies in North Dakota excavate areas to construct sediment ponds—and not to extract coal— and these must be backfilled when they are no longer needed. Although the term ''backfill'' is

[737] 30 U.S.C. 1265(b)(19).

[738] 30 U.S.C. 1265(b)(10).

[739] 30 U.S.C. 1265(b)(19).

[740] 30 U.S.C. 1265(b)(24).

[741] 80 FR 44436, 44567 (Jul. 27, 2015).

[742] 80 FR 44436, 44567–44570 (Jul. 27, 2015).

[743] 80 FR 44436, 44567 (Jul. 27, 2015).

[744] *Id.*

[745] *Id.*

[746] 80 FR 44436, 44468 (Jul. 27, 2015).

commonly used in the manner suggested by the commenter outside the mining context, in the mining context, the term refers to material placed in the mined area and to the related act of placing that material in the void created by mining. In the mining context, the filling in of sediment ponds or other excavations when they are no longer needed is referred to as ''reclaiming'' the site to its approximate original contour. Thus, our proposed definitions are accurate.

In new § 816.102(a)(1), we have replaced the phrase ''except in the following circumstances with deviations from the approximate original contour restoration requirements are allowed in the following situations.'' This change should make it clear to permit applicants and to state regulatory authorities that an exemption from the approximate original contour restoration requirements cannot be claimed by the permittee when a permanent impoundment is created or when one of the other situations enumerated in § 816.102(a)(1) are present. We discuss this point in more detail below.

The proposed deviations from the general approximate original contour restoration requirements generated numerous comments. One commenter argued that the definition of ''approximate original contour'' in paragraph (a)(1) was ambiguous and could lead to a loophole around the statutory requirement to backfill and grade. The commenter noted a recent administrative decision [747] documenting testimony by a geologist with a state regulatory authority who claimed that the slopes of impoundments above the level of the water should not be considered in evaluating whether a mining company has backfilled and graded in a manner that achieves the approximate original contour. The commenter asserted that SMCRA, the previous regulations, and the proposed regulations cannot be read to support the state engineer's testimony. The commenter argued that this approach would allow mine operators to create ponds in front of highwalls or leave unreclaimed pits as ''supposed impoundments'' and then contend that the land forms do not need to conform to the approximate original contour requirements. To prevent a misreading of the statute or regulations, the commenter recommended that we clarify that slopes of impoundments *are* a part of the contour of a mine site. The commenter also noted that many impoundments have been created for the purpose of avoiding the costs associated with spoil transport.

The commenter is correct that the term ''approximate original contour'' is often misconstrued and misapplied. As that commenter noted, the previously-referenced state geologist incorrectly excluded so-called ''impoundment slopes'' from his approximate original contour analysis because he apparently believed that any slope leading down to the water level of a permanent impoundment is part of the design criteria for a permanent impoundment.[748] He therefore interpreted our previous regulations as providing an exemption for these slopes from the requirement to restore the land to its approximate original contour for areas around permanent impoundments. This interpretation was erroneous, and we agree with the commenter that the postmining contours of the entire permit area should be evaluated for approximate original contour compliance.

It is not appropriate to create permanent impoundments merely for the purpose of avoiding the true cost of reclaiming the mined out area and restoring its approximate original contour. As the commenter suggests, the regulatory and statutory provisions dealing with impoundments, highwall elimination, spoil pile elimination, and drainage patterns should all be read together and applied together so that land affected by a surface coal mining and reclamation operation will be returned to the same approximate configuration that existed prior to any mining. In other words, land that was generally flat prior to any mining should be generally flat after the mining and reclamation operations are complete, although there may be some variations in site elevation after mining. The permittee should not propose, and the regulatory authority should not approve, the creation of land forms that were not present within the permit area prior to any mining. After reclamation operations are complete, the mined out area and the area affected by surface coal mining and reclamation operations should closely resemble the contours of the land that existed prior to any mining.

Permanent impoundments are allowable deviations from approximate original contour, but they are not an exemption from the requirement to return land to the approximate original contour that existed prior to any mining.[749] Permanent impoundments of an appropriate size and proper depth can provide significant wildlife habitat and recreational value. However, this does not mean permanent impoundments can be as large and as deep as a surface owner or a permittee might like them to be. The size and depth of permanent impoundments are limited by the requirements of final rule §§ 780.24 and 816.102(a)(3)(ii).

We have previously approved highwall retention provisions as part of the New Mexico and Utah regulatory programs.[750] Our proposed rule allowed for the retention of modified highwalls under limited circumstances. We received many comments on this proposal. Some commenters urged us to eliminate the proposed retention of modified highwalls. The commenters argued that highwalls are not natural and that, while they may serve as habitat for some wildlife, such as raptors, they present significant danger to inhabitants, livestock, and other wildlife. Other commenters opposed our proposed highwall retention provisions because, in the commenters' view, those provisions are not applicable to other regions and could be used as a loophole to circumvent the approximate original contour restoration requirement. Other commenters opined that a national rule was not needed because similar highwall retention provisions have been approved in state regulatory programs where the limited retention of highwalls is an acceptable method of restoring mined land to its approximate original contour.

Section 816.102(a)(3)(iii) of the final rule still allows for the retention of modified highwalls under limited circumstances. However, we have changed the rule in response to the commenters' concerns by addressing: (1) The nature of highwalls, (2) the effect of highwalls on wildlife, and (3) the danger that highwalls represent. We explain these changes further below.

We disagree that our proposed highwall retention provisions are inapplicable in regions outside of New Mexico and Utah, as commenters contended. Although the New Mexico and Utah programs allow for highwall retention under limited circumstances,

[747] *Farrell-Cooper Mining Company* v. *OSMRE,* OHA Docket No. 2013–1–R (Amended Decision of ALJ Sweitzer at 30, 31).

[748] So-called impoundment slopes are not part of the design criteria for permanent impoundments because such slopes play no role in the water-holding capacity of the impoundment. Only a small portion of the slope of an impoundment above the normal water line—the ''embankment slope''—is properly a part of the design criteria of an impoundment. The embankment slope is the slope from the normal waterline of the impoundment to the maximum water level where the water flows out the emergency spillway. *Id.*

[749] Permanent impoundments are allowed by section 515(b)(8) of SMCRA, 30 U.S.C. 1265(b)(8).

[750] 45 FR 86459 (Dec. 31, 1980), and 58 FR 48600 (Sept. 17, 1993), respectively.

New Mexico and Utah are not the only states where there are cliffs. This rule will have application any time a naturally occurring feature like a cliff is destroyed by coal mining operations, as long as the requirements of § 816.102(a)(3)(iii) are met. While our rule has nationwide applicability, we acknowledge that it will only affect regions and areas with cliffs. These provisions will have no effect at all on regions or areas where naturally occurring cliffs are not present.

We also disagree that this new regulatory provision could provide a ''loophole'' around the requirement to restore the land to its approximate original contour. As we explain below, the retention of modified highwalls is actually in harmony with the requirement to restore to approximate original contour.

While we agree that highwalls created as a part of a mining operation are not natural features, highwalls retained pursuant to paragraph (a)(3)(iv) are consistent with approximate original contour because they are allowed only when they are replacing natural cliffs which existed prior to any mining and then only if they are modified to simulate the preexisting cliffs.

Highwalls that are allowable postmining features are not formed by natural processes and must be modified, in some cases significantly, to closely resemble a natural landform. To ensure that this occurs, final § 816.106(a)(3)(iv)(A) requires the regulatory authority to establish conditions to ensure that the retained segment resembles similar premining landforms. As we discussed in the preamble to the proposed rule, the rule allows retention of modified highwall segments only if they replace cliffs and bluffs that existed prior to any mining.[751] We also clarified in the preamble to the proposed rule that we intend the rule to reconcile the potential conflict between the requirement to restore the approximate original contour and the requirement to eliminate all highwalls.[752] In effect, this means that the retention of highwalls is limited to a very specific set of circumstances and carries with it certain responsibilities.

As we proposed,[753] a permittee can only retain a highwall if the permittee destroyed naturally-occurring cliffs or bluffs while mining. Even then, a permittee must modify the highwall segments to *closely* resemble the features destroyed by mining.[754] This means that regulatory authorities must establish permit conditions to ensure that the retained segment restores the form of the destroyed natural cliff or bluff.[755] As we stated in the preamble to the proposed rule, this may require blasting ledges into the highwall face or creating microhabitats at the base of the highwall remnant.[756] Although we mentioned these two examples in the preamble to the proposed rule, we emphasize here that these examples are not intended to be exhaustive, and they will often not be sufficient to ensure that the retained segment resembles similar premining landforms.

Paragraph (a)(3)(iv)(A) further ensures that highwalls closely resemble the replaced features by making it clear that modified highwall segments are not authorized in excess of the number, length, and height needed to replace similar premining landforms. As a simple illustration, a two hundred foot cliff cannot be replaced with two one hundred foot highwalls. Likewise, five twenty foot bluffs cannot be replaced with a one hundred foot highwall. Rather, a highwall segment may be retained only if, under section (a)(3)(iv), it replaces similar natural landforms, and if, under (a)(3)(iv)(A), it closely resembles those similar premining landforms.

To avoid any confusion about the word ''similar'' in this context, we emphasize, as we did in the preamble to the proposed rule, that retained highwall segments must be modified to closely resemble *the features destroyed by mining* and to restore the ecological functions of *those features.*[757] Any attempt to replace a natural landform with a landform that is different in scale or type from the one destroyed by mining is inconsistent with the purpose and intent of this regulation.

As mentioned above, several commenters asserted that the retention of highwalls will have a negative effect on wildlife. For instance, commenters argued that, although highwalls may create habitat for raptors and cliff-dwelling wildlife, they may pose a danger to livestock and grassland wildlife. We share commenters' concern for the effect of highwalls on wildlife and note that this concern is addressed in the final rule. Final section 816.102(a)(3)(iv)(A) requires the regulatory authority to establish conditions to ensure that the retained segment *restores* the ecological niches that the premining landforms provided. If a cliff, prior to mining, provided an ecological niche for wildlife, the regulatory authority *must* establish conditions ensuring that the replacement highwall provides the same ecological niche. In the preamble to the proposed rule, we mentioned that permittees may need to blast ledges into the highwall face to provide nesting habitat for raptors and other cliff-dwelling habitat or create microhabitats at the base of a highwall remnant. Again, these examples are not exhaustive. Additionally, we added final paragraphs (a)(3)(iv)(B) and (C), which require that the retained highwall be stable and not create a safety hazard compared to the premining feature that it replaces.

We disagree with commenters who argue that limited highwall retention will not comply with SMCRA Section 515(b)(24). That section requires that surface coal mining and reclamation operations use the best technology currently available to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and to achieve enhancement of those resources where practicable. As we did in the preamble to the proposed rule,[758] we emphasize that the requirement to restore ecological niches will improve implementation of SMCRA 515(b)(24). In order to comply with both SMCRA and the final rule, operators must use the best technology available to identify ecological niches prior to mining and to restore them after mining. We also believe that the commenters' confusion about impacts on wildlife and habitat may stem from confusion surrounding the term ''ecological niches.'' The term is not defined in the regulation and is only used in §§ 816.102 and 817.102. In the proposed rule, we used the term without defining it, but intended it to be understood as it is used in common scientific parlance. We have retained that approach in the final rule.

As we discussed in the preamble to the proposed rule, ''ecological niche'' includes the wildlife habitat and ecological functions of the feature. Thus, no highwalls can be retained, as a commenter suggested, in areas where no cliffs or bluffs existed premining because such a highwall would provide a different ecological niche than premining landforms. Nor can a highwall be retained if it fails to fully restore the variety of environmental values provided by the destroyed premining landform. Succinctly, in order to restore an ecological niche, it is necessary to understand where the premining landforms provided

[751] 80 FR 44436, 444569 (Jul. 27, 2015).

[752] *Id.*

[753] *Id.*

[754] *Id.*

[755] *See Id.*

[756] *See Id.*

[757] 80 FF 44436, 44569 (Jul. 27, 2015).

[758] 80 FR 44436, 44569 (Jul. 27, 2015).

important environmental functions, how the premining landforms provided environmental values, and how a retained highwall segment must be modified to provide the *same* environmental values. The regulatory authority, for its part, must establish conditions ensuring that these values are understood and restored.

Some commenters suggested that, if highwalls are allowed to be retained, they should be no greater in length than the natural cliffs that existed prior to mining. These commenters further suggested that trails be cut through retained highwalls at intervals to allow for the passage of livestock and wildlife. We address the commenters' concern in final section 816.102(a)(3)(iv)(A). As previously discussed, this paragraph prohibits the retention of modified highwall segments that are longer than the premining landform. Again, as discussed above, this requirement cannot be avoided by combining or dividing the dimensions of premining natural landforms. Furthermore, we note that if trails are necessary to restoring the ecological niches provided by premining landforms, then those trails would be authorized under paragraph (a)(3)(iv)(A).

In response to concerns about the dangers posed by highwalls, we added paragraph (a)(3)(iv)(B). Commenters argued that due to the nature of some sedimentary geological formations, highwalls might prove to be unstable because they are susceptible to weathering. Paragraph (a)(3)(iv)(B) requires the regulatory authority to establish conditions to ensure that the retained segment is stable. To address similar safety concerns we also added paragraph (a)(3)(iv)(C). This provision requires the regulatory authority to establish conditions to ensure that the retained segment does not create an increased safety hazard compared to the premining feature that it replaces. The commenters further claimed that leaving highwalls would allow for the exposure of water bearing formations. In response, we added paragraph (a)(3)(iv)(D), which requires the regulatory authority to establish conditions to ensure that any exposure of water-bearing strata in the retained segment does not adversely affect the hydrologic balance.

Some commenters supported the principle of allowing remnant highwall features to replace cliffs destroyed during the mining process but questioned why it was necessary to include it in the federal final rule when several states have successfully incorporated this into their programs without a corresponding federal regulation. As we discussed in the preamble to the proposed rule, the rule harmonizes SMCRA section 515(b)(3)'s requirements to eliminate highwalls and restore the approximate original contour and clarifies any potential conflict between these requirements.[759] A federal final rule is necessary to ensure that these two provisions are properly harmonized, to avoid regulatory loopholes, and to provide consistency and clarity to affected regulated entities and the public. We understand that some states have incorporated elements of the final rule into their programs without a corresponding federal regulation, but that does not preclude us from adopting these provisions in our federal rule.

Many commenters argued that these provisions should be implemented at the discretion of state regulatory authorities. Regulatory authorities retain their traditional discretion under SMCRA to adopt provision that are no less stringent than SMCRA and no less effective than the Secretary's regulations in meeting the requirements of the Act. This final rule sets appropriate baseline requirements for regulatory authorities. Regulatory authorities must establish conditions to ensure that the retained segment: (1) Closely resembles the landforms that existed before any mining; (2) restores the ecological niches that those landforms provided; (3) is stable; (4) does not create an increased safety hazard compared to the feature that existed before any mining; and (5) does not adversely impact the hydrologic balance through the exposure of water-bearing strata. These are reasonable requirements that enhance implementation of SMCRA section 515(b)(3) and protect both the natural and human environment. Furthermore, state regulatory authorities retain their discretion to establish conditions that accomplish these requirements.

Some commenters argued that we should require public notice, a public hearing, and a comment period on any permit application, revision, or renewal that proposes to retain modified highwalls pursuant to paragraph (a)(3)(iv) in order to give local residents an opportunity to comment on potential changes to the local landscape. We have declined to change § 816.102 in response to this recommendation. Existing § 773.6 already provides these rights.[760]

Section 816.102(a)(5) requires permittees and operators to minimize erosion and water pollution. One commenter recommended that we revise this section to require the permittee or operator to ''significantly'' minimize erosion and water pollution. We have declined to make this revision, as it is unnecessary. The word ''minimize'' is used alone throughout the performance standards of SMCRA.[761] We are adopting this term in our regulations to more closely follow the mandates of SMCRA. Moreover, the word ''minimize,'' as commonly understood, indicates that the permittee or operator must reduce erosion and water pollution to the extent possible. Adding ''significantly'' would be redundant in this context. Thus, we are not accepting the commenter's suggestion to include the word ''significantly.''

Finally, in § 816.102(a)(5), we proposed to require that backfilling and grading be conducted to minimize water pollution, including discharges of parameters of concern for which no numerical effluent limitation or water quality standards have been established. One commenter argued that proposed § 816.102(a)(5) was too vague to implement. This commenter claimed that a permittee would not be able to understand, without numerical effluent limitations or water quality standards, how compliance will be determined, what effluent limits are appropriate, and whether grading and backfilling were being conducted appropriately. We understand the commenter's concern and deleted this language from the final rule. With this revision, § 816.102(a)(5) now requires the permittee to ''[m]inimize erosion and water pollution both on and off the site.'' As we stated in the preamble to the proposed rule, however, SMCRA requires the permittee to ''minimize the disturbances to the prevailing hydrologic balance at the mine site and in associated offsite areas and to the quality and quantity of water in surface and ground water systems both during and after surface coal mining operations and during reclamation.'' [762] This statutory requirement continues to apply to permittees regardless of changes to the regulatory text in this final rule.

Section 816.104: What special provisions for backfilling, grading, and surface configuration apply to sites with thin overburden?

We are finalizing section 816.104 as proposed. We received no comments on this section.

[759] 80 FR 44436, 44569 (Jul. 27, 2015).

[760] 30 CFR 773.6.

[761] 30 U.S.C. 1265.

[762] 30 U.S.C. 1265(b)(10).

Section 816.105: What special provisions for backfilling, grading, and surface configuration apply to sites with thick overburden?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.105,[763] which details special requirements applicable for operations with thick overburden. After evaluating the comments that we received, we are adopting the section as proposed.

Final Paragraph (b): Performance Standards

Two commenters expressed concern about the requirement in proposed paragraph (b)(1) that operators backfill the mined-out area to approximate original contour and then place the remaining spoil and waste materials on top of the backfilled area. One commenter alleged that because of this language, it was unclear whether the proposed rule allowed ''blending.'' Blending involves placing spoil material outside of the mined area as a transition between the location where overburden is removed, considering spoil swell factors, and the undisturbed surrounding terrain. The purpose of blending is to avoid any abrupt or potentially hazardous changes in elevation between the mined area and the existing, surrounding terrain. Blending can have beneficial impacts, such as reduced slope steepness throughout the reclaimed area. Spoil used for blending the reclaimed area into the surrounding terrain also helps to minimize the potential for excess spoil that would cause the burial of streams. This commenter stated that if blending is not allowed, it will greatly increase the spoil elevation in many areas. The commenter further opined that any provision prohibiting the practice of ''blending'' conflicts with SMCRA, which, according to the commenter, allows blending to achieve approximate original contour. In response, we direct the commenter to subpart (5) of this section, which requires the final surface configuration to ''blend[] into and complement[] the drainage pattern of the surrounding terrain to the extent possible.'' This language specifically allows blending. We also note that this section applies only to sites with thick overburden.

Another commenter indicated that the language of paragraph (b)(2) is contradictory. That paragraph states that operators must ''grade the backfilled area to the lowest practicable grade that is ecologically sound, consistent with the postmining land use, and compatible with the surrounding region.'' It further states that ''[n]o slope may exceed the angle of repose.'' The commenter specifically states that allowing the overstacking of backfill to a height greater than the approximate original contour, but never more than the angle of repose, conflicts with achieving the lowest practicable grade. In response, we note that the commenter appears to misunderstand the purpose of this section. Section 816.105 only applies to the limited circumstance of a surface mine with thick overburden. This section was specifically intended to recognize that in the limited circumstance of thick overburden, it may not be possible to achieve the approximate original contour configuration that would otherwise be required. In the limited situation of thick overburden, § 816.105 allows for placement of spoil within the mined area in a surface configuration in a manner that will probably not closely resemble the general surface configuration of the land prior to any mining. As a result, the final reclaimed surface configurations might exceed, in both contour height and slope steepness, a normal approximate original contour configuration for mine sites that do not have thick overburden. However, while this regulation specifically allows the placement and overstacking of spoil within the mined area at these sites, it recognizes there are additional factors that must be considered before placing spoil beyond normally allowable limits. These additional factors include the avoidance of the creation of slopes that would be considered unstable—but never to exceed the angle-of-repose— and the avoidance of the creation of slopes that would be considered ecologically unsound. Moreover, even though steeper-than-normal slopes would likely be created for surface mining operations that have thick overburden, the grading of spoil materials to the lowest practicable grade is still a reasonable overall target. These qualifiers to the grading of overstacked spoil will offer reasonable protection in areas of thick overburden.

Section 816.106: What special provisions for backfilling, grading, and surface configuration apply to previously mined areas with a preexisting highwall?

We are finalizing section 816.106 as proposed. We received no comments on this section.

Section 816.107: What special provisions for backfilling, grading, and surface configuration apply to operations on steep slopes?

We received no comments on this section. Nevertheless, we made one modification from the proposed rule. Proposed paragraph (d) provided that, ''you must handle woody materials in accordance with § 816.22(f) of this part. You may not bury them in the backfill.'' [764] We have removed the last sentence because it is in conflict with § 816.22(f)(ii) of the final rule. Section 816.22(f)(ii) provides an exception that allows material to be buried in the backfill when significant populations of invasive or noxious non-native species are present and it is necessary to bury the material at a sufficient depth to prevent regeneration or proliferation of undesirable species. Removal of ''[y]ou many not bury them in the backfill'' makes §§ 816.107 and 816.22 consistent in their handling of organic matter.

Section 816.111: How must I revegetate areas disturbed by mining activities?

We proposed to revise and restructure previous § 816.111.[765] After evaluating the comments that we received, we are adopting the section as proposed, with a few modifications. Some commenters expressed concern that this section does not require the vegetative cover to be ''of the same seasonal variety native to the area of land to be affected,'' as required by section 515(b)(19) of SMCRA.[766] Previous § 816.111(b)(2) required that vegetation have the same ''seasonal characteristics of growth'' as the native plant communities they replace. This requirement was part of a rule that was promulgated in 1983.[767] We did not change this requirement in the final rule. Final § 780.12(g)(3)(iv) retains the phrase ''seasonal characteristics of growth.'' The basis for the use of the term ''seasonal characteristics of growth'' instead of ''seasonal variety'' is set forth in the 1982 preamble to the proposed rule that resulted in, the 1983 final rule. In that preamble, we explained that ''seasonal variety'' in section 515(b)(19) of SMCRA [768] and ''seasonal characteristics of growth'' have essentially the same meaning, but that ''seasonal characteristics of growth'' is more easily understood, and refers to the major season of growth for herbaceous species.[769] This is still true;

[763] 80 FR 44436, 44571 (Jul. 27, 2015).

[764] 80 FR 44436, 44668 (Jul. 27, 2015).

[765] 80 FR 44436, 44572–73 (Jul. 27, 2015).

[766] 30 U.S.C. 1265(b)(19).

[767] 48 FR 40140, 40145 (Sept. 2,1983).

[768] 30 U.S.C. 1265(b)(19).

[769] 47 FR 12596 (Mar. 23, 1982).

therefore, we have not made modifications to the final rule in response to the commenter's concern.

Some commenters claimed that the proposed rule appeared to have little applicability outside Appalachia and suggested that revegetation issues should be resolved on a state-by-state basis. Section 780.12(g) is sufficiently flexible to accommodate special circumstances in any location within the nation, as well as geographic variability within an individual state program. Our reference to circumstances or research from Appalachia or other areas of the nation should not be misconstrued to mean those locations are the sole focus of these regulations.

Several commenters recommended that we not codify the revegetation requirements in the national regulations, but instead encourage the development of rules, policies, or procedures on a state-by-state basis. We have declined to make this change. The regulations provide sufficient discretion for individual states and tribes to accommodate their unique conditions. For instance, the revegetation plan permitting requirements within § 780.12(g)(2)(i) mandate that the proposed vegetative cover be consistent with the plant communities described in the permit application. The reference to ''native'' plant communities in this section makes clear that the revegetation requirements are based on site-specific conditions. Therefore, we have not made changes to the rule as a result of these comments.

Several commenters alleged that § 816.111 is inconsistent with sections 515(b)(19) and (20) of SMCRA.[770] SMCRA section 515(b)(19) allows the use of ''introduced species'' instead of native species where such use is ''desirable and necessary to achieve the approved postmining land use plan.'' SMCRA section 515(b)(20) creates another limited exception to the requirement to use native species when the regulatory authority issues ''a written finding approving a long-term, intensive, agricultural postmining land use.'' According to these commenters, the statute provides no other exception from the requirement to establish a diverse, effective and permanent vegetative cover of the same seasonal variety native to the area. These commenters argue that § 816.111(a)(3) and (a)(4) are inconsistent with SMCRA because they would create exceptions to the revegetation requirements for rock piles, water areas, and other non-vegetation features and for any approved ''impervious surface'' in support of the postmining land use.

We disagree that there is any inconsistency. Our regulations at § 816.111 are fully consistent with SMCRA. SMCRA recognizes the legitimacy of appurtenant features that support the postmining land use that might not support any vegetation, such as water features, rock piles for wildlife habitat, or parking lots. These non-vegetative features are authorized by section 515(b)(2) of SMCRA,[771] which allows for higher or better postmining land uses. These features are allowable pursuant to § 701.5, which defines ''land use'' as ''specific uses or management-related activities . . . [which] may include land used for support facilities that are an integral part of the use.'' Additionally, it would be unreasonable to expect parking lots and other impervious surfaces or water features such as stock ponds that are legitimate and integral parts of the approved postmining land use to support vegetation.[772]

One commenter expressed concern about the apparent removal of language relative to the revegetation of lands designated for cropland postmining land use. Several commenters stated that the proposed rule is problematic because sixty percent of all permitted land is cropland, and exemptions are necessary in order to use non-native species to accommodate cropland postmining land uses. In response, we note that provisions containing exceptions to the general requirement to use native species in order to achieve the postmining land use, including cropland use, have been retained in the rule. The language relating to cropland revegetation previously found within § 816.111 has been relocated from the performance standards to the permit requirements and is now part of the revegetation plan requirements at § 780.24(a)(2). The provisions related to postmining land uses (including cropland) can now be found in the final rule at § 780.12(g)(3)(i) and (g)(5) (proposed as § 780.12(g)(6)).

Proposed paragraph (b) requires that the reestablished vegetative cover comply with the revegetation plan approved in accordance with proposed § 780.12(g). It further requires in paragraph (b)(4) that vegetative cover ''[b]e capable of stabilizing the soil surface and, in the long term, preventing erosion in excess of what would have occurred naturally had the site not been disturbed.'' Paragraph (b)(5) requires that the vegetative cover ''[n]ot inhibit the establishment of trees and shrubs when the revegetation plan approved in the permit requires the use of woody plants.'' We invited comment on whether proposed paragraphs (b)(4) and (5) strike the proper balance between controlling erosion and promoting the establishment of native trees and shrubs. Commenters indicated that the language provided sufficient balance, and we are adopting the rule as proposed.

We received comments that the requirement in paragraph (b)(4), which is discussed above, is subjective and would be impossible to achieve. We acknowledge that background erosion levels on undisturbed sites vary from region to region and site to site, depending on geology, soils, topography, and climate. The final rule provides an exception for unavoidable erosion that is a consequence of the natural conditions of the site, if the extent of unavoidable erosion is determinable by comparison to other undisturbed areas with the same or similar conditions. This requirement is reasonable and allows the regulator to consider regional differences. We are not changing the rule in response to this comment.

In response to paragraph (b)(5), a commenter inquired as to who decides whether the re-established vegetative cover inhibits the establishment of trees and shrubs. The regulatory authority, based on state specific regulations contained in the approved program, has the discretion to make this determination.

Commenters also objected to the requirement in proposed paragraph (d)(2) to use native hay mulch to the extent it is commercially available. While noting that ''hay mulch'' is not a defined term, these commenters stated that the term typically refers to grass and legumes cut, dried, and stored for use with livestock, and not to straw mulch (baled stalks of a harvested wheat or similar crop), which is more typically used to protect soils. A commenter also raised a question regarding commercial availability of native hay seed stock for revegetation and questioned the efficacy of this requirement. We agree with the commenters that the use of ''hay mulch,'' in consideration of its commonly understood meaning, is not preferred as a mechanism for protecting soils, and certainly should not be mandated. Therefore, we have eliminated the requirement to use ''native hay mulch.''

[770] 30 U.S.C. 1265(b)(19) and (20).

[771] 30 U.S.C. 1265(b)(2).

[772] 30 U.S.C. 1265(b)(19).

Previous § 816.113: Revegetation: Timing

We have removed and reserved previous § 816.113 for the reasons discussed in the preamble to the proposed rule. Specifically, previous § 816.113 has been redesignated and moved to final rule § 816.111.[773]

Previous § 816.114: Revegetation: Mulching and Other Soil Stabilizing Practices

We have removed and reserved previous § 816.114 for the reasons discussed in the preamble to the proposed rule. Specifically, previous § 816.114 has been redesignated moved to final rule § 816.111.[774]

Section 816.115: How long am I responsible for revegetation after planting?

We are finalizing § 816.115 as proposed. We received no comments on this section.

Section 816.116: What requirements apply to standards for determining revegetation success?

As discussed in the preamble to the proposed rule, we proposed to modify our regulations at § 816.116 about the standards for determining revegetation success.[775] After evaluating the comments that we received, we are adopting the section as proposed, with the following exceptions and explanations.

We proposed to reorient our previous regulations concerning revegetation success standards away from a focus on a single postmining land use, which may or may not be implemented, toward standards pertinent to a determination of whether the site has been restored ''to a condition capable of supporting the uses which it was capable of supporting prior to any mining, or higher or better uses of which there is reasonable likelihood,'' as required by section 515(b)(2) of SMCRA.[776] Commenters disagreed with this proposed switch in focus and claimed that it would be contrary to statutory requirements. The commenters opined that sections 515(b)(19) and (20)[777] set the minimum requirements for revegetation, and we may not establish different requirements through a rulemaking. Similarly and without elaboration, commenters also opined that the proposed standards for determining revegetation success—that the vegetation be ''adequate to demonstrate restoration of premining land use capability and must reflect'' the revegetation plan—are inconsistent with 515(b)(19) of SMCRA. We disagree; this section, along with other sections of the final rule, actually implements both of these statutory sections. In particular, this section defines how the regulatory authority will determine that the reclamation performed at the site complies with these sections 515(b)(19) and (20) of SMCRA:[778] Through standards for evaluating revegetation success and statistically valid sampling techniques for measuring revegetation success. Other sections of the rule, such as § 780.12(g), which is cross-referenced in paragraph (b), require a diverse, effective, permanent vegetative cover that is consistent with the native vegetative plant communities and natural succession process within the permitted and surrounding areas.

Additionally, some commenters asserted that the proposed regulations, which focus on establishing native vegetation, do not sufficiently allow for the variety of postmining land uses that exist outside the forested regions of Appalachia. These commenters suggested that the regulations do not provide for a variety of agricultural lands, reestablishment of native grasslands, certain types of managed wildlife areas, industrial lands, commercial lands, or recreational lands. The commenters also claimed these requirements have nothing to do with stream protection. In response, we note that the reestablishment of native species vegetation is of primary importance in reclaiming mined lands, and that the reclamation of these lands can have significant impacts on a stream's watershed and the health of that stream. Benefits to streams from the revegetation of terrestrial lands include the return of the appropriate surface water flow regimes and reestablishment of the proper nutrients and organic matter to the aquatic habitat. Regardless of the postmining land use, the final regulations are sufficiently flexible to allow planting of appropriate plant species specific to the various regions and local habitats, within limitations identified at § 780.12(g).

Final paragraph (a) is substantively identical to our previous regulation and provides the regulatory authority the discretion to select standards for revegetation success and statistically valid sampling techniques for measuring that success. One commenter requested that we remove the requirement that statistically valid sampling techniques must be used to measure revegetation success because it may be difficult to comply with this requirement in small areas with a limited sample size. We are not making any changes as a result of this comment. For a sample to be scientifically valid, it must present results within acceptable bounds of statistical certainty. Each regulatory authority retains the discretion to approve a model appropriate to the circumstances, as long as it uses statistically valid sampling techniques. For example, current practices, when appropriate, allow for small areas to be analyzed along with other areas; this type of grouping provides the larger sample size that will support the use of valid sampling techniques.

Commenters also expressed concern about the requirement in proposed § 816.116(b) to demonstrate restoration of premining land use capability using revegetation success standards. These commenters alleged that this requirement would impose an unnecessary burden placed on the operators and regulatory authorities, as these standards would be hard to quantify other than by planting and sampling the vegetation of many different seed mixes to determine if the premining capability has returned. After consideration, we agree and have eliminated the reference to revegetation success as part of an adequate demonstration of the affected land's premining capability.

Section 816.116(b)(4) provides that the standards of revegetation success must reflect the postmining land use established under section 780.24, but only to the extent that the approved postmining land use will be implemented before final bond release under §§ 800.40 through 800.43 of this chapter. Otherwise, the site must be revegetated in a manner that will restore native plant communities, and the revegetation success standards for the site must reflect this requirement. Commenters claim that this paragraph inappropriately allows the regulatory authority to create exceptions to the requirements of section 515(b)(19).[779] These commenters also asserted that sections 515(b)(19) and 515(b)(20) of SMCRA[780] strictly limit exceptions to the revegetation requirements to only two situations; where the permittee may use introduced species when desirable and necessary to achieve the approved postmining land use plan, and where the regulatory authority has approved a long-term, intensive, agricultural postmining land use. These commenters

[773] 80 FR 44436, 44574 (Jul. 27, 2015).
[774] 80 FR 44436, 44574 (Jul. 27, 2015).
[775] 80 FR 44436, 44574–76 (Jul. 27, 2015).
[776] 30 U.S.C. 1265(b)(2).
[777] 30 U.S.C. 1265(b)(19) and (20).
[778] 30 U.S.C. 1265(b)(19) and (20).
[779] 30 U.S.C. 1265(b)(19).
[780] 30 U.S.C. 1265(b)(19) and (20).

also opposed the exemption, now in final rule 816.116(c)(3), for ''land actually used for cropland'' because cropland is not one of the two exemptions from the revegetation requirements set out in SMCRA sections 515(b)(19) and 515(b)(20).[781] We are not changing the rule in response to these comments because they fail to take into account other relevant portions of the statute. As we discussed in our response to comments made on § 816.111, which is closely related to § 816.116, our regulations at § 816.116(b)(4), (c)(3), and (g) are also directly and specifically authorized by section 515(b)(19) of SMCRA.[782] These paragraphs base revegetation success standards on the postmining land use that is achieved at the time of final bond release. If the permittee achieves postmining land use before final bond release, consistent with section 515(b)(19) of SMCRA,[783] its success in doing so will count toward the measurement of its revegetation success. If, however, it does not achieve the postmining land by that time, it will need to return the site to native plants. This is consistent with section 515(b)(19) of SMCRA [784] because it allows the permittee to use introduced species only as necessary to achieve the postmining land use. Of course, our regulations at paragraph (c)(3), as described in the preamble discussion of § 816.111, also include an exception for ''long-term intensive agricultural postmining land use'' to give effect to section 515(b)(20) of SMCRA.[785]

In addition to failing to give effect to section 515(b)(19) of SMCRA,[786] the interpretation espoused by the commenters fails to give effect to section 515(b)(2) of SMCRA [787] which, as previously mentioned, requires restoration of land ''to a condition capable of supporting the uses which it was capable of supporting prior to any mining, or higher or better uses of which there is a reasonable likelihood. . . .'' As explained in Part V of the preamble to the proposed rule,[788] this section is consistent with section 515(b)(2), (19), and (20) [789] by requiring revegetation success standards that support uses which the site was capable of supporting prior to any mining or reasonably likely higher or better uses.[790] Thus, the regulation as we are finalizing, is designed in accordance with the Act.

Some commenters requested that we retain the existing regulations in § 816.116 regulations pertaining to revegetation standards and introduced species because they adhere much more closely to SMCRA than the proposed regulations. According to the commenters, SMCRA requires revegetation standards to focus on the approved postmining land use. We disagree. Proposed and final rule § 816.116(b) takes into account both the postmining land use approved by the regulatory authority and the premining land use capability of the permitted site. These shared goals appear within SMCRA at sections 515(b)(19) and 515(b)(2).[791] These commenters also claim that under SMCRA a native vegetative cover is necessary, but ''introduced species may be used in the revegetation process where desirable and necessary to achieve the approved postmining land use plan'' regardless of when that plan is completed; therefore, under SMCRA, revegetation with native species is only necessary where there is no approved post-mining land use, and conversely, when there is a post-mining use, revegetation should be consistent with that use and not require native vegetation. We disagree. These commenters have misinterpreted SMCRA. In all cases, sections 508(a)(3) and (4) of SMCRA [792] require identification of a postmining land use before a permit is approved; therefore, to require native species only when there is no postmining land use is illogical. We have further discussed native species use in this preamble within final rule § 780.16(c), above.

Other commenters criticized paragraph (d) for allegedly being contrary to section 515(b)(19) of SMCRA.[793] Paragraph (d) provides that ''ground cover, production, and stocking of the revegetated area will be considered equal to the approved success standards for those parameters when the measured values are not less than 90 percent of the success standard.'' These commenters interpret section 515(b)(19) of SMCRA [794] to require that the minimum revegetation success rate needs to be at least equal in extent of cover to the natural vegetation of the area. We are adopting this section as proposed. Paragraph (d), however, which was previously located at § 816.116(a)(2), has been a part of our rules since 1979 and has not been substantively changed since that time. The preamble to the 1979 rule explains that we adopted the 90% equivalency provision in recognition of the fact that climatic variations may affect productivity in the two consecutive growing seasons during which production is measured to determine revegetation success.[795] After review, we have determined that this reasoning is still valid and are retaining this provision.

Finally, the commenters considered paragraph (g) to be inconsistent with § 515(b)(19) because, according to them, it would inappropriately exempt areas that are ''to be developed for industrial, commercial, or residential use'' from the revegetation requirements. We are adopting paragraph (g) as proposed. Paragraph (g) exempts areas with impervious surfaces like roads, parking lots, and other structures, which are frequently part of industrial, commercial, and residential uses, from counting against the measurement of revegetation success. Removing this requirement is impracticable because it is impossible to revegetate these types of surfaces. To the extent that portions of the site are not covered in an impervious surface, those portions must be revegetated sufficient to ''control erosion.''

In addition to comments received about how this section relates to sections 515(b)(19) and (20) of SMCRA,[796] we received five other comments on this section. First, a commenter requested that we use the term ''reclamation'' instead of ''restoration'' in the introductory language to paragraph (b). As discussed above, we have deleted the clause to which the commenter was referring. As revised, this paragraph requires assessment of the success of revegetation in relation to establishing approved postmining mining land use; it does not require that the vegetation demonstrate that premining capability has been restored.

Second, a commenter expressed concern that the proposed rule would require reclamation that will support both the premining land use and any higher or better uses selected in the reclamation plan. Specifically, the commenter explained that if the ''approved postmining land use is pasture, but the land was used for cropland before mining, proposed §§ 780.12(e) and 816.22, require that the soil be reconstructed in a manner that would restore the site's capability to support cropland.'' The commenter

[781] 30 U.S.C. 1265(b)(19) and (20).
[782] *Id.*
[783] 30 U.S.C. 1265(b)(19).
[784] *Id.*
[785] 30 U.S.C. 1265(b)(20).
[786] 30 U.S.C. 1265(b)(19).
[787] 30 U.S.C. 1265(b)(2).
[788] 80 FR 44436, 44446 (Jul. 27, 2015).
[789] 30 U.S.C. 1265(b)(2), (19), and (20).
[790] 30 U.S.C. 1265(b)(2).
[791] 30 U.S.C. 1265(b)(2) and (b)(19).
[792] 30 U.S.C. 1258(a)(3) and (4).
[793] 30 U.S.C. 1265(b)(19).
[794] 30 U.S.C. 1265(b)(19).
[795] 44 FR 14902,15237 (Mar. 13, 1979).
[796] 30 U.S.C. 1265(b)(19) and (20).

disagreed with this requirement because it requires additional reclamation on the basis of pure speculation that the site might one day support a different land use. We decline to make changes to § 811.116 based on the comment. Section 508(a)(2) of SMCRA [797] requires the development of a reclamation plan demonstrating the capability of the land prior to any mining to support a variety of uses. Similarly, section 515(b)(2) of SMCRA [798] requires that the reclamation actually ''restore land affected to a condition capable of supporting the uses which it was capable of supporting prior to any mining, or higher or better uses of which there is reasonable likelihood, as long as such use or uses do not present any actual or probable hazard to public health or safety or pose any actual or probable threat of water diminution or pollution, and the permit applicants' declared proposed land use following reclamation is not deemed to be impractical or unreasonable, inconsistent with applicable land use policies and plans, involves unreasonable delay in implementation, or is violative of Federal, State, or local law [;]''. Therefore, our regulations requiring the restoration of the premining capability of the land is in harmony with SMCRA. In most cases, all that is needed to restore the premining capability of the land is to restore appropriate topsoil thickness and rooting medium—not revegetation. As explained, restoring the capability of the land to support a variety of postmining land uses beyond the immediately selected postmining land use is in fact what SMCRA requires. The revegetation requirements apply only to the postmining land use, not to other uses that the land would have been capable of before mining.

Third, several commenters suggested that proposed paragraph (b)(4), which would have required the establishment of certain types of vegetation before the end of the vegetation responsibility liability period, should be changed to require establishment of that vegetation ''prior to bond release.'' These commenters noted that certain land uses, such as industrial or commercial uses, have no vegetation responsibility period. To address this comment, we are changing the language within paragraph (b)(4) to require the achievement of all postmining land use requirements prior to final bond release instead of the expiration of the revegetation liability period. We also point out, however, that although certain features, such as buildings, roads, parking lots, and bodies of water that do not support vegetation are not directly subject to the revegetation requirements, industrial and commercial postmining land uses may include areas that require revegetation and are subject to the revegetation requirements.

Fourth, several commenters encouraged us not to set national revegetation standards because of drastic differences between the regions with respect to vegetation types, precipitation amounts, humidity, and temperature. We recognize the differences in vegetation across the nation. The final rule includes minimum requirements for native species that allow for the differences between the regions with specific exceptions for introduced species as established within § 780.12(g)(3) and (4). Moreover, we have retained the measured values of the success standards from our previous regulations. As prescribed in § 780.12(g), it is primarily mine operators who will determine the types of vegetation at each site as approved by the regulatory authority.

Finally, a fifth commenter asserted, with respect to paragraph (c), that while it is possible after mining to establish native plant communities that provide a diverse, effective, and permanent vegetative cover comprised of species native to the area, those plant communities often differ significantly from the ones that existed prior to mining, primarily because of the requirements in our rules to replace the topsoil in a uniform thickness. However, in § 816.22(e)(1)(v) of our rule, we have provided an exception to this requirement that allows the thickness to vary when consistent with the postmining land use and when variations are necessary or desirable to achieve specific revegetation goals and ecological diversity, as set forth in the revegetation plan developed under § 780.12(g) of this chapter and approved as part of the permit. Therefore, uniform soil thickness should not be a barrier to the revegetation requirements in § 780.12(g).

Paragraphs (c)(1) and (2) require the description of the diversity and the areal extent of species respectively. One commenter recommended that these requirements not apply to land actually used for cropland after the completion of regrading and redistribution of soil materials. We disagree because these data are necessary to demonstrate compliance with the § 816.97(g) performance standards. Under that provision, in instances where cropland is the postmining land use and where appropriate for wildlife-management and crop-management practices, the operator must intersperse the crop fields with trees, hedges, or fence rows to break up large blocks of monoculture and to diversify habitat types for birds and other animals. Thus, we are retaining paragraphs (c)(1) and (2) as proposed.

A commenter requested that we define the phrase ''areal distribution,'' as used in paragraph (c)(2) where we require that the standards for determining revegetation success include the areal distribution of species required to be present. We disagree that a specific regulatory definition of this term is needed. In general, this paragraph requires that the replanting of the vegetation needs to resemble the general spatial distribution of plant species as they would be found in a natural setting. For example, some species may clump or grow in clusters, while others may be scattered or more evenly distributed; this premining vegetative characteristic should be exhibited within the reclaimed area as well.

Proposed paragraph (d) was substantively identical to the second sentence of paragraph (a)(2) of our previously existing regulations which established statistical confidence requirements for revegetation sampling techniques and statistical adequacy standards for determining when revegetation success standards have been met for ground cover, production, and stocking. In paragraph (d) of the preamble,[799] we invited comment on whether our statistical confidence interval requirements are appropriate in all situations. Several commenters responded that the current statistical confidence intervals are effective; some of these commenters who supported them also considered them unnecessary in some cases. Other commenters considered them ineffective and unnecessary. Commenters suggested that due to regional variability, a single statistical confidence interval would not be appropriate nationally. Statistical confidence is important to prove whether revegetation has been successful. A confidence interval is a range of values describing the uncertainty surrounding an estimate, so it is merely a way to numerically represent the certainty or uncertainty in any given situation. Our regulation requires revegetation that is ''not less than 90 percent of the success standard, using a 90-percent statistical confidence interval.'' It is the mining operator and the regulatory authority who will determine what that ''success standard''

[797] 30 U.S.C. 1258(a)(2).

[798] 30 U.S.C. 1265(b)(2).

[799] *See* 80 FR 44436, 44575 (Jul. 27, 2015).

is, a standard that should take into account regional concerns and ecological conditions. It is also the mining operator and the regulatory authority that, in the reclamation plan, will choose the actual vegetation type or density that the operator must achieve. Our rule merely establishes in a way that is statistically valid throughout the country that the permittee has complied with that plan. We have, therefore, made no change to the requirement and are adopting this provision as proposed.

Section 816.131: What actions must I take when I temporarily cease mining operations?

We are finalizing § 816.131 as proposed. We received no comments on this section.

Section 816.132: What actions must I take when I permanently cease mining operations?

We are finalizing § 816.132 as proposed. We received no comments on this section.

Section 816.133: What provisions concerning postmining land use apply to my operation?

We are finalizing § 816.133 as proposed. We received no comments on this section.

Section 816.150: What are the general requirements for haul and access roads?

Final Paragraph (b): Performance Standards

Proposed paragraph (b)(4) prohibited all haul or access roads from causing or contributing to, directly or indirectly, violations of water standards applicable to receiving waters. We have revised final paragraph (b)(4) to clarify, that each road must be located, designed, constructed, used, maintained, and reclaimed so that it does not violate *any* applicable water-quality standards adopted under the authority of section 303(c) of the Clean Water Act, not just applicable receiving waters. This is consistent with the remainder of the final rule. We received no comments on this section.

Section 816.151: What additional requirements apply to primary roads?

We are finalizing § 816.151 as proposed. We received no comments on this section.

Section 816.180: To what extent must I protect utility installations?

We are finalizing § 816.180 as proposed. We received no comments on this section.

Section 816.181: What requirements apply to support facilities?

We are finalizing § 816.181 as proposed. We received no comments on this section.

Previous § 816.200: Interpretative Rules Related to General Performance Standards

We have removed and reserved previous § 816.200 for the reasons discussed in the preamble to the proposed rule.[800]

M. Part 817—Permanent Program Performance Standards—Underground Mining Activities

Section 817.1: What does this part do?

With the exception of altering the title of this section for clarity, we are finalizing § 817.1 as proposed. We received no comments on this section.

Section 817.2: What is the objective of this part?

We are finalizing § 817.2 as proposed. We received no comments on this section.

Section 817.10: Information Collection

Section 817.10 pertains to compliance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* We are adding contact information for persons who wish to comment on these aspects of part 817.

Section 817.11: What signs and markers must I post?

Final Paragraph (a): General Specifications

We inadvertently referred to ''surface'' mining activities in the proposed rule. In the final rule we have replaced ''surface'' with ''underground.'' With the exception of this modification, we are finalizing § 817.11 as proposed. We received no comments on this section.

Section 817.13: What special requirements apply to drilled holes, wells, and exposed underground openings?

This section requires the mine operator to cap, seal, backfill, or otherwise properly manage each shaft, drift, adit, tunnel, exploratory hole, entryway, or other opening to the surface from underground. A commenter alleged that the proposed rule should be updated to provide clarification on performance standard requirements where an abandoned mine land site exists (and associated sinkholes, drifts, adits) within an active permit area, but the applicant has no intention to re-mine or otherwise disturb the abandoned mine land. The commenter suggested that the applicant should not be required to reclaim an abandoned mine land site just because it is located within an active permit. Final paragraph (e)(1) requires that the permittee permanently seal any underground opening unless the regulatory authority approves use of the hole or well for water monitoring purposes or authorizes other management of the hole or well. Final paragraph (f)(1) requires that the permittee seal these underground openings unless the regulatory authority approves another use and finds that it will not adversely affect the environment or public health and safety. An opening to an underground mine, pre-law or not, presents a risk to public health and safety. For this reason, we are finalizing § 817.13 as proposed.

Section 817.22: How must I handle topsoil, subsoil, and other plant growth media?

We have modified this section; however, these modifications are discussed in final rule § 816.22, which is the surface mining counterpart to § 817.22.

Section 817.34: How must I protect the hydrologic balance?

We have modified this section; however, these modifications are discussed in final rule § 816.34, which is the surface mining counterpart to § 817.34. In addition, as discussed in the general comments Section IV. K. we have added language to final rule § 817.34(a)(2). This new language makes it clear that while underground operations must prevent material damage to the hydrologic balance outside the permit area, if a regulatory authority determines that the permit application affirmatively demonstrates that the proposed operation, which may include temporary subsidence that can be repaired, has been designed to prevent material damage of the hydrologic balance outside the permit area, pursuant to § 817.121(c), the permit may be issued.

Section 817.35: How must I monitor groundwater?

We have modified this section; however, these modifications are discussed in final rule § 816.35, which is the surface mining counterpart to § 817.35.

[800] 80 FR 44436, 44576 (Jul. 27, 2015).

Section 817.36: How must I monitor surface water?

We have modified this section; however, these modifications are discussed in final rule § 816.36, which is the surface mining counterpart to § 817.36.

Section 817.37: How must I monitor the biological condition of streams?

We have modified this section; however, these modifications are discussed in final rule § 816.37, which is the surface mining counterpart to § 817.37.

Section 817.38: How must I handle acid-forming and toxic-forming materials?

Section 817.38 describes how the operator must handle acid-forming and toxic-forming materials. Although many aspects of this section are substantively identical to the surface mining counterpart found at § 816.38, there are several differences that resulted in unique comments for this section. We received several comments from regulatory authorities and operators, recommending that we delete paragraph (a) of this section. Commenters asserted that paragraph (a) erroneously presupposes that all coal seams and the pit floor are acid forming and toxic forming materials. The commenters were particularly concerned with the requirement to specify that exposed coal seams and the stratum immediately beneath the lowest coal seam mined must be covered with a layer of compacted material with a hydraulic conductivity at least two orders of magnitude lower than the hydraulic conductivity of the adjacent less-compacted spoil to minimize contact and interaction with water. For the same reasons set forth in our preamble to § 816.38, we agree in part with the commenters.

We are revising proposed paragraph (a) to align more with underground mining issues related to the handling acid-forming or toxic forming materials. We are retaining the first part of paragraph (a) with a few changes that are specific to underground mining. We have revised paragraph (a) to clarify that for the face-up area you must identify potential acid-forming and toxic-forming materials in overburden strata and the stratum immediately below the coal seam to be mined. If the stratum immediately below the coal seam to be mined contains acid-forming or toxic-forming material, you must develop a plan to prevent any adverse hydrologic impacts that might otherwise develop as a result of exposure of that stratum.

The rationale for requiring a plan to prevent any adverse hydrologic impacts that might otherwise develop as a result of exposure of that stratum is the same discussed in preamble for § 816.38.

Several commenters questioned why paragraph (c) was included in § 817.38 of the proposed rule. They asserted that these requirements apply to surface coal mining not underground mining. We agree. The inclusion of paragraph (c) was an error and we have deleted paragraph (c) from the final rule and renumbered the other paragraphs accordingly.

Section 817.39: What must I do with exploratory or monitoring wells when I no longer need them?

To accommodate renumbering and final rule changes in part 800, we have renumbered references to part 800 in this section. With the exception of this renumbering, we are finalizing § 817.39 as proposed. We received no comments on this section.

Section 817.40: What responsibility do I have to replace water supplies?

We have modified this section; however, these modifications are discussed in final rule § 816.40, which is the surface mining counterpart to § 817.40.

Section 817.41: Under what conditions may I discharge water and other materials into an underground mine?

We have modified this section; however, these modifications are discussed in final rule § 816.41, which is the surface mining counterpart to § 817.41.

Section 817.42: What Clean Water Act requirements apply to discharges from my operation?

We have modified this section, including the title; however, these modifications are discussed in final rule § 816.42, which is the surface mining counterpart to § 817.42.

Section 817.43: How must I construct and maintain diversions?

We have modified this section; however, these modifications are discussed in final rule § 816.43, which is the surface mining counterpart to § 817.43.

Section 817.44: What restrictions apply to gravity discharges from underground mines?

We are finalizing § 817.44 as proposed. We received no comments on this section.

Section 817.45: What sediment control measures must I implement?

We have modified this section; however, these modifications are discussed in final rule § 816.45, which is the surface mining counterpart to § 817.45.

Section 817.46: What requirements apply to siltation structures?

We have modified this section; however, these modifications are discussed in final rule § 816.46, which is the surface mining counterpart to § 817.46.

Section 817.47: What requirements apply to discharge structures for impoundments?

We have modified this section; however, these modifications are discussed in final rule § 816.47, which is the surface mining counterpart to § 817.47.

Section 817.49: What requirements apply to impoundments?

We have modified this section; however, these modifications are discussed in final rule § 816.49, which is the surface mining counterpart to § 817.49.

Section 817.55: What must I do with sedimentation ponds, diversions, impoundments, and treatment facilities after I no longer need them?

We have modified this section; however, these modifications are discussed in final rule § 816.55, which is the surface mining counterpart to § 817.55.

Section 817.56: What additional performance standards apply to mining activities conducted in or through an ephemeral stream?

Section 817.56, like § 816.56, is a new section that we have added to address confusion expressed by commenters about which requirements in the rule apply to the various types of streams. Specifically, these commenters noted that proposed § 816.57, which would have applied to surface mining activities in, through, or adjacent to perennial or intermittent streams, also contained cross-references to proposed § n 780.28(b)(3), which would have addressed the establishment of riparian corridors for ephemeral streams. (These sections have counterparts in §§ 817.57 and 784.28 that address streams impacted by surface activities conducted in conjunction with underground mining.) To alleviate any confusion, we have added new § 817.56 which sets out the requirements for ephemeral streams. These include requirements that are counterparts to those for intermittent and perennial streams such as requirements to comply with the Clean Water Act, establish a

postmining drainage pattern and stream channel configuration that is consistent with the approved permit, and establish a 100-foot streamside vegetative corridor that complies with the standards in § 817.57(d)(1)(iv) through (4) if activities are conducted through an ephemeral stream. The comparable requirements for the streamside vegetative corridors for intermittent and perennial streams are still found in § 817.57.

Section 817.57: What additional performance standards apply to mining activities conducted in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream?

We have modified this section; however, these modifications are discussed in final rule § 816.57, which is the surface mining counterpart to § 817.57.

Section 817.59: How must I maximize coal recovery?

We are finalizing § 817.59 as proposed. We received no comments on this section.

Section 817.61: Use of Explosives: General Requirements

We have modified this section; however, these modifications are discussed in final rule § 816.61, which is the surface mining counterpart to section 817.61.

Section 817.62: Use of Explosives: Preblasting Survey

We are finalizing § 817.62 as proposed. We received no comments on this section.

Section 817.64: Use of Explosives: General Performance Standards

We are finalizing § 817.64 as proposed. We received no comments on this section.

Section 817.66: Use of Explosives: Blasting Signs, Warnings, and Access Control

We are finalizing § 817.66 as proposed. We received no comments on this section.

Section 817.67: Use of Explosives: Control of Adverse Effects

We are finalizing § 817.67 as proposed. We received no comments on this section.

Section 817.68: Use of Explosives: Records of Blasting Operations

We are finalizing § 817.68 as proposed. We received no comments on this section.

Section 817.71: How must I dispose of excess spoil?

We have modified this section; however, these modifications are discussed in final rule § 816.71, which is the surface mining counterpart to section 817.71.

Section 817.74: What special requirements apply to disposal of excess spoil on a preexisting bench?

We are finalizing § 817.74 as proposed. We received no comments on this section.

Section 817.81: How must I dispose of coal mine waste?

We have modified this section; however, these modifications are discussed in final rule § 816.81, which is the surface mining counterpart to § 817.81.

Section 817.83: What special requirements apply to coal mine waste refuse piles?

We are finalizing § 817.83 as proposed. We received no comments on this section.

Section 817.84: What special requirements apply to coal mine waste impounding structures?

We are finalizing § 817.84 as proposed. We received no comments on this section.

Section 817.87: What special requirements apply to burning and burned coal mine waste?

We are finalizing § 817.87 as proposed. We received no comments on this section.

Section 817.89: How must I dispose of noncoal mine wastes?

We are finalizing § 817.89 as proposed. We received no comments on this section.

Section 817.95: How must I protect surface areas from wind and water erosion?

We have modified this section; however, these modifications are discussed in final rule § 816.95, which is the surface mining counterpart to section 817.95.

Section 817.97: How must I protect and enhance fish, wildlife, and related environmental values?

We have modified this section; however, these modifications are discussed in final rule § 816.97, which is the surface mining counterpart to § 817.97.

Section 817.99: What measures must I take to prevent and remediate landslides?

We are finalizing § 817.99 as proposed. We received no comments on this section.

Section 817.100: What are the standards for conducting reclamation contemporaneously with mining?

We are finalizing § 817.100 as proposed. We received no comments on this section.

Section 817.102: How must I backfill surface excavations and grade and configure the land surface?

We have modified this section; however, these modifications are discussed in final rule § 816.102, which is the surface mining counterpart to § 817.102.

Section 817.106: What special provisions for backfilling, grading, and surface configuration apply to previously mined areas with a preexisting highwall?

We are finalizing § 817.106 as proposed. We received no comments on this section.

Section 817.107: What special provisions for backfilling, grading, and surface configuration apply to operations on steep slopes?

We have modified this section; however, these modifications are discussed in final rule § 816.107, which is the surface mining counterpart to § 817.107.

Section 817.111: How must I revegetate areas disturbed by mining activities?

We have modified this section; however, these modifications are discussed in final rule § 816.111, which is the surface mining counterpart to § 817.111.

Previous § 817.113: Revegetation: Timing

Like section 816.113, this section's surface mining counterpart, we have removed and reserved previous § 817.113 for the reasons discussed in the preamble to the proposed rule. Specifically, previous § 817.113 has been redesignated and moved to final rule § 817.111.[801]

Previous § 817.114: Revegetation: Mulching and Other Soil Stabilizing

Like § 816.114, this section's surface mining counterpart, we have removed and reserved previous § 817.114 for the reasons discussed in the preamble to the

[801] 80 FR 44436, 44574 (Jul. 27, 2015).

proposed rule. Specifically, previous § 817.114 has been redesignated and moved to final rule § 817.111.[802]

Section 817.115: How long am I responsible for revegetation after planting?

We are finalizing § 817.115 as proposed. We received no comments on this section.

Section 817.116: What requirements apply to standards for determining revegetation success?

We have modified this section; however, these modifications are discussed in final rule § 816.116, which is the surface mining counterpart to § 817.116.

Section 817.121: What measures must I take to prevent, control, or correct damage resulting from subsidence?

Consistent with the discussion about our revisions to the definition of material damage (in the context of the subsidence control provisions of §§ 784.30 and 817.121), our final paragraph (c) has been revised to specify that measures to prevent, control, or correct damage resulting from subsidence also applies to wetlands, streams and water bodies whenever the subsidence control standards are applicable to surface lands. These changes are consistent with our revised definition of material damage in the context of the subsidence provision of our regulations and the revisions to the subsidence control plan regulations at § 784.30.

Final Paragraph (c): Repair of Damage to Surface Lands and Waters

Final paragraph (c)(1) provides that to the extent technologically and economically feasible, the permittee must correct any subsidence-related material damage to surface lands, wetlands, streams, or water bodies by restoring the land and water features to a condition capable of maintaining the value and reasonably foreseeable uses that the land was capable of supporting before the subsidence-related damage occurred. Final paragraph (c)(1) is substantively identical to the corresponding provisions in previous § 817.121(c)(1). The primary revision is the addition of explicit references to surface water features, consistent with the preamble to the previous definition of ''material damage'' in § 701.5, which states that the definition'' covers damage to the surface and to surface features, such as wetlands, streams, and bodies of water, and to structures or facilities.'' [803] As part of this final rule, we revised the definition of ''material damage'' to incorporate the preamble language.

Some commenters suggested that the regulations specify that the regulatory authority must consider the repair of the damage to be technologically and economically infeasible when a permittee has attempted to repair surface lands or waters for two years without achieving complete success. According to the commenters, the regulatory authority should then require the permittee to perform appropriate mitigation work. In response to these comments, we added § 817.121(g)(3)(ii), which requires that the regulatory authority initiate bond forfeiture proceedings if the permittee has not completed correction or repair of material damage to surface lands or waters or replaced adversely impacted protected water supplies within 2 years following the occurrence of that damage. Paragraph (g)(3)(ii) also requires that the regulatory authority use the funds collected to repair the surface lands and waters or replace the protected water supplies. In addition, we added § 817.121(c)(2), which requires that the permittee implement fish and wildlife enhancement measures, as approved by the regulatory authority in a permit revision, to offset subsidence-related material damage to wetlands or a perennial or intermittent stream when correction of that damage is technologically and economically infeasible. Paragraph (c)(2) is analogous to the fish and wildlife enhancement requirements in §§ 780.16(d)(3) and 784.16(d)(3) that apply when mining activities conducted on the land surface result in the permanent loss of wetlands or a segment of a perennial or intermittent stream.

Previous Paragraph (c): Removal of Suspended Provisions

We proposed to remove all of previous paragraph (c)(4), except previous paragraph (c)(4)(v) because those provisions were vacated by a court and have been suspended since December 22, 1999 (64 FR 71652–71653). *See also* 80 FR 44528 (citing *Nat'l Mining Ass'n* v. *Babbitt,* 173 F.3d 906 (D.C. Cir. 1999)). Several commenters requested that we instead revise those provisions in a manner consistent with the reasoning in the court's decision. We decline to make this revision at this time. Substantive changes of the type recommended by the commenters, especially ones related to evidentiary presumptions (*see, e.g., Nat'l Mining Ass'n* v. *Babbitt,* 173 F.3d at 912), are better addressed in future rulemaking subject to full notice and opportunity to comment.

Final Paragraph (d): Repair or Compensation for Damage to Non-Commercial Buildings, Occupied Residential Dwellings, and Related Structures

We also received comments that we should revise the proposed rule at paragraph (d) with regard to repair or compensation for damage to non-commercial buildings, dwellings, and related structures to ensure that the choice between repair and compensation rests with the person whose property has suffered damage, not the permittee causing the subsidence damage. We have not made any changes as a result of this comment because there appears to be a misunderstanding of the revisions we made in the proposed rule; our revisions were merely intended to adopt plain language principles by use of the word ''you'' instead of ''permittee'', in doing so we did not revise the previous language or intent with regard to this issue.

Final Paragraph (g): Adjustment of Bond Amount for Subsidence Damage

Final paragraph (g)(1) provides that, when subsidence-related material damage to land (including wetlands, streams, and water bodies), structures or facilities protected under paragraphs (c) through (e) occurs, or when contamination, diminution, or interruption to a water supply protected under § 817.40 occurs, the regulatory authority must require the permittee to post additional performance bond until the repair, compensation, or replacement is completed. Apart from the clarification that the term ''land'' includes wetlands, streams, and water bodies, consistent with the preamble to the previous rule, this paragraph is substantively identical to the corresponding requirement in previous § 817.121(c)(5).

Final paragraph (g)(2) explains how the bond amount must be calculated. This paragraph is substantively identical to the corresponding provisions in previous § 817.121(c)(5) with one exception. We added final paragraph (g)(2)(iii) to specify that, for material damage to lands and waters, the amount of the bond must equal the estimated cost of restoring the land and waters to a condition capable of maintaining the value and reasonably foreseeable uses that they were capable of supporting before the material damage occurred. The previous rule

[802] 80 FR 44436, 44574 (Jul. 27, 2015).

[803] 62 FR 16724 (Mar. 31, 1995).

required that the bond amount for damage to land equal repair costs, without elaborating on what ''repair'' means in the context of damage to land or waters.

Final paragraph (g)(3)(i) provides that the bond requirements of paragraph (g)(1) do not apply if repair, compensation, or replacement is completed within 90 days of the occurrence of damage. Final paragraph (g)(3)(i) also establishes criteria for extension of the 90-day period that are substantively identical to the corresponding provisions of the previous rule at § 817.121(c)(5).

Final paragraph (g)(3)(ii)(A) provides that, if the permittee has not completed correction or repair of material damage to surface lands or waters or replaced adversely impacted protected water supplies within two years following the occurrence of that damage, the regulatory authority must initiate bond forfeiture proceedings under § 800.50 and use the funds collected to repair the surface lands and waters or replace the protected water supplies. We added paragraph (g)(3)(ii)(A) to the final rule to place a cap on the length of time that the bond may remain in place without any effort to correct the material damage or replace the adversely impacted water supply. Final paragraph (g)(3)(iii)(B) provides two exceptions to the requirement for initiation of bond forfeiture after two years. If either exception applies, the regulatory authority has the discretion to determine when the bond should be released. The first exception applies if the landowner refuses to allow access to implement the appropriate corrective actions. The second exception applies if the permittee demonstrates, and the regulatory authority finds, that correction or repair of the material damage to surface lands or waters is not technologically or economically feasible. When the latter exception applies, final paragraph (g)(3)(iii)(B)(*2*) provides that the permittee must complete the enhancement measures required under final paragraph (c)(2). Final paragraph (c)(2) requires that the permittee implement fish and wildlife enhancement measures, as approved by the regulatory authority in a permit revision, to offset material damage to a perennial or intermittent stream when correction of that damage is technologically and economically infeasible. We added final paragraph (c)(2) and the enhancement provision in final paragraph (g)(3)(iii)(B)(*2*) to discourage abuse of this exception.

Section 817.122: How and when must I provide notice of planned underground mining?

We are finalizing § 817.122 as proposed. We received no comments on this section.

Section 817.131: What actions must I take when I temporarily cease mining operations?

We are finalizing § 817.131 as proposed. We received no comments on this section.

Section 817.132: What actions must I take when I permanently cease mining operations?

We are finalizing § 817.132 as proposed. We received no comments on this section.

Section 817.133: What provisions concerning postmining land use apply to my operation?

We are finalizing § 817.133 as proposed. We received no comments on this section.

Section 817.150: What are the general requirements for haul and access roads?

We have modified this section; however, these modifications are discussed in final rule § 816.150, which is the surface mining counterpart to § 817.150.

Section 817.151: What additional requirements apply to primary roads?

We are finalizing § 817.151 as proposed. We received no comments on this section.

Section 817.180: To what extent must I protect utility installations?

We are finalizing § 817.180 as proposed. We received no comments on this section.

Section 817.181: What requirements apply to support facilities?

We are finalizing § 817.181 as proposed. We received no comments on this section.

Previous § 817.200: Interpretative Rules Related to General Performance Standards

We have removed and reserved previous § 817.200 for the reasons discussed in the preamble to the proposed rule.[804]

[804] 80 FR 44436, 44578 (Jul. 27, 2015).

N. Part 824—Special Permanent Program Performance Standards—Mountaintop Removal Mining Operations

Section 824.11: What special performance standards apply to mountaintop removal mining operations?

As discussed in the preamble to final rule § 785.14, explaining what special provisions apply to mountaintop removal mining operations, we revised § 824.11 to include a new paragraph (b)(6) in response to a comment. The language adopted in this final rule therefore includes text requiring the prevention of ''damage to natural watercourses in accordance with the finding made by the regulatory authority under § 785.14 of this chapter.''

O. Part 827—Special Permanent Program Performance Standards—Coal Preparation Plants Not Located Within the Permit Area of a Mine

Section 827.12: What performance standards apply to coal preparation plants?

We are finalizing § 827.12 as proposed. We received no comments on this section.

VII. What effect would this rule have in federal program states and on Indian lands?

The final rule that we are adopting today applies to all non-Indian lands in states with a federal regulatory program. States with federal regulatory programs include Arizona, California, Georgia, Idaho, Massachusetts, Michigan, North Carolina, Oregon, Rhode Island, South Dakota, Tennessee, and Washington. These programs are codified at 30 CFR parts 903, 905, 910, 912, 921, 922, 933, 937, 939, 941, 942, and 947, respectively. In general, there will be no need to amend the approved federal program because, with limited exceptions, each program cross-references 30 CFR parts 700, 701, 773, 774, 777, 779, 780, 783, 784, 785, 800, 816, 817, 824, and 827.

Tennessee is the only federal program state with active coal production and, thus, is the only state in which the rule would have immediate impact. Tennessee law already sharply restricts most significant mining activities in or near perennial and intermittent streams, which means that the provisions of proposed 30 CFR 780.28, 784.28, 816.57, and 817.57 pertaining to mining in, through, or near a perennial or intermittent stream, are unlikely to have much effect on mining within that state. For example, section 69–3–108(f) of the

Tennessee Code Annotated, as amended by the Responsible Mining Act of 2009, prohibits issuance of any permit for the removal of coal by surface mining methods or for surface access points to underground mining within 100 feet of the ordinary high water mark of a stream. It also prohibits issuance of a permit that would allow placement of overburden or waste from a surface mine within that buffer zone.

The federal rule adopted today will have some impacts in Tennessee, For instance, unlike the final rule, the state law does not apply to stream crossings, to operations that improve the quality of stream segments previously disturbed by mining, or to coal mine waste from underground mines or coal preparation plants. Likewise, unlike the federal rule, the state law does not apply to coal transportation, storage, preparation and processing, loading, and shipping operations when necessary because of site-specific conditions, provided that those activities and operations do not cause the loss of stream function.

The following parts of the final rule also would apply to Indian lands by virtue of cross-references in 30 CFR part 750:

- 30 CFR 750.12(c)(1) includes the permitting provisions of parts 773, 774, 777, 779, 780, 783, 784, and 785 by cross-reference. There are no substantive revisions to the exceptions listed in 30 CFR 750.12(c)(2).
- 30 CFR 750.17 includes the bond and insurance provisions of subchapter J (part 800) by cross-reference.
- 30 CFR 750.16 includes the performance standards of parts 816, 817, 824, and 827 by cross-reference.

The revisions to parts 700 and 701 also would apply to Indian lands by virtue of 30 CFR 700.1(a), which prescribes that subchapter A of 30 CFR chapter VII contains ''regulatory requirements and definitions generally applicable to the programs and persons covered by the Act.'' After a tribe receives approval of a tribal regulatory program under section 710(j) of SMCRA,[805] we will treat tribe as a state for regulatory program purposes. Once that occurs, Part VIII of this preamble (state regulatory programs) will apply in place of Part VII of this preamble for any Indian lands with an approved tribal regulatory program.

VIII. How would this rule affect state regulatory programs?

Adoption of this final rule will not have any immediate effect on approved state regulatory programs. Each state with primacy will need to propose and adopt counterpart revisions to its regulations and other state program provisions and submit them for review by OSMRE and the public as a program amendment under 30 CFR 732.17. Under 30 CFR 732.17(g)(9), no change to state law or regulations making up the approved program may take effect for purposes of a state program until that change is approved by OSMRE as a program amendment.

We will evaluate each state regulatory program approved under 30 CFR part 732 and section 503 of the Act[806] to determine whether any changes in the state program are necessary to maintain consistency with federal requirements. If we determine that a state program provision needs to be amended as a result of revisions to the corresponding federal rule, we will notify the state in accordance with 30 CFR 732.17(d).

Section 505(a) of the Act[807] and 30 CFR 730.11(a) provide that SMCRA and federal regulations adopted under SMCRA do not supersede any state law or regulation unless that law or regulation is inconsistent with the Act or the federal regulations adopted under the Act. Section 505(b) of the Act[808] and 30 CFR 730.11(b) provide that we may not construe existing state laws and regulations, or state laws and regulations adopted in the future, as inconsistent with SMCRA or the federal regulations if these state laws and regulations either provide for more stringent land use and environmental controls and regulations or have no counterpart in the Act or the federal regulations.

Under 30 CFR 732.15(a), each state regulatory program must provide for the state to carry out the provisions and meet the purposes of the Act and its implementing regulations. In addition, that rule requires that state laws and regulations be in accordance with the provisions of the Act and consistent with the federal regulations. As defined in 30 CFR 730.5, ''consistent with'' and ''in accordance with'' mean that the state laws and regulations are no less stringent than, meet the minimum requirements of, and include all applicable provisions of the Act. The definition also provides that these terms mean that the state laws and regulations are no less effective than the federal regulations in meeting the requirements of the Act. Under 30 CFR 732.17(e)(1), we may require a state program amendment if, as a result of changes in SMCRA or the federal regulations, the approved state regulatory program no longer meets the requirements of SMCRA or the federal regulations.

IX. Procedural Matters and Required Determinations

A. Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. This final rule is considered a ''significant regulatory action'' under Executive Order 12866 because it may raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order and therefore is subject to review by the Office of Management and Budget (OMB).

OMB has also found that this rule is not likely to have an annual effect of $100 million or more on the economy. We prepared a final environmental impact statement and regulatory impact analysis, which analyzed, among other things, the costs and benefits of the rule, including costs and benefits associated with environmental impacts, human health impacts, energy market effects, compliance costs, regulatory costs, coal market welfare, economic activity, coal prices, electricity production, employment, and severance taxes.[809] As further discussed in those documents, the rule will not adversely affect in a material way the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities.

Executive Order 13563 reaffirms the principles of Executive Order 12866 while calling for improvements in the Nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The Executive Order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. Executive Order 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this final rule in a manner consistent with these requirements.

We have prepared a final RIA and submitted it to OMB. Based upon the final RIA, we do not project that the final rule will prohibit mining in excess

[805] 30 U.S.C. 1300(j).

[806] 30 U.S.C. 1253.

[807] 30 U.S.C. 1255(a).

[808] 30 U.S.C. 1255(b).

[809] For a brief summary of the costs and benefits associated with these categories, *see* RIA at ES–1–ES–4.

of baseline conditions of any particular coal reserves. Therefore, our estimates do not include direct and indirect costs associated with stranded coal reserves.

B. Regulatory Flexibility Act (RFA)

The final Regulatory Flexibility Analysis, which appears in Appendix A of our final RIA, considers the extent to which the economic impacts resulting from this final rule could be borne by small businesses. Because of the complexity of corporate structures in the coal mining industry, it is difficult to calculate the exact number of small entities that could be affected by this rule. The coal mining industry is continually changing and it is common for large mining operators to merge with smaller operators, creating complicated business relationships between parent corporations and subsidiaries. For this analysis, we use information from the Mine Safety and Health Administration about mine controllers because information on parent companies is not readily available. We then used two methods for identifying small controllers:

Using the Small Business Administration (SBA) definition of small mines,[810] we estimate that there were 97 small underground coal mining entities, 199 small surface coal mining entities, and 43 small anthracite coal mining entities producing coal in 2015. This is a total of 339 small entities in the industry, representing approximately 98 percent of all entities. Using the Mine Safety and Health Administration definition of ''small mines'' (mines reporting less than 20 employees), we estimate that there were 167 small mines producing coal in 2015. Using either definition of small entities, nearly 90 percent of mines operated by small entities were in the Appalachian Basin. All of these entities are expected to be affected by this final rule.

In particular, we estimate that compliance costs for surface mines with fewer than 20 employees will total between 0.1 and 3.1 percent of annual revenues, depending on mining region. For surface mines reporting 1,250 or fewer employees, we estimate that compliance costs will total between 0.1 and 3.1 percent of revenues, depending on mining region. For underground mines reporting 1,500 or fewer employees, we estimate compliance costs will total between zero and 0.1 percent of revenues, depending on mining region. The annual cost of the final rule as a share of annual revenue for a mine operated by a small entity is 1.2 percent.

The largest affected group of small coal mining entities is small surface mines in Appalachia (311 mines). We anticipate that this final rule will increase costs to small mines in Appalachia with fewer than 20 employees by approximately 1.1 percent of annual revenues for surface mines and 0.1 percent of annual revenues for underground mines. Average compliance costs for small surface mines in Appalachia with 1,250 or fewer employees are estimated to be 1.1 percent of annual revenues. Average compliance costs for small underground mines in Appalachia with 1,500 or fewer employees are estimated to be 0.1 percent of annual revenues.

The estimated impacts of the stream protection rule on small business revenues have changed in the final RIA as compared to the draft RIA for several reasons. First, the estimated costs of the rule have been revised in the final RIA to reflect public comments as well as rule changes. Second, the SBA's small business thresholds for businesses in the coal industry have been revised since development of the draft RIA. Specifically, the SBA thresholds for surface and underground mining were 500 employees in the draft RIA, but the SBA now splits the industry into three parts with separate thresholds: Bituminous coal and lignite surface mining has a threshold of 1,250 employees, bituminous coal underground mining has a threshold of 1,500 employees, and anthracite mining has a threshold of 250 employees. While increasing the thresholds for these businesses results in more businesses being included as small entities, the impacts per business are smaller as a result. Third, as a consequence of changes we made in response to public comments, we revisited the distribution of administrative costs among entities. In the draft RIA, we assumed that administrative costs were evenly distributed across mining businesses, regardless of size. This resulted in the appearance of larger revenue impacts to smaller businesses associated with these costs. However, after reconsidering the various administrative cost components, we concluded that assuming a linear relationship between administrative costs and tons of coal produced is likely to more accurately estimate the administrative burden of the final rule. In section A.4 of the final RIA, the analysis recognizes that some administrative costs, such as increased monitoring requirements, may vary depending on the physical size of the mine. To the extent that small mines are physically smaller, they may need to collect fewer samples than assumed in the standard mine used to estimate costs. Additionally, in general, there are likely to be fewer permits required of smaller operations. Thus, the final RIA estimates revenue impacts per business by assuming a linear relationship exists between administrative costs and the tons of coal produced by an entity. The final RIA also recognizes that small coal producers may be disproportionately impacted by the final rule because they may be more likely to lease the land that they mine, operate with smaller budgets, and struggle to pay the minimum royalty payments, thus facing a greater risk of shutting down as coal production costs increase. Further, the final RIA recognizes that to the extent that administrative costs are independent of the scale of the affected operations, revenue impacts could be larger for small entities than are presented in this analysis. This aspect of the analysis is caveated in Exhibits A–9 through A–14 of the final RIA.

Description of Measures To Minimize Economic Impacts on Small Entities

Section 507(c) of SMCRA [811] establishes the small operator assistance program (SOAP). To the extent that funds are appropriated for that program, this provision of SMCRA authorizes us to provide small operators with training and financial assistance in preparing certain elements of permit applications. An operator is eligible to receive training and assistance if his or her probable total annual production at all locations will not exceed 300,000 tons.

Under section 507(c)(1) of SMCRA [812] and 30 CFR 795.9, the following permit application activities are eligible for financial assistance under SOAP:

- Preparation of the determination of the probable hydrologic consequences of mining, including collection and analysis of baseline data and any engineering analyses and designs needed for the determination.
- Collection and analysis of geological data.
- Development of cross-sections, maps, and plans.
- Collection of information on archaeological and historical resources and preparation of any related plans.
- Development of preblast surveys.

[810] The Regulatory Flexibility Analysis has been revised to reflect the recent changes to the Small Business size thresholds identified by the Small Business Administration for coal mining companies. The Small Business Administration thresholds for coal mining entities are as follows: Bituminous coal underground mining, 1,500 employees or less; bituminous coal and lignite surface mining, 1,250 employees or less; anthracite mining, 250 employees or less.

[811] 30 U.S.C. 1257(c).

[812] 30 U.S.C. 1257(c)(1).

• Collection of site-specific information on fish and wildlife resources and preparation of fish and wildlife protection and enhancement plans.

These activities include many of the new permit application requirements in this final rule; *e.g.,* the expanded baseline data requirements concerning hydrology, geology, and the biological condition of streams and the expanded requirements for site-specific fish and wildlife protection and enhancement plans. In addition, section 507(c)(2) of SMCRA [813] provides that, as part of SOAP, we must either provide training or assume the cost of training eligible small operators on the preparation of permit applications and compliance with the regulatory program. Although SOAP funding is available for activities associated with new permit application requirements and training, SMCRA does not authorize SOAP funding for compliance costs associated with the expanded requirements for monitoring groundwater, surface water, and the biological condition of streams.

SOAP funding is subject to annual appropriation from the federal expense portion of the Abandoned Mine Reclamation Fund established under section 401(a) of SMCRA.[814] Section 401(c)(9) of SMCRA [815] caps SOAP funding at $10 million per year. Subject to appropriations from Congress, we intend to provide financial assistance to small operators to develop permit applications up to the $10 million cap. We also intend to provide training to assist small operators in meeting the additional requirements of this final rule. SOAP assistance should substantially reduce compliance costs for small operators by offsetting the cost of most of the new permit application requirements.

C. Small Business Regulatory Enforcement Fairness Act

The Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act, unless the head of the agency certifies that the rule would not have a significant economic impact on a substantial number of small entities.[816] These statutes are designed to ensure that government regulations do not unnecessarily or disproportionately burden small entities. Small entities include small businesses, small governmental jurisdictions, and small not-for-profit enterprises. As discussed in Part IX.B., OSMRE reviewed the Small Business Administration (SBA) and Mine Safety and Health Administration size standards for small mines. OSMRE concludes that the vast majority of entities operating in the relevant sectors are small businesses as defined by the SBA.[817] As such, the rule will likely affect a substantial number of small entities. OSMRE finds, however, that the final rule will not have a significant economic impact on a substantial number of small entities. As explained more in the Final Regulatory Flexibility Analysis in the RIA, the annual cost of the final rule as a share of annual revenue for mines operated by a small entity is 1.2 percent.[818] This small change is not large enough to be considered significant.

Although it is not required, OSMRE nevertheless chose to prepare an Initial Regulatory Flexibility Analysis and Final Regulatory Flexibility Analysis for this rule. Even though this rule is not economically significant, OSMRE believes it is prudent, and potentially helpful to small entities, to provide an IRFA and FRFA for the rulemaking. This decision should not be viewed as a precedent for other rulemakings.

D. Unfunded Mandates Reform Act

As discussed in response to comments on the final RIA, Appendix I, this final rule will not impose an unfunded mandate on state, local, or tribal governments or the private sector of $100 million or more per year. As discussed in Chapter 9 of the final RIA, the total aggregate annual compliance and related costs for this rule are on the order of $81 million (when calculated at a seven percent real rate of discount), which includes the costs that state regulatory agencies are expected to bear.[819] More specifically, the increased compliance and related costs for regulatory authorities as a result of this rule is only expected to be approximately $0.72 million.[820] In addition, this final rule will not have a significant or unique effect on state, tribal, or local governments or the private sector. Therefore, a statement containing the information required by the Unfunded Mandates Reform Act, 2 U.S.C. 1534, is not required.

E. Executive Order 12630—Takings

Under the criteria in Executive Order 12630, we have made a determination that this final rule does not have specific, identifiable takings implications. First, based upon the final RIA, we do not project that this final rule will prohibit mining in excess of baseline conditions of any particular coal reserves. In Chapter 5 of the final RIA we analyze the potential for coal reserves to be ''stranded'' or ''sterilized.'' We define stranded reserves as those that are technically and economically minable, but unavailable for production given the new requirements and restrictions included in the final rule. Our analysis indicates that there will be no increase in stranded reserves, that is, the engineering analyses determined that the same volume of coal could be mined under the final rule as under the baseline. Second, the question of whether this final rule might affect a compensable taking of a particular property interest necessarily involves ad hoc factual inquiries, including the economic impact of the final rule on a particular claimant; the extent to which this final rule might interfere with a claimant's reasonable, investment-backed expectations; and the character of the government action. None of these factual inquiries is possible for a national rule of this scope, which does not specifically bar the mining of any particular coal reserves. However, based upon the final RIA, we have no basis to believe that implementation of this final rule will result in compensable takings of any specific property interests.

F. Executive Order 13132—Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires that we develop a process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' Policies that have federalism implications are defined in the Executive Order to include regulations that have ''substantial direct effects on the States [in terms of compliance costs], on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.'' In addition, policies have federalism implications if they preempt State law. In terms of compliance costs, the Federal government must provide the necessary funds to pay the direct costs

[813] 30 U.S.C. 1257(c)(2).

[814] 30 U.S.C. 1231(a).

[815] 30 U.S.C. 1231(c)(9).

[816] 5 U.S.C. 601. The exception is found in 5 U.S.C. 605(b).

[817] RIA, at Appendix A, p. A–15–A–16.

[818] RIA, at Appendix A, p. A–27.

[819] RIA, at 9–2.

[820] RIA, at ES–31–ES–32.

incurred by State and local governments in complying with the regulation if the rule:

1. Results in direct expenditures to state and local governments in aggregate of $25 million in any one year; or

2. Results in expenditures to state and local governments greater than one percent of their annual revenues in any one year.

As explained in Chapter 4.4 of the final RIA, and in our Paperwork Reduction Act analysis in section J of the Procedural Matters and Required Determinations of this preamble, we do not anticipate that this rule will result in greater compliance costs for the States above thresholds listed above. As discussed in Part IV.C. of this preamble, we also do not expect this rule to impact the relationship between the Federal government and the States or on the distribution of power and responsibilities among the various levels of government, as specified in the Order.

G. Executive Order 12988—Civil Justice Reform

Executive Order 12898, ''Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations'' (February 11, 1994), requires federal agencies to identify disproportionately large and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Among other actions, agencies are directed to improve research and data collection regarding health and environmental effects in minority and low-income communities. We provide this analysis in the final EIS for the final rule in the Environmental Justice discussion at section 4.4.

H. Executive Order 13175—Consultation and Coordination With Indian Tribal Governments

Where coal extraction occurs on Indian lands, we are the SMRCA regulatory authority. Therefore, the final rule has the potential to affect Indian tribes. Consistent with Executive Order 13175, the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951), the Department of the Interior Policy on Consultation with Indian Tribes (Dec. 1, 2011), and 512 Departmental Manual 2, we evaluated possible effects of the rule on federally recognized Indian tribes and engaged in government-to-government consultations. On May 12, 2010, our Director met with the Chairmen of the Hopi and Crow Tribes and the President of the Navajo Nation to initiate consultation on the stream protection rulemaking and development of the DEIS. The Tribes in attendance requested that they be kept informed of the rulemaking process and EIS development.

Our Director again met with tribal leaders in Washington, DC on December 1, 2011. At that time, we provided additional information on the elements under consideration for the alternatives in the DEIS and discussed the expected impacts to the SMCRA regulatory program for Indian lands. From 2010–2016, the status of the stream protection rule was often included during our quarterly government-to-government meetings with the Crow Tribe, the Hopi Tribe, and the Navajo Nation. Our Western Regional Office conducts these quarterly consultation meetings with the Tribes to discuss topics of interest such as our rulemakings activities, coal mining operations on Tribal lands, and development of Tribal primacy.

On August 28, 2015, our Director sent letters to the Hopi and Crow Tribes and the Navajo Nation notifying them of the publication of our proposed stream protection rule, DEIS, and DRIA. The letters again included an offer to meet with the Tribes and further discuss the proposed rule and DEIS. On November 6, 2015, we requested government-to-government consultation with the Hopi Tribe, Crow Tribe, and Navajo Nation.

At the request of the Navajo Nation, OSMRE Director Joseph Pizarchik conducted government-to-government consultation with Navajo Nation Tribal leaders in Window Rock, Arizona on January 13, 2016. During the meeting the Navajo Tribal leaders were briefed on the proposed stream protection rule. On May 4, 2016, we offered to continue government-to-government consultation on an ongoing basis at the request of the Navajo Nation. A consultation meeting also occurred with the Navajo Nation on June 15, 2016, during which the Navajo Nation indicated its support for the letter sent by the western states and that it had no further comments on the proposed stream protection rule. We also consulted with the Hopi Tribe on June 28, 2016, at which time the Tribal representative indicated that the Hopi Tribe had no further comments on the proposed stream protection rule.

The Crow Tribe did not request additional consultation in response to our offer on November 6, 2015, or during subsequent government-to-government quarterly meetings held with the Tribe on January 13, 2016 and May 24, 2016, when the stream protection rule was discussed. On September 28, 2016, during an Executive Order 12866 meeting on the stream protection rule, a Crow tribal representative indicated that the Tribe wanted additional consultation on the stream protection rule. As a follow-up, we sent a letter to the Crow Tribe on September 29, 2016, explaining that we were in the late stages of rulemaking but offering to meet with the Tribe at the earliest opportunity. Having not received a response in over 30 days, we proceeded to finalize the rule and its supporting documents.

On November 15, 2016, the day the final environmental impact statement was released to the public, we received a letter from the Crow Tribe asking for consultation starting in January 2017. On November 17, 2016, the Chairman of the Crow Tribe requested a meeting with the Assistant Secretary for Land and Minerals Management to discuss the rule and consultation with the Crow Tribe. This meeting took place the following day on November 18, 2016, which was also attended by the Director and Deputy Director of OSMRE. The tribe did not raise any new issues at the meeting that had not already been considered. Additionally, we informed the Tribe that we did consider the comments of the Montana Department of Environmental Quality, Cloud Peak Energy, and Westmoreland Coal Company, which the Tribe indicated that they concurred with and adopted pending further review. We also committed to the Chairman that we would continue to work with and meet with the Tribe during implementation of the rule.

In addition, we sent letters to the Southern Ute Indian Tribe, Ute Mountain Ute Tribe, and Northern Cheyenne Tribe on March 7, 2016 requesting government-to-government consultation on the stream protection rule. The three Tribes did not respond to these requests.

We are committed to continuing working and meeting with the Tribes during implementation of the rule.

I. Executive Order 13211—Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use.

This final rule is not a significant energy action under Executive Order 13211. As discussed below and in the final RIA, the revisions contained in this final rule will not have a significant effect on the supply, distribution, or use of energy.

The Office of Management and Budget has identified nine outcomes that may constitute ''a significant adverse

effect.'' [821] The three outcomes that are relevant to this final rule are: (1) A reduction in coal production in excess of five million tons per year, (2) a reduction in electricity production in excess of one billion kilowatt-hours per year or in excess of 500 megawatts (MW) of installed capacity,[822] and (3) an increase in the cost of energy production in excess of one percent. This final rule may affect the cost of coal production, the amount of electricity produced, and the cost of energy production, but as explained below, the increases are anticipated to be less than what would constitute ''a significant adverse effect.''

In the final RIA, we analyzed the effects of the final rule on coal production and electricity production. Regarding coal production, this final rule is not expected to result in a reduction in national coal production in excess of five million tons per year. The greatest single-year reduction in domestic coal production is expected to occur in 2021, reaching 2.3 million tons. The change in production from baseline conditions over the period of this analysis is on average 0.7 million tons, significantly smaller than the 5 million tons that is considered a significant adverse effect.

This final rule may also affect levels of domestic electricity production by influencing the costs of production. By increasing the costs of coal production, the final rule may lead to subsequent increases in the price of coal paid by power plants. Because coal makes up a significant part of the domestic energy mix, a change in the price of coal is expected to be reflected in domestic electricity prices, reducing market demand for electricity. The final RIA uses the Energy Ventures Associates coal market model to predict the changes in electricity supply and demand resulting from the final rule. Electricity is an essential service in the United States industrial, commercial, and residential sectors. Typically a supply reduction of an essential good or service is followed by an immediate price spike. The extent and duration of the price spike depends on the economic viability of alternative inputs to substitute for the initial supply reduction over a period of time as alternative investments are made. In the case of the United States power generating sector and the increasingly diverse array of energy inputs, higher cost of one form of electricity generation, such as coal, will result in an increase in use of an alternative form of electricity generation, such as natural gas. Due to the substitution of alternative forms of generation for coal, in the long-term there is a negligible effect on the supply and demand for electricity as a result of the final rule.

There is some long-term cost involved in moving from one fuel source to another due to additional capital expenditures. This cost is ultimately reflected in the price of electricity. Thereby, the final rule will result in a slightly elevated electricity price that will translate to an expected decrease in electricity consumption by 78 million kilowatt hours. In the United States, reduced electricity consumption has typically been achieved by adoption of more energy efficient practices such as purchases of energy efficient appliances by households.

This final rule will introduce a number of new requirements that may increase the overall costs of energy produced by coal. Compliance costs are estimated to make up less than one percent of total coal production costs, nationally, in every year within the study period. On average, compliance costs are expected to account for 0.18 percent of total coal production costs, nationally. The final rule may result in an increase in the price of coal, which may increase the costs of electricity production nationwide. We do not expect that this final rule will result in an increase in electricity production costs exceeding one percent over the 21-year study period. Instead, as explained in the final RIA, on average, this final rule is expected to increase electricity costs nationwide by less than .01 percent.

J. Paperwork Reduction Act

Under 5 CFR part 1320, the rules implementing the information collection aspects of the Paperwork Reduction Act, a federal agency must estimate the burden imposed on the public by any proposed collection of information. This burden consists of ''the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency.''

We estimated the aggregate burden (in hours) for information collection under the final rule by calculating the number of hours that industry and state governments would need to comply with each element of the rule.

In addition, we estimated the total annual non-hour cost burden to respondents. These non-wage costs include items such as equipment required for monitoring, sampling, drilling and testing, operation and maintenance, and purchase of services.

We calculated the total estimated burden for two respondent groups, mine operators and state regulatory authorities, on an annual basis averaged over a 3-year period.

We sought comments from the public on the information collection activities for our regulations that would be revised by the proposed stream protection rule. Although no comments were submitted to the information collection clearance officer during the public comment period a number of comments were submitted regarding burden (hours and non-wage costs) which we considered in preparing this final rule and associated information collection clearance packages.

Summary of Burden (Costs) Calculated by Part for the Stream Protection Rule

This final rule contains collections of information that we have submitted to the Office of Management and Budget (OMB) for review and were approved in accordance with the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.* These collections are contained in 30 CFR parts 779, 780, 783, 784, 785, 800, 816, and 817. We also estimated programmatic changes where burden is being moved between parts.

Title: 30 CFR parts 779 and 783—Surface and Underground Mining Permit Applications—Minimum Requirements for Information on Environmental Resources and Conditions.

OMB Control Number: 1029–0035.

Summary: Applications for surface and underground coal mining permits are required to provide adequate descriptions of the environmental resources that may be affected by proposed surface mining activities. Without this information, OSMRE and state regulatory authorities could not approve permit applications for surface coal mines and related facilities.

Title: 30 CFR part 780—Surface Mining Permit Applications—Minimum Requirements for Operation and Reclamation Plans.

OMB Control Number: 1029–0036.

Summary: Sections 507 and 508 of the Act contain permit application requirements for surface coal mining activities, including a requirement that the application include an operation

[821] OMB 2001. Memorandum for Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M–01–27. *http://www.whitehouse.gov/omb/memoranda/m01–27.html* (last accessed Nov. 1, 2016).

[822] Installed capacity is the ''total manufacturer-rated capacity for equipment such as turbines, generators, condensers, transformers, and other system components'' and represents the maximum flow of energy from the plant or the maximum output of the plant. Final Regulatory Impact Analysis—Chapter 9, page 3.

and reclamation plan. The regulatory authority uses this information to determine whether the proposed surface coal mining operation will achieve the environmental protection requirements of the Act and regulatory program. Without this information, OSMRE and state regulatory authorities could not approve permit applications for surface coal mines and related facilities.

Title: 30 CFR part 784—Underground Mining Permit Applications—Minimum Requirements for Operation and Reclamation Plans.

OMB Control Number: 1029–0039.

Summary: Sections 507(b), 508(a), and 516(b) and (d) of SMCRA require applicants for permits for underground coal mines to prepare and submit operation and reclamation plans for coal mining activities as part of the application. Regulatory authorities use this information to determine whether the plans will achieve the reclamation and environmental protection requirements of the Act and regulatory program. Without this information, OSMRE and state regulatory authorities could not approve permit applications for underground coal mines and related facilities.

Title: 30 CFR part 785—Requirements for Permits for Special Categories of Mining.

OMB Control Number: 1029–0040.

Summary: Sections 507, 508, 510, 515, 701, and 711 of SMCRA require applicants for special categories of mining activities to provide descriptions, maps, plans, and data relating to the proposed activity. Without this information, OSMRE and state regulatory authorities could not approve permit applications for special categories of mining activities.

Title: 30 CFR part 800—Performance Bond, Financial Assurance, and Insurance Requirements for Surface Coal Mining and Reclamation Operations.

OMB Control Number: 1029–0043.

Summary: OSMRE and state regulatory authorities use the information collected under 30 CFR part 800 to ensure that persons conducting or planning to conduct surface coal mining and reclamation operations post and maintain a performance bond or financial assurance in a form and amount adequate to guarantee fulfillment of all reclamation obligations.

Title: 30 CFR parts 816 and 817—Permanent Program Performance Standards—Surface and Underground Mining Activities.

OMB Control Number: 1029–0047.

Summary: Sections 515 and 516 of SMCRA provide that permittees conducting coal mining and reclamation operations must meet all applicable performance standards of the regulatory program approved under the Act. The regulatory authority uses the information collected to assist in evaluating compliance with this requirement.

The table below summarizes estimated information collection burdens for our regulations as revised by this final rule. We calculated the total estimated burden for two respondent groups, mine operators and state regulatory authorities, on an annual basis averaged over a 3-year period. The table does not include operational or other costs that do not involve a collection of information. For ease of understanding, the following table depicts burden increases as a result of the rule and total burden by 30 CFR part after implementation of the rule, but not programmatic changes where burden is moved between 30 CFR parts or between sections, which is less meaningful to respondents.

30 CFR part	Type of respondent	Estimated annual responses	Estimated burden hour changes due to SPR	Total estimated burden hours (all burden hours by 30 CFR part)	Estimated operator non-wage cost changes due to SPR	Total Estimated burden non-wage costs (all non-wage costs by 30 CFR part)
779 and 783	Operators	1,181	6,853	141,844	$41,590	$41,590
	SRA [823]	1,166	1,888	8,718	0	0
780	Operators	2,604	19,5340	58,559	6,444,960	7,474,551
	SRA	2,582	9,135	25,764	0	0
784	Operators	776	7,562	18,500	4,655,868	5,081,139
	SRA	798	2,757	6,533	0	0
785	Operators	187	400	12,240	0	0
	SRA	187	80	5,720	0	0
800	Operators	5,398	28,852	74,751	6,000	1,223,971
	SRA	13,859	4,818	104,473	10,817	291,158
816 and 817	Operators	469,455	136,578	1,742,515	10,513,667	33,364,075
	SRA	169	0	4,424	0	0
Subtotals	Operators	479,601	199,779	2,048,409	21,662,085	47,185,326
	SRA	18,761	18,678	155,632	$10,817	$291,158
Grand totals		498,362	218,457	2,204,041	21,672,902	47,476,484

Under the Paperwork Reduction Act, we must obtain OMB approval of all information and recordkeeping requirements. In accordance with 44 U.S.C. 3507(d), we submitted the information collection and recordkeeping requirements of 30 CFR parts 779, 780, 783, 784, 785, 800, 816, and 817 to OMB for review, and OMB approved them.

No person is required to respond to an information collection request unless the forms and regulations requesting the information have currently valid OMB control numbers. These control numbers appear in §§ 779.10, 780.10, 783.10, 784.10, 785.10, 800.10, 816.10, and 817.10.

You should direct any comments on the accuracy of our burden estimates; ways to enhance the quality, utility, and clarity of the information to be collected; and ways to minimize the burden of collection on respondents, to the Information Collection Clearance Officer, Office of Surface Mining Reclamation and Enforcement, 1951 Constitution Ave. NW., Room 203 SIB, Washington, DC 20240.

[823] State Regulatory Agency (SRA).

K. National Environmental Policy Act

The revisions to our regulations constitute a major Federal action affecting the quality of the natural and human environment under the National Environmental Policy Act of 1969 (NEPA). Therefore, we prepared a final Environmental Impact Statement (FEIS) pursuant to section 102(2)(C) of NEPA, 42 U.S.C. 4332(2)(C), the Council on Environmental Quality's (CEQ) implementing regulations (40 CFR part 1500 through 1508), and the Department's implementing regulations (43 CFR part 46). The FEIS, which is entitled ''Stream Protection Rule; Final Environmental Impact Statement,'' is available on the Internet at *www.regulations.gov*. The Docket ID number is OSM–2010–0021. A copy of the FEIS is also available for inspection as part of the administrative record for this rulemaking in the South Interior Building, Room 101, 1951 Constitution Avenue NW., Washington, DC 20240, and various other OSMRE offices, and it is available on our Web site at: *www.osmre.gov*.

We, along with the U.S. Environmental Protection Agency, published notices of availability of the FEIS on November 16, 2016, 81 FR 80592 and 81 FR 80664, respectively. In accordance with 40 CFR 1506.10(b)(2), a final decision on the proposed action was not made until at least thirty days after publication of the U.S. Environmental Protection Agency's notice.

The purpose of the proposed action is to update and revise our regulations to provide a better balance between the Nation's need for coal as an essential energy source with the need to prevent or mitigate adverse environmental effects of present and future surface coal mining operations. The proposed action will apply to both surface mines and underground mines and will protect, minimize, and mitigate adverse impacts on surface water, groundwater, and site productivity, with particular emphasis on protecting or restoring streams, aquatic ecosystems, riparian habitats and corridors, native vegetation, and the ability of mined land to support the uses that it was capable of supporting before mining.

Despite the enactment of SMCRA and the promulgation of federal regulations implementing the statute, scientific studies published since the adoption of our previous regulations indicate that surface coal mining operations continue to have significant negative impacts on streams, fish, and wildlife, which has created a need for us to update and revise the regulations to reflect the best available science in order to avoid or minimize these negative impacts, and provide regulatory certainty to industry. Further evidence is available through several decades of our observing the impacts of coal mining operations. In addition since our earlier rulemakings, there have been significant improvements in technologies and methods for prediction, prevention, mitigation, and reclamation of coal mining impacts on hydrology, streams, fish, wildlife, and related resources. (*See* Section II in this preamble and Chapter 1 in the FEIS).

Additional information about the alternatives considered and the Preferred Alternative selected may be reviewed in the FEIS. The evaluation of alternatives, including the No Action Alternative, and decision to implement the Preferred Alternative is documented in the Record of Decision, which is available on the Internet at *www.regulations.gov*. The Docket ID number is OSM–2010–0021. A copy of the Record of Decision is also available for inspection as part of the administrative record for this rulemaking in the South Interior Building, Room 101, 1951 Constitution Avenue NW., Washington, DC 20240, and it is available on our Web site at: *www.osmre.gov*.

L. Consultation Under the Endangered Species Act of 1973

We completed formal Section 7 consultations with the U.S. Fish and Wildlife Service on the continuation of existing permits and the approval and conduct of future surface coal mining and reclamation operations under both state and federal regulatory programs adopted pursuant to SMCRA, as modified by the final rule. OSMRE and the U.S. Fish and Wildlife Service agree that, due to the broad scope of this rulemaking and consultation, and because the action under consultation sufficiently modifies the OSMRE's regulations consulted on under the 1996 Biological Opinion, that this section 7 consultation supersedes the 1996 Biological Opinion for all future permitting actions. While the incidental take statement accompanying the 1996 Biological Opinion will remain valid for all existing surface coal mining and reclamation permits that complied with the terms and conditions of the 1996 Biological Opinion to obtain incidental take coverage prior to the effective date of the stream protection rule, any new permits, or revisions to previously approved permits where a revision would change the manner or extent of effects to species, would need to complete the technical assistance process identified in the new 2016 Biological Opinion and accompanying Memorandum of Understanding (MOU) or a habitat conservation plan under Section 10 of the ESA in order to demonstrate ESA compliance.

As noted elsewhere in this preamble, FEIS, and the 2016 Biological Opinion, significant new information has become available that reveals that surface coal mining operations affect listed and proposed species and proposed and designated critical habitats in a manner and to an extent not considered in the 1996 Biological Opinion, independently triggering reinitiation of ESA section 7 consultation on the 1996 Biological Opinion. Therefore, even without this rulemaking, OSMRE would have been required to reinitiate consultation on the continuation of existing permits and the approval and conduct of future surface coal mining and reclamation operations under both state and federal regulatory programs adopted pursuant to SMCRA. Further, any failure by OSMRE to ensure full implementation of this rulemaking in the Federal programs and all approved state regulatory programs would require OSMRE to reinitiate consultation on its surface coal mining program.

Because full implementation of the final rule could potentially take several years under SMCRA's cooperative federalism framework, OSMRE included in its ESA section 7 consultation an evaluation of the potential impacts to species resulting from the continuation of existing permits approved under the 1996 Biological Opinion and the approval and conduct of future surface coal mining and reclamation operations by states under the existing regulations between the effective date of the stream protection rule and the time when states update their programs to be consistent with OSMRE's stream protection rule and all program amendments are approved by OSMRE. Therefore, the scope of the consultation includes direct implementation and enforcement of the final rule in federal program states, oversight of state programs under the existing regulations until those states amend their approved programs to be consistent with the final stream protection rule, oversight of state programs as modified to be consistent with the final stream protection rule, including OSMRE's oversight of compliance with requirements related to the protection and enhancement of proposed or listed species and proposed or designated critical habitats.

Through the process of completing this section 7 consultation, OSMRE and the U.S. Fish and Wildlife Service entered into a MOU to improve

interagency coordination and cooperation to ensure that proposed, threatened, and endangered species and proposed and designated critical habitat are adequately protected for all surface coal mining and reclamation permitting actions, including exploration operations, initial permit issuance, renewals, and significant revisions. The MOU complements the U.S. Fish and Wildlife Service's 2016 programmatic Biological Opinion. The MOU specifically addresses the permit review and approval processes when proposed or listed species or proposed or designated critical habitats are involved, also referred to as the technical assistance process, and provides detailed dispute resolution procedures should there be disagreement between the SMCRA regulatory authority and the relevant U.S. Fish and Wildlife Service office under the final 2016 programmatic Biological Opinion for the rule.

The U.S. Fish and Wildlife Service issued a programmatic Biological Opinion finding that OSMRE's direct enforcement of the federal regulatory program, approval and conduct of surface coal mining and reclamation operations by primacy states, and oversight and enforcement of those state programs, as modified by the final rule and associated MOU, is not likely to jeopardize the continued existence of proposed and listed species and is not likely to destroy or adversely modify proposed or designated critical habitat. Compliance with the terms and conditions of the 2016 programmatic Biological Opinion and the MOU is only required where a proposed surface coal mining operation may affect proposed or federally-listed species or proposed or designated critical habitat and the proposed operation chooses to obtain incidental take coverage through compliance with the 2016 programmatic Biological Opinion. Alternatively, where a proposed operation may impact proposed or federally-listed species or proposed or designated critical habitat, the applicant may pursue ESA compliance through a process under section 10 or may modify its project so that it no longer has the potential to impact species or critical habitat.

Further details on this consultation can be found in the Biological Assessment and Biological Opinion for the final rule, available at *www.osmre.gov* and on regulations.gov under the stream protection rule docket. These documents contain the final species lists on which the consultations were based, terms and conditions that must be followed to obtain incidental take coverage, as well as the terms under which this consultation would be reinitiated.

We have determined that adoption of the final rule would have no effect on species under the jurisdiction of the National Marine Fisheries Service. As discussed below, no listed or proposed species under the National Marine Fisheries Service's jurisdiction occur in the study area or in such proximity to it that there would be any direct or indirect effects on them from this action.

One federal agency specifically asked if we gave consideration to the impact upon salmon near Tyonek, Alaska. We did, and there are no listed salmon species in Alaska that would be impacted by mining activity. Furthermore, in response to the proposed rule, another commenter stated that we must consult with the National Marine Fisheries Service on this rule. The commenter also stated that because of the potential impacts to species under the National Marine Fisheries Service's jurisdiction, regulatory authorities must include the National Marine Fisheries Service in consultations pursuant to section 7 of the Endangered Species Act.[824] Specifically, the commenter alleged that the shortnose sturgeon and the New York Bight distinct population segment of Atlantic sturgeon are potentially impacted by drainage from coal mining in the anthracite region of Pennsylvania that flows into the Delaware River. The only drainage from coal mining in the anthracite region of Pennsylvania that flows into the Delaware River originates in Luzerne County and Schuylkill County. We conducted a geographic information systems analysis of the distance this drainage must travel before reaching the Delaware River. Drainage from Luzerne County, after traveling through smaller tributaries, flows first into the Lehigh River. It then travels 63 miles down the river before reaching the Delaware River at Easton, Pennsylvania at approximately mile 183.5 of the Delaware River. Atlantic sturgeons are believed to spawn between the salt front of estuaries and the fall line of major rivers. The fall line of the Delaware River is at Trenton, New Jersey, at approximately Delaware River mile 136. Shortnose sturgeons are known to spawn in the Delaware River between miles 133 and 145 of that river. Thus, this drainage would have to travel over 100 miles before it reached a point where Atlantic sturgeon or shortnose sturgeon may be present. Drainage from Schuylkill County would flow approximately 118 miles down the Schuylkill River where it would enter the Delaware River at Philadelphia at mile 92.5 of the Delaware River. Given the dilution that would take place throughout these distances, we determined that there would be no effect on Atlantic sturgeon or shortnose sturgeon from mining in the anthracite region of Pennsylvania.

The commenter also stated there could be effects to the Carolina distinct population segment of the Atlantic sturgeon from potential mining in North Carolina. There has been no coal mining in North Carolina since 1953. North Carolina is not a part of the action area for this rulemaking and no mining is expected to occur there. Therefore, we have determined that this action will have no effect on the Carolina distinct population segment of Atlantic sturgeon.

The commenter also stated that this rulemaking may have effects on the lower Rio Grande River and the Gulf of Mexico. The National Marine Fisheries Service provided us with a list of species that may be potentially affected in the Gulf of Mexico. The list included the following sea turtle and whale species: North Atlantic distinct population segment of the green turtle, the leatherback sea turtle, the northwest Atlantic distinct population segment of the loggerhead sea turtle, the hawksbill sea turtle, the Kemp's ridley sea turtle, the humpback whale, the sei whale, the fin whale, and the blue whale. None of these species occur in the action area in Texas, nor do they occur in the lower Rio Grande River. These obligate marine species (sea turtles and whales) occur in saltwater in the Gulf of Mexico. They never enter freshwater and do not occur in the area that this rule will impact. Because coal mining occurs in inland areas in this region, drainage from mining would have to travel down tributaries, into streams, then into large rivers and finally out into the Gulf of Mexico before any of the marine species could potentially be encountered. We conducted a geographic information system analysis of the drainage distance from potentially mineable coal to the Gulf Coast. The minimum drainage distance from potentially mineable coal to the Gulf Coast is 80 river miles. We determined that the long distance, and the volume and chemistry of the receiving waters means that there would be no detectable residue of the drainage by the time the drainage encounters any threatened or endangered species. Therefore, there would be no effect on the marine species cited by the commenter.

In conclusion, we determined that this rulemaking will have no effect on

[824] 16 U.S.C. 1536.

species under the jurisdiction of the National Marine Fisheries Service. Therefore, it is not necessary to consult with the National Marine Fisheries Service under the Endangered Species Act.

M. Data Quality Act

In developing this final rule, we did not conduct or use a study, experiment, or survey requiring peer review under the Data Quality Act (Pub. L. 106–554).

List of Subjects

30 CFR Part 700

Administrative practice and procedure, Reporting and recordkeeping requirements, Surface mining, Underground mining

30 CFR Part 701

Law enforcement, Surface mining, Underground mining

30 CFR Part 773

Administrative practice and procedure, Reporting and recordkeeping requirements, Surface mining, Underground mining

30 CFR Part 774

Reporting and recordkeeping requirements, Surface mining, Underground mining

30 CFR Part 777

Reporting and recordkeeping requirements, Surface mining, Underground mining

30 CFR Part 779

Environmental protection, Reporting and recordkeeping requirements, Surface mining

30 CFR Part 780

Incorporation by reference, Reporting and recordkeeping requirements, Surface mining

30 CFR Part 783

Environmental protection, Reporting and recordkeeping requirements, Underground mining

30 CFR Part 784

Reporting and recordkeeping requirements, Underground mining

30 CFR Part 785

Reporting and recordkeeping requirements, Surface mining, Underground mining

30 CFR Part 800

Insurance, Reporting and recordkeeping requirements, Surety bonds, Surface mining, Underground mining

30 CFR Part 816

Environmental protection, Incorporation by reference, Reporting and recordkeeping requirements, Surface mining

30 CFR Part 817

Environmental protection, Incorporation by reference, Reporting and recordkeeping requirements, Underground mining

30 CFR Part 824

Environmental protection, Surface mining

30 CFR Part 827

Environmental protection, Surface mining, Underground mining.

Janice M. Schneider,

Assistant Secretary, Land and Minerals Management.

For the reasons set forth in the preamble, the Department amends 30 CFR parts 700, 701, 773, 774, 777, 779, 780, 783, 784, 785, 800, 816, 817, 824, and 827 as set forth below.

PART 700—GENERAL

■ 1. The authority citation for part 700 continues to read as follows:

Authority: 30 U.S.C. 1201 *et seq.*

■ 2. In § 700.11, revise the section heading and paragraph (d) to read as follows:

§ 700.11 What coal exploration and coal mining operations are subject to our rules?

* * * * *

(d) *Termination and reassertion of jurisdiction*—(1) *Termination of jurisdiction for initial regulatory program sites.* A regulatory authority may terminate its jurisdiction under the initial regulatory program over a completed surface coal mining and reclamation operation, or portion thereof, when the regulatory authority determines in writing that all requirements imposed under subchapter B of this chapter have been successfully completed.

(2) *Termination of jurisdiction for permanent regulatory program sites.* A regulatory authority may terminate its jurisdiction under the permanent regulatory program over a completed surface coal mining and reclamation operation, or portion thereof, when—

(i) The regulatory authority determines in writing that all requirements imposed under the applicable regulatory program have been successfully completed; or

(ii) Where a performance bond or financial assurance was required, the regulatory authority has made a final decision in accordance with the applicable regulatory program to release the performance bond or financial assurance fully.

(3) *Reassertion of jurisdiction.* Following a termination under paragraph (d)(1) or (2) of this section, the regulatory authority must reassert jurisdiction under the regulatory program over a site or operation whenever—

(i) Conditions develop after termination of jurisdiction that would constitute a violation of the reclamation requirements of the applicable regulatory program;

(ii) The conditions described in paragraph (d)(3)(i) of this section are the result of surface coal mining operations for which jurisdiction was terminated; and

(iii) The written determination or bond release referred to in paragraph (d)(1) or (2) of this section was based upon fraud, collusion, or the intentional or unintentional misrepresentation of a material fact. The intentional or unintentional misrepresentation of a material fact includes the discovery of a discharge requiring treatment after termination of jurisdiction, provided that the conditions creating the need for treatment are the result of the mining operation.

(4) *Exception for certain underground mining requirements.* The provisions of paragraphs (d)(1) and (2) of this section do not apply to the domestic water supply replacement requirements of § 817.40 of this chapter or to the structural damage repair or compensation requirements of § 817.121(d) of this chapter.

PART 701—PERMANENT REGULATORY PROGRAM

■ 3. The authority citation for part 701 continues to read as follows:

Authority: 30 U.S.C. 1201 *et seq.*

■ 4. Amend § 701.5 as follows:
■ a. Revise the definitions for ''Acid drainage'' and ''Adjacent area''.
■ b. Add in alphabetical order a definition for ''Angle of dewatering'';
■ c. Revise the definition for ''Approximate original contour'';
■ d. Add in alphabetical order definitions for ''Backfill'', ''Bankfull stage'', and ''Biological condition'';
■ e. Revise the definition for ''Cumulative impact area'';
■ f. Add in alphabetical order a definition for ''Ecological function'';
■ g. Revise the definitions for ''Ephemeral stream'' and ''Excess spoil'';
■ h. Add in alphabetical order definitions for ''Fill'' and ''Form'';

■ i. Remove the definitions for ''Fugitive dust'' and ''Ground water'';
■ j. Add in alphabetical order a definition for ''Groundwater'';
■ k. Remove the definition for ''Highwall remnant'';
■ l. Revise the definition for ''Hydrologic balance'';
■ m. Add in alphabetical order a definition for ''Hydrologic function'';
■ n. Revise the definition for ''Intermittent stream'';
■ o. Add in alphabetical order a definition for ''Invasive species'':
■ p. Revise the definitions for ''Land use'' and ''Material damage'';
■ q. Add in alphabetical order a definition for ''Material damage to the hydrologic balance outside the permit area'';
■ r. Revise the definition for ''Mountaintop removal mining'';
■ s. Add in alphabetical order a definition for ''Native species'';
■ t. Revise the definition for ''Occupied residential dwelling and structures related thereto'';
■ u. Add in alphabetical order definitions for ''Ordinary high water mark'' and ''Parameters of concern'';
■ v. Revise the definition for ''Perennial stream'';
■ w. Add in alphabetical order a definition for ''Premining'';
■ x. Revise the definition for ''Reclamation'';
■ y. Add in alphabetical order a definition for ''Reclamation plan''; and
■ z. Revise the definitions for ''Renewable resource lands'', ''Replacement of water supply'', and ''Temporary diversion''.

The revisions and additions read as follows:

§ 701.5 Definitions.

Acid drainage or *acid mine drainage* means water with a pH of less than 6.0 and in which total acidity exceeds total alkalinity that is discharged from an active, inactive, or abandoned surface coal mining and reclamation operation or from an area affected by surface coal mining and reclamation operations.

* * * * *

Adjacent area means—

(1) *Basic definition for all operations and all resources.* (i) Except as provided in paragraph (1)(ii) of this definition, the adjacent area includes those areas outside the proposed or actual permit area within which there is a reasonable probability of adverse impacts from surface coal mining operations or underground mining activities, as determined by the regulatory authority. The area covered by this term will vary with the context in which a regulation uses this term; *i.e.,* the nature of the resource or resources addressed by a regulation in which the term ''adjacent area'' appears will determine the size and other dimensions of the adjacent area for purposes of that regulation.

(ii) In the context of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* the term *adjacent area* includes those areas outside the proposed or actual permit area where surface coal mining operations or underground mining activities may affect a species listed or proposed for listing as endangered or threatened under that Act or designated or proposed critical habitat under that Act.

(2) *Underground mines.* For underground mines, the adjacent area includes, at a minimum, the area overlying the underground workings plus the area within a reasonable angle of dewatering from the perimeter of the underground workings.

(3) *Underground mine pools.* For all operations, the adjacent area also includes the area that might be affected physically or hydrologically by the dewatering of existing mine pools as part of surface or underground mining operations, plus the area that might be affected physically or hydrologically by mine pools that develop after cessation of mining activities.

* * * * *

Angle of dewatering means the angle created from a vertical line drawn from the outer edge or boundary of high-extraction underground mining workings and an oblique line drawn from terminus of the vertical line at the mine floor to the farthest expected extent that the mining will cause dewatering of groundwater or surface water.

* * * * *

Approximate original contour means that surface configuration achieved by backfilling and grading of the mined area so that the reclaimed area closely resembles the general surface configuration of the land within the permit area prior to any mining activities or related disturbances and blends into and complements the drainage pattern of the surrounding terrain. All highwalls and spoil piles must be eliminated to meet the terms of the definition, but that requirement does not prohibit the approval of terracing under § 816.102 or § 817.102 of this chapter, the retention of access roads in accordance with § 816.150 or § 817.151 of this chapter, or the approval of permanent water impoundments that comply with §§ 816.49, 816.55, and 780.24(b) or §§ 817.49, 817.55, and 784.24(b) of this chapter. For purposes of this definition, the term ''mined area'' does not include excess spoil fills and coal refuse piles.

* * * * *

Backfill, when used as a noun, means the spoil and waste materials used to fill the void resulting from an excavation created for the purpose of extracting coal from the earth. When used as a verb, the term refers to the process of filling that void. The term also includes all spoil and waste materials used to restore the approximate original contour.

Bankfull stage means the water level at which a stream, river, or lake begins to overflow its natural banks and enter the active floodplain, with the exception of an entrenched stream, river, or lake, in which case bankfull stage is the highest scour line, bench, or top of the point bar.

* * * * *

Biological condition refers to the type, diversity, distribution, and abundance of aquatic organisms and communities found in surface water bodies, including streams.

* * * * *

Cumulative impact area means an area that includes the—

(1) Actual or proposed permit area.

(2) HUC–12 (U.S. Geological Survey 12-digit Watershed Boundary Dataset) watershed or watersheds in which the actual or proposed permit area is located or a differently-sized watershed adequate for purposes of preparation of the cumulative hydrologic impact assessment, as determined by the regulatory authority.

(3) Any other area within which impacts resulting from an actual or proposed surface or underground coal mining operation may interact with the impacts of all existing and anticipated surface and underground coal mining on surface-water and groundwater systems, including the impacts that existing and anticipated mining will have during mining and reclamation until final bond release. At a minimum, existing and anticipated mining must include:

(i) The proposed operation;

(ii) All existing surface and underground coal mining operations;

(iii) Any proposed surface or underground coal mining operation for which a permit application has been submitted to the regulatory authority;

(iv) Any proposed surface or underground coal mining operation for which a request for an authorization, certification, or permit has been submitted under the Clean Water Act; and

(v) All existing and proposed coal mining operations that are required to

meet diligent development requirements for leased federal coal and for which a resource recovery and protection plan has been either approved or submitted to and reviewed by the authorized officer of the Bureau of Land Management under 43 CFR 3482.1(b).

* * * * *

Ecological function of a stream means the species richness, diversity, and extent of plants, insects, amphibians, reptiles, fish, birds, mammals, and other organisms for which the stream provides habitat, food, water, or shelter. The biological condition of a stream is one way to describe its ecological function.

* * * * *

Ephemeral stream means a stream or part of a stream that has flowing water only during, and for a short duration after, precipitation and snowmelt events in a typical year. Ephemeral streams include only those conveyances with channels that display both a bed-and-bank configuration and an ordinary high water mark, and that have streambeds located above the water table year-round. Groundwater is not a source of water for streamflow. Runoff from rainfall events and snowmelt is the primary source of water for streamflow.

* * * * *

Excess spoil means spoil material permanently disposed of within the permit area in a location other than the mined-out area. This term also includes all spoil material placed on the mined-out area in excess of the amount necessary to restore the approximate original contour when the spoil placement is part of an excess spoil fill with a toe located outside the mined-out area. This term does not include—

(1) Spoil used to restore the approximate original contour;

(2) Spoil used to blend the final configuration of the mined-out area with the surrounding terrain in non-steep slope areas in accordance with § 816.102(b)(3) or § 817.102(b)(2) of this chapter;

(3) Spoil placed outside the mined-out area as part of a remining operation under § 816.106 or § 817.106 of this chapter;

(4) Spoil placed within the mined-out area in accordance with the thick overburden provisions of § 816.105(b)(1) of this chapter, with the exception of spoil material placed on the mined-out area as part of an excess spoil fill with a toe located outside the mined-out area; or

(5) Any temporary stockpile of material that will be subsequently transported to another location.

* * * * *

Fill means a permanent, non-impounding structure constructed under §§ 816.71 through 816.83 or §§ 817.71 through 817.83 of this chapter for the purpose of disposing of excess spoil or coal mine waste generated by surface coal mining operations or underground mining activities.

* * * * *

Form, as used in §§ 780.28, 784.28, 800.42, 816.57, and 817.57 of this chapter, means the physical characteristics, pattern, profile, and dimensions of a stream channel. The term includes, but is not limited to, the ratio of the flood-prone area to the bankfull width (entrenchment), the ratio of the channel width to channel depth, channel slope, sinuosity, bankfull depth, dominant in-stream substrate particle size, and capacity for riffles and pools.

* * * * *

Groundwater means subsurface water located in soils and geologic formations that are fully saturated with water, including regional, local, and perched aquifers. This term does not include water in soil horizons that are temporarily saturated by precipitation events.

* * * * *

Hydrologic balance means the relationship between the quality and quantity of water inflow to, water outflow from, and water storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake, or reservoir. It encompasses the dynamic relationships among precipitation, runoff, evaporation, and changes in storage of groundwater and surface water, as well as interactions that result in changes in the chemical composition or physical characteristics of groundwater and surface water.

Hydrologic function, as used in §§ 780.28, 784.28, 800.42, 816.57, and 817.57 of this chapter, means the role that streams play in the transport of water and the flow of water within the stream channel and floodplain. The term includes total flow volume, seasonal variations in streamflow and base flow, and provision of the water needed to maintain floodplains and wetlands associated with the stream.

* * * * *

Intermittent stream means a stream or part of a stream that has flowing water during certain times of the year when groundwater provides water for streamflow. The water table is located above the streambed for only part of the year, which means that intermittent streams may not have flowing water during dry periods. Runoff from rainfall events and snowmelt is a supplemental source of water for streamflow. Intermittent streams include only those conveyances with channels that display both a bed-and-bank configuration and an ordinary high water mark.

Invasive species means an alien species (a species that is not native to the region or area), the introduction of which has caused or is likely to cause economic or environmental harm or harm to human health.

* * * * *

Land use means specific uses or management-related activities, rather than the vegetation or cover of the land. Land uses may be identified in combination when joint or seasonal uses occur. Each land use category includes land used for facilities that support the land use. For purposes of this chapter, the following land use categories apply:

(1) *Cropland.* Land used for the production of crops for harvest, either alone or in rotation with grasses and legumes. Crops include row crops, small grains, hay, commercial nursery plantings, vegetables, fruits, nuts, crops, and other plants typically cultivated for commercial purposes in fields, orchards, vineyards, and similar settings.

(2) *Pastureland or land occasionally cut for hay.* Land used primarily for the long-term production of adapted, domesticated forage plants to be grazed by livestock or occasionally cut and cured for livestock feed.

(3) *Grazing land.* Land used for grasslands and forest lands where the indigenous vegetation is actively managed for grazing, browsing, or occasional hay production.

(4) *Forestry.* Land used or managed for the long-term production of wood, wood fiber, or wood-derived products.

(5) *Residential.* Land used for single- and multiple-family housing, mobile home parks, or other residential lodgings.

(6) *Industrial/Commercial.* Land used for—

(i) Extraction or transformation of materials for fabrication of products, wholesaling of products, or long-term storage of products. This includes all heavy and light manufacturing facilities.

(ii) Retail or trade of goods or services, including hotels, motels, stores, restaurants, and other commercial establishments.

(7) *Recreation.* Land used for public or private leisure-time activities, including developed recreation facilities such as parks, camps, and amusement areas, as well as areas for less intensive uses such as hiking, canoeing, and other undeveloped recreational uses.

(8) *Fish and wildlife habitat.* Land dedicated wholly or partially to the

production, protection, or management of species of fish or wildlife.

(9) *Developed water resources.* Land used for storing water for beneficial uses, such as stock ponds, irrigation, fire protection, flood control, and water supply.

(10) *Undeveloped land or no current use or land management.* Land that is undeveloped or, if previously developed, land that has been allowed to return naturally to an undeveloped state or has been allowed to return to forest through natural succession.

* * * * *

Material damage, in the context of §§ 784.30 and 817.121 of this chapter, which pertain to subsidence from underground mining operations, means:

(1) Any functional impairment of surface lands, surface features (including wetlands, streams, and bodies of water), structures, or facilities;

(2) Any physical change that—

(i) Has a significant adverse impact on the affected land's capability to support any current or reasonably foreseeable uses; or

(ii) Causes a significant loss in production or income; or

(3) Any significant change in the condition, appearance, or utility of any structure or facility from its pre-subsidence condition.

Material damage to the hydrologic balance outside the permit area means an adverse impact, as determined in accordance with the rest of this definition, resulting from surface coal mining and reclamation operations, underground mining activities, or subsidence associated with underground mining activities, on the quality or quantity of surface water or groundwater, or on the biological condition of a perennial or intermittent stream. The determination of whether an adverse impact constitutes material damage to the hydrologic balance outside the permit area will be based on consideration of the baseline data collected under § 780.19 or § 784.19 of this chapter and the following reasonably anticipated or actual effects of the operation:

(1) For a surface water located outside the permit area, effects that cause or contribute to a violation of applicable state or tribal water quality standards, including, but not limited to, state or tribal water quality standards established under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, for a surface water for which water quality standards have not been established, effects that cause or contribute to non-attainment of any premining use of that surface water outside the permit area;

(2) Effects that cause or contribute to a violation of applicable state or tribal water quality standards for groundwater located outside the permit area, or effects that preclude a premining use of groundwater located outside the permit area; or

(3) Effects that result in a violation of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.*

* * * * *

Mountaintop removal mining means surface mining activities in which the mining operation extracts an entire coal seam or seams running through the upper fraction of a mountain, ridge, or hill, except for outcrop barriers retained under § 824.11(b)(2) of this chapter, by removing substantially all overburden above the coal seam and using that overburden to create a level plateau or a gently rolling contour, with no highwalls remaining, that is capable of supporting one or more of the postmining land uses identified in § 785.14 of this chapter.

* * * * *

Native species means, with respect to a particular ecosystem, a species that historically occurred or currently occurs in that ecosystem. This term does not include alien species that occur in that ecosystem or species introduced to that ecosystem.

* * * * *

Occupied residential dwelling and structures related thereto means, for purposes of §§ 784.30 and 817.121 of this chapter, any building or other structure that, at the time the subsidence occurs, is used either temporarily, occasionally, seasonally, or permanently for human habitation. This term also includes any building, structure, or facility installed on, above, or below the land surface if that building, structure, or facility is adjunct to or used in connection with an occupied residential dwelling. Examples of such structures include, but are not limited to, garages; storage sheds and barns; greenhouses and related buildings; utilities and cables; fences and other enclosures; retaining walls; paved or improved patios, walks and driveways; septic sewage treatment facilities; and lot drainage and lawn and garden irrigation systems. This term does not include any structure used only for commercial agricultural, industrial, retail or other commercial purposes.

* * * * *

Ordinary high water mark means that line on the bank established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

* * * * *

Parameters of concern means those chemical or physical characteristics and properties of surface water or groundwater that could be altered by surface or underground mining activities, including discharges associated with those activities, in a manner that would adversely impact the quality of groundwater or surface water, including adverse impacts on aquatic life.

Perennial stream means a stream or part of a stream that has flowing water year-round during a typical year. The water table is located above the streambed for most of the year. Groundwater is the primary source of water for streamflow. Runoff from rainfall events and snowmelt is a supplemental source of water for streamflow. Perennial streams include only those conveyances with channels that display both a bed-and-bank configuration and an ordinary high water mark.

* * * * *

Premining refers to the conditions and features that exist on a site at the time of application for a permit to conduct surface coal mining operations.

* * * * *

Reclamation means those actions taken to restore mined land and associated disturbed areas to a condition in which the site is capable of supporting the uses it was capable of supporting prior to any mining or any higher or better uses approved by the regulatory authority. The site also must meet all other requirements of the permit and regulatory program that pertain to restoration of the site. For sites with discharges that require treatment, this term also includes those actions taken to eliminate, remediate, or treat those discharges, including both discharges from the mined area and all other discharges that are hydrologically connected to either the mined area or the operation, regardless of whether those discharges are located within the disturbed area.

Reclamation plan means the plan for reclamation of surface coal mining operations under parts 780, 784, and 785 of this chapter.

* * * * *

Renewable resource lands means aquifers, aquifer recharge areas, recharge areas for other subsurface water, watersheds for surface water bodies that

function as a water supply, areas for agricultural or silvicultural production of food and fiber, and grazing lands.

Replacement of water supply means, with respect to protected water supplies contaminated, diminished, or interrupted by coal mining operations, provision of water supply on both a temporary and permanent basis equivalent to premining quantity and quality. Replacement includes provision of an equivalent water-delivery system and payment of operation and maintenance costs in excess of customary and reasonable delivery costs for premining water supplies.

* * * * *

Temporary diversion means a channel constructed to convey streamflow or overland flow away from the site of actual or proposed coal exploration or surface coal mining and reclamation operations or to convey those flows to a siltation structure or other treatment facility. The term includes only those channels not approved by the regulatory authority to remain after reclamation as part of the approved postmining land use.

* * * * *

■ 5. Add § 701.16 to read as follows:

§ 701.16 How will the stream protection rule apply to existing and future permits and permit applications?

(a) *General applicability.* The revisions to parts 701 through 827 of this chapter that became effective on January 19, 2017 (hereafter referred to as the stream protection rule) apply as provided therein or, if there is no specific applicability provision in the revisions, to—

(1) Any application for a new permit submitted to the regulatory authority after the effective date of the stream protection rule under the applicable regulatory program.

(2) Any application for a new permit pending a decision under § 773.7 of this chapter or its state program counterpart as of the effective date of the stream protection rule under the applicable regulatory program, unless the regulatory authority has determined the application to be administratively complete under § 777.15 of this chapter or its state program counterpart before the effective date of the stream protection rule under the applicable regulatory program.

(3) Any application for the addition of acreage to an existing permit submitted to the regulatory authority after the effective date of the stream protection rule under the applicable regulatory program, with the exception of applications for incidental boundary revisions that do not propose to add acreage for coal removal.

(4) Any application for the addition of acreage to an existing permit pending a decision under § 773.7 of this chapter or its state program counterpart as of the effective date of the stream protection rule under the applicable regulatory program, with two exceptions:

(i) Applications for incidental boundary revisions that do not propose to add acreage for coal removal; and

(ii) Applications that the regulatory authority has determined to be administratively complete before the effective date of the stream protection rule under the applicable regulatory program.

(5) Any application for a permit revision submitted on or after the effective date of the stream protection rule under the applicable regulatory program, or pending a decision as of that date, that proposes a new excess spoil fill, coal mine waste refuse pile, or coal mine waste slurry impoundment or that proposes to move or expand the location of an approved excess spoil fill or coal mine waste facility.

(b) [Reserved]

PART 773—REQUIREMENTS FOR PERMITS AND PERMIT PROCESSING

■ 6. The authority citation for part 773 is revised to read as follows:

Authority: 30 U.S.C. 1201 *et seq.,* 54 U.S.C. 300101 *et seq.,* 16 U.S.C. 661 *et seq.,* 16 U.S.C. 703 *et seq.,* 16 U.S.C. 668a *et seq.,* 16 U.S.C. 469 *et seq.,* and 16 U.S.C. 1531 *et seq.*

■ 7. Revise § 773.5 to read as follows:

§ 773.5 How must the regulatory authority coordinate the permitting process with requirements under other laws?

(a) To avoid duplication, each regulatory program must provide for the coordination of review of permit applications and issuance of permits for surface coal mining operations with the federal and state agencies responsible for permitting and related actions under the following laws and their implementing regulations:

(1) The Clean Water Act (33 U.S.C. 1251 *et seq.*).

(2) The Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*).

(3) The Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

(4) The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703 *et seq.*).

(5) The Bald and Golden Eagle Protection Act (16 U.S.C. 668–668d).

(b) In addition to the requirements of paragraph (a) of this section, each federal regulatory program must provide for coordination of the review of permit applications and issuance of permits for surface coal mining operations with applicable requirements of the following laws and their implementing regulations:

(1) The National Historic Preservation Act of 1966 (54 U.S.C. 300101 *et seq.*).

(2) The Archeological and Historic Preservation Act of 1974 (16 U.S.C. 469 *et seq.*).

(3) The Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa *et seq.*), where federal or Indian lands covered by that Act are involved.

(4) The National Environmental Policy Act of 1969 (42 U.S.C. 4371 *et seq.*).

■ 8. Revise § 773.7 to read as follows:

§ 773.7 How and when will the regulatory authority review and make a decision on an application for a permit, permit revision, or permit renewal?

(a) *General.* The regulatory authority will review an application for a permit, permit revision, or permit renewal; and issue a written decision granting, requiring modification of, or denying the application. Before making this decision, the regulatory authority must consider any written comments and objections submitted, as well as the records of any informal conference or hearing held on the application.

(b) *When will the regulatory authority make a decision on a permit application*? (1) If an informal conference is held under § 773.6(c) of this part, the regulatory authority will issue a decision on the application within 60 days of the close of the conference.

(2) If no informal conference is held under § 773.6(c) of this part, the regulatory authority must issue a decision on the application within a reasonable time established in the regulatory program. In determining what constitutes a reasonable time, the regulatory authority must consider the following five factors:

(i) The time needed for proper site investigations.

(ii) The complexity of the permit application.

(iii) Whether there are any written objections on file.

(iv) Whether the application previously has been approved or disapproved, in whole or in part.

(v) The time required for coordination of permitting activities with other agencies under § 773.5 of this part.

(c) *Who has the burden of proof*? You, the applicant for a permit, revision of a permit, or the transfer, assignment, or sale of permit rights, have the burden of establishing that your application is in compliance with all requirements of the regulatory program.

■ 9. Revise § 773.15 to read as follows:

§ 773.15 What findings must the regulatory authority make before approving a permit application?

The regulatory authority may not approve any application for a permit or a significant revision of a permit that you, the applicant, submit unless the application affirmatively demonstrates and the regulatory authority finds, in writing, on the basis of information set forth in the application or from information otherwise available that is documented in the approval, that—

(a) The application is accurate and complete and you have complied with all applicable requirements of the Act and the regulatory program.

(b) You have demonstrated that reclamation as required by the Act and the regulatory program can be accomplished under the reclamation plan contained in the permit application.

(c) The proposed permit area is not within an area—

(1) Under study or administrative proceedings under a petition filed pursuant to part 764 or part 769 of this chapter to have an area designated as unsuitable for surface coal mining operations, unless you demonstrate that you made substantial legal and financial commitments before January 4, 1977, in relation to the operation covered by the permit application;

(2) Designated under parts 762 and 764 or 769 of this chapter as unsuitable for the type of surface coal mining operations that you propose to conduct; or

(3) Subject to the prohibitions of § 761.11 of this chapter, unless one or more of the exceptions provided under that section apply.

(d) For mining operations where the private mineral estate to be mined has been severed from the private surface estate, you have submitted to the regulatory authority the documentation required under § 778.15(b) of this chapter.

(e) The regulatory authority has—

(1) Made an assessment of the probable cumulative impacts of all anticipated coal mining on the hydrologic balance in the cumulative impact area; and

(2) Determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

(f) You have demonstrated that any existing structure will comply with § 701.11(d) of this chapter and the applicable performance standards of subchapter B or K of this chapter.

(g) You have paid all reclamation fees from previous and existing operations as required by subchapter R of this chapter.

(h) You have satisfied the applicable requirements of part 785 of this chapter.

(i) If applicable, you have satisfied the requirements for approval of a long-term, intensive agricultural postmining land use.

(j)(1) You have provided documentation that the proposed surface coal mining and reclamation operations would have no effect on species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or on designated or proposed critical habitat under that law; or

(2) You and the regulatory authority have documented compliance with a valid biological opinion that covers issuance of permits for surface coal mining operations and the conduct of those operations under the applicable regulatory program; or

(3) You have provided documentation that interagency consultation under section 7 of the Endangered Species Act of 1973, 16 U.S.C. 1536, has been completed for the proposed operation; or

(4) You have provided documentation that the proposed operation is covered under a permit issued pursuant to section 10 of the Endangered Species Act of 1973, 16 U.S.C. 1539.

(k) The regulatory authority has taken into account the effect of the proposed permitting action on properties listed on and eligible for listing on the National Register of Historic Places. This finding may be supported in part by inclusion of appropriate permit conditions or changes in the operation plan protecting historic resources or a documented decision that the regulatory authority has determined that no additional protection measures are necessary.

(l) For a proposed remining operation where you intend to reclaim in accordance with the requirements of § 816.106 or § 817.106 of this chapter, the site of the operation is a previously mined area, as that term is defined in § 701.5 of this chapter.

(m) You are eligible to receive a permit, based on the reviews under §§ 773.7 through 773.14 of this part.

(n) You have demonstrated, and the regulatory authority concurs, that—

(1) The operation has been designed to prevent the formation of toxic mine drainage that would require long-term treatment after mining has been completed.

(2) A thorough analysis of all available evidence supports a conclusion that the design of the proposed operation will work as intended to prevent the formation of discharges that would require long-term treatment after mining has been completed. If a study or other evidence supports a contrary conclusion, you must explain why that study or other evidence is not credible or applicable to the proposed operation.

(o) To the extent possible using the best technology currently available, the proposed operation has been designed to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and to achieve enhancement of those resources where practicable, as required under § 780.16 or § 784.16 of this chapter.

■ 10. Revise § 773.17 to read as follows:

§ 773.17 What conditions must the regulatory authority place on each permit issued?

The regulatory authority must include the following conditions in each permit issued:

(a) You, the permittee, may conduct surface coal mining and reclamation operations only on those lands that are specifically designated as the permit area on the maps submitted with the application and authorized for the term of the permit and that are subject to the performance bond or other equivalent guarantee in effect pursuant to part 800 of this chapter.

(b) You must conduct all surface coal mining and reclamation operations only as described in the approved application, except to the extent that the regulatory authority otherwise directs in the permit.

(c) You must comply with the terms and conditions of the permit, all applicable requirements of the Act, and the requirements of the regulatory program.

(d) Without advance notice, delay, or a search warrant, upon presentation of appropriate credentials, you must allow authorized representatives of the Secretary and the regulatory authority to—

(1) Have the right of entry provided for in §§ 842.13 and 840.12 of this chapter; and

(2) Be accompanied by private persons for the purpose of conducting an inspection in accordance with parts 840 and 842 of this chapter, when the inspection is in response to an alleged violation reported to the regulatory authority by the private person.

(e) You must take all possible steps to minimize any adverse impact to the environment or public health and safety resulting from noncompliance with any term or condition of the permit, including, but not limited to—

(1) Any accelerated or additional monitoring necessary to determine the nature and extent of noncompliance and the results of the noncompliance.

(2) Immediate implementation of measures necessary to comply.

(3) Warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.

(4) Notifying the regulatory authority and other appropriate state and federal regulatory agencies whenever conditions within the permit area result in an imminent danger to the health or safety of the public or cause or can reasonably be expected to cause significant, imminent environmental harm to land, air, or water resources, regardless of whether a noncompliance exists.

(f) As applicable, you must comply with § 701.11(d) and subchapter B or K of this chapter for compliance, modification, or abandonment of existing structures.

(g) You or the operator must pay all reclamation fees required by subchapter R of this chapter for coal produced under the permit for sale, transfer, or use, in the manner required by that subchapter.

(h) You must obtain all necessary authorizations, certifications, and permits in accordance with other applicable federal, state, and tribal laws before conducting any activities that require authorization, certification, or a permit under those laws.

(i) You must comply with all effluent limitations and conditions in any National Pollutant Discharge Elimination System permit issued for your operation by the appropriate authority under the Clean Water Act, 33 U.S.C. 1251 *et seq.*

■ 11. Add § 773.20 to read as follows:

§ 773.20 What actions must the regulatory authority take when a permit is issued on the basis of inaccurate information?

(a) We, the regulatory authority, will take the actions set forth in paragraphs (b) through (f) of this section if we issue a permit on the basis of what we later determine to be inaccurate baseline information, provided that the information is inaccurate to the extent that it would invalidate one or more of the findings required for permit application approval under § 773.15 or other provisions of this chapter.

(b) We will provide you, the permittee, with written notice that we have made a preliminary finding that your permit was issued on the basis of inaccurate information of the nature described in paragraph (a) of this section. The notice will set forth the reasons for that finding.

(c) Within 30 days of receiving a notice under paragraph (b) of this section, you may—

(1) Challenge the preliminary finding by providing us with an explanation of why the information either is not inaccurate or does not meet the standard established in paragraph (a) of this section; or

(2) Supply, or agree to supply, updated information and submit an application to revise the permit as needed to correct the deficiency in an expeditious manner.

(d)(1) We will evaluate any explanation that you submit under paragraph (c)(1) of this part.

(2)(i) If you do not take either of the actions identified under paragraph (c) of this section, or if the evaluation under paragraph (d)(1) of this section determines that the deficiency identified in our preliminary finding still exists, we will serve you with a written notice of proposed suspension or rescission of the permit, together with a statement of the reasons for the proposed suspension or rescission,

(ii) Any proposed suspension or rescission will take effect 60 days from the date that we provide notice under paragraph (d)(2)(i) of this section, unless you obtain temporary relief under § 775.11(b)(2) of this chapter.

(3) The proposed suspension or rescission under paragraph (d)(2) of this section is subject to administrative review under part 775 of this chapter.

(4) Section 843.14 of this chapter will govern service under paragraph (d)(2) of this section.

(e)(1) If we suspend your permit under paragraph (d)(2) of this section, you must cease all surface coal mining operations under the permit and complete all affirmative obligations specified in the suspension order within the time established in that order. We will rescind your permit in accordance with paragraph (d)(2) of this section if you do not complete those obligations within the time specified.

(2) If we rescind your permit under paragraph (d)(2) of this section, you must cease all surface coal mining operations under the permit and complete reclamation within the time specified in the order.

(f)(1) If we suspend or rescind your permit under paragraph (d)(2) of this section, the bond posted for the permit will remain in effect until you complete all reclamation obligations under the reclamation plan approved in the permit and obtain bond release under §§ 800.40 through 800.44 of this chapter.

(2) We will initiate bond forfeiture proceedings under § 800.50 of this chapter if you do not complete all reclamation obligations within the time specified in the order issued under paragraph (d)(2) of this section.

PART 774—REVISION; RENEWAL; TRANSFER, ASSIGNMENT, OR SALE OF PERMIT RIGHTS; POST-PERMIT ISSUANCE REQUIREMENTS

■ 12. The authority citation for part 774 continues to read as follows:

Authority: 30 U.S.C. 1201 et seq.

■ 13. Revise the part heading for part 774 to read as set forth above.

■ 14. Revise § 774.9 to read as follows:

§ 774.9 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0116. The regulatory authority uses this information to determine if you, the applicant, meet the requirements for permit revision; permit renewal; or the transfer, assignment, or sale of permit rights. The regulatory authority also uses this information to update the Applicant/Violator System. You must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

■ 15. Revise § 774.10 to read as follows:

§ 774.10 When must the regulatory authority review a permit after issuance?

(a)(1) The regulatory authority must review each permit issued and outstanding under an approved regulatory program during the term of the permit.

(2) The review required by paragraph (a)(1) of this section must include, but is not limited to, an evaluation of the impacts of the operation on fish, wildlife, and related environmental values in the permit and adjacent areas. The regulatory authority must use that evaluation to determine whether it is necessary to order the permittee to modify the fish and wildlife enhancement plan approved in the

permit to ensure that the operation minimizes disturbances and adverse impacts on fish, wildlife, and related environmental values within the permit and adjacent areas to the extent possible using the best technology currently available.

(3) The review required by paragraph (a)(1) of this section must occur not later than the middle of each permit term except that permits with a term longer than 5 years must be reviewed no less frequently than the permit midterm or every 5 years, whichever is more frequent.

(4) Permits granted in accordance with § 785.14 of this chapter (mountaintop removal mining) and permits containing a variance from approximate original contour restoration requirements in accordance with § 785.16 of this chapter must be reviewed no later than 3 years from the date of issuance of the permit, unless the permittee affirmatively demonstrates that the proposed development is proceeding in accordance with the terms of the permit. This review may be combined with the first review conducted under paragraph (a)(3) of this section if the permit term does not exceed 5 years.

(5) Permits containing an experimental practice approved in accordance with § 785.13 of this chapter must be reviewed as set forth in the permit or at least every 2½ years from the date of issuance as required by the regulatory authority, in accordance with § 785.13(g) of this chapter.

(6) Permits granted in accordance with § 785.18 of this chapter (variance for delay in contemporaneous reclamation requirement in combined surface and underground mining operations) must be reviewed no later than 3 years from the date of issuance of the permit. This review may be combined with the first review conducted under paragraph (a)(3) of this section if the permit term does not exceed 5 years.

(b) After a review required by paragraph (a) of this section, or at any time, the regulatory authority may, by order, require reasonable revision of a permit in accordance with § 774.13 to ensure compliance with the Act and the regulatory program.

(c) Any order of the regulatory authority requiring revision of a permit must be based upon written findings and is subject to the provisions for administrative and judicial review in part 775 of this chapter. Copies of the order must be sent to the permittee.

(d) Permits may be suspended or revoked in accordance with subchapter L of this chapter.

■ 16. Revise § 774.15 to read as follows:

§ 774.15 How may I renew a permit?

(a) *Right of renewal.* A valid permit, issued pursuant to an approved regulatory program, carries with it the right of successive renewal, within the approved boundaries of the existing permit, upon expiration of the term of the permit.

(b) *Application requirements and procedures.* (1) You, the permittee, must file an application for renewal of a permit with the regulatory authority at least 120 days before expiration of the existing permit term.

(2) You must file the application for renewal in the form required by the regulatory authority. At a minimum, your application must include the following information—

(i) Your name and address.

(ii) The term of the renewal requested.

(iii) The permit number or other identifier.

(iv) Evidence that a liability insurance policy for the operation will continue in full force and effect during the proposed renewal term or that you will have adequate self-insurance under § 800.60 of this chapter for the proposed term of renewal.

(v) Evidence that the performance bond for the permit will continue in full force and effect for the proposed term of renewal.

(vi) A copy of the newspaper notice and proof of publication, as required by § 778.21 of this chapter.

(vii) Additional revised or updated information required by the regulatory authority.

(3) Applications for renewal are subject to the public notification and public participation requirements in §§ 773.6 and 773.19(b) of this chapter.

(4) If an application for renewal includes any proposed revisions to the permit, those revisions must be identified and processed in accordance with § 774.13 of this part.

(c) *Approval process*—(1) *Criteria for approval.* The regulatory authority must approve a complete and accurate application for permit renewal, unless it finds, in writing that—

(i) The terms and conditions of the existing permit are not being satisfactorily met.

(ii) The present surface coal mining and reclamation operations are not in compliance with the environmental protection standards of the Act and the regulatory program. The permit eligibility standards in §§ 773.12 through 773.14 of this chapter apply to this determination.

(iii) The requested renewal substantially jeopardizes your continuing ability to comply with the Act and the regulatory program on existing permit areas.

(iv) You have not provided evidence of having continuing liability insurance or self-insurance coverage as required under § 800.60 of this chapter.

(v) You have not provided evidence that any performance bond required to be in effect for the operation will continue in full force and effect for the proposed term of renewal.

(vi) You have not posted any additional bond required by the regulatory authority under part 800 of this chapter.

(vii) You have not provided any additional revised or updated information required by the regulatory authority.

(2) *Burden of proof.* In the determination of whether to approve or deny an application for renewal of a permit, the burden of proof is on the opponents of renewal.

(3) *Alluvial valley floor variance.* Areas previously identified in the reclamation plan for the original permit as exempt from the standards in paragraphs (A) and (B) of section 510(b)(5) of the Act and the requirements of paragraphs (c) through (e) of § 785.19 of this chapter will retain their exempt status for the term of the renewal.

(d) *Renewal term.* The term for any permit renewal must not exceed the original permit term under § 773.19(c) of this chapter.

(e) *Notice of decision.* The regulatory authority must send copies of its decision to the applicant, to each person who filed comments or objections on the renewal, to each party to any informal conference held on the permit renewal, and to OSMRE if OSMRE is not the regulatory authority.

(f) *Administrative and judicial review.* Any person having an interest which is or may be adversely affected by the decision of the regulatory authority has the right to administrative and judicial review under part 775 of this chapter.

PART 777—GENERAL CONTENT REQUIREMENTS FOR PERMIT APPLICATIONS

■ 17. Revise the authority citation for part 777 to read as follows:

Authority: 30 U.S.C. 1201 et seq.

■ 18. Revise § 777.1 to read as follows:

§ 777.1 What does this part cover?

This part provides minimum requirements concerning data collection and analysis and the format and general content of permit applications under a regulatory program.

■ 19. Revise § 777.11 to read as follows:

§ 777.11 What are the format and content requirements for permit applications?

(a) An application must—

(1) Contain current information, as required by this subchapter.

(2) Be clear and concise.

(3) Be filed in the format prescribed by the regulatory authority.

(b) If used in the application, referenced materials must either be provided to the regulatory authority by the applicant or be readily available to the regulatory authority. If provided, relevant portions of referenced published materials must be presented briefly and concisely in the application by photocopying or abstracting and with explicit citations.

(c) Applications for permits; revisions; renewals; or transfers, sales or assignments of permit rights must be verified under oath, by a responsible official of the applicant, that the information contained in the application is true and correct to the best of the official's information and belief.

■ 20. Revise § 777.13 to read as follows:

§ 777.13 What requirements apply to the collection, analysis, and reporting of technical data and to the use of models?

(a) *Technical data and analyses.* (1) All technical data submitted in the application must be accompanied by metadata, including, but not limited to, the names of persons or organizations that collected and analyzed the data, the dates that the data were collected and analyzed, descriptions of the methodology used to collect and analyze the data, the quality assurance and quality control procedures used by the laboratory and the results of those procedures, and the field sampling sheets for each surface-water sample collected and for each groundwater sample collected from wells, seeps, and springs. For electronic data, metadata must include identification of any data transformations.

(2) Technical analyses must be planned by or under the direction of a professional qualified in the subject to be analyzed.

(b) *Sampling and analyses of groundwater and surface water.* All sampling and analyses of groundwater and surface water performed to meet the requirements of this subchapter must be conducted according to—

(1) The methodology in 40 CFR parts 136 and 434, to the extent applicable; or

(2) A scientifically defensible methodology acceptable to the regulatory authority, in coordination with any agency responsible for administering or implementing a program under the Clean Water Act, 33 U.S.C. 1251 *et seq.,* that requires water sampling and analysis.

(c) *Geological sampling and analysis.* All geological sampling and analyses performed to meet the requirements of this subchapter must be conducted using a scientifically defensible methodology.

(d) *Use of models.* (1) Unless the regulatory authority specifies otherwise, you may use modeling techniques, interpolation, or statistical techniques to prepare the permit application.

(2) You must use actual site-specific data to calibrate each model. All models must be validated for the region and ecosystem in which they will be used.

(3) The regulatory authority may either disallow the use of models or require that you submit additional actual, site-specific data.

■ 21. Revise § 777.14 to read as follows:

§ 777.14 What general requirements apply to maps and plans?

(a)(1) Maps submitted with applications must be presented in a consolidated format, to the extent possible, and must include all the types of information that are set forth on topographic maps of the U.S. Geological Survey of the 1:24,000 scale series.

(2) Maps of the proposed permit area must be at a scale of 1:6,000 or larger.

(3) Maps of the adjacent area must clearly show the lands and waters within that area and must be at a scale determined by the regulatory authority, but in no event smaller than 1:24,000.

(b) When applicable, maps must clearly show those portions of the operation where surface coal mining operations occurred—

(1) Prior to August 3, 1977.

(2) After August 3, 1977, but prior to either—

(i) May 3, 1978; or

(ii) January 1, 1979, if an applicant or operator obtained a small operator's exemption in accordance with § 710.12 of this chapter.

(3) After May 3, 1978 (or January 1, 1979, for persons who received a small operator's exemption in accordance with § 710.12 of this chapter) and prior to the approval of the applicable regulatory program.

■ 22. Revise § 777.15 to read as follows:

§ 777.15 What information must my application include to be administratively complete?

An administratively complete application for a permit to conduct surface coal mining operations and must include at a minimum—

(a) For surface mining activities, the information required under parts 778, 779, and 780 of this chapter, and, as applicable to the operation, part 785 of this chapter.

(b) For underground mining activities, the information required under parts 778, 783, and 784 of this chapter, and, as applicable to the operation, part 785 of this chapter.

■ 23. Lift the suspension of § 779.21 and revise part 779 to read as follows:

PART 779—SURFACE MINING PERMIT APPLICATIONS—MINIMUM REQUIREMENTS FOR INFORMATION ON ENVIRONMENTAL RESOURCES AND CONDITIONS

Sec.

779.1 What does this part do?
779.2 What is the objective of this part?
779.4 What responsibilities do I and government agencies have under this part?
779.10 Information collection.
779.11 [Reserved]
779.12 [Reserved]
779.17 What information on cultural, historic, and archeological resources must I include in my permit application?
779.18 What information on climate must I include in my permit application?
779.19 What information on vegetation must I include in my permit application?
779.20 What information on fish and wildlife resources must I include in my permit application?
779.21 What information on soils must I include in my permit application?
779.22 What information on land use and productivity must I include in my permit application?
779.24 What maps, plans, and cross-sections must I submit with my permit application?
779.25 [Reserved]

Authority: 30 U.S.C. 1201 *et seq.* and 54 U.S.C. 300101 *et seq.*

§ 779.1 What does this part do?

This part establishes the minimum requirements for the descriptions of environmental resources and conditions that you must include in an application for a permit to conduct surface mining activities.

§ 779.2 What is the objective of this part?

The objective of this part is to ensure that you, the permit applicant, provide the regulatory authority with a complete and accurate description of the environmental resources that may be impacted or affected by proposed surface mining activities and the environmental conditions that exist within the proposed permit and adjacent areas.

§ 779.4 What responsibilities do I and government agencies have under this part?

(a) You, the permit applicant, must provide all information required by this

part in your application, except when this part specifically exempts you from doing so.

(b) State and federal government agencies are responsible for providing information for permit applications to the extent that this part specifically requires that they do so.

§ 779.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0035. The information is being collected to meet the requirements of sections 507 and 508 of SMCRA, which require that each permit application include a description of the premining environmental resources within and around the proposed permit area. The regulatory authority uses this information as a baseline for evaluating the impacts of mining. You, the permit applicant, must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

§ 779.11 [Reserved]

§ 779.12 [Reserved]

§ 779.17 What information on cultural, historic, and archeological resources must I include in my permit application?

(a) Your permit application must describe the nature of cultural, historic, and archeological resources listed or eligible for listing on the National Register of Historic Places and known archeological sites within the proposed permit and adjacent areas. The description must be based on all available information, including, but not limited to, information from the State Historic Preservation Officer and from local archeological, historical, and cultural preservation agencies.

(b) The regulatory authority may require you, the applicant, to identify and evaluate important historic and archeological resources that may be eligible for listing on the National Register of Historic Places by—

(1) Collecting additional information;

(2) Conducting field investigations, or

(3) Completing other appropriate analyses.

§ 779.18 What information on climate must I include in my permit application?

The regulatory authority may require that your permit application contain a statement of the climatic factors that are representative of the proposed permit area, including:

(a) The average seasonal precipitation.

(b) The average direction and velocity of prevailing winds.

(c) Seasonal temperature ranges.

(d) Additional data that the regulatory authority deems necessary to ensure compliance with the requirements of this subchapter.

§ 779.19 What information on vegetation must I include in my permit application?

(a) You must identify, describe, and map existing vegetation types and plant communities within the proposed permit area. If you propose to use reference areas for purposes of determining revegetation success under § 816.116 of this chapter, you also must identify, describe, and map existing vegetation types and plant communities within any proposed reference areas.

(b) The description and map required under paragraph (a) of this section must—

(1) Be in sufficient detail to assist in preparation of the revegetation plan under § 780.12(g) of this chapter and provide a baseline for comparison with postmining vegetation;

(2) Be adequate to evaluate whether the vegetation provides important habitat for fish and wildlife and whether the proposed permit area contains native plant communities of local or regional significance;

(3) Identify areas with significant populations of non-native invasive or noxious species; and

(4) Delineate all wetlands and all areas bordering streams that either support or are capable of supporting hydrophytic or hydrophilic vegetation or vegetation typical of floodplains.

(c) If the vegetation on the proposed permit area has been altered by human activity, you must describe the native vegetation and plant communities typical of that area in the absence of human alterations.

§ 779.20 What information on fish and wildlife resources must I include in my permit application?

(a) *General requirements.* Your permit application must include information on fish and wildlife resources for the proposed permit and adjacent areas, including all species of fish, wildlife, plants, and other life forms listed or proposed for listing under the Endangered Species Act of 1973, 30 U.S.C. 1531 *et seq.* The adjacent area must include all lands and waters likely to be affected by the proposed operation.

(b) *Scope and level of detail.* The regulatory authority will determine the scope and level of detail for this information in coordination with state and federal agencies with responsibilities for fish and wildlife. The scope and level of detail must be sufficient to design the protection and enhancement plan required under § 780.16 of this chapter.

(c) *Site-specific resource information requirements.* Your application must include site-specific resource information if the proposed permit area or the adjacent area contains or is likely to contain one or more of the following—

(1) Species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or designated or proposed critical habitat under that law. When these circumstances exist, the site-specific resource information must include a description of the effects of future non-federal activities that are reasonably certain to occur within the proposed permit and adjacent areas.

(2) Species or habitat protected by state or tribal endangered species statutes and regulations.

(3) Habitat of unusually high value for fish and wildlife, which may include wetlands, riparian areas, cliffs that provide nesting sites for raptors, significant migration corridors, specialized reproduction or wintering areas, areas offering special shelter or protection, and areas that support populations of endemic species that are vulnerable because of restricted ranges, limited mobility, limited reproductive capacity, or specialized habitat requirements.

(4) Other species or habitat identified through interagency coordination as requiring special protection under state, tribal, or federal law, including species identified as sensitive by a state, tribal, or federal agency.

(5) Perennial or intermittent streams.

(6) Native plant communities of local or regional ecological significance.

§ 779.21 What information on soils must I include in my permit application?

Your permit application must include—

(a) The results of a reconnaissance inspection to determine whether the proposed permit area may contain prime farmland historically used for

cropland, as required by § 785.17(b)(1) of this chapter.

(b)(1) A map showing the soil mapping units located within the proposed permit area, if the National Cooperative Soil Survey has completed and published a soil survey of the area.

(2) The applicable soil survey information that the Natural Resources Conservation Service maintains for the soil mapping units identified in paragraph (b)(1) of this section. You may provide this information either in paper form or via a link to the appropriate element of the Natural Resources Conservation Service's soil survey Web site.

(c) A description of soil depths within the proposed permit area.

(d) Detailed information on soil quality, if you seek approval for the use of soil substitutes or supplements under § 780.12(e) of this chapter.

(e) The soil survey information required by § 785.17(b)(3) of this chapter if the reconnaissance inspection conducted under paragraph (a) of this section indicates that prime farmland historically used for cropland may be present.

(f) Any other information on soils that the regulatory authority finds necessary to determine land use capability.

§ 779.22 What information on land use and productivity must I include in my permit application?

Your permit application must contain a statement of the condition, capability, and productivity of the land within the proposed permit area, including—

(a)(1) A map and narrative identifying and describing the land use or uses in existence at the time of the filing of the application.

(2) A description of the historical uses of the land to the extent that this information is readily available or can be inferred from the uses of other lands in the vicinity.

(3) For any previously mined area within the proposed permit area, a description of the land uses in existence before any mining, to the extent that such information is available.

(b) A narrative analysis of—

(1) The capability of the land before any mining to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover, and the hydrology of the proposed permit area; and

(2) The productivity of the proposed permit area before mining, expressed as average yield of food, fiber, forage, or wood products obtained under high levels of management, as determined by—

(i) Actual yield data; or

(ii) Yield estimates for similar sites based on current data from the U.S. Department of Agriculture, state agricultural universities, or appropriate state natural resources or agricultural agencies.

(c) Any additional information that the regulatory authority deems necessary to determine the condition, capability, and productivity of the land within the proposed permit area.

§ 779.24 What maps, plans, and cross-sections must I submit with my permit application?

(a) In addition to the maps, plans, and information required by other sections of this part, your permit application must include maps and, when appropriate, plans and cross-sections showing—

(1) All boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the proposed permit area.

(2) The boundaries of land within the proposed permit area upon which you have the legal right to enter and begin surface mining activities.

(3) The boundaries of all areas that you anticipate affecting over the estimated total life of the surface mining activities, with a description of the size, sequence, and timing of the mining of subareas for which you anticipate seeking additional permits or expansion of an existing permit in the future.

(4) The location and current use of all buildings on the proposed permit area or within 1,000 feet of the proposed permit area.

(5) The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, highways, electric transmission lines, pipelines, constructed drainageways, irrigation ditches, and agricultural drainage tile fields.

(6) The location and boundaries of any proposed reference areas for determining the success of revegetation.

(7) The location and ownership of existing wells, springs, and other groundwater resources within the proposed permit and adjacent areas. You may provide ownership information in a table cross-referenced to a map if approved by the regulatory authority.

(8) The location and depth (if available) of each water well within the proposed permit and adjacent areas. You may provide information concerning depth in a table cross-referenced to a map if approved by the regulatory authority.

(9) The name, location, ownership, and description of all surface-water bodies and features, such as perennial, intermittent, and ephemeral streams; ponds, lakes, and other impoundments; wetlands; and natural drainageways, within the proposed permit and adjacent areas. To the extent appropriate, you may provide this information in a table cross-referenced to a map if approved by the regulatory authority.

(10) The locations of water supply intakes for current users of surface water flowing into, from, and within a hydrologic area defined by the regulatory authority.

(11) The location of any public water supplies and the extent of any associated wellhead protection zones located within one-half mile, measured horizontally, of the proposed permit area. Both you and the regulatory authority must keep this information confidential when required by state law or when otherwise necessary for safety and security purposes and protection of the integrity of public water supplies.

(12) The location of all existing and proposed discharges to any surface-water body within the proposed permit and adjacent areas.

(13) The location of any discharge into or from an active, inactive, or abandoned surface or underground mine, including, but not limited to, a mine-water treatment or pumping facility, that is hydrologically connected to the site of the proposed operation or that is located within one-half mile, measured horizontally, of the proposed permit area.

(14) Each public road located in or within 100 feet of the proposed permit area.

(15) The boundaries of any public park and locations of any cultural or historical resources listed or eligible for listing in the National Register of Historic Places and known archeological sites within the permit and adjacent areas.

(16) Each cemetery that is located in or within 100 feet of the proposed permit area.

(17) Any land within the proposed permit area which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System, including study rivers designated under section 5(a) of the Wild and Scenic Rivers Act.

(18) The elevations, locations, and geographic coordinates of test borings and core samplings. You may provide this information in a table cross-referenced to a map if approved by the regulatory authority.

(19) The location and extent of any subsurface water encountered within the proposed permit and adjacent areas. This information must include, but is not limited to, the elevation of the water table, the areal and vertical distribution of aquifers, and maximum and minimum variations in hydraulic head in different aquifers. You must provide this information on appropriately-scaled cross-sections or maps, in a narrative, or a combination of these methods, whichever format best displays this information to the satisfaction of the regulatory authority.

(20) The elevations, locations, and geographic coordinates of monitoring stations used to gather data on water quality and quantity and on fish and wildlife in preparation of the application. You may provide this information in a table cross-referenced to a map if approved by the regulatory authority.

(21) The nature, depth, thickness, and commonly used names of the coal seams to be mined.

(22) Any coal crop lines within the permit and adjacent areas and the strike and dip of the coal to be mined.

(23) The location and extent of known workings of active, inactive, or abandoned underground mines within or underlying the proposed permit and adjacent areas.

(24) Any underground mine openings to the surface within the proposed permit and adjacent areas.

(25) The location and extent of existing or previously surface-mined areas within the proposed permit area.

(26) The location and dimensions of existing areas of spoil, coal mine waste, noncoal mine waste disposal sites, dams, embankments, other impoundments, and water treatment facilities within the proposed permit area.

(27) The location and, if available, the depth of all gas and oil wells within the proposed permit and adjacent areas. You must identify the lateral extent of the well bores unless that information is confidential under state law. You may provide information concerning well depth in a table cross-referenced to a map if approved by the regulatory authority.

(28) Other relevant information required by the regulatory authority.

(b) Maps, plans, and cross-sections required by paragraph (a) of this section must be—

(1) Prepared by, or under the direction of, and certified by a qualified registered professional engineer, a professional geologist, or in any state that authorizes land surveyors to prepare and certify such maps, plans, and cross-sections, a qualified registered professional land surveyor, with assistance from experts in related fields such as landscape architecture.

(2) Updated when required by the regulatory authority.

(c) The regulatory authority may require that you submit the materials required by this section in a digital format that includes all necessary metadata.

§ 779.25 [Reserved]

■ 24. Revise part 780 to read as follows:

PART 780—SURFACE MINING PERMIT APPLICATIONS—MINIMUM REQUIREMENTS FOR OPERATION AND RECLAMATION PLANS

Sec.

780.1 What does this part do?
780.2 What is the objective of this part?
780.4 What responsibilities do I and government agencies have under this part?
780.10 Information collection.
780.11 What must I include in the general description of my proposed operations?
780.12 What must the reclamation plan include?
780.13 What additional maps and plans must I include in the reclamation plan?
780.14 What requirements apply to the use of existing structures?
780.15 What plans for the use of explosives must I include in my application?
780.16 What must I include in the fish and wildlife protection and enhancement plan?
780.18 [Reserved]
780.19 What baseline information on hydrology, geology, and aquatic biology must I provide?
780.20 How must I prepare the determination of the probable hydrologic consequences of my proposed operation (PHC determination)?
780.21 What requirements apply to preparation and review of the cumulative hydrologic impact assessment (CHIA)?
780.22 What information must I include in the hydrologic reclamation plan and what information must I provide on alternative water sources?
780.23 What information must I include in plans for the monitoring of groundwater, surface water, and the biological condition of streams during and after mining?
780.24 What requirements apply to the postmining land use?
780.25 What information must I provide for siltation structures, impoundments, and refuse piles?
780.26 What special requirements apply to surface mining near underground mining?
780.27 What additional permitting requirements apply to activities in or through an ephemeral stream?
780.28 What additional permitting requirements apply to activities in, through, or adjacent to a perennial or intermittent stream?
780.29 What information must I include in the surface-water runoff control plan?
780.31 What information must I provide concerning the protection of publicly owned parks and historic places?
780.33 What information must I provide concerning the relocation or use of public roads?
780.35 What information must I provide concerning the minimization and disposal of excess spoil?
780.37 What information must I provide concerning access and haul roads?
780.38 What information must I provide concerning support facilities?

Authority: 30 U.S.C. 1201 *et seq.* and 54 U.S.C. 300101 *et seq.*

§ 780.1 What does this part do?

This part establishes the minimum requirements for the operation and reclamation plan portions of applications for a permit to conduct surface mining activities, except to the extent that part 785 of this subchapter establishes different requirements.

§ 780.2 What is the objective of this part?

The objective of this part is to ensure that you, the permit applicant, provide the regulatory authority with comprehensive and reliable information on how you propose to conduct surface mining activities and reclaim the disturbed area in compliance with the Act, this chapter, and the regulatory program.

§ 780.4 What responsibilities do I and government agencies have under this part?

(a) You, the permit applicant, must provide to the regulatory authority all information required by this part, except where specifically exempted in this part.

(b) State and federal governmental agencies must provide information needed for permit applications to the extent that this part specifically requires that they do so.

§ 780.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0036. Sections 507 and 508 of SMCRA contain permit application requirements for surface coal mining activities, including a requirement that the application include an operation and reclamation plan. The regulatory authority uses this information to determine whether the proposed surface coal mining operation will achieve the environmental protection requirements of the Act and regulatory program. You, the permit applicant, must respond to

obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

§ 780.11 What must I include in the description of my proposed operations?

Your application must contain a description of the mining operations that you propose to conduct during the life of the mine within the proposed permit area, including, at a minimum, the following:

(a) A narrative description of the—

(1) Type and method of coal mining procedures and proposed engineering techniques.

(2) Anticipated annual and total number of tons of coal to be produced.

(3) Major equipment to be used for all aspects of the proposed operations.

(b) A narrative explaining the construction, modification, use, maintenance, and removal (unless you can satisfactorily explain why retention is necessary or appropriate for the postmining land use specified in the application under § 780.24 of this part) of the following facilities:

(1) Dams, embankments, and other impoundments.

(2) Overburden and soil handling and storage areas and structures.

(3) Coal removal, handling, storage, cleaning, and transportation areas and structures.

(4) Spoil, coal processing waste, and noncoal mine waste removal, handling, storage, transportation, and disposal areas and structures.

(5) Mine facilities.

(6) Water pollution control facilities.

§ 780.12 What must the reclamation plan include?

(a) *General requirements.* Your application must contain a plan for the reclamation of the lands to be disturbed within the proposed permit area. The plan must show how you will comply with the operation and reclamation requirements of the applicable regulatory program. At a minimum, the plan must include all information required under this part and part 785 of this chapter.

(b) *Reclamation timetable.* The reclamation plan must contain a detailed timetable for the completion of each major step in the reclamation process including, but not limited to—

(1) Backfilling.

(2) Grading.

(3) Establishment of the surface drainage pattern and stream-channel configuration approved in the permit, including construction of appropriately-designed perennial, intermittent, and ephemeral stream channels to replace those removed by mining, to the extent and in the form required by §§ 780.27, 780.28, 816.56, and 816.57 of this chapter.

(4) Soil redistribution.

(5) Planting of all vegetation in accordance with the revegetation plan approved in the permit, including establishment of streamside vegetative corridors along the banks of perennial, intermittent, and ephemeral streams when required by §§ 816.56(c) and 816.57(d) of this chapter.

(6) Demonstration of revegetation success.

(7) Demonstration of restoration of the ecological function of all reconstructed perennial and intermittent stream segments.

(8) Application for each phase of bond release under § 800.42 of this chapter.

(c) *Reclamation cost estimate.* The reclamation plan must contain a detailed estimate of the cost of reclamation, including both direct and indirect costs, of those elements of the proposed operations that are required to be covered by a performance bond under part 800 of this chapter, with supporting calculations for the estimates. You must use current standardized construction cost estimation methods and equipment cost guides or up-to-date actual contracting costs incurred by the regulatory authority for similar activities to prepare this estimate.

(d) *Backfilling and grading plan.* (1) The reclamation plan must contain a plan for backfilling the mined area, compacting the backfill, and grading the disturbed area, with contour maps, models, or cross-sections that show in detail the anticipated final surface configuration of the proposed permit area, including drainage patterns, in accordance with §§ 816.102 through 816.107 of this chapter, using the best technology currently available.

(2) The backfilling and grading plan must describe in detail how you will conduct backfilling and related reclamation activities, including how you will—

(i) Compact spoil to reduce infiltration to minimize leaching and discharges of parameters of concern.

(ii) Limit compaction of topsoil and soil materials in the root zone to the minimum necessary to achieve stability. The plan also must identify measures that will be used to alleviate soil compaction if necessary.

(iii) Handle acid-forming and toxic-forming materials, if present, to prevent the formation of acid or toxic drainage from acid-forming and toxic-forming materials within the overburden. The plan must be consistent with paragraph (n) of this section and § 816.38 of this chapter.

(e) *Soil handling plan.*—(1) *General requirements.* (i) The reclamation plan must include a plan and schedule for removal, storage, and redistribution of topsoil, subsoil, and other material to be used as a final growing medium in accordance with § 816.22 of this chapter. It also must include a plan and schedule for removal, storage, and redistribution or other use of organic matter in accordance with § 816.22(f) of this chapter.

(ii) Except as provided in paragraphs (e)(1)(iii) and (iv) of this section, the plan submitted under paragraph (e)(1)(i) of this section must require that the B soil horizon, the C soil horizon, and other underlying strata, or portions of those soil horizons and strata, be removed separately, stockpiled if necessary, and redistributed to the extent and in the manner needed to achieve the optimal rooting depths required to restore premining land use capability and to comply with the revegetation requirements of §§ 816.111 and 816.116 of this chapter.

(iii) The plan submitted under paragraph (e)(1)(i) of this section need not require salvage of those soil horizons which you demonstrate, to the satisfaction of the regulatory authority, are inferior to other overburden materials as a plant growth medium, provided you comply with the soil substitute requirements of paragraph (e)(2) of this section.

(iv) The plan submitted under paragraph (e)(1)(i) of this section may allow blending of the B soil horizon, the C soil horizon, and underlying strata, or portions thereof, to the extent that research or prior experience under similar conditions has demonstrated that blending will not adversely affect soil productivity.

(v) The plan submitted under paragraph (e)(1)(i) of this section must explain how you will handle and, if necessary, store soil materials to avoid contamination by acid-forming or toxic-forming materials and to minimize deterioration of desirable soil characteristics.

(2) *Substitutes and supplements.* (i) You must identify each soil horizon for which you propose to use appropriate overburden materials as either a supplement to or a substitute for the existing topsoil or subsoil on the proposed permit area. For each of those horizons, you must demonstrate, and the regulatory authority must find in writing, that—

(A)(*1*) The quality of the existing topsoil and subsoil is inferior to that of the best overburden materials available; or

(*2*) The quantity of the existing topsoil and subsoil is insufficient to provide an optimal rooting depth. In this case, the plan must require that all available existing topsoil and favorable subsoil, regardless of the amount, be removed, stored, and redistributed as part of the final growing medium unless the conditions described in paragraph (e)(2)(i)(A)(*1*) of this section also apply.

(B) The use of the overburden materials that you have selected, in combination with or in place of the existing topsoil or subsoil, will result in a soil medium that is more suitable than the existing topsoil and subsoil to support and sustain vegetation consistent with the postmining land use and the revegetation plan under paragraph (g) of this section and that will provide a rooting depth that is superior to the existing topsoil and subsoil.

(C) The overburden materials that you select for use as a soil substitute or supplement are the best materials available to support and sustain vegetation consistent with the postmining land use and the revegetation plan under paragraph (g) of this section.

(ii) For purposes of paragraph (e)(2)(i) of this section, the regulatory authority will specify the—

(A) Suitability criteria for substitutes and supplements.

(B) Chemical and physical analyses, field trials, or greenhouse tests that you must conduct to make the demonstration required by paragraph (e)(2)(i) of this section.

(C) Sampling objectives and techniques and the analytical techniques that you must use for purposes of paragraph (e)(2)(ii)(B) of this section.

(iii) At a minimum, the demonstrations required by paragraph (e)(2)(i) of this section must include—

(A) The physical and chemical soil characteristics and root zones needed to support and sustain the type of vegetation to be established on the reclaimed area.

(B) A comparison and analysis of the thickness, total depth, texture, percent coarse fragments, pH, and areal extent of the different kinds of soil horizons and overburden materials available within the proposed permit area, based upon a statistically-valid sampling procedure.

(iv) You must include a plan for testing and evaluating overburden materials during both removal and redistribution to ensure that only materials approved for use as soil substitutes or supplements are removed and redistributed.

(f) *Surface stabilization plan.* The reclamation plan must contain a plan for stabilizing road surfaces, redistributed soil materials, and other exposed surface areas to effectively control erosion and air pollution attendant to erosion in accordance with §§ 816.95, 816.150, and 816.151 of this chapter.

(g) *Revegetation plan.* (1) The reclamation plan must contain a plan for revegetation consistent with §§ 816.111 through 816.116 of this chapter, including, but not limited to, descriptions of—

(i) The schedule for revegetation of the area to be disturbed.

(ii) The site preparation techniques that you plan to use, including the measures that you will take to avoid or, when avoidance is not possible, to minimize and alleviate compaction of the root zone during backfilling, grading, soil redistribution, and planting.

(iii) What soil tests you will perform, together with a statement as to whether you will apply lime, fertilizer, or other amendments in response to those tests before planting or seeding.

(iv) The species that you will plant to achieve temporary erosion control or, if you do not intend to establish a temporary vegetative cover, a description of other soil stabilization measures that you will implement in lieu of planting a temporary cover.

(v) The species that you will plant and the seeding and stocking rates and planting arrangements that you will use to achieve or complement the postmining land use, enhance fish and wildlife habitat, and achieve the streamside vegetative corridor requirements of §§ 816.56(c) and 816.57(d) of this chapter, when applicable.

(A) Revegetation plans that involve the establishment of trees and shrubs must include site-specific planting prescriptions for canopy trees, understory trees and shrubs, and herbaceous ground cover compatible with establishment of trees and shrubs.

(B) To the extent practicable and consistent with other revegetation and regulatory program requirements, the species mix must include native pollinator-friendly plants and the planting arrangements must promote the establishment of pollinator-friendly habitat.

(vi) The planting and seeding techniques that you will use.

(vii) Whether you will apply mulch and, if so, the type of mulch and the method of application.

(viii) Whether you plan to conduct irrigation or apply fertilizer after the first growing season and, if so, to what extent and for what length of time.

(ix) Any normal husbandry practices that you plan to use in accordance with § 816.115(d) of this chapter.

(x) The standards and evaluation techniques that you propose to use to determine the success of revegetation in accordance with § 816.116 of this chapter.

(xi) The measures that you will take to avoid the establishment of invasive species on reclaimed areas or to control those species if they do become established.

(2) Except as provided in paragraphs (g)(4) and (5) of this section, the species and planting rates and arrangements selected as part of the revegetation plan must be designed to create a diverse, effective, permanent vegetative cover that is consistent with the native plant communities and natural succession process described in the permit application in accordance with § 779.19 of this chapter.

(3) The species selected as part of the revegetation plan must—

(i) Be native to the area. The regulatory authority may approve the use of introduced species as part of the permanent vegetative cover for the site only if—

(A) The introduced species are both non-invasive and necessary to achieve the postmining land use;

(B) Planting of native species would be inconsistent with the approved postmining land use; and

(C) The approved postmining land use is implemented before the entire bond amount for the area has been fully released under §§ 800.40 through 800.43 of this chapter.

(ii) Be capable of stabilizing the soil surface from erosion to the extent that control of erosion with herbaceous ground cover is consistent with establishment of a permanent vegetative cover that resembles native plant communities in the area.

(iii) Be compatible with the approved postmining land use.

(iv) Have the same seasonal characteristics of growth, consistent with the appropriate stage of natural succession, as the native plant communities described in the permit application in accordance with § 779.19 of this chapter.

(v) Be capable of self-regeneration and natural succession.

(vi) Be compatible with the plant and animal species of the area.

(vii) Meet the requirements of applicable state and federal seed, noxious plant, and introduced species laws and regulations.

(4) The regulatory authority may grant an exception to the requirements of paragraphs (g)(3)(i), (iv), and (v) of this section when necessary to achieve a quick-growing, temporary, stabilizing cover on disturbed and regraded areas, and the species selected to achieve this purpose will not impede the establishment of permanent vegetation.

(5) The regulatory authority may grant an exception to the requirements of paragraphs (g)(2), (g)(3)(iv), and (g)(3)(v) of this section for those areas with a long-term, intensive, agricultural postmining land use.

(6) A qualified, experienced biologist, soil scientist, forester, or agronomist must prepare or approve all revegetation plans.

(h) *Stream protection and reconstruction plan.* The reclamation plan must describe how you will comply with the stream reconstruction requirements of §§ 780.27 and 816.56 of this chapter for ephemeral streams and the stream protection, stream reconstruction, and functional restoration requirements of §§ 780.28 and 816.57 of this chapter for perennial and intermittent streams.

(i) *Coal resource conservation plan.* The reclamation plan must describe the measures that you will employ to maximize the use and conservation of the coal resource while using the best technology currently available to maintain environmental integrity, as required by § 816.59 of this chapter.

(j) *Plan for disposal of noncoal waste materials.* The reclamation plan must describe—

(1) The type and quantity of noncoal waste materials that you anticipate disposing of within the proposed permit area.

(2) How you intend to dispose of noncoal waste materials in accordance with § 816.89 of this chapter.

(3) The locations of any proposed noncoal waste material disposal sites within the proposed permit area.

(4) The contingency plans that you have developed to preclude sustained combustion of combustible noncoal materials.

(k) *Management of mine openings, boreholes, and wells.* The reclamation plan must contain a description, including appropriate cross-sections and maps, of the measures that you will use to seal or manage mine openings, and to plug, case or manage exploration holes, boreholes, wells and other openings within the proposed permit area, in accordance with § 816.13 of this chapter.

(l) *Compliance with Clean Air Act and Clean Water Act.* The reclamation plan must describe the steps that you have taken or will take to comply with the requirements of the Clean Air Act (42 U.S.C. 7401 *et seq.*), the Clean Water Act (33 U.S.C. 1251 *et seq.*), and other applicable air and water quality laws and regulations and health and safety standards.

(m) *Consistency with land use plans and surface owner plans.* The reclamation plan must describe how the proposed operation is consistent with—

(1) All applicable state and local land use plans and programs.

(2) The plans of the surface landowner, to the extent that those plans are practicable and consistent with this chapter and with other applicable laws and regulations.

(n) *Handling of acid-forming and toxic-forming materials.* (1) If the baseline geologic information collected under § 780.19(e)(3) of this part indicates the presence of acid-forming or toxic-forming materials in any stratum above the lowest coal seam to be mined, you must develop a plan to prevent any adverse hydrologic impacts that may result from exposure and fracturing of that stratum during the mining process and demonstrate how you will handle the materials to protect groundwater and surface water. At a minimum the plan must—

(i) Identify the anticipated postmining groundwater level for all locations within the mined-out area at which you propose to place acid-forming or toxic-forming materials within the backfill.

(ii) Explain how you will use one of the techniques in paragraphs (n)(1)(ii)(A) through (C) of this section when placing those materials in the backfill, as appropriate and as approved by the regulatory authority, to prevent the formation of acid or toxic mine drainage or other discharges that would require long-term treatment after mining has been completed:

(A) Treat or otherwise neutralize acid-forming and toxic-forming materials to prevent the formation of acid or toxic mine drainage. This technique may include the blending of acid-forming materials with spoil of sufficient alkalinity to prevent the development of acid drainage.

(B) Place acid-forming and toxic-forming materials in a location below the water table where they will remain fully saturated at all times, provided that you demonstrate, and the regulatory authority finds in writing in the permit, that complete saturation will prevent the formation of acid or toxic mine drainage.

(C) Isolate acid-forming and toxic-forming materials by completely surrounding them with compacted material with a hydraulic conductivity at least two orders of magnitude lower than the hydraulic conductivity of the adjacent spoil.

(2) The plan developed under paragraph (n)(1) of this section may allow the placement of acid-forming and toxic-forming materials in an excess spoil fill or a coal mine waste refuse pile, using one or more of the techniques identified in paragraphs (n)(1)(ii)(A) through (C) of this section.

(3) If the baseline geologic information collected under § 780.19(e)(3) of this chapter indicates the presence of acid-forming or toxic-forming material in the stratum immediately below the lowest coal seam to be mined, you must identify the measures that you will take to prevent any adverse hydrologic impacts that might develop as a result of exposure of that stratum during the mining process.

§ 780.13 What additional maps and plans must I include in the reclamation plan?

(a) In addition to the maps and plans required under § 779.24 and other provisions of this subchapter, your application must include maps, plans, and cross-sections of the proposed permit area showing—

(1) The lands that you propose to affect throughout the life of the operation, including the sequence and timing of surface mining activities and the sequence and timing of backfilling, grading, and other reclamation activities on areas where the operation will disturb the land surface.

(2) Each area of land for which a performance bond or equivalent guarantee will be posted under part 800 of this chapter.

(3) Any change that the proposed operations will cause in a facility or feature identified under § 779.24 of this chapter.

(4) All buildings, utility corridors, and facilities to be used or constructed within the proposed permit area, with identification of those facilities that you propose to retain as part of the postmining land use.

(5) Each coal storage, cleaning, processing, and loading area and facility.

(6) Each temporary storage area for soil, spoil, coal mine waste, and noncoal mine waste.

(7) Each water diversion, collection, conveyance, treatment, storage and discharge facility to be used, including the location of each point at which water will be discharged from the proposed permit area to a surface-water body and the name of that water body.

(8) Each disposal facility for coal mine waste and noncoal mine waste materials.

(9) Each feature and facility to be constructed to protect or enhance fish, wildlife, and related environmental values.

(10) Each explosive storage and handling facility.

(11) The location of each siltation structure, sedimentation pond, permanent water impoundment, refuse pile, and coal mine waste impoundment for which plans are required by § 780.25 of this part, and the location of each excess spoil fill for which plans are required under § 780.35 of this part.

(12) Each segment of a perennial or intermittent stream that you propose to mine through, bury, or divert.

(13) Each location in which you propose to restore a perennial or intermittent stream or construct a temporary or permanent diversion of a perennial or intermittent stream.

(14) Each streamside vegetative corridor that you propose to establish.

(15) Each segment of a perennial or intermittent stream that you propose to enhance under the plan submitted in accordance with § 780.16 of this part.

(16) The location and geographic coordinates of each monitoring point for groundwater and surface water.

(17) The location and geographic coordinates of each point at which you propose to monitor the biological condition of perennial and intermittent streams.

(b) Except as provided in §§ 780.25(a)(2), 780.25(a)(3), 780.35, 816.74(c), and 816.81(c) of this chapter, maps, plans, and cross-sections required under paragraphs (a)(5), (6), (7), (10), and (11) of this section must be prepared by, or under the direction of, and certified by a qualified registered professional engineer, a professional geologist, or, in any state that authorizes land surveyors to prepare and certify maps, plans, and cross-sections, a qualified registered professional land surveyor, with assistance from experts in related fields such as landscape architecture.

(c) The regulatory authority may require that you submit the materials required by paragraph (a) of this section in a digital format.

§ 780.14 What requirements apply to the use of existing structures?

(a) Each application must contain a description of every existing structure that you propose to use in connection with or to facilitate surface coal mining and reclamation operations. The description must include—

(1) The location of the structure.

(2) Plans of the structure.

(3) A description of the current condition of the structure.

(4) The approximate dates when the structure was originally built.

(5) A showing, including relevant monitoring data or other evidence, of whether the structure meets the permanent program performance standards of subchapter K of this chapter or, if the structure does not meet the performance standards of subchapter K of this chapter, a showing of whether the structure meets the initial program performance standards of subchapter B of this chapter.

(b) Each application must contain a compliance plan for every existing structure that you propose to modify or reconstruct for use in connection with or to facilitate surface coal mining and reclamation operations. The compliance plan must include—

(1) Design specifications for the modification or reconstruction of the structure to meet the design and performance standards of subchapter K of this chapter.

(2) A schedule for the initiation and completion of any modification or reconstruction under paragraph (b)(1) of this section.

(3) Provisions for monitoring the structure during and after modification or reconstruction to ensure that the performance standards of subchapter K of this chapter are met.

(4) A demonstration that there is no significant risk of harm to the environment or to public health or safety during modification or reconstruction of the structure.

§ 780.15 What plans for the use of explosives must I include in my application?

(a) *Blasting plan.* Each application must contain a blasting plan for the proposed permit area, explaining how you will comply with the requirements of §§ 816.61 through 816.68 of this chapter. This plan must include, at a minimum, information setting forth the limitations on ground vibration and airblast, the bases for those limitations, and the methods to be applied in controlling the adverse effects of blasting operations.

(b) *Monitoring system.* Each application must contain a description of any system to be used to monitor compliance with the standards of § 816.67 including the type, capability, and sensitivity of any blast-monitoring equipment and proposed procedures and locations of monitoring.

(c) *Blasting near underground mines.* Blasting operations within 500 feet of active underground mines require approval of the state and federal regulatory authorities concerned with the health and safety of underground miners.

§ 780.16 What must I include in the fish and wildlife protection and enhancement plan?

(a) *General requirements.* Your application must include a fish and wildlife protection and enhancement plan that—

(1) Is consistent with the requirements of § 816.97 of this chapter.

(2) Is specific to the resources identified under § 779.20 of this chapter.

(3) Complies with the requirements of paragraphs (b) through (f) of this section.

(b) *Requirements related to the Endangered Species Act of 1973.* (1) Paragraphs (b)(2) and (3) of this section apply when the proposed operation may affect species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or designated or proposed critical habitat under that law.

(2) You must describe the steps that you have taken or will take to comply with the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* including any biological opinions developed under section 7 of that law and any species-specific habitat conservation plans developed in accordance with section 10 of that law.

(3) The regulatory authority may not approve the permit application before there is a demonstration of compliance with the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* through one of the mechanisms listed in § 773.15(j) of this chapter.

(c) *Protection of fish, wildlife, and related environmental values in general.* You must describe how, to the extent possible using the best technology currently available, you will minimize disturbances and adverse impacts on fish, wildlife, and related environmental values. At a minimum, you must explain how you will—

(1) Retain forest cover and other native vegetation as long as possible and time the removal of that vegetation to minimize adverse impacts on aquatic and terrestrial species.

(2) Locate and design sedimentation ponds, utilities, support facilities, roads, rail spurs, and other transportation facilities to avoid or minimize adverse impacts on fish, wildlife, and related environmental values.

(3) Except as provided under § 780.12(g)(4) of this part, select non-invasive native species for revegetation that either promote or do not inhibit the long-term development of wildlife habitat.

(4)(i) Avoid mining through wetlands or perennial or intermittent streams or disturbing riparian habitat adjacent to those streams. When avoidance is not possible, minimize—

(A) The time during which mining and reclamation operations disrupt wetlands or streams or riparian habitat associated with streams;

(B) The length of stream mined through; and

(C) The amount of wetlands or riparian habitat disturbed by the operation.

(ii) If you propose to mine through or discharge dredged or fill material into wetlands or streams that are subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* your application must identify the authorizations, certifications, and permits that you anticipate will be needed under the Clean Water Act and describe the steps that you have taken or will take to procure those authorizations, certifications, and permits. The regulatory authority will process your application and may issue the permit before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act, 33 U.S.C. 1251 *et seq.,* provided your application meets all applicable requirements of subchapter G of this chapter. Issuance of a permit under subchapter G of this chapter does not authorize you to conduct any surface mining activity in or affecting waters subject to the jurisdiction of the Clean Water Act before you obtain any required Clean Water Act authorization, certification, or permit. Information submitted and analyses conducted under subchapter G of this chapter may inform the agency responsible for authorizations, certifications, and permits under the Clean Water Act, but they are not a substitute for the reviews, authorizations, certifications, and permits required under the Clean Water Act.

(5) Implement other appropriate conservation practices such as, but not limited to, those identified in the technical guides published by the Natural Resources Conservation Service.

(d) *Enhancement measures.*—(1) *General requirements.* (i) You must describe how, to the extent possible, you will use the best technology currently available to enhance fish, wildlife, and related environmental values both within and outside the area to be disturbed by mining activities, where practicable. Your application must identify the enhancement measures that you propose to implement and the lands upon which you propose to implement those measures. Those measures may include some or all the potential enhancement measures listed in paragraph (d)(2) of this section, but they are not limited to the measures listed in paragraph (d)(2) of this section.

(ii) If your application includes no proposed enhancement measures under paragraph (d)(1)(i) of this section, you must explain, to the satisfaction of the regulatory authority, why implementation of enhancement measures is not practicable.

(2) *Potential enhancement measures.* Potential enhancement measures include, but are not limited to—

(i) Using the backfilling and grading process to create postmining surface features and configurations, such as functional wetlands, of high value to fish and wildlife.

(ii) Designing and constructing permanent impoundments in a manner that will maximize their value to fish and wildlife.

(iii) Creating rock piles and other permanent landscape features of value to raptors and other wildlife for nesting and shelter, to the extent that those features are consistent with features that existed on the site before any mining, the surrounding topography, and the approved postmining land use.

(iv) Reestablishing native forests or other native plant communities, both within and outside the permit area. This may include restoring the native plant communities that existed before any mining, establishing native plant communities consistent with the native plant communities that are a part of the natural succession process, establishing native plant communities designed to restore or expand native pollinator populations and habitats, or establishing native plant communities that will support wildlife species of local, state, tribal, or national concern, including, but not limited to, species listed or proposed for listing as threatened or endangered on a state, tribal, or national level.

(v) Establishing a vegetative corridor along the banks of streams where there is no such corridor before mining but where a vegetative corridor typically would exist under natural conditions. Species selected for planting within the corridor must be comprised of species native to the area, including native plants adapted to and suitable for planting in any floodplains or other riparian zones located within the corridor. Whenever possible, you should establish this corridor along both banks of the stream, preferably with a minimum corridor width of 100 feet along each bank.

(vi) Implementing conservation practices identified in publications, such as the technical guides published by the Natural Resources Conservation Service.

(vii) Permanently fencing livestock away from perennial and intermittent streams and wetlands.

(viii) Installing perches and nest boxes.

(ix) Establishing conservation easements or deed restrictions, with an emphasis on preserving riparian vegetation and forested corridors along perennial and intermittent streams.

(x) Providing funding to cover long-term operation and maintenance costs that watershed organizations incur in treating long-term postmining discharges from previous mining operations.

(xi) Reclaiming previously mined areas located outside the area that you propose to disturb for coal extraction.

(xii) Implementing measures to reduce or eliminate existing sources of surface-water or groundwater pollution.

(3) *Additional enhancement requirements for operations with anticipated long-term adverse impacts.* (i) The exception in paragraph (d)(1)(ii) of this section does not apply if your proposed surface mining activities would result in the—

(A) Temporary or permanent loss of mature native forest or other native plant communities that cannot be restored fully before final bond release under §§ 800.40 through 800.43 of this chapter or

(B) Permanent loss of wetlands or a segment of a perennial or intermittent stream.

(ii) Whenever the conditions described in paragraph (d)(3)(i) of this section apply, the scope of the enhancement measures that you propose under paragraph (d)(1)(i) of this section must be commensurate with the magnitude of the long-term adverse impacts of the proposed operation.

Whenever possible, the measures must be permanent.

(iii)(A) Enhancement measures proposed under paragraph (d)(3)(ii) of this section must be implemented within the watershed in which the proposed operation is located, unless opportunities for enhancement are not available within that watershed. In that case, you must propose to implement enhancement measures in the closest adjacent watershed in which enhancement opportunities exist, as approved by the regulatory authority.

(B) Each regulatory program must prescribe the size of the watershed for purposes of paragraph (d)(3)(iii)(A) of this section, using a generally-accepted watershed classification system.

(4) *Inclusion within permit area.* If the enhancement measures to be implemented under paragraphs (d)(1) through (d)(3) of this section would involve more than a de minimis disturbance of the surface of land outside the area to be mined, you must include the land to be disturbed by those measures within the proposed permit area.

(e) *Fish and Wildlife Service or National Marine Fisheries Service review.* (1)(i) The regulatory authority must provide the protection and enhancement plan developed under this section and the resource information submitted under § 779.20 of this chapter to the appropriate regional or field office of the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as applicable, whenever the resource information submitted under § 779.20 of this chapter includes species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* designated or proposed critical habitat under that law, or species proposed for listing as threatened or endangered under that law. The regulatory authority must provide the resource information and the protection and enhancement plan to the appropriate Service(s) no later than the time that it provides written notice of the permit application to governmental agencies under § 773.6(a)(3)(ii) of this chapter.

(ii)(A) When the resource information obtained under § 779.20 of this chapter does not include species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* designated or proposed critical habitat under that law, or species proposed for listing as threatened or endangered under that law, the regulatory authority must provide the resource information and the protection and enhancement plan to the appropriate regional or field office of the U.S. Fish and Wildlife Service only if the Service requests an opportunity to review and comment on the resource information and the protection and enhancement plan.

(B) The regulatory authority must provide the resource information and the protection and enhancement plan to the Service under paragraph (e)(1)(ii)(A) of this section within 10 days of receipt of a request from the Service to review the resource information and the protection and enhancement plan.

(2) The regulatory authority must document the disposition of comments that it receives from the applicable Service(s) in response to the distribution made under paragraph (e)(1)(i) of this section to the extent that those comments pertain to species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* to designated or proposed critical habitat under that law, or to species proposed for listing as threatened or endangered under that law.

§ 780.17 [Reserved]

§ 780.18 [Reserved]

§ 780.19 What baseline information on hydrology, geology, and aquatic biology must I provide?

(a)(1) *General requirements.* Your permit application must include information on the hydrology, geology, and aquatic biology of the proposed permit area and the adjacent area in sufficient detail to assist in—

(i) Determining the probable hydrologic consequences of the operation upon the quality and quantity of surface water and groundwater in the proposed permit and adjacent areas, as required under § 780.20 of this part.

(ii) Determining the nature and extent of both the hydrologic reclamation plan required under § 780.22 of this part and the monitoring plans required under § 780.23 of this part.

(iii) Determining whether reclamation as required by this chapter can be accomplished.

(iv) Preparing the cumulative hydrologic impact assessment under § 780.21 of this part, including an evaluation of whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

(2) *Core baseline water-quality data requirements for surface water and groundwater.* You must provide the following water-quality information for each groundwater and surface-water sample collected for baseline data purposes.

Parameter	Surface water	Groundwater
pH	Yes	Yes.
Specific conductance corrected to 25°C (conductivity)	Yes	Yes.
Total dissolved solids	Yes	Yes.
Total suspended solids	Yes	No.
Hot acidity	Yes	Yes.
Total alkalinity	Yes	Yes.
Major anions (dissolved), including, at a minimum, bicarbonate, sulfate, and chloride	Yes	Yes.
Major anions (total), including, at a minimum, bicarbonate, sulfate, and chloride	Yes	No.
Major cations (dissolved), including, at a minimum, calcium, magnesium, sodium, and potassium	Yes	Yes.
Major cations (total), including, at a minimum, calcium, magnesium, sodium, and potassium	Yes	No.
Cation-anion balance of dissolved major cations and dissolved major anions	Yes	Yes.
Any cation or anion that constitutes a significant percentage of the total ionic charge balance, but that was not included in the analyses of major anions and major cations.	Yes	Yes.
Iron (dissolved)	Yes	Yes.
Iron (total)	Yes	No.
Manganese (dissolved)	Yes	Yes.
Manganese (total)	Yes	No.
Selenium (dissolved)	Yes	Yes.
Selenium (total)	Yes	No.
Any other parameter identified in any applicable National Pollutant Discharge Elimination System permit, if known at the time of application for the SMCRA permit.	Yes	No.
Temperature	Yes	Yes.

(b) *Groundwater information*—(1) *General requirements.* Your permit application must include information sufficient to document seasonal variations in the quality, quantity, and usage of groundwater, including all surface discharges, within the proposed permit and adjacent areas.

(2) *Underground mine pools.* If an underground mine pool is present within the proposed permit or adjacent areas, you must prepare an assessment of the characteristics of the mine pool, including seasonal changes in quality, quantity, and flow patterns, unless you demonstrate, and the regulatory authority finds, that the mine pool is not hydrologically connected to the proposed permit area. The determination of the probable hydrologic consequences of mining required under § 780.20 of this part also must include a discussion of the effect of the proposed mining operation on any underground mine pools within the proposed permit and adjacent areas.

(3) *Monitoring wells.* The regulatory authority must require the installation of properly-screened monitoring wells to document seasonal variations in the quality, quantity, and usage of groundwater.

(4) *Groundwater quality descriptions.* Groundwater quality descriptions must include baseline information on the parameters identified in paragraph (a)(2) of this section and any additional parameters that the regulatory authority determines to be of local importance.

(5) *Groundwater quantity descriptions.* At a minimum, groundwater quantity descriptions must include baseline data documenting seasonal variations in—

(i) The areal extent and saturated thickness of all potentially-impacted aquifers; and

(ii) Approximate rates of groundwater discharge or usage and the elevation of the water table or potentiometric head in—

(A) Each water-bearing coal seam to be mined.

(B) Each aquifer above each coal seam to be mined.

(C) Each potentially-impacted aquifer below the lowest coal seam to be mined.

(6) *Groundwater sampling requirements.* (i) You must establish monitoring wells or equivalent monitoring points at a sufficient number of locations within the proposed permit and adjacent areas to determine groundwater quality, quantity, and movement in each aquifer above or immediately below the lowest coal seam to be mined. At a minimum, for each aquifer, you must locate monitoring points—

(A) Upgradient and downgradient of the proposed permit area; and

(B) Within the proposed permit area.

(ii)(A) To document seasonal variations in groundwater quality and quantity, you must collect samples and take the measurements identified in paragraph (b)(5) of this section from each location identified in paragraph (b)(6)(i) of this section at approximately equally-spaced monthly intervals for a minimum of 12 consecutive months.

(B) If approved by the regulatory authority, you may modify the interval or the 12-consecutive-month requirement specified in paragraph (b)(6)(ii)(A) of this section if adverse weather conditions make travel to a location specified in paragraph (b)(6)(i) of this section hazardous or if the water at that location is completely frozen.

(C) In lieu of the frequency specified in paragraph (b)(6)(ii)(A) of this section, the regulatory authority may allow you to collect data quarterly for 2 years. The regulatory authority may initiate review of the permit application after collection and analysis of the first four quarterly groundwater samples, but it may not approve the application until after receipt and analysis of the final four quarterly groundwater samples.

(D) You must analyze the samples collected in paragraph (b)(6)(ii)(A) of this section for the applicable water quality parameters identified in paragraph (a)(2) of this section and any other parameters specified by the regulatory authority.

(iii) You must provide the Palmer Drought Severity Index for the proposed permit and adjacent areas for the initial baseline data collection period under paragraph (b)(6)(ii) of this section. The regulatory authority may extend the minimum data collection period specified in paragraph (b)(6)(ii) of this section whenever data available from the National Oceanic and Atmospheric Administration or similar databases indicate that the region in which the proposed operation is located experienced severe drought or abnormally high precipitation during the initial baseline data collection period.

(c) *Surface-water information.*—(1) *General requirements.* Your permit application must include information sufficient to document seasonal variation in surface-water quality, quantity, and usage within the proposed permit and adjacent areas.

(2) *Surface-water quality descriptions.* Surface-water quality descriptions must include baseline information on the parameters identified in paragraph (a)(2) of this section and any additional parameters that the regulatory authority determines to be of local importance.

(3) *Surface-water quantity descriptions.* (i) At a minimum, surface-water quantity descriptions for perennial and intermittent streams within the proposed permit and adjacent areas must include baseline data documenting—

(A) Peak-flow magnitude and frequency.

(B) Actual and anticipated usage.

(C) Seasonal flow variations.

(ii) All flow measurements under paragraph (c)(3)(i) of this section must be made using generally-accepted professional techniques approved by the regulatory authority. All techniques must be repeatable and must produce consistent results on successive measurements. Visual observations are not acceptable.

(4) *Surface-water sampling requirements.* (i) You must establish monitoring points at a sufficient number of locations within the proposed permit and adjacent areas to determine the quality and quantity of water in perennial and intermittent streams within those areas. At a minimum, you must locate monitoring points upgradient and downgradient of the proposed permit area in each perennial and intermittent stream within the proposed permit and adjacent areas.

(ii)(A) To document seasonal variations in surface-water quality and quantity, you must collect samples and take the measurements identified in paragraph (c)(3) of this section from each location identified in paragraph (c)(4)(i) of this section at approximately equally-spaced monthly intervals for a minimum of 12 consecutive months.

(B) If approved by the regulatory authority, you may modify the interval or the 12-consecutive-month sampling requirement specified in paragraph (c)(4)(ii)(A) of this section if adverse weather conditions make travel to a location specified in paragraph (c)(4)(i) of this section hazardous or if the water at that location is completely frozen.

(C) You must analyze the samples collected under paragraph (c)(4)(ii)(A) of this section for the applicable parameters identified in paragraph (a)(2) of this section and any other parameters specified by the regulatory authority.(iii) You must provide the Palmer Drought Severity Index for the proposed permit and adjacent areas for the initial baseline data collection period under paragraph (c)(4)(ii) of this section. The regulatory authority may extend the minimum data collection period specified in paragraphs (c)(4)(ii) and (iii) of this section whenever data available from the National Oceanic and

Atmospheric Administration or similar databases indicate that the region in which the proposed operation is located experienced severe drought or abnormally high precipitation during the initial baseline data collection period.

(5) *Precipitation measurements.* (i) You must provide records of precipitation amounts for the proposed permit area, using on-site, self-recording devices.

(ii) Precipitation records must be adequate to generate and calibrate a hydrologic model of the site. The regulatory authority will determine whether you must create such a model.

(iii) At the discretion of the regulatory authority, you may use precipitation data from a single self-recording device to provide baseline data for multiple permits located close to each other.

(6) *Stream assessments.* (i)(A) You must map and separately identify all perennial, intermittent, and ephemeral streams within the proposed permit area and all perennial and intermittent streams within the adjacent area.

(B) The map must show the location of the channel head of each stream identified in paragraph (c)(6)(i)(A) of this section whenever the applicable area includes a terminal reach of the stream.

(C) The map must show the location of transition points from ephemeral to intermittent and from intermittent to perennial (and vice versa, when applicable) for each stream identified in paragraph (c)(6)(i)(A) of this section whenever the applicable area includes such a transition point. If the U.S. Army Corps of Engineers has determined the location of a transition point, your application must be consistent with that determination.

(ii)(A) For all perennial and intermittent streams within the proposed permit area, you must describe the baseline stream pattern, profile, and dimensions, with measurements of channel slope, sinuosity, water depth, alluvial groundwater depth, depth to bedrock, bankfull depth, bankfull width, width of the flood-prone area, and dominant in-stream substrate at a scale and frequency adequate to characterize the entire length of the stream within the proposed permit area.

(B) You must describe the general stream-channel configuration of ephemeral streams within the proposed permit area.

(iii) For all perennial, intermittent, and ephemeral streams within the proposed permit area, you must describe the vegetation growing along the banks of each stream, including—

(A) Identification of any hydrophytic vegetation located within or adjacent to the stream channel.

(B) The extent to which streamside vegetation consists of trees and shrubs.

(C) The percentage of channel canopy coverage.

(D) A scientific calculation of the species diversity of the vegetation.

(iv) You must identify all stream segments within the proposed permit and adjacent areas that appear on the list of impaired surface waters prepared under section 303(d) of the Clean Water Act, 33 U.S.C. 1313(d). You must identify the parameters responsible for the impaired condition and the total maximum daily loads associated with those parameters, when applicable.

(v) For all perennial, intermittent, and ephemeral streams within the proposed permit area and for all perennial and intermittent streams within the adjacent area, you must identify the extent of wetlands adjoining the stream and describe the quality of those wetlands.

(vi) Except as provided in paragraph (g) of this section, you must provide an assessment of the biological condition of—

(A) Each perennial stream within the proposed permit area.

(B) Each perennial stream within the adjacent area that could be affected by the proposed operation.

(C) Each intermittent stream within the proposed permit area, if a scientifically defensible protocol has been established for assessment of intermittent streams in the state or region in which the stream is located.

(D) Each intermittent stream within the adjacent area that could be affected by the proposed operation, if a scientifically defensible protocol has been established for assessment of intermittent streams in the state or region in which the stream is located.

(vii) When determining the biological condition of a stream under paragraph (c)(6)(vi) of this section, you must adhere to a bioassessment protocol approved by the state or tribal agency responsible for preparing the water quality inventory required under section 305(b) of the Clean Water Act, 33 U.S.C. 1315(b), or to other scientifically defensible bioassessment protocols accepted by agencies responsible for implementing the Clean Water Act, 33 U.S.C. 1251 *et seq.,* modified as necessary to meet the following requirements. The protocol must—

(A) Be based upon the measurement of an appropriate array of aquatic organisms, including, at a minimum, benthic macroinvertebrates, identified to the genus level where possible, otherwise to the lowest practical taxonomic level.

(B) Result in the calculation of index values for both stream habitat and aquatic biota based on the reference condition.

(C) Provide index values that correspond to the capability of the stream to support its designated aquatic life uses under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(D) Include a quantitative assessment of in-stream and riparian habitat condition.

(E) Describe the technical elements of the bioassessment protocol, including but not limited to sampling methods, sampling gear, index period, sample processing and analysis, and quality assessment/quality control procedures.

(viii) Except as provided in paragraph (g) of this section, you must describe the biology of each intermittent stream within the proposed permit area, and each intermittent stream within the adjacent area that could be affected by the proposed operation, whenever an assessment of the biological condition of those streams is not required under paragraph (c)(6)(vi) of this section. When obtaining the data needed to prepare this description, you must—

(A) Sample each stream using a scientifically defensible sampling method or protocol established or endorsed by an agency responsible for implementing the Clean Water Act, 33 U.S.C. 1251 *et seq.;*

(B) Identify benthic macroinvertebrates to the genus level where possible, otherwise to the lowest practical taxonomic level; and

(C) Describe the technical elements of the sampling protocol, including but not limited to sampling methods, sampling gear, index period, sample processing and analysis, and quality assessment/quality control procedures.

(d) *Additional information for discharges from previous coal mining operations.* If the proposed permit and adjacent areas contain any point-source discharges from previous surface or underground coal mining operations, you must sample those discharges during low-flow conditions of the receiving stream on a one-time basis. You must analyze the samples for the surface-water parameters identified in paragraph (a)(2) of this section and for both total and dissolved fractions of the following parameters—

(1) Aluminum.
(2) Arsenic.
(3) Barium.
(4) Beryllium.
(5) Cadmium.
(6) Copper.
(7) Lead.

(8) Mercury.
(9) Nickel.
(10) Silver.
(11) Thallium.
(12) Zinc.

(e) *Geologic information.* (1) Your application must include a description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined that may be adversely impacted by mining. The description must include—

(i) The areal and structural geology of the proposed permit and adjacent areas.

(ii) Other parameters that may influence the required reclamation.

(iii) An explanation of how the areal and structural geology and other parameters affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface water and groundwater.

(2) The description required by paragraph (e)(1) of this section must be based on all of the following—

(i) The cross-sections, maps, and plans required by § 779.24 of this chapter.

(ii) The information obtained under paragraphs (e)(3) and (4) of this section.

(iii) Geologic literature and practices.

(3) For any portion of the proposed permit area in which the strata down to the coal seam or seams to be mined will be removed or are already exposed, you must collect and analyze samples collected from test borings; drill cores; or fresh, unweathered, uncontaminated samples from rock outcrops, down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest seam to be mined that may be adversely impacted by mining. Your application must include the following data and analyses:

(i) Logs showing the lithologic characteristics, including physical properties and thickness of each stratum, and the location of any groundwater encountered.

(ii) Chemical analyses identifying those strata that may contain acid-forming materials, toxic-forming materials, or alkalinity-producing materials and the extent to which each stratum contains those materials.

(iii) Chemical analyses of all coal seams for acid-forming or toxic-forming materials, including, but not limited to, total sulfur and pyritic sulfur.

(4) You must provide any additional geologic information and analyses that the regulatory authority determines to be necessary to protect the hydrologic balance or to meet the performance standards of this chapter.

(5) You may request the regulatory authority to waive the requirements of paragraph (e)(3) of this section, in whole or in part. The regulatory authority may grant the waiver request only after finding in writing that the collection and analysis of such data is unnecessary because other representative information is available to the regulatory authority in a satisfactory form.

(f) *Cumulative impact area information.* (1) You must obtain the hydrologic, geologic, and biological information necessary to assess the impacts of both the proposed operation and all anticipated mining on surface-water and groundwater systems in the cumulative impact area, as required by § 780.21 of this part, from the appropriate federal or state agencies, to the extent that the information is available from those agencies.

(2) If the information identified as necessary in paragraph (f)(1) of this section is not available from other federal or state agencies, you may gather and submit this information to the regulatory authority as part of the permit application. As an alternative to collecting new information, you may submit data and analyses from nearby mining operations if the site of those operations is representative of the proposed operations in terms of topography, hydrology, geology, geochemistry, and method of mining.

(3) The regulatory authority may not approve the permit application until the information identified as necessary in paragraph (f)(1) of this section has been made available to the regulatory authority and the regulatory authority has used that information to prepare the cumulative hydrologic impact assessment required by § 780.21 of this part.

(g) *Exception for operations that avoid streams.* Upon your request, the regulatory authority may waive the biological information requirements of paragraphs (c)(6)(vi) through (viii) of this section if you demonstrate, and if the regulatory authority finds in writing, that your operation will not—

(1) Mine through or bury a perennial or intermittent stream;

(2) Create a point-source discharge to any perennial, intermittent, or ephemeral stream; or

(3) Modify the base flow of any perennial or intermittent stream.

(h) *Coordination with Clean Water Act agencies.* The regulatory authority will make best efforts to—

(1) Consult in a timely manner with the agencies responsible for issuing permits, authorizations, and certifications under the Clean Water Act;

(2) Minimize differences in baseline data collection points and parameters; and

(3) Share data to the extent practicable and consistent with each agency's mission, statutory requirements, and implementing regulations.

(i) *Corroboration of baseline data.* The regulatory authority must either corroborate a sample of the baseline information in your application or arrange for a third party to conduct the corroboration at your expense. Corroboration may include, but is not limited to, simultaneous sample collection and analysis, visual observation of sample collection, use of field measurements, or comparison of application data with application or monitoring data from adjacent operations.

§ 780.20 How must I prepare the determination of the probable hydrologic consequences of my proposed operation (PHC determination)?

(a) *Content of PHC determination.* Your permit application must contain a determination of the probable hydrologic consequences of the proposed operation upon the quality and quantity of surface water and groundwater and, except as provided in § 780.19(g) of this part, upon the biology of perennial and intermittent streams under seasonal flow conditions for the proposed permit and adjacent areas. You must base the PHC determination on an analysis of the baseline hydrologic, geologic, biological, and other information required under § 780.19 of this part. It must include findings on:

(1) Whether the operation may cause material damage to the hydrologic balance outside the permit area.

(2) Whether acid-forming or toxic-forming materials are present that could result in the contamination of surface water or groundwater, including, but not limited to, a discharge of toxic mine drainage after the completion of land reclamation.

(3) Whether the proposed operation may result in contamination, diminution, or interruption of an underground or surface source of water within the proposed permit or adjacent areas that is used for a domestic, agricultural, industrial, or other legitimate purpose.

(4) Whether the proposed operation will intercept aquifers in overburden strata or aquifers in underground mine voids (mine pools) or create aquifers in spoil placed in the backfilled area and, if so, what impacts the operation would

have on those aquifers, both during mining and after reclamation, and the effect of those impacts on the hydrologic balance.

(5) What impact the proposed operation will have on:

(i) Sediment yield and transport from the area to be disturbed.

(ii) The quality of groundwater and surface water within the proposed permit and adjacent areas. At a minimum, unless otherwise specified, the finding must address the impacts of the operation on both groundwater and surface water in terms of the parameters listed in § 780.19(a)(2) of this part and any additional water quality parameters that the regulatory authority determines to be of local importance.

(iii) Flooding and precipitation runoff patterns and characteristics.

(iv) Peak-flow magnitude and frequency for perennial and intermittent streams within the proposed permit and adjacent areas.

(v) Seasonal variations in streamflow.

(vi) The availability of groundwater and surface water, including the impact of any diversion of surface or subsurface flows to underground mine workings or any changes in watershed size as a result of the postmining surface configuration.

(vii) The biology of perennial and intermittent streams within the proposed permit and adjacent areas, except as provided in § 780.19(g) of this part.

(viii) Other characteristics as required by the regulatory authority.

(b) *Supplemental information.* You must provide any supplemental information that the regulatory authority determines is needed to fully evaluate the probable hydrologic consequences of the proposed operation and to plan remedial and reclamation activities. This information may include, but is not limited to, additional drilling, geochemical analyses of overburden materials, aquifer tests, hydrogeologic analyses of the water-bearing strata, analyses of flood flows, or analyses of other characteristics of water quality or quantity, including the stability of underground mine pools that might be affected by the proposed operation.

(c) *Subsequent reviews of PHC determinations.* (1) The regulatory authority must review each application for a permit revision to determine whether a new or updated PHC determination is needed.

(2) The regulatory authority must require that you prepare a new or updated PHC determination if the review under paragraph (c)(1) of this section finds that one is needed.

§ 780.21 What requirements apply to preparation, use, and review of the cumulative hydrologic impact assessment (CHIA)?

(a) *General requirements.* (1) The regulatory authority must prepare a written assessment of the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining upon surface-water and groundwater systems in the cumulative impact area. This assessment, which is known as the CHIA, must be sufficient to determine, for purposes of permit application approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

(2) In preparing the CHIA, the regulatory authority must consider relevant information on file for other mining operations located within the cumulative impact area or in similar watersheds.

(3) As provided in § 780.19(f) of this part, the regulatory authority may not approve a permit application until the hydrologic, geologic, and biological information needed to prepare the CHIA has been made available to the regulatory authority and the regulatory authority has used that information to prepare the CHIA.

(b) *Contents.* The CHIA must include—

(1) A map of the cumulative impact area. At a minimum, the map must identify and display—

(i) Any difference in the boundaries of the cumulative impact area for groundwater and surface water.

(ii) The locations of all previous, current, and anticipated surface and underground mining.

(iii) The locations of all baseline data collection sites within the proposed permit and adjacent areas under § 780.19 of this part.

(iv) Designated uses of surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(2) A description of all previous, existing, and anticipated surface and underground coal mining within the cumulative impact area, including, at a minimum, the coal seam or seams mined or to be mined, the extent of mining, and the reclamation status of each operation.

(3) A quantitative and qualitative description of baseline hydrologic information for the proposed permit and adjacent areas under § 780.19 of this part, including—

(i) The quality and quantity of surface water and groundwater and seasonal variations therein.

(ii) The quality and quantity of water needed to support, maintain, or attain each—

(A) Designated use of surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, each premining use of surface water.

(B) Premining use of groundwater.

(iii) A description and/or maps of the local and regional groundwater systems.

(iv) To the extent required by § 780.19(c)(6)(vi) of this part, the biological condition of perennial and intermittent streams and, to the extent required by § 780.19(c)(6)(viii) of this part, the biology of intermittent streams not included within § 780.19(c)(6)(vi) of this part.

(4) A discussion of any potential concerns identified in the PHC determination required under § 780.20 of this part and how those concerns have been or will be resolved.

(5) A qualitative and quantitative assessment of how all anticipated surface and underground mining may impact the quality of surface water and groundwater in the cumulative impact area, expressed in terms of each baseline parameter identified under § 780.19 of this part.

(6) Site-specific numeric or narrative thresholds for material damage to the hydrologic balance outside the permit area. These thresholds must also be included as a condition of the permit. When identifying thresholds to define when material damage to the hydrologic balance outside the permit area would occur in connection with a particular permit, the regulatory authority will—

(i) In consultation with the Clean Water Act authority, as appropriate, undertake a comprehensive evaluation that considers the following factors—

(A) The baseline data collected under § 780.19 of this part;

(B) The PHC determination prepared under § 780.20 of this part;

(C) Applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c);

(D) Applicable state or tribal standards for surface water or groundwater;

(E) Ambient water quality criteria developed under section 304(a) of the Clean Water Act, 33 U.S.C. 1314(a);

(F) The biological requirements of any species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* when those species; designated critical habitat for those species; habitat occupied by those species, such as nesting, resting, feeding, and breeding areas; and any areas in which those

species are present only for a short time, but that are important to their persistence, such as migration and dispersal corridors, are present within the cumulative impact area; and

(G) Other pertinent information and considerations to identify the parameters for which thresholds are necessary.

(ii) In consultation with the Clean Water Act authority, adopt numeric thresholds as appropriate, taking into consideration relevant contaminants for which there are water quality criteria under the Clean Water Act, 33 U.S.C. 1251 *et seq.* The regulatory authority may not adopt a narrative threshold for parameters for which numeric water quality criteria exist under the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(iii) Identify the portion of the cumulative impact area to which each threshold applies. Parameters and thresholds may vary from subarea to subarea within the cumulative impact area when appropriate, based upon differences in watershed characteristics and variations in the geology, hydrology, and biology of the cumulative impact area.

(iv) Identify the points within the cumulative impact area at which the permittee will monitor the impacts of the operation on surface water and groundwater outside the permit area and explain how those locations will facilitate timely detection of the impacts of the operation on surface water and groundwater outside the permit area in a scientifically defensible manner. The permit applicant must incorporate those monitoring locations into the surface water and groundwater monitoring plans submitted under § 780.23 of this part.

(7) Evaluation thresholds for critical water quality and quantity parameters, as determined by the regulatory authority. After permit issuance, if monitoring results at the locations designated under paragraph (b)(6)(iv) of this section document exceedance of an evaluation threshold, the regulatory authority, in consultation with the Clean Water Act authority, as appropriate, must determine the cause of the exceedance. If the mining operation is responsible for the exceedance and if the adverse trend is likely to continue in the absence of corrective action, the regulatory authority must issue a permit revision order under § 774.10 of this chapter. The order must require that the permittee reassess the adequacy of the PHC determination prepared under § 780.20 of this part and the hydrologic reclamation plan approved under § 780.20 of this part and develop measures to prevent material damage to the hydrologic balance outside the permit area.

(8) An assessment of how all anticipated surface and underground mining may affect groundwater movement and availability within the cumulative impact area.

(9) After consultation with the Clean Water Act authority, as appropriate, an evaluation, with references to supporting data and analyses, of whether the CHIA will support a finding that the operation has been designed to prevent material damage to the hydrologic balance outside the permit area. To support this finding, the CHIA must include the following determinations, with appropriate documentation, or an explanation of why the determination is not necessary or appropriate:

(i) Except as provided in §§ 780.22(b) and 816.40 of this chapter, the proposed operation will not—

(A) Cause or contribute to a violation of applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or other applicable state or tribal water quality standards;

(B) Cause or contribute to a violation of applicable state or tribal groundwater quality standards;

(C) Preclude attainment of a premining use of a surface water located outside the permit area when no water quality standards have been established for that surface water; or

(D) Preclude attainment of any premining use of groundwater located outside the permit area.

(ii) The proposed operation has been designed to ensure that neither the mining operation nor the final configuration of the reclaimed area will result in changes in the size or frequency of peak flows from precipitation events or thaws that would cause an increase in flooding outside the permit area, when compared with premining conditions.

(iii) Perennial and intermittent streams located outside the permit area will continue to have sufficient base flow at all times during and after mining and reclamation to maintain their premining flow regime; *i.e.,* perennial streams located outside the permit area will retain perennial flows and intermittent streams located outside the permit area will retain intermittent flows both during and after mining and reclamation. Conversion of an intermittent stream to a perennial stream or conversion of an ephemeral stream to an intermittent or perennial stream outside the permit area may be acceptable, provided the conversion would be consistent with paragraph (b)(9)(i) of this section and would not result in a violation of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.*

(iv) The proposed operation has been designed to protect the quantity and quality of water in any aquifer that significantly ensures the prevailing hydrologic balance.

(c) *Subsequent reviews.* (1) The regulatory authority must review each application for a significant permit revision to determine whether a new or updated CHIA is needed. The regulatory authority must document the review, including the analysis and conclusions, together with the rationale for the conclusions, in writing.

(2) The regulatory authority must reevaluate the CHIA at intervals not to exceed 3 years to determine whether the CHIA remains accurate and whether the material damage and evaluation thresholds in the CHIA and the permit are adequate to ensure that material damage to the hydrologic balance outside the permit area will not occur. This evaluation must include a review of all biological and water monitoring data from both this operation and all other coal mining operations within the cumulative impact area.

(3) The regulatory authority must prepare a new or updated CHIA if the review conducted under paragraph (c)(1) or (2) of this section finds that one is needed.

§ 780.22 What information must I include in the hydrologic reclamation plan and what information must I provide on alternative water sources?

(a) *Hydrologic reclamation plan.* Your permit application must include a plan, with maps and descriptions, that demonstrates how the proposed operation will comply with the applicable provisions of subchapter K of this chapter that relate to protection of the hydrologic balance. The plan must—

(1) Be specific to local hydrologic conditions.

(2) Include preventive or remedial measures for any potential adverse hydrologic consequences identified in the PHC determination prepared under § 780.20 of this part. These measures must describe the steps that you will take during mining and reclamation through final bond release under §§ 800.40 through 800.43 of this chapter to—

(i) Minimize disturbances to the hydrologic balance within the proposed permit and adjacent areas.

(ii) Prevent material damage to the hydrologic balance outside the proposed permit area.

(iii) Meet applicable water quality laws and regulations.

(iv) Protect the rights of existing water users in accordance with paragraph (b) of this section and § 816.40 of this chapter.

(v) Avoid acid or toxic discharges to surface water and avoid or, if avoidance is not possible, minimize degradation of groundwater.

(vi) Prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow or to runoff outside the proposed permit area.

(vii) Provide water-treatment facilities when needed.

(viii) Control surface-water runoff in accordance with § 780.29 of this part.

(ix) Restore the approximate premining recharge capacity.

(3) Address the impacts of any transfers of water among active and abandoned mines within the proposed permit and adjacent areas.

(4) Describe the steps that you will take during mining and reclamation through final bond release under §§ 800.40 through 800.43 of this chapter to protect and enhance aquatic life and related environmental values to the extent possible using the best technology currently available.

(b) *Alternative water source information.* (1) If the PHC determination prepared under § 780.20 of this part indicates that the proposed mining operation may result in contamination, diminution, or interruption of an underground or surface source of water that is used for a domestic, agricultural, industrial, or other legitimate purpose, you must—

(i) Identify alternative water sources that are available, feasible to develop, and of suitable quality and sufficient in quantity to support the uses existing before mining and, when applicable, the approved postmining land uses.

(ii) Develop a water supply replacement plan that includes construction details, costs, and an implementation schedule.

(2) If you cannot identify an alternative water source that is both suitable and available, you must modify your application to prevent the proposed operation from contaminating, interrupting, or diminishing any water supply protected under § 816.40 of this chapter.

(3)(i) When a suitable alternative water source is available, your operation plan must require that the alternative water supply be developed and installed on a permanent basis before your operation advances to the point at which it could adversely affect an existing water supply protected under § 816.40 of this chapter.

(ii) Paragraph (b)(3)(i) of this section will not apply immediately if you demonstrate, and the regulatory authority finds, that the proposed operation also would adversely affect the replacement supply. In that case, your plan must require provision of a temporary replacement water supply until it is safe to install the permanent replacement water supply required under paragraph (b)(3)(i) of this section.

(4) Your application must describe how you will provide both temporary and permanent replacements for any unexpected losses of water supplies protected under § 816.40 of this chapter.

§ 780.23 What information must I include in plans for the monitoring of groundwater, surface water, and the biological condition of streams during and after mining?

(a) *Groundwater monitoring plan.*—(1) *General requirements.* Your permit application must include a groundwater monitoring plan adequate to evaluate the impacts of the mining operation on groundwater in the proposed permit and adjacent areas and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area. The plan must—

(i) Identify the locations to be monitored, the measurements to be taken at each location, and the parameters to be analyzed in samples collected at each location.

(ii) Specify the sampling frequency.

(iii) Establish a sufficient number of appropriate monitoring locations to evaluate the accuracy of the findings in the PHC determination, to identify adverse trends, and to determine, in a timely fashion, whether corrective action is needed to prevent material damage to the hydrologic balance outside the permit area. At a minimum, the plan must include—

(A) For each aquifer above or immediately below the lowest coal seam to be mined, monitoring wells or equivalent monitoring points located upgradient and downgradient of the proposed operation.

(B) Monitoring wells placed in backfilled portions of the permit area after backfilling and grading of all or a portion of the permit area is completed, unless you demonstrate, and the regulatory authority finds in writing, that wells in the backfilled area are not necessary to determine or predict the future impact of the mining operation on groundwater quality.

(C) Monitoring wells in any existing underground mine workings that would have a direct hydrologic connection to the proposed operation.

(D) Monitoring wells or equivalent monitoring points at the locations specified in the CHIA under § 780.21(b)(6)(iv) of this part.

(iv) Describe how the monitoring data will be used to—

(A) Determine the impacts of the operation upon the hydrologic balance.

(B) Determine the impacts of the operation upon the biology of surface waters within the permit and adjacent areas.

(C) Prevent material damage to the hydrologic balance outside the permit area.

(v) Describe how the water samples will be collected, preserved, stored, transmitted for analysis, and analyzed in accordance with the sampling, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter.

(2) *Parameters.*—(i) *General criteria for selection of parameters.* The plan must provide for the monitoring of parameters for which an evaluation threshold under § 780.21(b)(7) of this part exists. It also must provide for the monitoring of other parameters that could be affected by the proposed operation to the extent needed to assess the—

(A) Accuracy of the findings and predictions in the PHC determination prepared under § 780.20 of this part.

(B) Suitability of the quality and quantity of groundwater for premining uses of the groundwater within the permit and adjacent areas, subject to § 816.40 of this chapter.

(C) Suitability of the quality and quantity of groundwater to support the premining land uses within the permit and adjacent areas.

(ii) *Minimum sampling and analysis requirements.* At a minimum, the plan must require collection and analysis of a sample from each monitoring point every 3 months, with data submitted to the regulatory authority at the same frequency. The data must include—

(A) Analysis of each sample for the groundwater parameters listed in § 780.19(a)(2) of this part.

(B) Water levels in each well used for monitoring purposes and discharge rates from each spring or underground opening used for monitoring purposes.

(C) Analysis of each sample for parameters detected by the baseline sampling and analysis conducted under § 780.19(d) of this part.

(D) Analysis of each sample for all parameters for which there is an evaluation threshold under § 780.21(b)(7) of this part.

(E) Analysis of each sample for other parameters of concern, as determined by

the regulatory authority, based upon the information and analyses required under §§ 780.19 through 780.21 of this part.

(3) *Regulatory authority review and action.* (i) Upon completing the technical review of the application, the regulatory authority may require that you revise the plan to increase the frequency of monitoring, to require monitoring of additional parameters, or to require monitoring at additional locations, if the additional requirements would contribute to protection of the hydrologic balance.

(ii) After completing preparation of the cumulative hydrologic impact assessment required under § 780.21 of this part, the regulatory authority must reconsider the adequacy of the monitoring plan and require that you make any necessary changes.

(4) *Exception.* If you can demonstrate, on the basis of the PHC determination prepared under § 780.20 of this part or other available information that a particular aquifer in the proposed permit and adjacent areas has no existing or foreseeable use for agricultural or other human purposes or for fish and wildlife purposes and does not serve as an aquifer that significantly ensures the hydrologic balance within the cumulative impact area, the regulatory authority may waive monitoring of that aquifer.

(b) *Surface-water monitoring plan.*—(1) *General requirements.* Your permit application must include a surface-water monitoring plan adequate to evaluate the impacts of the mining operation on surface water in the proposed permit and adjacent areas and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area. The plan must—

(i) Identify the locations to be monitored, the measurements to be taken at each location, and the parameters to be analyzed in samples collected at each location.

(ii)(A) Require on-site measurement of precipitation amounts at specified locations within the permit area, using self-recording devices.

(B) Measurement of precipitation amounts must continue through Phase II bond release under § 800.42(c) of this chapter or for any longer period specified by the regulatory authority.

(C) At the discretion of the regulatory authority, you may use precipitation data from a single self-recording device to provide monitoring data for multiple permits that are contiguous or nearly contiguous if a single station would provide adequate and accurate coverage of precipitation events occurring in that area.

(iii) Specify the sampling frequency.

(iv) Establish a sufficient number of appropriate monitoring locations to evaluate the accuracy of the findings in the PHC determination, to identify adverse trends, and to determine, in a timely fashion, whether corrective action is needed to prevent material damage to the hydrologic balance outside the permit area. At a minimum, the plan must include—

(A) Monitoring of point-source discharges from the proposed operation.

(B) Monitoring locations upgradient and downgradient of the proposed permit area in each perennial and intermittent stream within the proposed permit and adjacent areas, with the exception that no upgradient monitoring location is needed for a stream when the operation will mine through the headwaters of that stream.

(C) Monitoring locations specified in the CHIA under § 780.21(b)(6)(vi) of this part.

(v) Describe how the monitoring data will be used to—

(A) Determine the impacts of the operation upon the hydrologic balance.

(B) Determine the impacts of the operation upon the biology of surface waters within the permit and adjacent areas.

(C) Prevent material damage to the hydrologic balance outside the permit area.

(vi) Describe how the water samples will be collected, preserved, stored, transmitted for analysis, and analyzed in accordance with the sampling, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter.

(2) *Parameters.*—(i) *General criteria for selection of parameters.* The plan must provide for the monitoring of parameters—

(A) For which there are applicable effluent limitation guidelines under 40 CFR part 434.

(B) Needed to assess the accuracy of the findings and predictions in the PHC determination prepared under § 780.20 of this part.

(C) Needed to assess the adequacy of the surface-water runoff control plan prepared under § 780.29 of this part.

(D) Needed to assess the suitability of the quality and quantity of surface water in the permit and adjacent areas for all designated uses under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, all premining uses of surface water in the permit and adjacent areas, subject to § 816.40 of this chapter; and

(E) Needed to assess the suitability of the quality and quantity of surface water in the permit and adjacent areas to support the premining land uses.

(F) For which there is an evaluation threshold under § 780.21(b)(7) of this part.

(ii) *Minimum sampling and analysis requirements for monitoring locations other than point-source discharges.* For all monitoring locations other than point-source discharges, the plan must require collection and analysis of a sample from each monitoring point at least every 3 months, with data submitted to the regulatory authority at the same frequency. The data must include—

(A) Analysis of each sample for the surface-water parameters listed in § 780.19(a)(2) of this part.

(B) Flow rates at each sampling location. The plan must require use of generally-accepted professional flow measurement techniques. Visual observations are not acceptable.

(C) Analysis of each sample for parameters detected by the baseline sampling and analysis conducted under § 780.19(d) of this part.

(D) Analysis of each sample for all parameters for which there is an evaluation threshold under § 780.21(b)(7) of this part.

(E) Analysis of each sample for other parameters of concern, as determined by the regulatory authority, based upon the information and analyses required under §§ 780.19 through 780.21 of this part.

(iii) *Minimum requirements for point-source discharges.* For point-source discharges, the plan must—

(A) Provide for monitoring in accordance with 40 CFR parts 122, 123, and 434 and as required by the National Pollutant Discharge Elimination System permitting authority.

(B) Require measurement of flow rates, using generally-accepted professional flow measurement techniques. Visual observations are not acceptable.

(iv) *Requirements related to the Clean Water Act.* You must revise the plan to incorporate any site-specific monitoring requirements imposed by the National Pollutant Discharge Elimination System permitting authority or the agency responsible for administration of section 404 of the Clean Water Act, 33 U.S.C. 1344, subsequent to submission of the SMCRA permit application.

(3) *Regulatory authority review and action.* (i) Upon completing the technical review of your application, the regulatory authority may require that you revise the plan to increase the frequency of monitoring, to require

monitoring of additional parameters, or to require monitoring at additional locations, if the additional requirements would contribute to protection of the hydrologic balance.

(ii) After completing preparation of the cumulative hydrologic impact assessment required under § 780.21 of this part, the regulatory authority must reconsider the adequacy of the monitoring plan and require that you make any necessary changes.

(c) *Biological condition monitoring plan.*—(1) *General requirements.* Except as provided in paragraph (d) of this section, your permit application must include a plan for monitoring the biological condition of each perennial and intermittent stream within the proposed permit and adjacent areas for which baseline biological condition data was collected under § 780.19(c)(6)(vi) of this part. The plan must be adequate to evaluate the impacts of the mining operation on the biological condition of those streams and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area.

(2) *Monitoring techniques.* The plan must—

(i) Require use of a bioassessment protocol that meets the requirements of § 780.19(c)(6)(vii) of this part.

(ii) Identify monitoring locations in each perennial and intermittent stream within the proposed permit and adjacent areas for which baseline biological condition data was collected under § 780.19(c)(6)(vi) of this part.

(iii) Establish a sampling frequency that must be no less than annual, but not so frequent as to unnecessarily deplete the populations of the species being monitored.

(iv) Require submission of monitoring data to the regulatory authority on an annual basis.

(3) *Regulatory authority review and action.* (i) Upon completing review of your application, the regulatory authority may require that you revise the plan to adjust monitoring locations, the frequency of monitoring, and the species to be monitored.

(ii) After completing preparation of the cumulative hydrologic impact assessment required under § 780.21 of this part, the regulatory authority must reconsider the adequacy of the monitoring plan and require that you make any necessary changes.

(d) *Exceptions.*—(1) *Lands eligible for remining.* (i) If the proposed permit area includes only lands eligible for remining, you may request that the regulatory authority modify the groundwater and surface water monitoring plan requirements of paragraphs (a) and (b) of this section and modify or waive the biological condition monitoring plan requirements of paragraph (c) of this section.

(ii) The regulatory authority may approve your request if it determines that a less extensive monitoring plan will be adequate to monitor the impacts of the proposed operation on groundwater and surface water, based upon an evaluation of the quality of groundwater and surface water and the biological condition of the receiving stream at the time of application.

(2) *Operations that avoid streams.* (i) Upon your request, the regulatory authority may waive the biological condition monitoring plan requirements of paragraph (c) of this section if you demonstrate, and if the regulatory authority finds in writing, that your operation will not—

(A) Mine through or bury any perennial or intermittent stream;

(B) Create a point-source discharge to any perennial, intermittent, or ephemeral stream; or

(C) Modify the base flow of any perennial or intermittent stream.

(ii) If you meet all the criteria of paragraph (d)(2)(i) of this section with the exception of paragraph (d)(2)(i)(B) of this section, you may request, and the regulatory authority may approve, limiting the biological condition monitoring plan requirements of paragraph (c) of this section to only the stream that will receive the point-source discharge.

(e) *Coordination with Clean Water Act agencies.* The regulatory authority will make best efforts to—

(1) Consult in a timely manner with the agencies responsible for issuing permits, authorizations, and certifications under the Clean Water Act;

(2) Minimize differences in monitoring locations and reporting requirements; and

(3) Share data to the extent practicable and consistent with each agency's mission, statutory requirements, and implementing regulations.

§ 780.24 What requirements apply to the postmining land use?

(a) *What postmining land use information must my application contain*? (1) You must describe and map the proposed use or uses of the land within the proposed permit area following reclamation, based on the categories of land uses listed in the definition of land use in § 701.5 of this chapter.

(2) Except for prime farmland historically used for cropland, you must discuss the utility and capability of the reclaimed land to support the proposed postmining land use and the variety of uses that the land was capable of supporting before any mining, as identified under § 779.22 of this chapter, regardless of the proposed postmining land use.

(3) You must explain how the proposed postmining land use is consistent with existing state and local land use policies and plans.

(4) You must include a copy of the comments concerning the proposed postmining use that you receive from the—

(i) Legal or equitable owner of record of the surface of the proposed permit area; and

(ii) State and local government agencies that would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation.

(5) You must explain how the proposed postmining land use will be achieved and identify any support activities or facilities needed to achieve that use.

(6) If you propose to restore the proposed permit area or a portion thereof to a condition capable of supporting a higher or better use or uses rather than to a condition capable of supporting the uses that the land could support before any mining, you must provide the demonstration required under paragraph (b)(1) of this section.

(b) *What requirements apply to the approval of alternative postmining land uses*?—(1) *Application requirements.* If you propose to restore the proposed permit area or a portion thereof to a condition capable of supporting a higher or better use or uses, rather than to a condition capable of supporting the uses that the land could support before any mining, you must demonstrate that the proposed higher or better use or uses meet the following criteria:

(i) There is a reasonable likelihood that the proposed use or uses will be achieved after mining and reclamation, as documented by, for example, real estate and construction contracts, plans for installation of any necessary infrastructure, procurement of any necessary zoning approvals, landowner commitments, economic forecasts, and studies by land use planning agencies.

(ii) The proposed use or uses do not present any actual or probable hazard to public health or safety or any threat of water diminution or pollution.

(iii) The proposed use or uses will not—

(A) Be impractical or unreasonable.

(B) Be inconsistent with applicable land use policies or plans.

(C) Involve unreasonable delay in implementation.

(D) Cause or contribute to a violation of federal, state, tribal or local law.

(E) Result in changes in the size or frequency of peak flows from the reclaimed area that would cause an increase in flooding when compared with the conditions that would exist if the land were restored to a condition capable of supporting the uses that it was capable of supporting before any mining.

(F) Cause the total volume of flow from the reclaimed area, during every season of the year, to vary in a way that would preclude attainment of any designated use of a surface water located outside the permit area under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, any premining use of a surface water located outside the permit area.

(G) Cause a change in the temperature or chemical composition of the water that would preclude attainment of any designated use of a surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, any premining use of a surface water located outside the permit area.

(2) *Regulatory authority decision requirements.* The regulatory authority may approve your request if it—

(i) Consults with the landowner or the land management agency having jurisdiction over the lands to which the use would apply; and

(ii) Finds in writing that you have made the demonstration required under paragraph (b)(1) of this section. Landowner consent alone is an insufficient basis for this finding.

(c) *What requirements apply to permit revision applications that propose to change the postmining land use*? (1) You may propose to change the postmining land use for all or a portion of the permit area at any time through the permit revision process under § 774.13 of this chapter.

(2) If you propose a higher or better postmining land use, the requirements of paragraphs (b)(1) and (2) of this section will apply and the application must be considered a significant permit revision for purposes of § 774.13(b)(2) of this chapter.

(d) *What restrictions apply to the retention of mining-related structures*? (1) If you propose to retain mining-related structures other than roads and impoundments for potential future use as part of the postmining land use, you must demonstrate, and the regulatory authority must find in writing, that the size and characteristics of the structures are consistent with and proportional to the needs of the postmining land use.

(2) The amount of bond required for the permit under part 800 of this chapter must include the cost of removing the structure and reclaiming the land upon which it was located to a condition capable of supporting the premining uses. The bond must include the cost of restoring the site to its approximate original contour in accordance with § 816.102 of this chapter and revegetating the site in accordance with the revegetation plan approved under § 780.12(g) of this part for the permit area surrounding the site upon which the structure was previously located.

(3) The reclamation plan submitted under § 780.12 of this part must specify that if a structure is not in use as part of the approved postmining land use by the end of the revegetation responsibility period specified in § 816.115 of this chapter, you must remove the structure and reclaim the land upon which it was located by restoring the approximate original contour in accordance with § 816.102 of this chapter and revegetating the site in accordance with the revegetation plan approved under § 780.12(g) of this part for the permit area surrounding the site upon which the structure was previously located.

(e) *What special provisions apply to previously mined areas*? If land that was previously mined cannot be reclaimed to the land use that existed before any mining because of the previously mined condition, you may propose, and the regulatory authority may approve, any appropriate postmining land use for that land that is both achievable and compatible with land uses in the surrounding area, provided that restoration of the land to that capability does not require disturbance of land previously unaffected by mining.

§ 780.25 What information must I provide for siltation structures, impoundments, and refuse piles?

(a) *How do I determine the hazard potential of a proposed impoundment*? You must use the following table to identify the hazard potential classification of each proposed impoundment that includes a dam:

Hazard potential classification	Loss of human life in event of failure	Economic, environmental, or lifeline losses [1] in event of failure
Low	None expected	Low potential; generally limited to property owned by the permittee.
Significant	None expected	Yes.
High	Loss of one or more lives probable	Yes, but not necessary for this classification.

[1] Lifeline losses refer to disruption of lifeline facilities, which include, but are not limited to, important public utilities, highways, and railroads.

(b) *How must I prepare the general plan for proposed siltation structures, impoundments, and refuse piles*? If you propose to construct a siltation structure, impoundment, or refuse pile, your application must include a general plan that meets the following requirements:

(1) The plan must be prepared by, or under the direction of, and certified by a qualified registered professional engineer, a professional geologist, or, in any state that authorizes land surveyors to prepare and certify such plans, a qualified registered professional land surveyor, with assistance from experts in related fields such as landscape architecture.

(2) The plan must contain a description, map, and cross-sections of the structure and its location.

(3) The plan must contain the hydrologic and geologic information required to assess the hydrologic impact of the structure.

(4)(i) The plan must contain a report describing the results of a geotechnical investigation of the potential effect on the structure if subsurface strata subside as a result of past, current, or future underground mining operations beneath or within the proposed permit and adjacent areas. When necessary, the investigation report also must identify design and construction measures that would prevent adverse subsidence-related impacts on the structure.

(ii) Except for structures that would meet the criteria in § 77.216(a) of this title or that would have a significant or high hazard potential under paragraph (a) of this section, the requirements of paragraph (b)(4)(i) of this section do not apply—

(A) In areas with 26.0 inches or less of average annual precipitation; or

(B) To siltation structures.

(5)(i) The plan must contain an analysis of the potential for each impoundment to drain into subjacent underground mine workings, together with an analysis of the impacts of such drainage.

(ii) Except for structures that would meet the criteria in § 77.216(a) of this title or that would have a significant or high hazard potential under paragraph (a) of this section, the requirements of paragraph (b)(5)(i) of this section do not apply—

(A) In areas with 26.0 inches or less of average annual precipitation; or

(B) To siltation structures.

(6) The plan must include a schedule setting forth the dates when any detailed design plans for structures that are not submitted with the general plan will be submitted to the regulatory authority.

(c) *How must I prepare the detailed design plan for proposed siltation structures, impoundments, and refuse piles*?—(1) *Detailed design plan requirements for high hazard dams, significant hazard dams, and impounding structures that meet MSHA criteria.* If you propose to construct an impounding structure that would meet the criteria in § 77.216(a) of this title or that would have a significant or high hazard potential under paragraph (a) of this section, you must prepare and submit a detailed design plan that meets the following requirements:

(i) The plan must be prepared by, or under the direction of, a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture. The engineer must certify that the impoundment design meets the requirements of this part, current prudent engineering practices, and any design criteria established by the regulatory authority. The qualified registered professional engineer must be experienced in the design and construction of impoundments.

(ii) The plan must incorporate any design and construction measures identified in the geotechnical investigation report prepared under paragraph (b)(4) of this section as necessary to protect against potential adverse impacts from subsidence resulting from underground mine workings underlying or adjacent to the structure.

(iii) The plan must describe the operation and maintenance requirements for each structure.

(iv) The plan must describe the timetable and plans to remove each structure, if appropriate.

(2) *Detailed design plan requirements for other structures.* If you propose to construct an impounding structure that would not meet the criteria in § 77.216(a) of this title and that would not have a significant or high hazard potential under paragraph (a) of this section, you must prepare and submit a detailed design plan that meets the following requirements:

(i)(A) Except as provided in paragraph (c)(2)(i)(B) of this section, the plan must be prepared by, or under the direction of, a qualified, registered, professional engineer, or, in any state that authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional, land surveyor. The engineer or land surveyor must certify that the impoundment design meets the requirements of this part, current prudent engineering practices, and any design criteria established by the regulatory authority. The qualified registered professional engineer or qualified registered professional land surveyor must be experienced in the design and construction of impoundments.

(B) All coal mine waste structures to which §§ 816.81 through 816.84 of this chapter apply must be certified by a qualified, registered, professional engineer.

(ii) The plan must reflect any design and construction requirements for the structure, including any measures identified as necessary in the geotechnical investigation report prepared under paragraph (b)(4) of this section.

(iii) The plan must describe the operation and maintenance requirements for each structure.

(iv) The plan must describe the timetable and plans to remove each structure, if appropriate.

(3) *Timing of submittal of detailed design plans.* You must submit the detailed design plans to the regulatory authority either as part of the permit application or in accordance with the schedule submitted under paragraph (b)(6) of this section. The regulatory authority must approve, in writing, the detailed design plan for a structure before you may begin construction of the structure.

(d) *What additional design requirements apply to siltation structures?* You must design siltation structures in compliance with the requirements of § 816.46 of this chapter.

(e) *What additional design requirements apply to permanent and temporary impoundments?* (1) You must design permanent and temporary impoundments to comply with the requirements of § 816.49 of this chapter.

(2) The regulatory authority may establish, through the regulatory program approval process, engineering design standards that ensure stability comparable to a 1.3 minimum static safety factor in lieu of conducting engineering tests to establish compliance with the minimum static safety factor of 1.3 required in § 816.49(a)(2)(ii) of this chapter.

(3) Each plan must include stability analyses of the proposed impoundment if the structure would meet the criteria in § 77.216(a) of this title or would have a significant or high hazard potential under paragraph (a) of this section. The stability analyses must address static, seismic, and post-earthquake (liquefaction) conditions. They must include, but are not limited to, strength parameters, pore pressures, and long-term seepage conditions. The plan also must contain a description of each engineering design assumption and calculation with a discussion of each alternative considered in selecting the specific analysis and design parameters and construction methods.

(f) *What additional design requirements apply to coal mine waste impoundments, refuse piles, and impounding structures constructed of coal mine waste?* If you propose to place coal mine waste in a refuse pile or impoundment, or if you plan to use coal mine waste to construct an impounding structure, you must comply with the applicable design requirements in paragraphs (f)(1) and (2) of this section.

(1) *Design requirements for refuse piles.* You must design refuse piles to comply with the requirements of §§ 780.28, 816.81, and 816.83 of this chapter.

(2) *Design requirements for impounding structures that will impound coal mine waste or that will be constructed of coal mine waste.* (i) You must design impounding structures constructed of or intended to impound coal mine waste to comply with the coal mine waste disposal requirements of §§ 780.28, 816.81, and 816.84 of this chapter and with the impoundment requirements of paragraphs (a) and (c) of § 816.49 of this chapter.

(ii) The plan for each impounding structure that meets the criteria of § 77.216(a) of this title must comply with the requirements of § 77.216–2 of this title.

(iii) Each plan for an impounding structure that will impound coal mine waste or that will be constructed of coal mine waste must contain the results of a geotechnical investigation to determine the structural competence of the foundation that will support the proposed impounding structure and the

impounded material. An engineer or engineering geologist must plan and supervise the geotechnical investigation. In planning the investigation, the engineer or geologist must—

(A) Determine the number, location, and depth of borings and test pits using current prudent engineering practice for the size of the impoundment and the impounding structure, the quantity of material to be impounded, and subsurface conditions.

(B) Consider the character of the overburden and bedrock, the proposed abutment sites for the impounding structure, and any adverse geotechnical conditions that may affect the impounding structure.

(C) Identify all springs, seepage, and groundwater flow observed or anticipated during wet periods in the area of the proposed impounding structure on each plan.

(D) Consider the possibility of mudflows, rock-debris falls, or other landslides into the impounding structure, impoundment, or impounded material.

(iv) The design must ensure that at least 90 percent of the water stored in the impoundment during the design precipitation event will be removed within a 10-day period.

§ 780.26 What special requirements apply to surface mining near underground mining?

Your application must describe the measures that you will use to comply with § 816.79 of this chapter if you intend to conduct surface mining activities within 500 feet of an underground mine.

§ 780.27 What additional permitting requirements apply to proposed activities in or through ephemeral streams?

(a) *Clean Water Act requirements.* If the proposed permit area includes waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* the regulatory authority must condition the permit to prohibit initiation of surface mining activities in or affecting those waters before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(b) *Postmining surface drainage pattern and stream-channel configuration.* (1) If you propose to mine through an ephemeral stream, your application must include a plan to construct—

(i) A postmining surface drainage pattern that is similar to the premining surface drainage pattern, relatively stable, and in dynamic near-equilibrium; and

(ii) Postmining stream-channel configurations that are relatively stable and similar to the premining configuration of ephemeral stream channels.

(2) The regulatory authority may approve or require a postmining surface drainage pattern or stream-channel configuration that differs from the pattern or configuration otherwise required under paragraph (b)(1) of this section when the regulatory authority finds that a different pattern or configuration is necessary or appropriate to—

(i) Ensure stability;

(ii) Prevent or minimize downcutting or widening of reconstructed stream channels and control meander migration;

(iii) Promote enhancement of fish and wildlife habitat;

(iv) Accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation;

(v) Accommodate the construction of excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures;

(vi) Replace a stream that was channelized or otherwise severely altered prior to submittal of the permit application with a more natural, relatively stable, and ecologically sound drainage pattern or stream-channel configuration; or

(vii) Reclaim a previously mined area.

(c) *Streamside vegetative corridors.* (1) If you propose to mine through an ephemeral stream, your application must include a plan to establish a vegetative corridor at least 100 feet wide along each bank of the reconstructed stream channel, consistent with natural vegetation patterns.

(2) The plan submitted under paragraph (c)(1) of this section must be consistent with the requirements of § 816.56(c) of this chapter for vegetative corridors along ephemeral streams.

(3) Paragraphs (c)(1) and (2) of this section do not apply to prime farmland historically used for cropland.

§ 780.28 What additional permitting requirements apply to proposed activities in, through, or adjacent to a perennial or intermittent stream?

(a) *Clean Water Act requirements.* If the proposed permit area includes waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* the regulatory authority must condition the permit to prohibit initiation of surface mining activities in or affecting those waters before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(b) *To what activities does this section apply*? You, the permit applicant, must provide the information and demonstrations required by paragraphs (c) through (g) of this section, as applicable, whenever you propose to conduct surface mining activities—

(1) In or through a perennial or intermittent stream; or

(2) On the surface of lands within 100 feet of a perennial or intermittent stream. You must measure this distance horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(c) *Postmining surface drainage pattern and stream-channel configuration.* (1) If you propose to mine through a perennial or intermittent stream, your application must include a plan to construct—

(i) A postmining surface drainage pattern that is similar to the premining surface drainage pattern, relatively stable, and in dynamic near-equilibrium; and

(ii) Postmining stream-channel configurations that are relatively stable and similar to the premining configuration of perennial and intermittent stream channels.

(2) The regulatory authority may approve or require a postmining surface drainage pattern or stream-channel configuration that differs from the pattern or configuration otherwise required under paragraph (c)(1) of this section when the regulatory authority finds that a different pattern or configuration is necessary or appropriate to—

(i) Ensure stability;

(ii) Prevent or minimize downcutting or widening of reconstructed stream channels and control meander migration;

(iii) Promote enhancement of fish and wildlife habitat;

(iv) Accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation;

(v) Accommodate the construction of excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures;

(vi) Replace a stream that was channelized or otherwise severely altered prior to submittal of the permit application with a more natural, relatively stable, and ecologically sound drainage pattern or stream-channel configuration; or

(vii) Reclaim a previously mined area.

(d) *Streamside vegetative corridors.* (1) If you propose to conduct any surface mining activities identified in paragraph (b) of this section, your application must include a plan to

establish a vegetated streamside corridor at least 100 feet wide along each bank of the stream as part of the reclamation process following the completion of surface mining activities within that area.

(2) The plan submitted under paragraph (d)(1) of this section must be consistent with natural vegetation patterns.

(3) The plan submitted under paragraph (d)(1) of this section must be consistent with the streamside vegetative corridor requirements of § 816.57(d) of this chapter.

(4) The corridor width must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(5) Paragraphs (d)(1) through (2) of this section do not apply to prime farmland historically used for cropland.

(e) *What demonstrations must I include in my application if I propose to conduct activities in or within 100 feet of a perennial or intermittent stream?* (1) Except as provided in paragraphs (e)(4), (e)(5), and (i) of this section and § 816.57(i) of this chapter, your application must contain the applicable demonstrations set forth in the table if you propose to conduct surface mining activities in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream, as specified in paragraph (b) of this section.

Demonstration	Activity		
	Any activity other than mining through or permanently diverting a stream or construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream	Mining through or permanently diverting a stream	Construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream
(i) The proposed activity would not cause or contribute to a violation of applicable state or tribal water quality standards, including, but not limited to, standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).	Yes	Yes	Yes.
(ii) The proposed activity would not cause material damage to the hydrologic balance outside the permit area or upset the dynamic near-equilibrium of streams outside the permit area.	Yes	Yes	Yes.
(iii) The proposed activity would not result in conversion of the affected stream segment from perennial to ephemeral.	Yes	Yes	Not applicable.
(iv) The proposed activity would not result in conversion of the affected stream segment from intermittent to ephemeral or from perennial to intermittent.	Yes	Yes, except as provided in paragraphs (e)(2) and (5) of this section.	Not applicable.
(v) There is no practicable alternative that would avoid mining through or diverting a perennial or intermittent stream.	Not applicable	Yes, except as provided in paragraph (e)(3) of this section.	Yes.
(vi) After evaluating all potential upland locations in the vicinity of the proposed operation, including abandoned mine lands and unreclaimed bond forfeiture sites, there is no practicable alternative that would avoid placement of excess spoil or coal mine waste in a perennial or intermittent stream.	Not applicable	Not applicable	Yes.
(vii) The proposed operation has been designed to minimize the extent to which perennial or intermittent streams will be mined through, diverted, or covered by an excess spoil fill, a coal mine waste refuse pile, or a coal mine waste impounding structure.	Not applicable	Yes, except as provided in paragraphs (e)(3) and (5) of this section.	Yes.
(viii) The stream restoration techniques in the proposed reclamation plan are adequate to ensure restoration or improvement of the form, hydrologic function (including flow regime), dynamic near-equilibrium, streamside vegetation, and ecological function of the stream after you have mined through it, as required by § 816.57 of this chapter.	Not applicable	Yes, except as provided in paragraph (e)(5) of this section.	Not applicable.
(ix) The proposed operation has been designed to minimize the amount of excess spoil or coal mine waste that the proposed operation will generate.	§ 780.35(b) of this part requires minimization of excess spoil.	§ 780.35(b) of this part requires minimization of excess spoil.	Yes.

Demonstration	Activity		
	Any activity other than mining through or permanently diverting a stream or construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream	Mining through or permanently diverting a stream	Construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream
(x) To the extent possible using the best technology currently available, the proposed operation has been designed to minimize adverse impacts on fish, wildlife, and related environmental values.	Yes	Yes	Yes.
(xi) The fish and wildlife enhancement plan prepared under § 780.16 of this part includes measures that would fully and permanently offset any long-term adverse impacts on fish, wildlife, and related environmental values within the footprint of each excess spoil fill, coal mine waste refuse pile, and coal mine waste impounding structure.	Not applicable	Not applicable	Yes.
(xii) Each excess spoil fill, coal mine waste refuse pile, and coal mine waste impounding structure has been designed in a manner that will not result in the formation of toxic mine drainage.	Not applicable	Not applicable	Yes.
(xiii) The revegetation plan prepared under § 780.12(g) of this part requires reforestation of each completed excess spoil fill if the land is forested at the time of application or if the land would revert to forest under conditions of natural succession.	Not applicable	Not applicable	Yes.

(2)(i) As part of a proposal to mine through an intermittent stream, you may propose to convert a minimal portion of the mined-through segment of an intermittent stream to an ephemeral stream. The regulatory authority may approve the proposed conversion only if you demonstrate, and the regulatory authority finds, that the conversion would not degrade the hydrologic function, dynamic near-equilibrium, or the ecological function of the stream as a whole within the mined area, as determined by comparison with the stream assessment conducted under § 780.19(c)(6) of this part.

(ii) Paragraph (e)(2)(i) of this section does not apply to the circumstances described in paragraph (e)(5) of this section.

(3)(i) Paragraphs (e)(1)(v) and (vii) of this section do not apply to a proposal to mine through a segment of an intermittent stream when that segment meets the criteria of paragraph (e)(3)(ii) of this section, provided you demonstrate, and the regulatory authority finds, that implementation of the proposed mining and reclamation plan—

(A) Will improve the form of the stream segment;

(B) Will improve the hydrologic function of the stream;

(C) Is likely to result in improvement of the biological condition or ecological function of the stream;

(D) Will not further degrade the hydrologic function, dynamic near-equilibrium, biological condition, or ecological function of the stream; and

(E) Will result in establishment of a streamside vegetative corridor for the stream segment in accordance with § 816.57(d) of this chapter.

(ii) To qualify for purposes of paragraph (e)(3)(i) of this section, a stream segment must display both of the following characteristics:

(A) Prior anthropogenic activity has resulted in substantial degradation of the profile or dimensions of the stream channel; and

(B) Degradation of the stream channel has resulted in a substantial adverse impact on the ecological function of the stream.

(4) Paragraph (e)(1) of this section does not apply to a stream segment that will be part of a permanent impoundment approved and constructed under § 816.49(b) of this chapter.

(5) Paragraphs (e)(1)(iv) and (vii) of this section and the requirement for restoration of the hydrologic and ecological functions and the dynamic near-equilibrium of a stream in paragraph (e)(1)(viii) of this section do not apply to an intermittent stream segment if—

(i) The intermittent segment is a minor interval in what is otherwise a predominantly ephemeral stream;

(ii) You demonstrate, and the regulatory authority finds, that the intermittent segment has no significant fish, wildlife, or related environmental values, as documented by the baseline data collected under § 780.19(c)(6) of this part; and

(iii) You demonstrate, and the regulatory authority finds, that conversion of the intermittent stream segment will not adversely affect water uses.

(f) *What design requirements apply to the diversion, restoration, and reconstruction of perennial and intermittent stream channels?* (1)(i) You must design permanent stream-channel diversions, temporary stream-channel diversions that will remain in use for 3 or more years, and stream channels to be reconstructed after the completion of mining to restore, approximate, or improve the premining characteristics of the original stream channel, to promote the recovery and enhancement of aquatic habitat and the ecological and hydrologic functions of the stream, and to minimize adverse alteration of stream

channels on and off the site, including channel deepening or enlargement.

(ii) Pertinent stream-channel characteristics include, but are not limited to, the baseline stream pattern, profile, dimensions, substrate, habitat, and natural vegetation growing in the riparian zone and along the banks of the stream.

(iii) For temporary stream-channel diversions that will remain in use for 3 or more years, the vegetation proposed for planting along the banks of the diversion need not include species that would not reach maturity until after the diversion is removed.

(2) You must design the hydraulic capacity of all temporary and permanent stream-channel diversions to be at least equal to the hydraulic capacity of the unmodified stream channel immediately upstream of the diversion, but no greater than the hydraulic capacity of the unmodified stream channel immediately downstream from the diversion.

(3) You must design all temporary and permanent stream-channel diversions in a manner that ensures that the combination of channel, bank, and flood-plain configuration is adequate to pass safely the peak runoff of a 10-year, 6-hour precipitation event for a temporary diversion and a 100-year, 6-hour precipitation event for a permanent diversion.

(4) You must submit a certification from a qualified registered professional engineer that the designs for all stream-channel diversions and all stream channels to be reconstructed after the completion of mining meet the design requirements of this section and any additional design criteria established by the regulatory authority. This certification may be limited to the location, dimensions, and physical characteristics of the stream channel.

(g) *What requirements apply to establishment of standards for restoration of the ecological function of a stream?* (1) If you propose to mine through a perennial or intermittent stream, the regulatory authority must establish standards for determining when the ecological function of the reconstructed stream has been restored. Your application must incorporate those standards and explain how you will meet them.

(2) In establishing standards under paragraph (g)(1) of this section, the regulatory authority must coordinate with the appropriate agencies responsible for administering the Clean Water Act, 33 U.S.C. 1251 *et seq.,* to ensure compliance with all Clean Water Act requirements.

(3)(i) The biological component of the standards established under paragraph (g)(1) of this section must employ the best technology currently available, as specified in paragraphs (g)(3)(ii) through (iv) of this section.

(ii) For perennial streams, the best technology currently available includes an assessment of the biological condition of the stream, as determined by an index of biological condition or other scientifically-defensible bioassessment protocols consistent with § 780.19(c)(6)(vii) of this part. Standards established under paragraph (g)(1) of this section for perennial streams—

(A) Need not require that a reconstructed stream or stream-channel diversion have precisely the same biological condition or biota as the stream segment did before mining.

(B) Must prohibit substantial replacement of pollution-sensitive species with pollution-tolerant species.

(C) Must require that populations of organisms used to determine the biological condition of the reconstructed stream or stream-channel diversion be self-sustaining within that stream segment.

(iii) Paragraph (g)(3)(ii) of this section also applies to intermittent streams whenever a scientifically defensible biological index and bioassessment protocol have been established for assessment of intermittent streams in the state or region in which the stream is located.

(iv)(A) Except as provided in paragraph (g)(3)(iii) of this section, the best technology currently available for intermittent streams consists of the establishment of standards that rely upon restoration of the form, hydrologic function, and water quality of the stream and reestablishment of streamside vegetation as a surrogate for the biological condition of the stream.

(B) The regulatory authority must reevaluate the best technology currently available for intermittent streams under paragraph (g)(3)(iv)(A) of this section at 5-year intervals. Upon conclusion of that evaluation, the regulatory authority must make any appropriate adjustments before processing permit applications submitted after the conclusion of that evaluation.

(4) Standards established under paragraph (g)(1) of this section must ensure that the reconstructed stream or stream-channel diversion will not—

(i) Preclude attainment of the designated uses of that stream segment under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), before mining, or, if there are no designated uses, the premining uses of that stream segment; or

(ii) Result in that stream segment not meeting the applicable anti-degradation requirements under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), as adopted by a state or authorized tribe or as promulgated in a federal rulemaking under the Clean Water Act.

(h) *What finding must the regulatory authority make before approving a permit application under this section?* The regulatory authority may not approve an application that includes a proposal to conduct surface mining activities in or within 100 feet of a perennial or intermittent stream unless it first makes a specific written finding that you have fully satisfied all applicable requirements of paragraphs (c) through (f) of this section. The finding must be accompanied by a detailed explanation of the rationale for the finding.

(i) *Programmatic alternative.* Paragraphs (c) through (h) of this section will not apply to a state program approved under subchapter T of this chapter if that program is amended to expressly prohibit all surface mining activities, including the construction of stream-channel diversions, that would result in more than a de minimis disturbance of perennial or intermittent streams or the surface of land within 100 feet of a perennial or intermittent stream.

§ 780.29 What information must I include in the surface-water runoff control plan?

Your application must contain a surface-water runoff control plan that includes the following—

(a)(1) An explanation of how you will handle surface-water runoff in a manner that will prevent peak flows from the proposed permit area, both during and after mining and reclamation, from exceeding the premining peak flow from the same area for the same-size precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution or another scientifically defensible method approved by the regulatory authority that takes into account the time of concentration to estimate peak flows.

(2) The explanation in paragraph (a)(1) of this section must consider the findings in the determination of the probable hydrologic consequences of mining prepared under § 780.20 of this part.

(b) A surface-water runoff monitoring and inspection program that will provide sufficient precipitation and stormwater discharge data for the proposed permit area to evaluate the effectiveness of the surface-water runoff control practices under paragraph (a) of

this section. The surface-water runoff monitoring and inspection program must specify criteria for monitoring, inspection, and reporting consistent with § 816.34(d) of this chapter. The program must contain a monitoring-point density that adequately represents the drainage pattern across the entire proposed permit area, with a minimum of one monitoring point per watershed discharge point.

(c) Descriptions maps, and cross-sections of runoff-control structures. A runoff-control structure is any man-made structure designed to control or convey storm water runoff on or across a minesite. This term encompasses the entire surface water control system and includes diversion ditches, drainage benches or terraces, drop structures or check dams, all types of conveyance channels, downdrains, and sedimentation and detention ponds and associated outlets. It does not include swales or reconstructed perennial, intermittent, or ephemeral stream channels.

(d) An explanation of how diversions will be constructed in compliance with § 816.43 of this chapter.

§ 780.31 What information must I provide concerning the protection of publicly owned parks and historic places?

(a) For any publicly owned parks or any places listed on the National Register of Historic Places that may be adversely affected by the proposed operation, you must describe the measures to be used—

(1) To prevent adverse impacts, or

(2) If a person has valid existing rights, as determined under § 761.16 of this chapter, or if joint agency approval is to be obtained under § 761.17(d) of this chapter, to minimize adverse impacts.

(b) The regulatory authority may require the applicant to protect historic or archeological properties listed on or eligible for listing on the National Register of Historic Places through appropriate mitigation and treatment measures. Appropriate mitigation and treatment measures may be required to be taken after permit issuance, provided that the required measures are completed before the properties are affected by any mining operation.

§ 780.33 What information must I provide concerning the relocation or use of public roads?

Your application must describe, with appropriate maps and cross-sections, the measures to be used to ensure that the interests of the public and landowners affected are protected if, under § 761.14 of this chapter, you seek to have the regulatory authority approve—

(a) Conducting the proposed surface mining activities within 100 feet of the right-of-way line of any public road, except where mine access or haul roads join that right-of-way; or

(b) Relocating a public road.

§ 780.35 What information must I provide concerning the minimization and disposal of excess spoil?

(a) *Applicability.* This section applies to you, the permit applicant, if you propose to generate excess spoil as part of your operation.

(b) *Demonstration of minimization of excess spoil.* (1) You must submit a demonstration, with supporting calculations and other documentation, that the operation has been designed to minimize, to the extent possible, the volume of excess spoil that the operation will generate.

(2) The demonstration under paragraph (b)(1) of this section must explain, in quantitative terms, how the maximum amount of overburden will be returned to the mined-out area after considering—

(i) Applicable regulations concerning backfilling, compaction, grading, and restoration of the approximate original contour.

(ii) Safety and stability needs and requirements.

(iii) The need for access and haul roads with their attendant drainage structures and safety berms during mining and reclamation. You may construct roads and their attendant drainage structures and safety berms on the perimeter of the backfilled area as necessary to conduct surface coal mining and reclamation operations, but, when the roads are no longer needed to support heavy equipment traffic, you must reduce the total width of roads and their attendant drainage structures and berms to be retained as part of the postmining land use to no more than 20 feet unless you demonstrate an essential need for a greater width for the postmining land use.

(iv) Needs and requirements associated with revegetation and the proposed postmining land use.

(v) Any other relevant regulatory requirements, including those pertaining to protection of water quality and fish, wildlife, and related environmental values.

(3) When necessary to avoid or minimize construction of excess spoil fills on undisturbed land, paragraph (b)(2)(i) of this section does not prohibit the placement of what would otherwise be excess spoil on the mined-out area to heights in excess of the premining elevation, provided that the final surface configuration is compatible with the surrounding terrain and generally resembles landforms found in the surrounding area.

(4) You may not create a permanent impoundment under § 816.49(b) of this chapter or place coal combustion residues or noncoal materials in the mine excavation if doing so would result in the creation of excess spoil.

(c) *Preferential use of preexisting benches for excess spoil disposal.* To the extent that your proposed operation will generate excess spoil, you must maximize the placement of excess spoil on preexisting benches in the vicinity of the proposed permit area in accordance with § 816.74 of this chapter rather than constructing excess spoil fills on previously undisturbed land.

(d) *Fill capacity demonstration.* You must submit a demonstration, with supporting calculations and other documentation, that the designed maximum cumulative volume of all proposed excess spoil fills within the permit area is no larger than the capacity needed to accommodate the anticipated cumulative volume of excess spoil that the operation will generate, as calculated under paragraph (b) of this section.

(e) *Requirements related to perennial and intermittent streams.* You must comply with the requirements of § 780.28 of this part concerning activities in or near perennial or intermittent streams if you propose to construct an excess spoil fill in or within 100 feet of a perennial or intermittent stream. The 100-foot distance must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(f) *Location and profile.* (1) You must submit maps and cross-section drawings or models showing the location and profile of all proposed excess spoil fills.

(2) You must locate fills on the most moderately sloping and naturally stable areas available. The regulatory authority will determine which areas are available, based upon the requirements of the Act and this chapter.

(3) Whenever possible, you must place fills on or above a natural terrace, bench, or berm if that location would provide additional stability and prevent mass movement.

(g) *Design plans.* You must submit detailed design plans, including appropriate maps and cross-section drawings, for each proposed fill, prepared in accordance with the requirements of this section and §§ 816.71 through 816.74 of this chapter. You must design the fill and

appurtenant structures using current prudent engineering practices and any additional design criteria established by the regulatory authority.

(h) *Geotechnical investigation.* You must submit the results of a geotechnical investigation, with supporting calculations and analyses, of the site of each proposed fill, with the exception of those sites at which excess spoil will be placed only on a preexisting bench under § 816.74 of this chapter. The information submitted must include—

(1) Sufficient foundation investigations, as well as any necessary laboratory testing of foundation material, to determine the design requirements for foundation stability for each site.

(2) A description of the character of the bedrock and any adverse geologic conditions in the area of the proposed fill.

(3) The geographic coordinates and a narrative description of all springs, seepage, mine discharges, and groundwater flow observed or anticipated during wet periods in the area of the proposed fill.

(4) An analysis of the potential effects of any underground mine workings within the proposed permit and adjacent areas, including the effects of any subsidence that may occur as a result of previous, existing, and future underground mining operations.

(5) A technical description of the rock materials to be used in the construction of fills underlain by a rock drainage blanket.

(6) Stability analyses that address static and seismic conditions. The analyses must include, but are not limited to, strength parameters, pore pressures and long-term seepage conditions. The analyses must be accompanied by a description of all engineering design assumptions and calculations and the alternatives considered in selecting the specific design specifications and methods.

(i) *Operation and reclamation plans.* You must submit plans for the construction, operation, maintenance, and reclamation of all excess spoil fills in accordance with the requirements of §§ 816.71 through 816.74 of this chapter.

(j) *Additional requirements for bench cuts or rock-toe buttresses.* If bench cuts or rock-toe buttresses are required under § 816.71(b)(2) of this chapter, you must provide the—

(1) Number, location, and depth of borings or test pits, which must be determined according to the size of the fill and subsurface conditions.

(2) Engineering specifications used to design the bench cuts or rock-toe buttresses. Those specifications must be based upon the stability analyses required under paragraph (h)(6) of this section.

(k) *Design certification.* A qualified registered professional engineer experienced in the design of earth and rock fills must certify that the design of each proposed fill and appurtenant structures meets the requirements of this section.

§ 780.37 What information must I provide concerning access and haul roads?

(a) *Design and other application requirements.* (1) You, the applicant, must submit a map showing the location of all roads that you intend to construct or use within the proposed permit area, together with plans and drawings for each road to be constructed, used, or maintained within the proposed permit area.

(2) You must include appropriate cross-sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, drainage structures, and fords and low-water crossings of perennial and intermittent streams.

(3) You must demonstrate how all proposed roads will comply with the applicable requirements of §§ 780.28, 816.150, and 816.151 of this chapter.

(4) You must identify—

(i) Each road that you propose to locate in or within 100 feet, measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark, of a perennial or intermittent stream.

(ii) Each proposed ford of a perennial or intermittent stream that you plan to use as a temporary route during road construction.

(iii) Any plans to alter or relocate a natural stream channel.

(iv) Each proposed low-water crossing of a perennial or intermittent stream channel.

(5) You must explain why the roads, fords, and stream crossings identified in paragraph (a)(4) of this section are necessary and how they comply with the applicable requirements of § 780.28 of this part and §§ 816.150 and 816.151 of this chapter.

(6) You must describe the plans to remove and reclaim each road that would not be retained as part of the postmining land use, and provide a schedule for removal and reclamation.

(b) *Primary road certification.* The plans and drawings for each primary road must be prepared by, or under the direction of, and certified by a qualified registered professional engineer, or in any state that authorizes land surveyors to certify the design of primary roads, a qualified registered professional land surveyor, with experience in the design and construction of roads, as meeting the requirements of this chapter; current, prudent engineering practices; and any design criteria established by the regulatory authority.

(c) *Standard design plans.* The regulatory authority may establish engineering design standards for primary roads through the regulatory program approval process, in lieu of engineering tests, to establish compliance with the minimum static safety factor of 1.3 for all embankments specified in § 816.151(c) of this chapter.

§ 780.38 What information must I provide concerning support facilities?

You must submit a description, plans, and drawings for each support facility to be constructed, used, or maintained within the proposed permit area. The plans and drawings must include a map, appropriate cross-sections, design drawings, and specifications sufficient to demonstrate compliance with § 816.181 of this chapter for each facility.

■ 25. Lift the suspensions of §§ 783.21, 783.25(a)(3), 783.25(a)(8), and 783.25(a)(9) and revise part 783 to read as follows:

Part 783—Underground Mining Permit Applications—Minimum Requirements for Information on Environmental Resources and Conditions

Sec.

783.1 What does this part do?
783.2 What is the objective of this part?
783.4 What responsibilities do I and government agencies have under this part?
783.10 Information collection.
783.11 [Reserved]
783.12 [Reserved]
783.17 What information on cultural, historic, and archeological resources must I include in my permit application?
783.18 What information on climate must I include in my permit application?
783.19 What information on vegetation must I include in my permit application?
783.20 What information on fish and wildlife resources must I include in my permit application?
783.21 What information on soils must I include in my permit application?
783.22 What information on land use and productivity must I include in my permit application?
783.24 What maps, plans, and cross-sections must I submit with my permit application?
783.25 [Reserved]
783.26 May I submit permit application information in increments as mining progresses?

Authority: 30 U.S.C. 1201 *et seq.* and 54 U.S.C. 300101 *et seq.*

§ 783.1 What does this part do?

This part establishes the minimum requirements for the descriptions of environmental resources and conditions that you must include in an application for a permit to conduct underground mining activities.

§ 783.2 What is the objective of this part?

The objective of this part is to ensure that you, the permit applicant, provide the regulatory authority with a complete and accurate description of the environmental resources that may be impacted or affected by proposed underground mining activities and the environmental conditions that exist within the proposed permit and adjacent areas.

§ 783.4 What responsibilities do I and government agencies have under this part?

(a) You, the permit applicant, must provide all information required by this part in your application, except when this part specifically exempts you from doing so.

(b) State and federal government agencies are responsible for providing information for permit applications to the extent that this part specifically requires that they do so.

§ 783.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0035. The information is being collected to meet the requirements of sections 507 and 508 of SMCRA, which require that each permit application include a description of the premining environmental resources within and around the proposed permit area. The regulatory authority uses this information as a baseline for evaluating the impacts of mining. You, the permit applicant, must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

§ 783.11 [Reserved]

§ 783.12 [Reserved]

§ 783.17 What information on cultural, historic, and archeological resources must I include in my permit application?

(a) Your permit application must describe the nature of cultural, historic, and archeological resources listed or eligible for listing on the National Register of Historic Places and known archeological sites within the proposed permit and adjacent areas. The description must be based on all available information, including, but not limited to, information from the State Historic Preservation Officer and from local archeological, historical, and cultural preservation agencies.

(b) The regulatory authority may require you, the applicant, to identify and evaluate important historic and archeological resources that may be eligible for listing on the National Register of Historic Places by—

(1) Collecting additional information,

(2) Conducting field investigations, or

(3) Completing other appropriate analyses.

§ 783.18 What information on climate must I include in my permit application?

The regulatory authority may require that your permit application contain a statement of the climatic factors that are representative of the proposed permit area, including—

(a) The average seasonal precipitation.

(b) The average direction and velocity of prevailing winds.

(c) Seasonal temperature ranges.

(d) Additional data that the regulatory authority deems necessary to ensure compliance with the requirements of this subchapter.

§ 783.19 What information on vegetation must I include in my permit application?

(a) You must identify, describe, and map existing vegetation types and plant communities within the proposed permit area. If you propose to use reference areas for purposes of determining revegetation success under § 817.116 of this chapter, you also must identify, describe, and map existing vegetation types and plant communities within any proposed reference areas.

(b) The description and map required under paragraph (a) of this section must—

(1) Be in sufficient detail to assist in preparation of the revegetation plan under § 784.12(g) of this chapter and provide a baseline for comparison with postmining vegetation;

(2) Be adequate to evaluate whether the vegetation provides important habitat for fish and wildlife and whether the proposed permit area contains native plant communities of local or regional significance;

(3) Identify areas with significant populations of non-native invasive or noxious species; and

(4) Delineate all wetlands and all areas bordering streams that either support or are capable of supporting hydrophytic or hydrophilic vegetation or vegetation typical of floodplains.

(c) If the vegetation on the proposed permit area has been altered by human activity, you must describe the native vegetation and plant communities typical of that area in the absence of human alterations.

§ 783.20 What information on fish and wildlife resources must I include in my permit application?

(a) *General requirements.* Your permit application must include information on fish and wildlife resources for the proposed permit and adjacent areas, including all species of fish, wildlife, plants, and other life forms listed or proposed for listing under the Endangered Species Act of 1973, 30 U.S.C. 1531 *et seq.* The adjacent area must include all lands and waters likely to be affected by the proposed operation.

(b) *Scope and level of detail.* The regulatory authority will determine the scope and level of detail for this information in coordination with state and federal agencies with responsibilities for fish and wildlife. The scope and level of detail must be sufficient to design the protection and enhancement plan required under § 784.16 of this chapter.

(c) *Site-specific resource information requirements.* Your application must include site-specific resource information if the proposed permit area or the adjacent area contains or is likely to contain one or more of the following—

(1) Species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or designated or proposed critical habitat under that law. When these circumstances exist, the site-specific resource information must include a description of the effects of future non-federal activities that are reasonably certain to occur within the proposed permit and adjacent areas.

(2) Species or habitat protected by state or tribal endangered species statutes and regulations.

(3) Habitat of unusually high value for fish and wildlife, which may include wetlands, riparian areas, cliffs that provide nesting sites for raptors,

significant migration corridors, specialized reproduction or wintering areas, areas offering special shelter or protection, and areas that support populations of endemic species that are vulnerable because of restricted ranges, limited mobility, limited reproductive capacity, or specialized habitat requirements.

(4) Other species or habitat identified through interagency coordination as requiring special protection under state, tribal, or federal law, including species identified as sensitive by a state, tribal, or federal agency.

(5) Perennial or intermittent streams.

(6) Native plant communities of local or regional ecological significance.

§ 783.21 What information on soils must I include in my permit application?

Your permit application must include—

(a) The results of a reconnaissance inspection to determine whether the proposed permit area may contain prime farmland historically used for cropland, as required by § 785.17(b)(1) of this chapter.

(b)(1) A map showing the soil mapping units located within the proposed permit area, if the National Cooperative Soil Survey has completed and published a soil survey of the area.

(2) The applicable soil survey information that the Natural Resources Conservation Service maintains for the soil mapping units identified in paragraph (b)(1) of this section. You may provide this information either in paper form or via a link to the appropriate element of the Natural Resources Conservation Service's soil survey Web site.

(c) A description of soil depths within the proposed permit area.

(d) Detailed information on soil quality, if you seek approval for the use of soil substitutes or supplements under § 784.12(e) of this chapter.

(e) The soil survey information required by § 785.17(b)(3) of this chapter if the reconnaissance inspection conducted under paragraph (a) of this section indicates that prime farmland historically used for cropland may be present.

(f) Any other information on soils that the regulatory authority finds necessary to determine land capability.

§ 783.22 What information on land use and productivity must I include in my permit application?

Your permit application must contain a statement of the condition, capability, and productivity of the land within the proposed permit area, including—

(a)(1) A map and narrative identifying and describing the land use or uses in existence at the time of the filing of the application.

(2) A description of the historical uses of the land to the extent that this information is readily available or can be inferred from the uses of other lands in the vicinity.

(3) For any previously mined area within the proposed permit area, a description of the land uses in existence before any mining, to the extent that such information is available.

(b) A narrative analysis of—

(1) The capability of the land before any mining to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover, and the hydrology of the proposed permit area; and

(2) The productivity of the proposed permit area before mining, expressed as average yield of food, fiber, forage, or wood products obtained under high levels of management, as determined by—

(i) Actual yield data; or

(ii) Yield estimates for similar sites based on current data from the U.S. Department of Agriculture, state agricultural universities, or appropriate state natural resources or agricultural agencies.

(c) Any additional information that the regulatory authority deems necessary to determine the condition, capability, and productivity of the land within the proposed permit area.

§ 783.24 What maps, plans, and cross-sections must I submit with my permit application?

(a) In addition to the maps, plans, and information required by other sections of this part, your permit application must include maps and, when appropriate, plans and cross-sections showing—

(1) All boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the proposed permit area.

(2) The boundaries of land within the proposed permit area upon which you have the legal right to enter and begin underground mining activities.

(3) The boundaries of all areas that you anticipate affecting over the estimated total life of the underground mining activities, with a description of the size, sequence, and timing of the mining of subareas for which you anticipate seeking additional permits or expansion of an existing permit in the future.

(4) The location and current use of all buildings within the proposed permit area or within 1,000 feet of the proposed permit area.

(5) The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit and adjacent areas, including, but not limited to, highways, electric transmission lines, pipelines, constructed drainageways, irrigation ditches, and agricultural drainage tile fields.

(6) The location and boundaries of any proposed reference areas for determining the success of revegetation.

(7) The location and ownership of existing wells, springs, and other groundwater resources within the proposed permit and adjacent areas. You may provide ownership information in a table cross-referenced to a map if approved by the regulatory authority.

(8) The location and depth (if available) of each water well within the proposed permit and adjacent areas. You may provide information concerning depth in a table cross-referenced to a map if approved by the regulatory authority.

(9) The name, location, ownership, and description of all surface-water bodies and features, such as perennial, intermittent, and ephemeral streams; ponds, lakes, and other impoundments; wetlands; and natural drainageways, within the proposed permit and adjacent areas. To the extent appropriate, you may provide this information in a table cross-referenced to a map if approved by the regulatory authority.

(10) The locations of water supply intakes for current users of surface water flowing into, from, and within a hydrologic area defined by the regulatory authority.

(11) The location of any public water supplies and the extent of any associated wellhead protection zones located within one-half mile, measured horizontally, of the proposed permit area or the area overlying the proposed underground workings. Both you and the regulatory authority must keep this information confidential when required by state law or when otherwise necessary for safety and security purposes and protection of the integrity of public water supplies.

(12) The location of all existing and proposed discharges to any surface-water body within the proposed permit and adjacent areas.

(13) The location of any discharge into or from an active, inactive, or abandoned surface or underground mine, including, but not limited to, a mine-water treatment or pumping facility, that is hydrologically connected to the site of the proposed operation or that is located within one-half mile,

measured horizontally, of either the proposed permit area or the area overlying the proposed underground workings.

(14) Each public road located in or within 100 feet of the proposed permit area.

(15) The boundaries of any public park and locations of any cultural or historical resources listed or eligible for listing in the National Register of Historic Places and known archeological sites within the permit and adjacent areas.

(16) Each cemetery that is located in or within 100 feet of the proposed permit area.

(17) Any land within the proposed permit area which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System, including study rivers designated under section 5(a) of the Wild and Scenic Rivers Act.

(18) The elevations, locations, and geographic coordinates of test borings and core samplings. You may provide this information in a table cross-referenced to a map if approved by the regulatory authority.

(19) The location and extent of subsurface water, if encountered, within the proposed permit and adjacent areas. This information must include, but is not limited to, the elevation of the water table, the areal and vertical distribution of aquifers, and maximum and minimum variations in hydraulic head in different aquifers. You must provide this information on appropriately-scaled cross-sections or maps, in a narrative, or a combination of these methods, whichever format best displays this information to the satisfaction of the regulatory authority.

(20) The elevations, locations, and geographic coordinates of monitoring stations used to gather data on water quality and quantity and on fish and wildlife in preparation of the application. You may provide this information in a table cross-referenced to a map if approved by the regulatory authority.

(21) The nature, depth, thickness, and commonly used names of the coal seams to be mined.

(22) Any coal crop lines within the permit and adjacent areas and the strike and dip of the coal to be mined.

(23) The location and extent of known workings of active, inactive, or abandoned underground mines within or underlying the proposed permit and adjacent areas.

(24) Any underground mine openings to the surface within the proposed permit and adjacent areas.

(25) The location and extent of existing or previously surface-mined areas within the proposed permit area.

(26) The location and dimensions of existing areas of spoil, coal mine waste, noncoal mine waste disposal sites, dams, embankments, other impoundments, and water treatment facilities within the proposed permit area.

(27) The location and, if available, the depth of all gas and oil wells within the proposed permit and adjacent areas. You must identify the lateral extent of the well bores unless that information is confidential under state law. You may provide information concerning well depth in a table cross-referenced to a map if approved by the regulatory authority.

(28) Other relevant information required by the regulatory authority.

(b) Maps, plans, and cross-sections required by paragraph (a) of this section must be—

(1) Prepared by, or under the direction of, and certified by a qualified registered professional engineer, a professional geologist, or in any state that authorizes land surveyors to prepare and certify such maps, plans, and cross-sections, a qualified registered professional land surveyor, with assistance from experts in related fields such as landscape architecture.

(2) Updated when required by the regulatory authority.

(c) The regulatory authority may require that you submit the materials required by this section in a digital format that includes all necessary metadata.

§ 783.25 [Reserved]

§ 783.26 May I submit permit application information in increments as mining progresses?

(a) You may request that the regulatory authority approve a schedule for incremental submission of the information required by this part, based on the anticipated progress and impact of underground mining activities.

(b) At its discretion, the regulatory authority may approve the proposed schedule, provided that—

(1) Each increment is clearly defined and includes at least 5 years of anticipated mining.

(2) The schedule includes a map showing the limits of underground mining activity under each increment. You must establish those limits in a manner that will prevent any impact on the succeeding increment before the regulatory authority approves mining within that increment.

(3) The schedule requires that you submit all required data under this part for each successive increment at least one year in advance of any anticipated impact of underground mining upon that increment.

(4) The regulatory authority conditions the permit to—

(i) Require that you reevaluate the adequacy of the PHC determination under § 784.20 of this chapter and the hydrologic reclamation plan under § 784.22 of this chapter as part of each submission under paragraph (b)(3) of this section.

(ii) Prohibit the conduct of any underground mining activity that might impact an increment before the regulatory authority reviews the information submitted for that increment, updates the CHIA prepared under § 784.21 of this chapter to incorporate that information, and determines that the findings made under § 773.15 of this chapter remain accurate.

■ 26. Revise part 784 to read as follows:

Part 784—Underground Mining Permit Applications—Minimum Requirements for Operation and Reclamation Plans

Sec.

784.1 What does this part do?
784.2 What is the objective of this part?
784.4 What responsibilities do I and government agencies have under this part?
784.10 Information collection.
784.11 What must I include in the general description of my proposed operations?
784.12 What must the reclamation plan include?
784.13 What additional maps and plans must I include in the reclamation plan?
784.14 What requirements apply to the use of existing structures?
784.15 [Reserved]
784.16 What must I include in the fish and wildlife protection and enhancement plan?
784.17 [Reserved]
784.18 [Reserved]
784.19 What baseline information on hydrology, geology, and aquatic biology must I provide?
784.20 How must I prepare the determination of the probable hydrologic consequences of my proposed operation (PHC determination)?
784.21 What requirements apply to preparation and review of the cumulative hydrologic impact assessment (CHIA)?
784.22 What information must I include in the hydrologic reclamation plan and what information must I provide on alternative water sources?
784.23 What information must I include in plans for the monitoring of groundwater, surface water, and the biological condition of streams during and after mining?
784.24 What requirements apply to the postmining land use?

784.25 What information must I provide for siltation structures, impoundments, and refuse piles?
784.26 What information must I provide if I plan to return coal processing waste to abandoned underground workings?
784.27 What additional permitting requirements apply to proposed activities in or through ephemeral streams?
784.28 What additional permitting requirements apply to proposed surface activities in, through, or adjacent to a perennial or intermittent stream?
784.29 What information must I include in the surface-water runoff control plan?
784.30 When must I prepare a subsidence control plan and what information must that plan include?
784.31 What information must I provide concerning the protection of publicly owned parks and historic places?
784.33 What information must I provide concerning the relocation or use of public roads?
784.35 What information must I provide concerning the minimization and disposal of excess spoil?
784.37 What information must I provide concerning access and haul roads?
784.38 What information must I provide concerning support facilities?
784.40 May I submit permit application information in increments as mining progresses?
784.200 [Reserved]

Authority: 30 U.S.C. 1201 *et seq.* and 54 U.S.C. 300101 *et seq.*

§ 784.1 What does this part do?

This part establishes the minimum requirements for the operation and reclamation plan portions of applications for a permit to conduct underground mining activities, except to the extent that part 785 of this subchapter establishes different requirements.

§ 784.2 What is the objective of this part?

The objective of this part is to ensure that you, the permit applicant, provide the regulatory authority with comprehensive and reliable information on how you propose to conduct underground mining activities and reclaim the disturbed area in compliance with the Act, this chapter, and the regulatory program.

§ 784.4 What responsibilities do I and government agencies have under this part?

(a) You, the permit applicant, must provide to the regulatory authority all information required by this part, except where specifically exempted in this part.

(b) State and federal governmental agencies must provide information needed for permit applications to the extent that this part specifically requires that they do so.

§ 784.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0039. Collection of this information is required under section 516(d) of SMCRA, which in effect requires applicants for permits for underground coal mines to prepare and submit an operation and reclamation plan for coal mining activities as part of the application. The regulatory authority uses this information to determine whether the plan will achieve the reclamation and environmental protection requirements of the Act and regulatory program. You, the permit applicant, must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

§ 784.11 What must I include in the general description of my proposed operations?

Your application must contain a description of the mining operations that you propose to conduct during the life of the mine, including, at a minimum, the following—

(a) A narrative description of the—

(1) Type and method of coal mining procedures and proposed engineering techniques.

(2) Anticipated annual and total number of tons of coal to be produced.

(3) Major equipment to be used for all aspects of the proposed operations.

(b) A narrative explaining the construction, modification, use, maintenance, and removal (unless you can satisfactorily explain why retention is necessary or appropriate for the postmining land use specified in the application under § 784.24 of this part) of the following facilities:

(1) Dams, embankments, and other impoundments.

(2) Overburden and soil handling and storage areas and structures.

(3) Coal removal, handling, storage, cleaning, and transportation areas and structures.

(4) Spoil, coal processing waste, underground development waste, and noncoal mine waste removal, handling, storage, transportation, and disposal areas and structures.

(5) Mine facilities, including ventilation boreholes, fans, and access roads.

(6) Water pollution control facilities.

§ 784.12 What must the reclamation plan include?

(a) *General requirements.* Your application must contain a plan for the reclamation of the lands to be disturbed within the proposed permit area. The plan must show how you will comply with the reclamation requirements of the applicable regulatory program. At a minimum, the plan must include all information required under this part and part 785 of this chapter.

(b) *Reclamation timetable.* The reclamation plan must contain a detailed timetable for the completion of each major step in the reclamation process including, but not limited to—

(1) Backfilling.

(2) Grading.

(3) Establishment of the surface drainage pattern and stream-channel configuration approved in the permit, including construction of appropriately-designed perennial, intermittent, and ephemeral stream channels to replace those removed by mining, to the extent and in the form required by §§ 784.27, 784.28, 817.56, and 817.57 of this chapter.

(4) Soil redistribution.

(5) Planting of all vegetation in accordance with the revegetation plan approved in the permit, including establishment of streamside vegetative corridors along the banks of perennial, intermittent, and ephemeral streams when required by §§ 817.56(c) and 817.57(d) of this chapter.

(6) Demonstration of revegetation success.

(7) Demonstration of restoration of the ecological function of all reconstructed perennial and intermittent stream segments.

(8) Application for each phase of bond release under § 800.42 of this chapter.

(c) *Reclamation cost estimate.* The reclamation plan must contain a detailed estimate of the cost of reclamation, including both direct and indirect costs, of those elements of the proposed operations that are required to be covered by a performance bond under part 800 of this chapter, with supporting calculations for the estimates. You must use current standardized construction cost estimation methods and equipment cost guides or up-to-date actual contracting costs incurred by the regulatory authority for similar activities to prepare this estimate.

(d) *Backfilling and grading plan.* (1) The reclamation plan must contain a plan for backfilling surface excavations, compacting the backfill, and grading the disturbed area, with contour maps, models, or cross-sections that show the anticipated final surface configuration of the proposed permit area, including drainage patterns, in accordance with §§ 817.102 through 817.107 of this chapter, using the best technology currently available.

(2) The backfilling and grading plan must describe in detail how you will conduct backfilling and related reclamation activities, including how you will—

(i) Compact spoil to reduce infiltration to minimize leaching and discharges of parameters of concern.

(ii) Limit compaction of topsoil and soil materials in the root zone to the minimum necessary to achieve stability. The plan also must identify measures that will be used to alleviate soil compaction if necessary.

(iii) Handle acid-forming and toxic-forming materials, if present, to prevent the formation of acid or toxic drainage from acid-forming and toxic-forming materials within the overburden. The plan must be consistent with paragraph (n) of this section and § 817.38 of this chapter.

(e) *Soil handling plan.*—(1) *General requirements.* (i) The reclamation plan must include a plan and schedule for removal, storage, and redistribution of topsoil, subsoil, and other material to be used as a final growing medium in accordance with § 817.22 of this chapter. It also must include a plan and schedule for removal, storage, and redistribution or other use of organic matter in accordance with § 817.22(f) of this chapter.

(ii) Except as provided in paragraphs (e)(1)(iii) and (iv) of this section, the plan submitted under paragraph (e)(1)(i) of this section must require that the B soil horizon, the C soil horizon, and other underlying strata, or portions of those soil horizons and strata, be removed separately, stockpiled if necessary, and redistributed to the extent and in the manner needed to achieve the optimal rooting depths required to restore premining land use capability and to comply with the revegetation requirements of §§ 817.111 and 817.116 of this chapter.

(iii) The plan submitted under paragraph (e)(1)(i) of this section need not require salvage of those soil horizons which you demonstrate, to the satisfaction of the regulatory authority, are inferior to other overburden materials as a plant growth medium, provided you comply with the soil substitute requirements of paragraph (e)(2) of this section.

(iv) The plan submitted under paragraph (e)(1)(i) of this section may allow blending of the B soil horizon, the C soil horizon, and underlying strata, or portions thereof, to the extent that research or prior experience under similar conditions has demonstrated that blending will not adversely affect soil productivity.

(v) The plan submitted under paragraph (e)(1)(i) of this section must explain how you will handle and, if necessary, store soil materials to avoid contamination by acid-forming or toxic-forming materials and to minimize deterioration of desirable soil characteristics.

(2) *Substitutes and supplements.* (i) You must identify each soil horizon for which you propose to use appropriate overburden materials as either a supplement to or a substitute for the existing topsoil or subsoil on the proposed permit area. For each of those horizons, you must demonstrate, and the regulatory authority must find in writing, that—

(A)(*1*) The quality of the existing topsoil and subsoil is inferior to that of the best overburden materials available; or

(*2*) The quantity of the existing topsoil and subsoil on the proposed permit area is insufficient to provide an optimal rooting depth. In this case, the plan must require that all available existing topsoil and favorable subsoil, regardless of the amount, be removed, stored, and redistributed as part of the final growing medium unless the conditions described in paragraph (e)(2)(i)(A)(*1*) of this section also apply.

(B) The use of the overburden materials that you have selected, in combination with or in place of the topsoil or subsoil, will result in a soil medium that is more suitable than the existing topsoil and subsoil to support and sustain vegetation consistent with the postmining land use and the revegetation plan under paragraph (g) of this section and that will provide a rooting depth that is superior to the existing topsoil and subsoil.

(C) The overburden materials that you select for use as a soil substitute or supplement are the best materials available to support and sustain vegetation consistent with the postmining land use and the revegetation plan under paragraph (g) of this section.

(ii) For purposes of paragraph (e)(2)(i) of this section, the regulatory authority will specify the—

(A) Suitability criteria for substitutes and supplements.

(B) Chemical and physical analyses, field trials, or greenhouse tests that you must conduct to make the demonstration required by paragraph (e)(2)(ii) of this section.

(C) Sampling objectives and techniques and the analytical techniques that you must use for purposes of paragraph (e)(2)(iii)(B) of this section.

(iii) At a minimum, the demonstrations required by paragraph (e)(2)(ii) of this section must include—

(A) The physical and chemical soil characteristics and root zones needed to support and sustain the type of vegetation to be established on the reclaimed area.

(B) A comparison and analysis of the thickness, total depth, texture, percent coarse fragments, pH, and areal extent of the different kinds of soil horizons and overburden materials available within the proposed permit area, based upon a statistically valid sampling procedure.

(v) You must include a plan for testing and evaluating overburden materials during both removal and redistribution to ensure that only materials approved for use as soil substitutes or supplements are removed and redistributed.

(f) *Surface stabilization plan.* The reclamation plan must contain a plan for stabilizing road surfaces, redistributed soil materials, and other exposed surface areas to effectively control erosion and air pollution attendant to erosion in accordance with §§ 817.95, 817.150, and 817.151 of this chapter.

(g) *Revegetation plan.* (1) The reclamation plan must contain a plan for revegetation consistent with §§ 817.111 through 817.116 of this chapter, including, but not limited to, descriptions of—

(i) The schedule for revegetation of the area to be disturbed.

(ii) The site preparation techniques that you plan to use, including the measures that you will take to avoid or, when avoidance is not possible, to minimize and alleviate compaction of the root zone during backfilling, grading, soil redistribution, and planting.

(iii) What soil tests you will perform, together with a statement as to whether you will apply lime, fertilizer, or other amendments in response to those tests before planting or seeding.

(iv) The species that you will plant to achieve temporary erosion control or, if you do not intend to establish a temporary vegetative cover, a description of other soil stabilization measures that you will implement in lieu of planting a temporary cover.

(v) The species that you will plant and the seeding and stocking rates and planting arrangements that you will use to achieve or complement the postmining land use, enhance fish and wildlife habitat, and achieve the streamside vegetative corridor requirements of §§ 817.56(c) and 817.57(d) of this chapter, when applicable.

(A) Revegetation plans that involve the establishment of trees and shrubs must include site-specific planting prescriptions for canopy trees, understory trees and shrubs, and herbaceous ground cover compatible with establishment of trees and shrubs.

(B) To the extent practicable and consistent with other revegetation and regulatory program requirements, the species mix must include native pollinator-friendly plants and the planting arrangements must promote the establishment of pollinator-friendly habitat.

(vi) The planting and seeding techniques that you will use.

(vii) Whether you will apply mulch and, if so, the type of mulch and the method of application.

(viii) Whether you plan to conduct irrigation or apply fertilizer after the first growing season and, if so, to what extent and for what length of time.

(ix) Any normal husbandry practices that you plan to use in accordance with § 817.115(d) of this chapter.

(x) The standards and evaluation techniques that you propose to use to determine the success of revegetation in accordance with § 817.116 of this chapter.

(xi) The measures that you will take to avoid the establishment of invasive species on reclaimed areas or to control those species if they do become established.

(2) Except as provided in paragraphs (g)(4) and (5) of this section, the species and planting rates and arrangements selected as part of the revegetation plan must be designed to create a diverse, effective, permanent vegetative cover that is consistent with the native plant communities and natural succession process described in the permit application in accordance with § 783.19 of this chapter.

(3) The species selected as part of the revegetation plan must—

(i) Be native to the area. The regulatory authority may approve the use of introduced species as part of the permanent vegetative cover for the site only if—

(A) The introduced species are both non-invasive and necessary to achieve the postmining land use;

(B) Planting of native species would be inconsistent with the approved postmining land use; and

(C) The approved postmining land use is implemented before the entire bond amount for the area has been fully released under §§ 800.40 through 800.43 of this chapter.

(ii) Be capable of stabilizing the soil surface from erosion to the extent that control of erosion with herbaceous ground cover is consistent with establishment of a permanent vegetative cover that resembles native plant communities in the area.

(iii) Be compatible with the approved postmining land use.

(iv) Have the same seasonal characteristics of growth, consistent with the appropriate stage of natural succession, as the native plant communities described in the permit application in accordance with § 783.19 of this chapter.

(v) Be capable of self-regeneration and natural succession.

(vi) Be compatible with the plant and animal species of the area.

(vii) Meet the requirements of applicable state and federal seed, noxious plant, and introduced species laws and regulations.

(4) The regulatory authority may grant an exception to the requirements of paragraphs (g)(3)(i), (iv), and (v) of this section when necessary to achieve a quick-growing, temporary, stabilizing cover on disturbed and regraded areas, and the species selected to achieve this purpose will not impede the establishment of permanent vegetation.

(5) The regulatory authority may grant an exception to the requirements of paragraphs (g)(2), (g)(3)(iv), and (g)(3)(v) of this section for those areas with a long-term, intensive, agricultural postmining land use.

(6) A qualified, experienced biologist, soil scientist, forester, or agronomist must prepare or approve all revegetation plans.

(h) *Stream protection and reconstruction plan.* The reclamation plan must describe how you will comply with the stream reconstruction requirements of §§ 784.27 and 817.56 of this chapter for ephemeral streams and the stream protection, stream reconstruction, and functional restoration requirements of §§ 784.28 and 817.57 of this chapter for perennial and intermittent streams.

(i) *Coal resource conservation plan.* The reclamation plan must describe the measures that you will employ to maximize the use and conservation of the coal resource while using the best technology currently available to maintain environmental integrity, as required by § 817.59 of this chapter.

(j) *Plan for disposal of noncoal waste materials.* The reclamation plan must describe—

(1) The type and quantity of noncoal waste materials that you anticipate disposing of within the proposed permit area.

(2) How you intend to dispose of noncoal waste materials in accordance with § 817.89 of this chapter.

(3) The locations of any proposed noncoal waste material disposal sites within the proposed permit area.

(4) The contingency plans that you have developed to preclude sustained combustion of combustible noncoal materials.

(k) *Management of mine openings, boreholes, and wells.* The reclamation plan must contain a description, including appropriate cross-sections and maps, of the measures that you will use to seal or manage mine openings, and to plug, case or manage exploration holes, boreholes, wells and other openings within the proposed permit area, in accordance with § 817.13 of this chapter.

(l) *Compliance with Clean Air Act and Clean Water Act.* The reclamation plan must describe the steps that you have taken or will take to comply with the requirements of the Clean Air Act (42 U.S.C. 7401 *et seq.*), the Clean Water Act (33 U.S.C. 1251 *et seq.*), and other applicable air and water quality laws and regulations and health and safety standards.

(m) *Consistency with land use plans and surface owner plans.* The reclamation plan must describe how the proposed operation is consistent with—

(1) All applicable state and local land use plans and programs.

(2) The plans of the surface landowner, to the extent that those plans are practicable and consistent with this chapter and with other applicable laws and regulations.

(n) *Handling of acid-forming and toxic-forming materials.* (1) If the baseline geologic information collected under § 784.19(e)(3) and (4) of this part indicates the presence of acid-forming or toxic-forming materials, you must develop a plan to prevent any adverse hydrologic impacts that may result from exposure of those materials during either the face-up process or disposal of underground development waste. At a minimum the plan must—

(i) Identify the anticipated postmining groundwater level for all locations at which you propose to place acid-forming or toxic-forming materials.

(ii) When approved in the permit, place acid-forming and toxic-forming

materials in an excess spoil fill or a coal mine waste refuse pile, using one or both of the following techniques, as appropriate:

(A) Completely surround acid-forming and toxic-forming materials with compacted material with a hydraulic conductivity at least two orders of magnitude lower than the hydraulic conductivity of the adjacent spoil or coal mine waste.

(B) Treat or otherwise neutralize acid-forming and toxic-forming materials to prevent the formation of acid or toxic mine drainage. This technique may include the blending of acid-forming materials with spoil of sufficient alkalinity to prevent the development of acid drainage.

§ 784.13 What additional maps and plans must I include in the reclamation plan?

(a) In addition to the maps and plans required under § 783.24 and other provisions of this subchapter, your application must include maps, plans, and cross-sections of the proposed permit area showing—

(1) The lands that you propose to affect throughout the life of the operation, including the sequence and timing of underground mining activities and the sequence and timing of backfilling, grading, and other reclamation activities to be conducted on areas where the operation will disturb the land surface.

(2) Each area of land for which a performance bond or other equivalent guarantee will be posted under part 800 of this chapter.

(3) Any change that the proposed operations will cause in a facility or feature identified under § 783.24 of this chapter.

(4) All buildings, utility corridors, and facilities to be used or constructed within the proposed permit area, with identification of those facilities that you propose to retain as part of the postmining land use.

(5) Each coal storage, cleaning, processing, and loading area and facility.

(6) Each temporary storage area for soil, spoil, coal mine waste, and noncoal mine waste.

(7) Each water diversion, collection, conveyance, treatment, storage and discharge facility to be used, including the location of each point at which water will be discharged from the proposed permit area to a surface-water body and the name of that water body.

(8) Each disposal facility for coal mine waste and noncoal mine waste materials.

(9) Each feature and facility to be constructed to protect or enhance fish, wildlife, and related environmental values.

(10) Each explosive storage and handling facility.

(11) The location of each siltation structure, sedimentation pond, permanent water impoundment, refuse pile, and coal mine waste impoundment for which plans are required by § 784.25 of this part, and the location of each excess spoil fill for which plans are required under § 784.35 of this part.

(12) Each segment of a perennial or intermittent stream that you propose to mine through, bury, or divert.

(13) Each location in which you propose to restore a perennial or intermittent stream or construct a temporary or permanent diversion of a perennial or intermittent stream.

(14) Each streamside vegetative corridor that you propose to establish.

(15) Each segment of a perennial or intermittent stream that you propose to enhance under the plan submitted in accordance with § 784.16 of this part.

(16) The location and geographic coordinates of each monitoring point for groundwater, surface water, and subsidence.

(17) The location and geographic coordinates of each point at which you propose to monitor the biological condition of perennial and intermittent streams.

(b) Except as provided in §§ 784.25(a)(2), 784.25(a)(3), 784.35, 817.74(c), and 817.81(c) of this chapter, maps, plans, and cross-sections required under paragraphs (a)(5), (6), (7), (10), and (11) of this section must be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or, in any state that authorizes land surveyors to prepare and certify such maps, plans, and cross-sections, a qualified, registered, professional, land surveyor, with assistance from experts in related fields such as landscape architecture.

(c) The regulatory authority may require that you submit the materials required by paragraph (a) of this section in a digital format.

§ 784.14 What requirements apply to the use of existing structures?

(a) Each application must contain a description of every existing structure that you propose to use in connection with or to facilitate surface coal mining and reclamation operations. The description must include—

(1) The location of the structure.

(2) Plans of the structure.

(3) A description of the current condition of the structure.

(4) The approximate dates when the structure was originally built.

(5) A showing, including relevant monitoring data or other evidence, of whether the structure meets the permanent program performance standards of subchapter K of this chapter or, if the structure does not meet the performance standards of subchapter K of this chapter, a showing of whether the structure meets the initial program performance standards of subchapter B of this chapter.

(b) Each application must contain a compliance plan for every existing structure that you propose to modify or reconstruct for use in connection with or to facilitate surface coal mining and reclamation operations. The compliance plan must include—

(1) Design specifications for the modification or reconstruction of the structure to meet the design and performance standards of subchapter K of this chapter.

(2) A schedule for the initiation and completion of any modification or reconstruction under paragraph (b)(1) of this section.

(3) Provisions for monitoring the structure during and after modification or reconstruction to ensure that the performance standards of subchapter K of this chapter are met.

(4) A demonstration that there is no significant risk of harm to the environment or to public health or safety during modification or reconstruction of the structure.

§ 784.15 [Reserved]

§ 784.16 What must I include in the fish and wildlife protection and enhancement plan?

(a) *General requirements.* Your application must include a fish and wildlife protection and enhancement plan that—

(1) Is consistent with the requirements of § 817.97 of this chapter.

(2) Is specific to the resources identified under § 783.20 of this chapter.

(3) Complies with the requirements of paragraphs (b) through (e) of this section.

(b) *Requirements related to the Endangered Species Act of 1973.* (1) Paragraphs (b)(2) and (3) of this section apply when the proposed operation may affect species listed or proposed for listing as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or designated or proposed critical habitat under that law.

(2) You must describe the steps that you have taken or will take to comply with the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* including

any biological opinions developed under section 7 of that law and any species-specific habitat conservation plans developed in accordance with section 10 of that law.

(3) The regulatory authority may not approve the permit application before there is a demonstration of compliance with the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* through one of the mechanisms listed in § 773.15(j) of this chapter.

(c) *Protection of fish, wildlife, and related environmental values in general.* You must describe how, to the extent possible using the best technology currently available, you will minimize disturbances and adverse impacts on fish, wildlife, and related environmental values. At a minimum, you must explain how you will—

(1) Retain forest cover and other native vegetation as long as possible and time the removal of that vegetation to minimize adverse impacts on aquatic and terrestrial species.

(2) Locate and design sedimentation ponds, utilities, support facilities, roads, rail spurs, and other transportation facilities to avoid or minimize adverse impacts on fish, wildlife, and related environmental values.

(3) Except as provided under § 784.12(g)(4) of this part, select non-invasive native species for revegetation that either promote or do not inhibit the long-term development of wildlife habitat.

(4)(i) Avoid mining through wetlands or perennial or intermittent streams or disturbing riparian habitat adjacent to those streams. When avoidance is not possible, minimize—

(A) The time during which mining and reclamation operations disrupt wetlands or streams or riparian habitat associated with streams;

(B) The length of stream mined through; and

(C) The amount of wetlands or riparian habitat disturbed by the operation.

(ii) If you propose to mine through or discharge dredged or fill material into wetlands or streams that are subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* your application must identify the authorizations, certifications, and permits that you anticipate will be needed under the Clean Water Act and describe the steps that you have taken or will take to procure those authorizations, certifications, and permits. The regulatory authority will process your application and may issue the permit before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act, 33 U.S.C. 1251 *et seq.,* provided your application meets all applicable requirements of subchapter G of this chapter. Issuance of a permit under subchapter G of this chapter does not authorize you to conduct any mining-related activity in or affecting waters subject to the jurisdiction of the Clean Water Act before you obtain any required Clean Water Act authorization, certification, or permit. Information submitted and analyses conducted under subchapter G of this chapter may inform the agency responsible for authorizations, certifications, and permits under the Clean Water Act, but they are not a substitute for the reviews, authorizations, certifications, and permits required under the Clean Water Act.

(5) Implement other appropriate conservation practices such as, but not limited to, those identified in the technical guides published by the Natural Resources Conservation Service.

(d) *Enhancement measures.*—(1) *General requirements.* (i) You must describe how, to the extent possible, you will use the best technology currently available to enhance fish, wildlife, and related environmental values both within and outside the area to be disturbed by mining activities, where practicable. Your application must identify the enhancement measures that you propose to implement and the lands upon which you propose to implement those measures. Those measures may include some or all the potential enhancement measures listed in paragraph (d)(2) of this section, but they are not limited to the measures listed in paragraph (d)(2) of this section.

(ii) If your application includes no proposed enhancement measures under paragraph (d)(1)(i) of this section, you must explain, to the satisfaction of the regulatory authority, why implementation of enhancement measures is not practicable.

(2) *Potential enhancement measures.* Potential enhancement measures include, but are not limited to—

(i) Using the backfilling and grading process to create postmining surface features and configurations, such as functional wetlands, of high value to fish and wildlife.

(ii) Designing and constructing permanent impoundments in a manner that will maximize their value to fish and wildlife.

(iii) Creating rock piles and other permanent landscape features of value to raptors and other wildlife for nesting and shelter, to the extent that those features are consistent with features that existed on the site before any mining, the surrounding topography, and the approved postmining land use.

(iv) Reestablishing native forests or other native plant communities, both within and outside the permit area. This may include restoring the native plant communities that existed before any mining, establishing native plant communities consistent with the native plant communities that are a part of the natural succession process, establishing native plant communities designed to restore or expand native pollinator populations and habitats, or establishing native plant communities that will support wildlife species of local, state, tribal, or national concern, including, but not limited to, species listed or proposed for listing as threatened or endangered on a state, tribal, or national level.

(v) Establishing a vegetative corridor along the banks of streams where there is no such corridor before mining but where a vegetative corridor typically would exist under natural conditions. Species selected for planting within the corridor must be comprised of species native to the area, including native plants adapted to and suitable for planting in any floodplains or other riparian zones located within the corridor. Whenever possible, you should establish this corridor along both banks of the stream, preferably with a minimum corridor width of 100 feet along each bank.

(vi) Implementing conservation practices identified in publications, such as the technical guides published by the Natural Resources Conservation Service.

(vii) Permanently fencing livestock away from perennial and intermittent streams and wetlands.

(viii) Installing perches and nest boxes.

(ix) Establishing conservation easements or deed restrictions, with an emphasis on preserving riparian vegetation and forested corridors along perennial and intermittent streams.

(x) Providing funding to cover long-term operation and maintenance costs that watershed organizations incur in treating long-term postmining discharges from previous mining operations.

(xi) Reclaiming previously mined areas located outside the area that you propose to disturb for coal extraction.

(xii) Implementing measures to reduce or eliminate existing sources of surface-water or groundwater pollution.

(3) *Additional enhancement requirements for operations with anticipated long-term adverse impacts.* (i) The exception in paragraph (d)(1)(ii) of this section does not apply if you

propose to conduct activities on the land surface that would result in the—

(A) Temporary or permanent loss of mature native forest or other native plant communities that cannot be restored fully before final bond release under §§ 800.40 through 800.43 of this chapter or

(B) Permanent loss of wetlands or a segment of a perennial or intermittent stream.

(ii) Whenever the conditions described in paragraph (d)(3)(i) of this section apply, the scope of the enhancement measures that you propose under paragraph (d)(1)(i) of this section must be commensurate with the magnitude of the long-term adverse impacts of the proposed operation. Whenever possible, the measures must be permanent.

(iii)(A) Enhancement measures proposed under paragraph (d)(3)(ii) of this section must be implemented within the watershed in which the proposed operation is located, unless opportunities for enhancement are not available within that watershed. In that case, you must propose to implement enhancement measures in the closest adjacent watershed in which enhancement opportunities exist, as approved by the regulatory authority.

(B) Each regulatory program must prescribe the size of the watershed for purposes of paragraph (d)(3)(iii)(A) of this section, using a generally-accepted watershed classification system.

(4) *Inclusion within permit area.* If the enhancement measures to be implemented under paragraphs (d)(1) through (d)(3) of this section would involve more than a de minimis disturbance of the surface of land outside the area to be mined, you must include the land to be disturbed by those measures within the proposed permit area.

(e) *Fish and Wildlife Service or National Marine Fisheries Service review.* (1)(i) The regulatory authority must provide the protection and enhancement plan developed under this section and the resource information submitted under § 779.20 of this chapter to the appropriate regional or field office of the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as applicable, whenever the resource information submitted under § 783.20 of this chapter includes species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* designated or proposed critical habitat under that law, or species proposed for listing as threatened or endangered under that law. The regulatory authority must provide the resource information and the protection and enhancement plan to the appropriate Service(s) no later than the time that it provides written notice of the permit application to governmental agencies under § 773.6(a)(3)(ii) of this chapter.

(ii)(A) When the resource information obtained under § 783.20 of this chapter does not include species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* designated or proposed critical habitat under that law, or species proposed for listing as threatened or endangered under that law, the regulatory authority must provide the resource information and the protection and enhancement plan to the appropriate regional or field office of the U.S. Fish and Wildlife Service only if the Service requests an opportunity to review and comment on the resource information or the protection and enhancement plan.

(B) The regulatory authority must provide the resource information and the protection and enhancement plan to the Service under paragraph (e)(1)(ii)(A) of this section within 10 days of receipt of a request from the Service to review the resource information and the protection and enhancement plan.

(2) The regulatory authority must document the disposition of comments that it receives from the applicable Service(s) in response to the distribution made under paragraph (e)(1)(i) of this section to the extent that those comments pertain to species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* to designated or proposed critical habitat under that law, or to species proposed for listing as threatened or endangered under that law.

§ 784.17 [Reserved]

§ 784.18 [Reserved]

§ 784.19 What baseline information on hydrology, geology, and aquatic biology must I provide?

(a)(1) *General requirements.* Your permit application must include information on the hydrology, geology, and aquatic biology of the proposed permit area and the adjacent area in sufficient detail to assist in—

(i) Determining the probable hydrologic consequences of the proposed operation upon the quality and quantity of surface water and groundwater in the proposed permit and adjacent areas, as required under § 784.20 of this part.

(ii) Determining the nature and extent of both the hydrologic reclamation plan required under § 784.22 of this part and the monitoring plans required under § 784.23 of this part.

(iii) Determining whether reclamation as required by this chapter can be accomplished.

(iv) Preparing the cumulative hydrologic impact assessment under § 784.21 of this part, including an evaluation of whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

(v) Preparing the subsidence control plan under § 784.30 of this part.

(2) *Core baseline water-quality data requirements for surface water and groundwater.* You must provide the following water-quality information for each groundwater and surface-water sample collected for baseline data purposes.

Parameter	Surface water	Groundwater
pH	Yes	Yes.
Specific conductance corrected to 25°C (conductivity)	Yes	Yes.
Total dissolved solids	Yes	Yes.
Total suspended solids	Yes	No.
Hot acidity	Yes	Yes.
Total alkalinity	Yes	Yes.
Major anions (dissolved), including, at a minimum, bicarbonate, sulfate, and chloride	Yes	Yes.
Major anions (total), including, at a minimum, bicarbonate, sulfate, and chloride	Yes	No.
Major cations (dissolved), including, at a minimum, calcium, magnesium, sodium, and potassium	Yes	Yes.
Major cations (total), including, at a minimum, calcium, magnesium, sodium, and potassium	Yes	No.
Cation-anion balance of dissolved major cations and dissolved major anions	Yes	Yes.
Any cation or anion that constitutes a significant percentage of the total ionic charge balance, but that was not included in the analyses of major anions and major cations.	Yes	Yes.

Parameter	Surface water	Groundwater
Iron (dissolved)	Yes	Yes.
Iron (total)	Yes	No.
Manganese (dissolved)	Yes	Yes.
Manganese (total)	Yes	No.
Selenium (dissolved)	Yes	Yes.
Selenium (total)	Yes	No.
Any other parameter identified in any applicable National Pollutant Discharge Elimination System permit, if known at the time of application for the SMCRA permit.	Yes	No.
Temperature	Yes	Yes.

(b) *Groundwater information*—(1) *General requirements.* Your permit application must include information sufficient to document seasonal variations in the quality, quantity, and usage of groundwater, including all surface discharges, within the proposed permit and adjacent areas.

(2) *Underground mine pools.* If an underground mine pool is present within the proposed permit or adjacent areas, you must prepare an assessment of the characteristics of the mine pool, including seasonal changes in quality, quantity, and flow patterns, unless you demonstrate, and the regulatory authority finds, that the mine pool would not be hydrologically connected to the proposed operation. The determination of the probable hydrologic consequences of mining required under § 784.20 of this part also must include a discussion of the effect of the proposed mining operation on any underground mine pools within the proposed permit and adjacent areas.

(3) *Monitoring wells.* The regulatory authority must require the installation of properly-screened monitoring wells to document seasonal variations in the quality, quantity, and usage of groundwater.

(4) *Groundwater quality descriptions.* Groundwater quality descriptions must include baseline information on the parameters identified in paragraph (a)(2) of this section and any additional parameters that the regulatory authority determines to be of local importance.

(5) *Groundwater quantity descriptions.* At a minimum, groundwater quantity descriptions must include baseline data documenting seasonal variations in—

(i) The areal extent and saturated thickness of all potentially-impacted aquifers; and

(ii) Approximate rates of groundwater discharge or usage and the elevation of the water table or potentiometric head in—

(A) Each water-bearing coal seam to be mined.

(B) Each aquifer above each coal seam to be mined.

(C) Each potentially-impacted aquifer below the lowest coal seam to be mined.

(6) *Groundwater sampling requirements.* (i) You must establish monitoring wells or equivalent monitoring points at a sufficient number of locations within the proposed permit and adjacent areas to determine groundwater quality, quantity, and movement in each aquifer above or immediately below the lowest coal seam to be mined. At a minimum, for each aquifer, you must locate monitoring points—

(A) Upgradient and downgradient of the proposed permit area;

(B) Upgradient and downgradient of the area encompassed by the angle of dewatering; and

(C) Within the proposed permit area and the area overlying the proposed underground workings.

(ii)(A) To document seasonal variations in groundwater quality and quantity, you must collect samples and take the measurements identified in paragraph (b)(5) of this section from each location identified in paragraph (b)(6)(i) of this section at approximately equally-spaced monthly intervals for a minimum of 12 consecutive months.

(B) If approved by the regulatory authority, you may modify the interval or the 12-consecutive-month requirement specified in paragraph (b)(6)(ii)(A) of this section if adverse weather conditions make travel to a location specified in paragraph (b)(6)(i) of this section hazardous or if the water at that location is completely frozen.

(C) In lieu of the frequency specified in paragraph (b)(6)(ii)(A) of this section, the regulatory authority may allow you to collect data quarterly for 2 years. The regulatory authority may initiate review of the permit application after collection and analysis of the first four quarterly groundwater samples, but it may not approve the application until after receipt and analysis of the final four quarterly groundwater samples.

(D) You must analyze the samples collected in paragraph (b)(6)(ii)(A) of this section for the applicable water quality parameters identified in paragraph (a)(2) of this section and any other parameters specified by the regulatory authority.

(iii) You must provide the Palmer Drought Severity Index for the proposed permit and adjacent areas for the initial baseline data collection period under paragraph (b)(6)(ii) of this section. The regulatory authority may extend the minimum data collection period specified in paragraph (b)(6)(ii) of this section whenever data available from the National Oceanic and Atmospheric Administration or similar databases indicate that the region in which the proposed operation is located experienced severe drought or abnormally high precipitation during the initial baseline data collection period.

(c) *Surface-water information.*—(1) *General requirements.* Your permit application must include information sufficient to document seasonal variation in surface-water quality, quantity, and usage within the proposed permit and adjacent areas.

(2) *Surface-water quality descriptions.* Surface-water quality descriptions must include baseline information on the parameters identified in paragraph (a)(2) of this section and any additional parameters that the regulatory authority determines to be of local importance.

(3) *Surface-water quantity descriptions.* (i) At a minimum, surface-water quantity descriptions for perennial and intermittent streams within the proposed permit and adjacent areas must include baseline data documenting—

(A) Peak-flow magnitude and frequency.

(B) Actual and anticipated usage.

(C) Seasonal flow variations.

(D) Seepage-run sampling determinations, if you propose to deploy a longwall panel beneath a perennial or intermittent stream or employ other types of full-extraction mining methods beneath a perennial or intermittent stream. You must take the seepage-run measurement during both low-flow and high-flow conditions. The seepage-run measurement must extend to the full length of the stream that

would be affected by the mining operation.

(ii) All flow measurements under paragraph (c)(3)(i) of this section must be made using generally-accepted professional techniques approved by the regulatory authority. All techniques must be repeatable and must produce consistent results on successive measurements. Visual observations are not acceptable.

(4) *Surface-water sampling requirements.* (i) You must establish monitoring points at a sufficient number of locations within the proposed permit and adjacent areas to determine the quality and quantity of water in perennial and intermittent streams within those areas. At a minimum, you must locate monitoring points—

(A) Upgradient and downgradient of the proposed permit area in each perennial and intermittent stream within the proposed permit and adjacent areas; and

(B) Upgradient and downgradient of the area encompassed by the angle of dewatering in all potentially affected perennial and intermittent streams.

(ii)(A) To document seasonal variations in surface-water quality and quantity, you must collect samples and take the measurements identified in paragraph (c)(3) of this section from each location identified in paragraph (c)(4)(i) of this section at approximately equally-spaced monthly intervals for a minimum of 12 consecutive months.

(B) If approved by the regulatory authority, you may modify the interval or the 12-consecutive-month sampling requirement specified in paragraph (c)(4)(ii)(A) of this section if adverse weather conditions make travel to a location specified in paragraph (c)(4)(i) of this section hazardous or if the water at that location is completely frozen.

(C) You must analyze the samples collected under paragraph (c)(4)(ii)(A) of this section for the applicable parameters identified in paragraph (a)(2) of this section and any other parameters specified by the regulatory authority.

(iii) You must provide the Palmer Drought Severity Index for the proposed permit and adjacent areas for the initial baseline data collection period under paragraph (c)(4)(ii) of this section. The regulatory authority may extend the minimum data collection period specified in paragraphs (c)(4)(ii) and (iii) of this section whenever data available from the National Oceanic and Atmospheric Administration or similar databases indicate that the region in which the proposed operation is located experienced severe drought or abnormally high precipitation during the initial baseline data collection period.

(5) *Precipitation measurements.* (i) You must provide records of precipitation amounts for the proposed permit area, using on-site, self-recording devices.

(ii) Precipitation records must be adequate to generate and calibrate a hydrologic model of the site. The regulatory authority will determine whether you must create such a model.

(iii) At the discretion of the regulatory authority, you may use precipitation data from a single self-recording device to provide baseline data for multiple permits located close to each other.

(6) *Stream assessments.* (i)(A) You must map and separately identify all perennial, intermittent, and ephemeral streams within the proposed permit area and all perennial and intermittent streams within the adjacent area.

(B) The map must show the location of the channel head of each stream identified in paragraph (c)(6)(i)(A) of this section whenever the applicable area includes a terminal reach of the stream.

(C) The map must show the location of transition points from ephemeral to intermittent and from intermittent to perennial (and vice versa, when applicable) for each stream identified in paragraph (c)(6)(i)(A) of this section whenever the applicable area includes such a transition point. If the U.S. Army Corps of Engineers has determined the location of a transition point, your application must be consistent with that determination.

(ii)(A) For all perennial and intermittent streams within the proposed permit area, you must describe the baseline stream pattern, profile, and dimensions, with measurements of channel slope, sinuosity, water depth, alluvial groundwater depth, depth to bedrock, bankfull depth, bankfull width, width of the flood-prone area, and dominant in-stream substrate at a scale and frequency adequate to characterize the entire length of the stream within the proposed permit area.

(B) You must describe the general stream-channel configuration of ephemeral streams within the proposed permit area.

(iii) For all perennial, intermittent, and ephemeral streams within the proposed permit area, you must describe the vegetation growing along the banks of each stream, including—

(A) Identification of any hydrophytic vegetation located within or adjacent to the stream channel.

(B) The extent to which streamside vegetation consists of trees and shrubs.

(C) The percentage of channel canopy coverage.

(D) A scientific calculation of the species diversity of the vegetation.

(iv) You must identify all stream segments within the proposed permit and adjacent areas that appear on the list of impaired surface waters prepared under section 303(d) of the Clean Water Act, 33 U.S.C. 1313(d). You must identify the parameters responsible for the impaired condition and the total maximum daily loads associated with those parameters, when applicable.

(v) For all perennial, intermittent, and ephemeral streams within the proposed permit area and for all perennial and intermittent streams within the adjacent area, you must identify the extent of wetlands adjoining the stream and describe the quality of those wetlands.

(vi) Except as provided in paragraph (g) of this section, you must provide an assessment of the biological condition of—

(A) Each perennial stream within the proposed permit area.

(B) Each perennial stream within the adjacent area that could be affected by the proposed operation.

(C) Each intermittent stream within the proposed permit area, if a scientifically defensible protocol has been established for assessment of intermittent streams in the state or region in which the stream is located.

(D) Each intermittent stream within the adjacent area that could be affected by the proposed operation, if a scientifically defensible protocol has been established for assessment of intermittent streams in the state or region in which the stream is located.

(vii) When determining the biological condition of a stream under paragraph (c)(6)(vi) of this section, you must adhere to a bioassessment protocol approved by the state or tribal agency responsible for preparing the water quality inventory required under section 305(b) of the Clean Water Act, 33 U.S.C. 1315(b), or to other scientifically defensible bioassessment protocols accepted by agencies responsible for implementing the Clean Water Act, 33 U.S.C. 1251 *et seq.,* modified as necessary to meet the following requirements. The protocol must—

(A) Be based upon the measurement of an appropriate array of aquatic organisms, including, at a minimum, benthic macroinvertebrates, identified to the genus level where possible, otherwise to the lowest practical taxonomic level.

(B) Result in the calculation of index values for both stream habitat and aquatic biota based on the reference condition.

(C) Provide index values that correspond to the capability of the stream to support its designated aquatic life uses under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(D) Include a quantitative assessment of in-stream and riparian habitat condition.

(E) Describe the technical elements of the bioassessment protocol, including but not limited to sampling methods, sampling gear, index period, sample processing and analysis, and quality assessment/quality control procedures.

(viii) Except as provided in paragraph (g) of this section, you must describe the biology of each intermittent stream within the proposed permit area, and each intermittent stream within the adjacent area that could be affected by the proposed operation, whenever an assessment of the biological condition of those streams is not required under paragraph (c)(6)(vi) of this section. When obtaining the data needed to prepare this description, you must—

(A) Sample each stream using a scientifically defensible sampling method or protocol established or endorsed by an agency responsible for implementing the Clean Water Act, 33 U.S.C. 1251 *et seq.;*

(B) Identify benthic macroinvertebrates to the genus level where possible, otherwise to the lowest practical taxonomic level; and

(C) Describe the technical elements of the sampling protocol, including but not limited to sampling methods, sampling gear, index period, sample processing and analysis, and quality assessment/quality control procedures.

(d) *Additional information for discharges from previous coal mining operations.* If the proposed permit and adjacent areas contain any point-source discharges from previous surface or underground coal mining operations, you must sample those discharges during low-flow conditions of the receiving stream on a one-time basis. You must analyze the samples for the surface-water parameters identified in paragraph (a)(2) of this section and for both total and dissolved fractions of the following parameters—

(1) Aluminum.
(2) Arsenic.
(3) Barium.
(4) Beryllium.
(5) Cadmium.
(6) Copper.
(7) Lead.
(8) Mercury.
(9) Nickel.
(10) Silver.
(11) Thallium.
(12) Zinc.

(e) *Geologic information.* (1) Your application must include a description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined that may be adversely impacted by mining. The description must include—

(i) The areal and structural geology of the proposed permit and adjacent areas.

(ii) Other parameters that influence the required reclamation.

(iii) An explanation of how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface water and groundwater.

(iv) The composition of the bed of each perennial and intermittent stream within the proposed permit and adjacent areas, together with a prediction of how that bed would respond to subsidence of strata overlying the proposed underground mine workings and how subsidence would impact streamflow.

(2) The description required by paragraph (f)(1) of this section must be based on all of the following—

(i) The cross-sections, maps, and plans required by § 783.24 of this chapter.

(ii) The information obtained under paragraphs (e)(3) through (5) of this section.

(iii) Geologic literature and practices.

(3) For any portion of the proposed permit area in which the strata down to the coal seam to be mined will be removed or are already exposed, you must collect and analyze samples from test borings; drill cores; or fresh, unweathered, uncontaminated samples from rock outcrops, down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest seam to be mined that may be adversely impacted by mining. Your application must include the following data and analyses:

(i) Logs showing the lithologic characteristics, including physical properties and thickness, of each stratum, and the location of any groundwater encountered.

(ii) Chemical analyses identifying those strata that may contain acid-forming materials, toxic-forming materials, or alkalinity-producing materials and the extent to which each stratum contains those materials.

(iii) Chemical analyses of all coal seams for acid-forming or toxic-forming materials, including, but not limited to, total sulfur and pyritic sulfur.

(4) For lands within the permit and adjacent areas where the strata above the coal seam to be mined will not be removed, you must collect and analyze samples from test borings or drill cores. Your application must include the following data and analyses:

(i) Logs showing the lithologic characteristics, including physical properties and thickness, of each stratum that may be impacted, and the location of any groundwater encountered.

(ii) Chemical analyses of those strata immediately above and below the coal seam to be mined to identify whether and to what extent each stratum contains acid-forming materials, toxic-forming materials, or alkalinity-producing materials.

(iii) Chemical analyses of the coal seam for acid-forming or toxic-forming materials, including, but not limited to, total sulfur and pyritic sulfur.

(iv) For standard room-and-pillar mining operations, the thickness and engineering properties of clays or soft rock such as clay shale, if any, in the strata immediately above and below each coal seam to be mined.

(5) You must provide any additional geologic information and analyses that the regulatory authority determines to be necessary to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards of this chapter.

(6) You may request the regulatory authority to waive the requirements of paragraphs (e)(3) and (4) of this section, in whole or in part. The regulatory authority may grant the waiver request only after finding in writing that the collection and analysis of that data is unnecessary because other representative information is available to the regulatory authority in a satisfactory form.

(f) *Cumulative impact area information.* (1) You must obtain the hydrologic, geologic, and biological information necessary to assess the impacts of both the proposed operation and all anticipated mining on surface-water and groundwater systems in the cumulative impact area, as required by § 784.21 of this part, from the appropriate federal or state agencies, to the extent that the information is available from those agencies.

(2) If the information identified as necessary in paragraph (f)(1) of this section is not available from other federal or state agencies, you may gather and submit this information to the regulatory authority as part of the permit application. As an alternative to collecting new information, you may submit data and analyses from nearby mining operations if the site of those operations is representative of the

proposed operations in terms of topography, hydrology, geology, geochemistry, and method of mining.

(3) The regulatory authority may not approve the permit application until the information identified as necessary in paragraph (f)(1) of this section has been made available to the regulatory authority and the regulatory authority has used that information to prepare the cumulative hydrologic impact assessment required by § 784.21 of this part.

(g) *Exception for operations that avoid streams.* Upon your request, the regulatory authority may waive the biological information requirements of paragraphs (c)(6)(vi) through (viii) of this section if you demonstrate, and if the regulatory authority finds in writing, that your operation will not—

(1) Mine through or bury a perennial or intermittent stream;

(2) Create a point-source discharge to any perennial, intermittent, or ephemeral stream; or

(3) Modify the base flow of any perennial or intermittent stream.

(h) *Coordination with Clean Water Act agencies.* The regulatory authority will make best efforts to—

(1) Consult in a timely manner with the agencies responsible for issuing permits, authorizations, and certifications under the Clean Water Act;

(2) Minimize differences in baseline data collection points and parameters; and

(3) Share data to the extent practicable and consistent with each agency's mission, statutory requirements, and implementing regulations.

(i) *Corroboration of baseline data.* The regulatory authority must either corroborate a sample of the baseline information in your application or arrange for a third party to conduct the corroboration at your expense. Corroboration may include, but is not limited to, simultaneous sample collection and analysis, visual observation of sample collection, use of field measurements, or comparison of application data with application or monitoring data from adjacent operations.

§ 784.20 How must I prepare the determination of the probable hydrologic consequences of my proposed operation (PHC determination)?

(a) *Content of PHC determination.* Your permit application must contain a determination of the probable hydrologic consequences of the proposed operation upon the quality and quantity of surface water and groundwater and, except as provided in § 784.19(g) of this part, upon the biology of perennial and intermittent streams under seasonal flow conditions for the proposed permit and adjacent areas. You must base the PHC determination on an analysis of the baseline hydrologic, geologic, biological, and other information required under § 784.19 of this part. It must include findings on:

(1) Whether the operation may cause material damage to the hydrologic balance outside the permit area.

(2) Whether acid-forming or toxic-forming materials are present that could result in the contamination of surface water or groundwater, including, but not limited to, a discharge of toxic mine drainage after the completion of land reclamation.

(3) Whether underground mining activities conducted after October 24, 1992, may result in contamination, diminution or interruption of a well or spring within the permit or adjacent areas that was in existence when the permit application was submitted and that is used for domestic, drinking, or residential purposes.

(4) Whether the proposed operation will intercept aquifers in overburden strata or aquifers in underground mine voids (mine pools) or create aquifers in spoil placed in the backfilled area and, if so, what impacts the operation would have on those aquifers, both during mining and after reclamation, and the effect of those impacts on the hydrologic balance.

(5) What impact the proposed operation will have on:

(i) Sediment yield and transport from the area to be disturbed.

(ii) The quality of groundwater and surface water within the proposed permit and adjacent areas. At a minimum, unless otherwise specified, the finding must address the impacts of the operation on both groundwater and surface water in terms of the parameters listed in § 784.19(a)(2) of this part and any additional water quality parameters that the regulatory authority determines to be of local importance.

(iii) Flooding and precipitation runoff patterns and characteristics.

(iv) Peak-flow magnitude and frequency for perennial and intermittent streams within the proposed permit and adjacent areas.

(v) Seasonal variations in streamflow.

(vi) The availability of groundwater and surface water, including the impact of any diversion of surface or subsurface flows to underground mine workings or any changes in watershed size as a result of the postmining surface configuration.

(vii) The biology of perennial and intermittent streams within the proposed permit and adjacent areas, except as provided in § 784.19(g) of this part.

(viii) Other characteristics as required by the regulatory authority.

(6) What impact subsidence resulting from the proposed underground mining activities may have on perennial and intermittent streams.

(7) Whether the underground mine workings will flood after mine closure and, if so, a statement and explanation of—

(i) The highest potentiometric surface of the mine pool after closure.

(ii) Whether, where, and when the mine pool is likely to result in a surface discharge, either via gravity or as a result of hydrostatic pressure.

(iii) The predicted quality of any discharge from the mine pool.

(iv) The predicted impact of the mine pool on the hydrologic balance of the proposed permit and adjacent areas after the mine pool reaches equilibrium.

(v) The potential for a mine pool blowout or other hydrologic disturbances.

(vi) The potential for the mine pool to destabilize surface features.

(vii) The potential impact of roof collapses on mine pool behavior and equilibrium.

(b) *Supplemental information.* You must provide any supplemental information that the regulatory authority determines is needed to fully evaluate the probable hydrologic consequences of the proposed operation and to plan remedial and reclamation activities. This information may include, but is not limited to, additional drilling, geochemical analyses of overburden materials, aquifer tests, hydrogeologic analyses of the water-bearing strata, analyses of flood flows, or analyses of other characteristics of water quality or quantity, including the stability of underground mine pools that might be affected by the proposed operation.

(c) *Subsequent reviews of PHC determinations.* (1) The regulatory authority must review each application for a permit revision to determine whether a new or updated PHC determination is needed.

(2) The regulatory authority must require that you prepare a new or updated PHC determination if the review under paragraph (c)(1) of this section finds that one is needed.

§ 784.21 What requirements apply to preparation, use, and review of the cumulative hydrologic impact assessment (CHIA)?

(a) *General requirements.* (1) The regulatory authority must prepare a

written assessment of the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining upon surface-water and groundwater systems in the cumulative impact area. This assessment, which is known as the CHIA, must be sufficient to determine, for purposes of permit application approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

(2) In preparing the CHIA, the regulatory authority must consider relevant information on file for other mining operations located within the cumulative impact area or in similar watersheds.

(3) As provided in § 784.19(f) of this part, the regulatory authority may not approve a permit application until the hydrologic, geologic, and biological information needed to prepare the CHIA has been made available to the regulatory authority and the regulatory authority has used that information to prepare the CHIA.

(b) *Contents.* The CHIA must include—

(1) A map of the cumulative impact area. At a minimum, the map must identify and display—

(i) Any difference in the boundaries of the cumulative impact area for groundwater and surface water.

(ii) The locations of all previous, current, and anticipated surface and underground mining.

(iii) The locations of all baseline data collection sites within the proposed permit and adjacent areas under § 784.19 of this part.

(iv) Designated uses of surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(2) A description of all previous, existing, and anticipated surface and underground coal mining within the cumulative impact area, including, at a minimum, the coal seam or seams mined or to be mined, the extent of mining, and the reclamation status of each operation.

(3) A quantitative and qualitative description of baseline hydrologic information for the proposed permit and adjacent areas under § 784.19 of this part, including—

(i) The quality and quantity of surface water and groundwater and seasonal variations therein.

(ii) The quality and quantity of water needed to support, maintain, or attain each—

(A) Designated use of surface water under section 303(c) of the Clean Water Act, 33 U.S.C. or 1313(c), or, if there are no designated uses, each premining use of surface water.

(B) Premining use of groundwater.

(iii) A description and/or maps of the local and regional groundwater systems.

(iv) To the extent required by § 784.19(c)(6)(vi) of this part, the biological condition of perennial and intermittent streams and, to the extent required by § 784.19(c)(6)(viii) of this part, the biology of intermittent streams not included within § 784.19(c)(6)(vi) of this part.

(4) A discussion of any potential concerns identified in the PHC determination required under § 784.20 of this part and how those concerns have been or will be resolved.

(5) A qualitative and quantitative assessment of how all anticipated surface and underground mining may impact the quality of surface water and groundwater in the cumulative impact area, expressed in terms of each baseline parameter identified under § 784.19 of this part.

(6) Site-specific numeric or narrative thresholds for material damage to the hydrologic balance outside the permit area. These thresholds must also be included as a condition of the permit. When identifying thresholds to define when material damage to the hydrologic balance outside the permit area would occur in connection with a particular permit, the regulatory authority will—

(i) In consultation with the Clean Water Act authority, as appropriate, undertake a comprehensive evaluation that considers the following factors—

(A) The baseline data collected under § 784.19 of this part;

(B) The PHC determination prepared under § 784.20 of this part;

(C) Applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c);

(D) Applicable state or tribal standards for surface water or groundwater;

(E) Ambient water quality criteria developed under section 304(a) of the Clean Water Act, 33 U.S.C. 1314(a);

(F) The biological requirements of any species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* when those species; designated critical habitat for those species; habitat occupied by those species, such as nesting, resting, feeding, and breeding areas; and any areas in which those species are present only for a short time, but that are important to their persistence, such as migration and dispersal corridors, are present within the cumulative impact area; and

(G) Other pertinent information and considerations to identify the parameters for which thresholds are necessary.

(ii) In consultation with the Clean Water Act authority, adopt numeric thresholds as appropriate, taking into consideration relevant contaminants for which there are water quality criteria under the Clean Water Act, 33 U.S.C. 1251 *et seq.* The regulatory authority may not adopt a narrative threshold for parameters for which numeric water quality criteria exist under the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(iii) Identify the portion of the cumulative impact area to which each threshold applies. Parameters and thresholds may vary from subarea to subarea within the cumulative impact area when appropriate, based upon differences in watershed characteristics and variations in the geology, hydrology, and biology of the cumulative impact area.

(iv) Identify the points within the cumulative impact area at which the permittee will monitor the impacts of the operation on surface water and groundwater outside the permit area and explain how those locations will facilitate timely detection of the impacts of the operation on surface water and groundwater outside the permit area in a scientifically defensible manner. The permit applicant must incorporate those monitoring locations into the surface water and groundwater monitoring plans submitted under § 784.23 of this part.

(7) Evaluation thresholds for critical water quality and quantity parameters, as determined by the regulatory authority. After permit issuance, if monitoring results at the locations designated under paragraph (b)(6)(iv) of this section document exceedance of an evaluation threshold, the regulatory authority, in consultation with the Clean Water Act authority, as appropriate, must determine the cause of the exceedance. If the mining operation is responsible for the exceedance and if the adverse trend is likely to continue in the absence of corrective action, the regulatory authority must issue a permit revision order under § 774.10 of this chapter. The order must require that the permittee reassess the adequacy of the PHC determination prepared under § 784.20 of this part and the hydrologic reclamation plan approved under § 784.20 of this part and develop measures to prevent material damage to the hydrologic balance outside the permit area.

(8) An assessment of how all anticipated surface and underground

mining may affect groundwater movement and availability within the cumulative impact area.

(9) After consultation with the Clean Water Act authority, as appropriate, an evaluation, with references to supporting data and analyses, of whether the CHIA will support a finding that the operation has been designed to prevent material damage to the hydrologic balance outside the permit area. To support this finding, the CHIA must include the following determinations, with appropriate documentation, or an explanation of why the determination is not necessary or appropriate:

(i) Except as provided in §§ 784.22(b) and 817.40 of this chapter, the proposed operation will not—

(A) Cause or contribute to a violation of applicable water quality standards adopted under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or other applicable state or tribal water quality standards;

(B) Cause or contribute to a violation of applicable state or tribal groundwater quality standards;

(C) Preclude attainment of a premining use of a surface water located outside the permit area when no water quality standards have been established for that surface water; or

(D) Preclude attainment of any premining use of groundwater located outside the permit area.

(ii) The proposed operation has been designed to ensure that neither the mining operation nor the final configuration of the reclaimed area will result in changes in the size or frequency of peak flows from precipitation events or thaws that would cause an increase in flooding outside the permit area, when compared with premining conditions.

(iii) Perennial and intermittent streams located outside the permit area will continue to have sufficient base flow at all times during and after mining and reclamation to maintain their premining flow regime; *i.e.,* perennial streams located outside the permit area will retain perennial flows and intermittent streams located outside the permit area will retain intermittent flows both during and after mining and reclamation. Conversion of an intermittent stream to a perennial stream or conversion of an ephemeral stream to an intermittent or perennial stream outside the permit area may be acceptable, provided the conversion would be consistent with paragraph (b)(9)(i) of this section and would not result in a violation of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.*

(iv) The proposed operation has been designed to protect the quantity and quality of water in any aquifer that significantly ensures the prevailing hydrologic balance.

(c) *Subsequent reviews.* (1) The regulatory authority must review each application for a significant permit revision to determine whether a new or updated CHIA is needed. The regulatory authority must document the review, including the analysis and conclusions, together with the rationale for the conclusions, in writing.

(2) The regulatory authority must reevaluate the CHIA at intervals not to exceed 3 years to determine whether the CHIA remains accurate and whether the material damage and evaluation thresholds in the CHIA and the permit are adequate to ensure that material damage to the hydrologic balance outside the permit area will not occur. This evaluation must include a review of all biological and water monitoring data from both this operation and all other coal mining operations within the cumulative impact area.

(3) The regulatory authority must prepare a new or updated CHIA if the review conducted under paragraph (c)(1) or (2) of this section finds that one is needed.

§ 784.22 What information must I include in the hydrologic reclamation plan and what information must I provide on alternative water sources?

(a) *Hydrologic reclamation plan.* Your permit application must include a plan, with maps and descriptions, that demonstrates how the proposed operation will comply with the applicable provisions of this subchapter and subchapter K of this chapter that relate to protection of the hydrologic balance. The plan must—

(1) Be specific to local hydrologic conditions.

(2) Include preventive or remedial measures for any potential adverse hydrologic consequences identified in the PHC determination prepared under § 784.20 of this part. These measures must describe the steps that you will take during mining and reclamation through final bond release under §§ 800.40 through 800.43 of this chapter to—

(i) Minimize disturbances to the hydrologic balance within the proposed permit and adjacent areas. .

(ii) Prevent material damage to the hydrologic balance outside the proposed permit area. The plan must include remedial measures for any predicted diminution of streamflow or loss of wetlands as a result of subsidence. The application must discuss the results of past use of the proposed remedial measures in the vicinity of the proposed mining operation and under similar conditions elsewhere.

(iii) Meet applicable water quality laws and regulations.

(iv) Protect existing water users in accordance with paragraph (b) of this section and § 817.40 of this chapter.

(v) Avoid acid or toxic discharges to surface water and avoid or, if avoidance is not possible, minimize degradation of groundwater.

(vi) Prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow or to runoff outside the proposed permit area.

(vii) Provide water-treatment facilities when needed.

(viii) Control surface-water runoff in accordance with § 784.29 of this part.

(3) Address the impacts of any transfers of water among active and abandoned mines within the proposed permit and adjacent areas.

(4) Describe the steps that you will take during mining and reclamation through final bond release under §§ 800.40 through 800.43 of this chapter to protect and enhance aquatic life and related environmental values to the extent possible using the best technology currently available.

(b) *Alternative water source information.* (1)(i) If the PHC determination prepared under § 784.20 of this part indicates that underground mining activities conducted after October 24, 1992, may result in contamination, diminution, or interruption of a well or spring that is in existence at the time the permit application is submitted and that is used for domestic, drinking, or residential purposes, you must demonstrate that alternative water sources are both available and feasible to develop. The alternative water sources must be of suitable quality and sufficient in quantity to support all uses protected under § 817.40 of this chapter.

(ii) You must develop a water supply replacement plan for all uses protected under § 817.40 of this chapter that includes construction details, costs, and an implementation schedule.

(2) If you cannot identify an alternative water source that is both suitable and available, you must modify your application to prevent the proposed operation from contaminating, interrupting, or diminishing any water supply protected under § 817.40 of this chapter.

(3)(i) When a suitable alternative water source is available, your operation plan must require that the alternative water supply be developed and installed

on a permanent basis before your operation advances to the point at which it could adversely affect an existing water supply protected under § 817.40 of this chapter. This requirement applies only to those water supplies for which adverse impacts are probable.

(ii) Paragraph (b)(3)(i) of this section will not apply immediately if you demonstrate, and the regulatory authority finds, that the proposed operation also would adversely affect the replacement supply. In that case, your plan must require provision of a temporary replacement water supply until it is safe to install the permanent replacement water supply required under paragraph (b)(3)(i) of this section.

(4) Your application must describe how you will provide both temporary and permanent replacements for any unexpected losses of water supplies protected under § 817.40 of this chapter.

§ 784.23 What information must I include in plans for the monitoring of groundwater, surface water, and the biological condition of streams during and after mining?

(a) *Groundwater monitoring plan.*—(1) *General requirements.* Your permit application must include a groundwater monitoring plan adequate to evaluate the impacts of the mining operation on groundwater in the proposed permit and adjacent areas and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area. The plan must—

(i) Identify the locations to be monitored, the measurements to be taken at each location, and the parameters to be analyzed in samples collected at each location.

(ii) Specify the sampling frequency.

(iii) Establish a sufficient number of appropriate monitoring locations to evaluate the accuracy of the findings in the PHC determination, to identify adverse trends, and to determine, in a timely fashion, whether corrective action is needed to prevent material damage to the hydrologic balance outside the permit area. At a minimum, the plan must include—

(A) For each aquifer above or immediately below the coal seam to be mined, monitoring sites located upgradient and downgradient of the proposed operation at a distance sufficiently close to the underground mine workings to detect changes as the mining operation progresses. The plan must include a schedule and map for moving these sites as the underground workings advance.

(B) Monitoring wells in any existing underground mine workings that would have a direct hydrological connection to the proposed operation.

(C) At least one monitoring well to be located in the mine pool after mine closure.

(D) Monitoring wells or equivalent monitoring points at the locations specified in the CHIA under § 784.21(b)(6)(vi) of this part.

(iv) Describe how the monitoring data will be used to—

(A) Determine the impacts of the operation upon the hydrologic balance.

(B) Determine the impacts of the operation upon the biology of surface waters within the permit and adjacent areas.

(C) Prevent material damage to the hydrologic balance outside the permit area.

(v) Describe how the water samples will be collected, preserved, stored, transmitted for analysis, and analyzed in accordance with the sampling, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter.

(2) *Parameters.*—(i) *General criteria for selection of parameters.* The plan must provide for the monitoring of parameters for which an evaluation threshold under § 784.21(b)(7) of this part exists. It also must provide for the monitoring of other parameters that could be affected by the proposed operation to the extent needed to assess the—

(A) Accuracy of the findings and predictions in the PHC determination prepared under § 784.20 of this part.

(B) Suitability of the quality and quantity of groundwater for protected premining uses of groundwater within the permit and adjacent areas, subject to § 817.40 of this chapter.

(C) Suitability of the quality and quantity of groundwater to support the premining land uses within the permit and adjacent areas.

(ii) *Minimum sampling and analysis requirements.* At a minimum, the plan must require collection and analysis of a sample from each monitoring point every 3 months, with data submitted to the regulatory authority at the same frequency. The data must include—

(A) Analysis of each sample for the groundwater parameters listed in § 784.19(a)(2) of this part.

(B) Water levels in each well used for monitoring purposes and discharge rates from each spring or underground opening used for monitoring purposes.

(C) Analysis of each sample for parameters detected by the baseline sampling and analysis conducted under § 784.19(d) of this part.

(D) Analysis of each sample for all parameters for which there is an evaluation threshold under § 784.21(b)(7) of this part.

(E) Analysis of each sample for other parameters of concern, as determined by the regulatory authority, based upon the information and analyses required under §§ 784.19 through 784.21 of this part.

(3) *Regulatory authority review and action.* (i) Upon completing the technical review of the application, the regulatory authority may require that you revise the plan to increase the frequency of monitoring, to require monitoring of additional parameters, or to require monitoring at additional locations, if the additional requirements would contribute to protection of the hydrologic balance.

(ii) After completing preparation of the cumulative hydrologic impact assessment required under § 784.21 of this part, the regulatory authority must reconsider the adequacy of the monitoring plan and require that you make any necessary changes.

(4) *Exception.* If you can demonstrate, on the basis of the PHC determination prepared under § 784.20 of this part or other available information that a particular aquifer in the proposed permit and adjacent areas has no existing or foreseeable use for agricultural or other human purposes or for fish and wildlife purposes and does not serve as an aquifer that significantly ensures the hydrologic balance within the cumulative impact area, the regulatory authority may waive monitoring of that aquifer.

(b) *Surface-water monitoring plan.*—(1) *General requirements.* Your permit application must include a surface-water monitoring plan adequate to evaluate the impacts of the mining operation on surface water in the proposed permit and adjacent areas and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area. The plan must—

(i) Identify the locations to be monitored, the measurements to be taken at each location, and the parameters to be analyzed in samples collected at each location.

(ii)(A) Require on-site measurement of precipitation amounts at specified locations within the permit area, using self-recording devices.

(B) Measurement of precipitation amounts must continue through Phase II bond release under § 800.42(c) of this chapter or for any longer period specified by the regulatory authority.

(C) At the discretion of the regulatory authority, you may use precipitation data from a single self-recording device to provide monitoring data for multiple permits that are contiguous or nearly contiguous if a single station would provide adequate and accurate coverage of precipitation events occurring in that area.

(iii) Specify the sampling frequency.

(iv) Establish a sufficient number of appropriate monitoring locations to evaluate the accuracy of the findings in the PHC determination, to identify adverse trends, and to determine, in a timely fashion, whether corrective action is needed to prevent material damage to the hydrologic balance outside the permit area. At a minimum, the plan must include—

(A) Monitoring of point-source discharges from the proposed operation.

(B) Monitoring locations upgradient and downgradient of the proposed permit area in each perennial and intermittent stream within the proposed permit and adjacent areas, with the exception that no upgradient monitoring location is needed for a stream when the operation will mine through the headwaters of that stream.

(C) Monitoring locations upgradient and downgradient of the proposed operation at a distance sufficiently close to the underground mine workings to detect changes as the mining operation progresses. The plan must include a schedule and map for moving these sites as the underground workings advance.

(D) Monitoring locations specified in the CHIA under § 784.21(b)(6)(vi) of this part.

(v) Describe how the monitoring data will be used to—

(A) Determine the impacts of the operation upon the hydrologic balance.

(B) Determine the impacts of the operation upon the biology of surface waters within the permit and adjacent areas.

(C) Prevent material damage to the hydrologic balance outside the permit area.

(vi) Describe how the water samples will be collected, preserved, stored, transmitted for analysis, and analyzed in accordance with the sampling, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter.

(2) *Parameters.*—(i) *General criteria for selection of parameters.* The plan must provide for the monitoring of parameters—

(A) For which there are applicable effluent limitation guidelines under 40 CFR part 434.

(B) Needed to assess the accuracy of the findings and predictions in the PHC determination prepared under § 784.20 of this part.

(C) Needed to assess the adequacy of the surface-water runoff control plan prepared under § 784.29 of this part.

(D) Needed to assess the suitability of the quality and quantity of surface water in the permit and adjacent areas for all designated uses under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, all premining uses of surface water in the permit and adjacent areas, subject to § 817.40 of this chapter; and

(E) Needed to assess the suitability of the quality and quantity of surface water in the permit and adjacent areas to support the premining land uses.

(F) For which there is an evaluation threshold under § 784.21(b)(7) of this part.

(ii) *Minimum sampling and analysis requirements for monitoring locations other than point-source discharges.* For all monitoring locations other than point-source discharges, the plan must require collection and analysis of a sample from each monitoring point at least every 3 months, with data submitted to the regulatory authority at the same frequency. The data must include—

(A) Analysis of each sample for the surface-water parameters listed in § 784.19(a)(2) of this part.

(B) Flow rates at each sampling location. The plan must require use of generally-accepted professional flow measurement techniques. Visual observations are not acceptable.

(C) Analysis of each sample for parameters detected by the baseline sampling and analysis conducted under § 784.19(d) of this part.

(D) Analysis of each sample for all parameters for which there is an evaluation threshold under § 784.21(b)(7) of this part.

(E) Analysis of each sample for other parameters of concern, as determined by the regulatory authority, based upon the information and analyses required under §§ 784.19 through 784.21 of this part.

(iii) *Minimum requirements for point-source discharges.* For point-source discharges, the plan must—

(A) Provide for monitoring in accordance with 40 CFR parts 122, 123, and 434 and as required by the National Pollutant Discharge Elimination System permitting authority.

(B) Require measurement of flow rates, using generally-accepted professional flow measurement techniques. Visual observations are not acceptable.

(iv) *Requirements related to the Clean Water Act.* You must revise the plan to incorporate any site-specific monitoring requirements imposed by the National Pollutant Discharge Elimination System permitting authority or the agency responsible for administration of section 404 of the Clean Water Act, 33 U.S.C. 1344, subsequent to submission of the SMCRA permit application.

(3) *Regulatory authority review and action.* (i) Upon completing the technical review of your application, the regulatory authority may require that you revise the plan to increase the frequency of monitoring, to require monitoring of additional parameters, or to require monitoring at additional locations, if the additional requirements would contribute to protection of the hydrologic balance.

(ii) After completing preparation of the cumulative hydrologic impact assessment required under § 784.21 of this part, the regulatory authority must reconsider the adequacy of the monitoring plan and require that you make any necessary changes.

(c) *Biological condition monitoring plan.*—(1) *General requirements.* Except as provided in paragraph (d) of this section, your permit application must include a plan for monitoring the biological condition of each perennial and intermittent stream within the proposed permit and adjacent areas for which baseline biological condition data was collected under § 784.19(c)(6)(vi) of this part. The plan must be adequate to evaluate the impacts of the mining operation on the biological condition of those streams and to determine in a timely manner whether corrective action is needed to prevent the operation from causing material damage to the hydrologic balance outside the permit area.

(2) *Monitoring techniques.* The plan must—

(i) Require use of a bioassessment protocol that meets the requirements of § 784.19(c)(6)(vii) of this part.

(ii) Identify monitoring locations in each perennial and intermittent stream within the proposed permit and adjacent areas for which baseline biological condition data was collected under § 784.19(c)(6)(vi) of this part.

(iii) Establish a sampling frequency that must be no less than annual, but not so frequent as to unnecessarily deplete the populations of the species being monitored.

(iv) Require submission of monitoring data to the regulatory authority on an annual basis.

(3) *Regulatory authority review and action.* (i) Upon completing review of your application, the regulatory authority may require that you revise the plan to adjust monitoring locations,

the frequency of monitoring, and the species to be monitored.

(ii) After completing preparation of the cumulative hydrologic impact assessment required under § 784.21 of this part, the regulatory authority must reconsider the adequacy of the monitoring plan and require that you make any necessary changes.

(d) *Exception for operations that avoid streams.* (1) Upon your request, the regulatory authority may waive the biological condition monitoring plan requirements of paragraph (c) of this section if you demonstrate, and if the regulatory authority finds in writing, that your operation will not—

(i) Mine through or bury any perennial or intermittent stream;

(ii) Create a point-source discharge to any perennial, intermittent, or ephemeral stream; or

(iii) Modify the base flow of any perennial or intermittent stream or cause the stream to pool, either as a result of subsidence or as a result of any other mining-related activity.

(2) If you meet all the criteria of paragraph (d)(1) of this section with the exception of paragraph (d)(1)(ii) of this section, you may request, and the regulatory authority may approve, limiting the biological condition monitoring requirements of paragraph (c) of this section to only the stream that will receive the point-source discharge.

(e) *Coordination with Clean Water Act agencies.* The regulatory authority will make best efforts to—

(1) Consult in a timely manner with the agencies responsible for issuing permits, authorizations, and certifications under the Clean Water Act;

(2) Minimize differences in monitoring locations and reporting requirements; and

(3) Share data to the extent practicable and consistent with each agency's mission, statutory requirements, and implementing regulations.

§ 784.24 What requirements apply to the postmining land use?

(a) *What postmining land use information must my application contain*? (1) You must describe and map the proposed use or uses of the land within the proposed permit area following reclamation, based on the categories of land uses listed in the definition of land use in § 701.5 of this chapter.

(2) Except for prime farmland historically used as cropland, you must discuss the utility and capability of the reclaimed land to support the proposed postmining land use and the variety of uses that the land was capable of supporting before any mining, as identified under § 783.22 of this chapter, regardless of the proposed postmining land use.

(3) You must explain how the proposed postmining land use is consistent with existing state and local land use policies and plans.

(4) You must include a copy of the comments concerning the proposed postmining use that you receive from the—

(i) Legal or equitable owner of record of the surface of the proposed permit area; and

(ii) State and local government agencies that would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation.

(5) You must explain how the proposed postmining land use will be achieved and identify any support activities or facilities needed to achieve that use.

(6) If you propose to restore the proposed permit area or a portion thereof to a condition capable of supporting a higher or better use or uses rather than to a condition capable of supporting the uses that the land could support before any mining, you must provide the demonstration required under paragraph (b)(1) of this section.

(b) *What requirements apply to the approval of alternative postmining land uses*?—(1) *Application requirements.* If you propose to restore the proposed permit area or a portion thereof to a condition capable of supporting a higher or better use or uses, rather than to a condition capable of supporting the uses that the land could support before any mining, you must demonstrate that the proposed higher or better use or uses meet the following criteria:

(i) There is a reasonable likelihood that the proposed use or uses will be achieved after mining and reclamation, as documented by, for example, real estate and construction contracts, plans for installation of any necessary infrastructure, procurement of any necessary zoning approvals, landowner commitments, economic forecasts, and studies by land use planning agencies.

(ii) The proposed use or uses do not present any actual or probable hazard to public health or safety or any threat of water diminution or pollution.

(iii) The proposed use or uses will not—

(A) Be impractical or unreasonable.

(B) Be inconsistent with applicable land use policies or plans.

(C) Involve unreasonable delay in implementation.

(D) Cause or contribute to a violation of federal, state, tribal or local law.

(E) Result in changes in the size or frequency of peak flows from the reclaimed area that would cause an increase in flooding when compared with the conditions that would exist if the land were restored to a condition capable of supporting the uses that it was capable of supporting before any mining.

(F) Cause the total volume of flow from the reclaimed area, during every season of the year, to vary in a way that would preclude attainment of any designated use of a surface water located outside the permit area under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, any premining use of a surface water located outside the permit area.

(G) Cause a change in the temperature or chemical composition of the water that would preclude attainment of any designated use of a surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, any premining use of a surface water located outside the permit area.

(2) *Regulatory authority decision requirements.* The regulatory authority may approve your request if it—

(i) Consults with the landowner or the land management agency having jurisdiction over the lands to which the use would apply; and

(ii) Finds in writing that you have made the demonstration required under paragraph (b)(1) of this section. Landowner consent alone is an insufficient basis for this finding.

(c) *What requirements apply to permit revision applications that propose to change the postmining land use*? (1) You may propose to change the postmining land use for all or a portion of the permit area at any time through the permit revision process under § 774.13 of this chapter.

(2) If you propose a higher or better postmining land use, the requirements of paragraphs (b)(1) and (2) of this section will apply and the application must be considered a significant permit revision for purposes of § 774.13(b)(2) of this chapter.

(d) *What restrictions apply to the retention of mining-related structures*? (1) If you propose to retain mining-related structures other than roads and impoundments for potential future use as part of the postmining land use, you must demonstrate, and the regulatory authority must find in writing, that the size and characteristics of the structures are consistent with and proportional to the needs of the postmining land use.

(2) The amount of bond required for the permit under part 800 of this

chapter must include the cost of removing the structure and reclaiming the land upon which it was located to a condition capable of supporting the premining uses. The bond must include the cost of restoring the site to its approximate original contour in accordance with § 817.102 of this chapter and revegetating the site in accordance with the revegetation plan approved under § 784.12(g) of this part for the permit area surrounding the site upon which the structure was previously located.

(3) The reclamation plan submitted under § 784.12 of this part must specify that if a structure is not in use as part of the approved postmining land use by the end of the revegetation responsibility period specified in § 817.115 of this chapter, you must remove the structure and reclaim the land upon which it was located by restoring the approximate original contour in accordance with § 817.102 of this chapter and revegetating the site in accordance with the revegetation plan approved under § 784.12(g) of this part for the permit area surrounding the site upon which the structure was previously located.

(e) *What special provisions apply to previously mined areas*? If land that was previously mined cannot be reclaimed to the land use that existed before any mining because of the previously mined condition, you may propose, and the regulatory authority may approve, any appropriate postmining land use for that land that is both achievable and compatible with land uses in the surrounding area, provided that restoration of the land to that capability does not require disturbance of land previously unaffected by mining.

§ 784.25 What information must I provide for siltation structures, impoundments, and refuse piles?

(a) *How do I determine the hazard potential of a proposed impoundment*? You must use the following table to identify the hazard potential classification of each proposed impoundment that includes a dam:

Hazard potential classification	Loss of human life in event of failure	Economic, environmental, or lifeline losses [1] in event of failure
Low	None expected	Low potential; generally limited to property owned by the permittee.
Significant	None expected	Yes.
High	Loss of one or more lives probable	Yes, but not necessary for this classification.

[1] Lifeline losses refer to disruption of lifeline facilities, which include, but are not limited to, important public utilities, highways, and railroads.

(b) *How must I prepare the general plan for proposed siltation structures, impoundments, and refuse piles*? If you propose to construct a siltation structure, impoundment, or refuse pile, your application must include a general plan that meets the following requirements:

(1) The plan must be prepared by, or under the direction of, and certified by a qualified registered professional engineer, a professional geologist, or, in any state that authorizes land surveyors to prepare and certify such plans, a qualified registered professional land surveyor, with assistance from experts in related fields such as landscape architecture.

(2) The plan must contain a description, map, and cross-sections of the structure and its location.

(3) The plan must contain the hydrologic and geologic information required to assess the hydrologic impact of the structure.

(4)(i) The plan must contain a report describing the results of a geotechnical investigation of the potential effect on the structure if subsurface strata subside as a result of past, current, or future underground mining operations beneath or within the proposed permit and adjacent areas. When necessary, the investigation report also must identify design and construction measures that would prevent adverse subsidence-related impacts on the structure.

(ii) Except for structures that would meet the criteria in § 77.216(a) of this title or that would have a significant or high hazard potential under paragraph (a) of this section, the requirements of paragraph (b)(4)(i) of this section do not apply—

(A) In areas with 26.0 inches or less of average annual precipitation; or

(B) To siltation structures.

(5)(i) The plan must contain an analysis of the potential for each impoundment to drain into subjacent underground mine workings, together with an analysis of the impacts of such drainage.

(ii) Except for structures that would meet the criteria in § 77.216(a) of this title or that would have a significant or high hazard potential under paragraph (a) of this section, the requirements of paragraph (b)(5)(i) of this section do not apply—

(A) In areas with 26.0 inches or less of average annual precipitation; or

(B) To siltation structures.

(6) The plan must include a schedule setting forth the dates when any detailed design plans for structures that are not submitted with the general plan will be submitted to the regulatory authority.

(c) *How must I prepare the detailed design plan for proposed siltation structures, impoundments, and refuse piles*?—(1) *Detailed design plan requirements for high hazard dams, significant hazard dams, and impounding structures that meet MSHA criteria.* If you propose to construct an impounding structure that would meet the criteria in § 77.216(a) of this title or that would have a significant or high hazard potential under paragraph (a) of this section, you must prepare and submit a detailed design plan that meets the following requirements:

(i) The plan must be prepared by, or under the direction of, a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture. The engineer must certify that the impoundment design meets the requirements of this part, current prudent engineering practices, and any design criteria established by the regulatory authority. The qualified registered professional engineer must be experienced in the design and construction of impoundments.

(ii) The plan must incorporate any design and construction measures identified in the geotechnical investigation report prepared under paragraph (b)(4) of this section as necessary to protect against potential adverse impacts from subsidence resulting from underground mine workings underlying or adjacent to the structure.

(iii) The plan must describe the operation and maintenance requirements for each structure.

(iv) The plan must describe the timetable and plans to remove each structure, if appropriate.

(2) *Detailed design plan requirements for other structures.* If you propose to construct an impounding structure that would not meet the criteria in § 77.216(a) of this title and that would not have a significant or high hazard

potential under paragraph (a) of this section, you must prepare and submit a detailed design plan that meets the following requirements:

(i)(A) Except as provided in paragraph (c)(2)(i)(B) of this section, the plan must be prepared by, or under the direction of, a qualified, registered, professional engineer, or, in any state that authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional, land surveyor. The engineer or land surveyor must certify that the impoundment design meets the requirements of this part, current prudent engineering practices, and any design criteria established by the regulatory authority. The qualified registered professional engineer or qualified registered professional land surveyor must be experienced in the design and construction of impoundments.

(B) All coal mine waste structures to which §§ 817.81 through 817.84 of this chapter apply must be certified by a qualified, registered, professional engineer.

(ii) The plan must reflect any design and construction requirements for the structure, including any measures identified as necessary in the geotechnical investigation report prepared under paragraph (b)(4) of this section.

(iii) The plan must describe the operation and maintenance requirements for each structure.

(iv) The plan must describe the timetable and plans to remove each structure, if appropriate.

(3) *Timing of submittal of detailed design plans.* You must submit the detailed design plans to the regulatory authority either as part of the permit application or in accordance with the schedule submitted under paragraph (b)(6) of this section. The regulatory authority must approve, in writing, the detailed design plan for a structure before you may begin construction of the structure.

(d) *What additional design requirements apply to siltation structures?* You must design siltation structures in compliance with the requirements of § 817.46 of this chapter.

(e) *What additional design requirements apply to permanent and temporary impoundments?* (1) You must design permanent and temporary impoundments to comply with the requirements of § 817.49 of this chapter.

(2) The regulatory authority may establish, through the regulatory program approval process, engineering design standards that ensure stability comparable to a 1.3 minimum static safety factor in lieu of conducting engineering tests to establish compliance with the minimum static safety factor of 1.3 required in § 816.49(a)(2)(ii) of this chapter.

(3) Each plan must include stability analyses of the proposed impoundment if the structure would meet the criteria in § 77.216(a) of this title or would have a significant or high hazard potential under paragraph (a) of this section. The stability analyses must address static, seismic, and post-earthquake (liquefaction) conditions. They must include, but are not limited to, strength parameters, pore pressures, and long-term seepage conditions. The plan also must contain a description of each engineering design assumption and calculation with a discussion of each alternative considered in selecting the specific analysis and design parameters and construction methods.

(f) *What additional design requirements apply to coal mine waste impoundments, refuse piles, and impounding structures constructed of coal mine waste?* If you propose to place coal mine waste in a refuse pile or impoundment, or if you plan to use coal mine waste to construct an impounding structure, you must comply with the applicable design requirements in paragraphs (f)(1) and (2) of this section.

(1) *Design requirements for refuse piles.* You must design refuse piles to comply with the requirements of §§ 784.28, 817.81, and 817.83 of this chapter.

(2) *Design requirements for impounding structures that will impound coal mine waste or that will be constructed of coal mine waste.* (i) You must design impounding structures constructed of or intended to impound coal mine waste to comply with the coal mine waste disposal requirements of §§ 784.28, 817.81, and 817.84 of this chapter and with the impoundment requirements of paragraphs (a) and (c) of § 817.49 of this chapter.

(ii) The plan for each impounding structure that meets the criteria of § 77.216(a) of this title must comply with the requirements of § 77.216–2 of this title.

(iii) Each plan for an impounding structure that will impound coal mine waste or that will be constructed of coal mine waste must contain the results of a geotechnical investigation to determine the structural competence of the foundation that will support the proposed impounding structure and the impounded material. An engineer or engineering geologist must plan and supervise the geotechnical investigation. In planning the investigation, the engineer or geologist must—

(A) Determine the number, location, and depth of borings and test pits using current prudent engineering practice for the size of the impoundment and the impounding structure, the quantity of material to be impounded, and subsurface conditions.

(B) Consider the character of the overburden and bedrock, the proposed abutment sites for the impounding structure, and any adverse geotechnical conditions that may affect the impounding structure.

(C) Identify all springs, seepage, and groundwater flow observed or anticipated during wet periods in the area of the proposed impounding structure on each plan.

(D) Consider the possibility of mudflows, rock-debris falls, or other landslides into the impounding structure, impoundment, or impounded material.

(iv) The design must ensure that at least 90 percent of the water stored in the impoundment during the design precipitation event will be removed within a 10-day period.

§ 784.26 What information must I provide if I plan to return coal processing waste to abandoned underground mine workings?

(a) As provided in §§ 816.81(h) and 817.81(h) of this chapter, you may return coal processing waste from either surface-mined coal or underground-mined coal to abandoned underground mine workings for disposal only if the regulatory authority and the Mine Safety and Health Administration first approve the disposal plan.

(b) Each plan for the return of coal processing waste to abandoned underground mine workings must describe the—

(1) Source and quality of coal processing waste to be stowed in the abandoned underground workings.

(2) All chemicals used to process the coal, the quantity of those chemicals remaining in the coal processing waste, and the likely impact of those chemicals on groundwater and any persons, aquatic life, or wildlife using that groundwater.

(3) Area of the abandoned underground workings in which the waste is to be placed.

(4) Percent of the abandoned underground mine void to be filled.

(5) Method of constructing underground retaining walls.

(6) Influence of the backstowing operation on active underground mine operations.

(7) Surface area to be supported by the backstowed waste.

(8) Anticipated occurrence of surface effects following backstowing.

(9) Source and operation of the hydraulic transport mediums.

(10) Method of dewatering the coal processing waste after placement.

(11) Extent to which water will be retained underground.

(12) Method of treatment of water if released to surface streams.

(13) Plans for monitoring for chemicals contained in the coal processing waste.

(14) Effect on the hydrologic regime and biological communities.

(15) Measures to be taken to comply with the requirements of § 816.41 or § 817.41 of this chapter for discharges to underground mines.

(c) The plan submitted under paragraph (b) of this section must include a monitoring plan that complies with § 784.23 of this part, as applicable. It must describe the objective of each permanent monitoring well to be located in the area in which coal processing waste is placed, the stratum underlying the mined coal, and the gradient from the area in which the waste is placed.

(d) Paragraphs (a) through (c) of this section also apply to pneumatic backstowing operations, except that the regulatory authority may exempt a proposed pneumatic backstowing operation from compliance with the monitoring requirements of paragraph (c) of this section after finding in writing that you have demonstrated that the proposed operation will not adversely impact surface water, groundwater, or water supplies.

§ 784.27 What additional permitting requirements apply to proposed activities in or through ephemeral streams?

(a) *Clean Water Act requirements.* If the proposed permit area includes waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* the regulatory authority must condition the permit to prohibit initiation of mining-related activities in or affecting those waters before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(b) *Postmining surface drainage pattern and stream-channel configuration.* (1) If you propose to mine through an ephemeral stream, your application must include a plan to construct—

(i) A postmining surface drainage pattern that is similar to the premining surface drainage pattern, relatively stable, and in dynamic near-equilibrium; and

(ii) Postmining stream-channel configurations that are relatively stable and similar to the premining configuration of ephemeral stream channels.

(2) The regulatory authority may approve or require a postmining surface drainage pattern or stream-channel configuration that differs from the pattern or configuration otherwise required under paragraph (b)(1) of this section when the regulatory authority finds that a different pattern or configuration is necessary or appropriate to—

(i) Ensure stability;

(ii) Prevent or minimize downcutting or widening of reconstructed stream channels and control meander migration;

(iii) Promote enhancement of fish and wildlife habitat;

(iv) Accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation; or

(v) Accommodate the construction of excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures;

(vi) Replace a stream that was channelized or otherwise severely altered prior to submittal of the permit application with a more natural, relatively stable, and ecologically sound drainage pattern or stream-channel configuration; or

(vii) Reclaim a previously mined area.

(c) *Streamside vegetative corridors.* (1) If you propose to mine through an ephemeral stream, your application must include a plan to establish a vegetative corridor at least 100 feet wide along each bank of the reconstructed stream channel, consistent with natural vegetation patterns.

(2) The plan submitted under paragraph (c)(1) of this section must be consistent with the requirements of § 817.56(c) of this chapter for vegetative corridors along ephemeral streams.

(3) Paragraphs (c)(1) and (2) of this section do not apply to prime farmland historically used for cropland.

§ 784.28 What additional permitting requirements apply to proposed surface activities in, through, or adjacent to perennial or intermittent streams?

(a) *Clean Water Act requirements.* If the proposed permit area includes waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* the regulatory authority must condition the permit to prohibit initiation of mining-related activities in or affecting those waters before you obtain all necessary authorizations, certifications, and permits under the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(b) *To what activities does this section apply*? You, the permit applicant, must provide the information and demonstrations required by paragraphs (c) through (g) of this section, as applicable, whenever you propose to conduct mining activities—

(1) In or through a perennial or intermittent stream; or

(2) On the surface of lands within 100 feet of a perennial or intermittent stream. You must measure this distance horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(c) *Postmining surface drainage pattern and stream-channel configuration.* (1) If you propose to mine through a perennial or intermittent stream, your application must include a plan to construct—

(i) A postmining surface drainage pattern that is similar to the premining surface drainage pattern, relatively stable, and in dynamic near-equilibrium; and

(ii) Postmining stream-channel configurations that are relatively stable and similar to the premining configuration of perennial and intermittent stream channels.

(2) The regulatory authority may approve or require a postmining surface drainage pattern or stream-channel configuration that differs from the pattern or configuration otherwise required under paragraph (c)(1) of this section when the regulatory authority finds that a different pattern or configuration is necessary or appropriate to—

(i) Ensure stability;

(ii) Prevent or minimize downcutting or widening of reconstructed stream channels and control meander migration;

(iii) Promote enhancement of fish and wildlife habitat;

(iv) Accommodate any anticipated temporary or permanent increase in surface runoff as a result of mining and reclamation;

(v) Accommodate the construction of excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures;

(vi) Replace a stream that was channelized or otherwise severely altered prior to submittal of the permit application with a more natural, relatively stable, and ecologically sound drainage pattern or stream-channel configuration; or

(vii) Reclaim a previously mined area.

(d) *Streamside vegetative corridors.* (1) If you propose to conduct any mining activities identified in paragraph (b) of this section, your application must include a plan to establish a vegetated streamside corridor at least 100 feet wide on each side of the stream as part

of the reclamation process following the completion of mining activities on the surface of land within that area.

(2) The plan submitted under paragraph (d)(1) of this section must be consistent with natural vegetation patterns.

(3) The plan submitted under paragraph (d)(1) of this section must be consistent with the streamside vegetative corridor requirements of § 817.57(d) of this chapter.

(4) The corridor width must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(5) Paragraphs (d)(1) through (2) of this section do not apply to prime farmland historically used for cropland.

(e) *What demonstrations must I include in my application if I propose to conduct activities in or within 100 feet of a perennial or intermittent stream?* (1) Except as provided in paragraphs (e)(5), (e)(6), and (i) of this section and § 817.57(i) of this chapter, your application must contain the applicable demonstrations set forth in the table if you propose to conduct mining activities in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream, as specified in paragraph (b) of this section.

Demonstration	Activity		
	Any activity other than mining through or permanently diverting a stream or construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream	Mining through or permanently diverting a stream	Construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream
(i) The proposed activity would not cause or contribute to a violation of applicable state or tribal water quality standards, including, but not limited to, standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).	Yes	Yes	Yes.
(ii) The proposed activity would not cause material damage to the hydrologic balance outside the permit area or upset the dynamic near-equilibrium of streams outside the permit area.	Yes	Yes	Yes.
(iii) The proposed activity would not result in conversion of the affected stream segment from perennial to ephemeral.	Yes	Yes	Not applicable.
(iv) The proposed activity would not result in conversion of the affected stream segment from intermittent to ephemeral or from perennial to intermittent.	Yes	Yes, except as provided in paragraphs (e)(2) and (5) of this section.	Not applicable.
(v) There is no practicable alternative that would avoid mining through or diverting a perennial or intermittent stream.	Not applicable	Yes, except as provided in paragraph (e)(3) of this section.	Yes.
(vi) After evaluating all potential upland locations in the vicinity of the proposed operation, including abandoned mine lands and unreclaimed bond forfeiture sites, there is no practicable alternative that would avoid placement of excess spoil or coal mine waste in a perennial or intermittent stream.	Not applicable	Not applicable	Yes.
(vii) The proposed operation has been designed to minimize the extent to which perennial or intermittent streams will be mined through, diverted, or covered by an excess spoil fill, a coal mine waste refuse pile, or a coal mine waste impounding structure.	Not applicable	Yes, except as provided in paragraphs (e)(3) and (5) of this section.	Yes.
(viii) The stream restoration techniques in the proposed reclamation plan are adequate to ensure restoration or improvement of the form, hydrologic function (including flow regime), dynamic near-equilibrium, streamside vegetation, and ecological function of the stream after you have mined through it, as required by § 817.57 of this chapter.	Not applicable	Yes, except as provided in paragraph (e)(5) of this section.	Not applicable.
(ix) The proposed operation has been designed to minimize the amount of excess spoil or coal mine waste that the proposed operation will generate.	§ 784.35(b) of this part requires minimization of excess spoil.	§ 784.35(b) of this part requires minimization of excess spoil.	Yes.
(x) To the extent possible using the best technology currently available, the proposed operation has been designed to minimize adverse impacts on fish, wildlife, and related environmental values.	Yes	Yes	Yes.
(xi) The fish and wildlife enhancement plan prepared under § 784.16 of this part includes measures that would fully and permanently offset any long-term adverse impacts on fish, wildlife, and related environmental values within the footprint of each excess spoil fill, coal mine waste refuse pile, and coal mine waste impounding structure.	Not applicable	Not applicable	Yes.

Demonstration	Activity		
	Any activity other than mining through or permanently diverting a stream or construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream	Mining through or permanently diverting a stream	Construction of an excess spoil fill, coal mine waste refuse pile, or impounding structure that encroaches upon any part of a stream
(xii) Each excess spoil fill, coal mine waste refuse pile, and coal mine waste impounding structure has been designed in a manner that will not result in the formation of toxic mine drainage.	Not applicable	Not applicable	Yes.
(xiii) The revegetation plan prepared under § 784.12(g) of this part requires reforestation of each completed excess spoil fill if the land is forested at the time of application or if the land would revert to forest under conditions of natural succession.	Not applicable	Not applicable	Yes.

(2)(i) As part of a proposal to mine through an intermittent stream, you may propose to convert a minimal portion of the mined-through segment of an intermittent stream to an ephemeral stream. The regulatory authority may approve the proposed conversion only if you demonstrate, and the regulatory authority finds, that the conversion would not degrade the hydrologic function, dynamic near-equilibrium, or the ecological function of the stream as a whole within the mined area, as determined by comparison with the stream assessment conducted under § 784.19(c)(6) of this part.

(ii) Paragraph (e)(2)(i) of this section does not apply to the circumstances described in paragraph (e)(5) of this section.

(3)(i) Paragraphs (e)(1)(v) and (vii) of this section do not apply to a proposal to mine through a segment of an intermittent stream when that segment meets the criteria of paragraph (e)(3)(ii) of this section, provided you demonstrate, and the regulatory authority finds, that implementation of the proposed mining and reclamation plan—

(A) Will improve the form of the stream segment;

(B) Will improve the hydrologic function of the stream;

(C) Is likely to result in improvement of the biological condition or ecological function of the stream;

(D) Will not further degrade the hydrologic function, dynamic near-equilibrium, biological condition, or ecological function of the stream; and

(E) Will result in establishment of a streamside vegetative corridor for the stream segment in accordance with § 817.57(d) of this chapter.

(ii) To qualify for purposes of paragraph (e)(3)(i) of this section, a stream segment must display both of the following characteristics:

(A) Prior anthropogenic activity has resulted in substantial degradation of the profile or dimensions of the stream channel; and

(B) Degradation of the stream channel has resulted in a substantial adverse impact on the ecological function of the stream.

(4) Paragraph (e)(1) of this section does not apply to a stream segment that will be part of a permanent impoundment approved and constructed under § 817.49(b) of this chapter.

(5) Paragraphs (e)(1)(iv) and (vii) of this section and the requirement for restoration of the hydrologic and ecological functions and the dynamic near-equilibrium of a stream in paragraph (e)(1)(viii) of this section do not apply to an intermittent stream segment if—

(i) The intermittent segment is a minor interval in what is otherwise a predominantly ephemeral stream;

(ii) You demonstrate, and the regulatory authority finds, that the intermittent segment has no significant fish, wildlife, or related environmental values, as documented by the baseline data collected under § 784.19(c)(6) of this part; and

(iii) You demonstrate, and the regulatory authority finds, that conversion of the intermittent stream segment will not adversely affect water uses.

(f) *What design requirements apply to the diversion, restoration, and reconstruction of perennial and intermittent stream channels?* (1)(i) You must design permanent stream-channel diversions, temporary stream-channel diversions that will remain in use for 3 or more years, and stream channels to be reconstructed after the completion of mining to restore, approximate, or improve the premining characteristics of the original stream channel, to promote the recovery and enhancement of aquatic habitat and the ecological and hydrologic functions of the stream, and to minimize adverse alteration of stream channels on and off the site, including channel deepening or enlargement.

(ii) Pertinent stream-channel characteristics include, but are not limited to, the baseline stream pattern, profile, dimensions, substrate, habitat, and natural vegetation growing in the riparian zone and along the banks of the stream.

(iii) For temporary stream-channel diversions that will remain in use for 3 or more years, the vegetation proposed for planting along the banks of the diversion need not include species that would not reach maturity until after the diversion is removed.

(2) You must design the hydraulic capacity of all temporary and permanent stream-channel diversions to be at least equal to the hydraulic capacity of the unmodified stream channel immediately upstream of the diversion, but no greater than the hydraulic capacity of the unmodified stream channel immediately downstream from the diversion.

(3) You must design all temporary and permanent stream-channel diversions in a manner that ensures that the combination of channel, bank, and flood-plain configuration is adequate to pass safely the peak runoff of a 10-year, 6-hour precipitation event for a temporary diversion and a 100-year, 6-hour precipitation event for a permanent diversion.

(4) You must submit a certification from a qualified registered professional engineer that the designs for all stream-

channel diversions and all stream channels to be reconstructed after the completion of mining meet the design requirements of this section and any additional design criteria established by the regulatory authority. This certification may be limited to the location, dimensions, and physical characteristics of the stream channel.

(g) *What requirements apply to establishment of standards for restoration of the ecological function of a stream?* (1) If you propose to mine through a perennial or intermittent stream, the regulatory authority must establish standards for determining when the ecological function of the reconstructed stream has been restored. Your application must incorporate those standards and explain how you will meet them.

(2) In establishing standards under paragraph (g)(1) of this section, the regulatory authority must coordinate with the appropriate agencies responsible for administering the Clean Water Act, 33 U.S.C. 1251 *et seq.,* to ensure compliance with all Clean Water Act requirements.

(3)(i) The biological component of the standards established under paragraph (g)(1) of this section must employ the best technology currently available, as specified in paragraphs (g)(3)(ii) through (iv) of this section.

(ii) For perennial streams, the best technology currently available includes an assessment of the biological condition of the stream, as determined by an index of biological condition or other scientifically-defensible bioassessment protocols consistent with § 784.19(c)(6)(vii) of this part. Standards established under paragraph (g)(1) of this section for perennial streams—

(A) Need not require that a reconstructed stream or stream-channel diversion have precisely the same biological condition or biota as the stream segment did before mining.

(B) Must prohibit substantial replacement of pollution-sensitive species with pollution-tolerant species.

(C) Must require that populations of organisms used to determine the biological condition of the reconstructed stream or stream-channel diversion be self-sustaining within that stream segment.

(iii) Paragraph (g)(3)(ii) of this section also applies to intermittent streams whenever a scientifically defensible biological index and bioassessment protocol have been established for assessment of intermittent streams in the state or region in which the stream is located.

(iv)(A) Except as provided in paragraph (g)(3)(iii) of this section, the best technology currently available for intermittent streams consists of the establishment of standards that rely upon restoration of the form, hydrologic function, and water quality of the stream and reestablishment of streamside vegetation as a surrogate for the biological condition of the stream.

(B) The regulatory authority must reevaluate the best technology currently available for intermittent streams under paragraph (g)(3)(iv)(A) of this section at 5-year intervals. Upon conclusion of that evaluation, the regulatory authority must make any appropriate adjustments before processing permit applications submitted after the conclusion of that evaluation.

(4) Standards established under paragraph (g)(1) of this section must ensure that the reconstructed stream or stream-channel diversion will not—

(i) Preclude attainment of the designated uses of that stream segment under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), before mining, or, if there are no designated uses, the premining uses of that stream segment; or

(ii) Result in that stream segment not meeting the applicable anti-degradation requirements under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), as adopted by a state or authorized tribe or as promulgated in a federal rulemaking under the Clean Water Act.

(h) *What finding must the regulatory authority make before approving a permit application under this section?* The regulatory authority may not approve an application that includes a proposal to conduct mining activities in a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream unless it first makes a specific written finding that you have fully satisfied all applicable requirements of paragraphs (c) through (f) of this section. The finding must be accompanied by a detailed explanation of the rationale for the finding.

(i) *Programmatic alternative.* Paragraphs (c) through (h) of this section will not apply to a state program approved under subchapter T of this chapter if that program is amended to expressly prohibit all mining activities, including the construction of stream-channel diversions, that would result in more than a de minimis disturbance of perennial or intermittent streams or the surface of land within 100 feet of a perennial or intermittent stream.

§ 784.29 What information must I include in the surface-water runoff control plan?

Your application must contain a surface-water runoff control plan that includes the following—

(a)(1) An explanation of how you will handle surface-water runoff in a manner that will prevent peak discharges from the proposed permit area, both during and after mining and reclamation, from exceeding the premining peak discharge from the same area for the same-size precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution or another scientifically defensible method approved by the regulatory authority that takes into account the time of concentration to estimate peak discharges.

(2) The explanation in paragraph (a)(1) of this section must consider the findings in the determination of the probable hydrologic consequences of mining prepared under § 784.20 of this part.

(b) A surface-water runoff monitoring and inspection program that will provide sufficient precipitation and stormwater discharge data for the proposed permit area to evaluate the effectiveness of the surface-water runoff control practices under paragraph (a) of this section. The surface-water runoff monitoring and inspection program must specify criteria for monitoring, inspection, and reporting consistent with § 817.34(d) of this chapter. The program must contain a monitoring-point density that adequately represents the drainage pattern across the entire proposed permit area, with a minimum of one monitoring point per watershed discharge point.

(c) Descriptions maps, and cross-sections of runoff-control structures. A runoff-control structure is any man-made structure designed to control or convey storm water runoff on or across a minesite. This term encompasses the entire surface water control system and includes diversion ditches, drainage benches or terraces, drop structures or check dams, all types of conveyance channels, downdrains, and sedimentation and detention ponds and associated outlets. It does not include swales or reconstructed perennial, intermittent, or ephemeral stream channels.

(d) An explanation of how diversions will be constructed in compliance with § 817.43 of this chapter.

§ 784.30 When must I prepare a subsidence control plan and what information must that plan include?

(a) *Pre-subsidence survey.* Each application must include—

(1) A map of the proposed permit and adjacent areas at a scale no smaller than 1:12,000. The regulatory authority may require a larger-scale or more detailed map. The map must show the location and type of—

(i) Structures, renewable resource lands, wetlands, streams, and water bodies that subsidence may materially damage or for which the value or reasonably foreseeable use may be diminished by subsidence; and

(ii) Drinking, domestic, and residential water supplies that could be contaminated, diminished, or interrupted by subsidence.

(2) A narrative indicating whether subsidence, if it occurred, could cause material damage to or diminish the value or reasonably foreseeable use of such structures, renewable resource lands, wetlands, streams, or water bodies or could contaminate, diminish, or interrupt drinking, domestic, or residential water supplies.

(3)(i) A survey of the quantity and quality of all drinking, domestic, and residential water supplies within the permit area and adjacent area that could be contaminated, diminished, or interrupted by subsidence.

(ii) You, the applicant, must pay for any technical assessment or engineering evaluation used to determine the premining quantity and quality of drinking, domestic, or residential water supplies. You may use publicly available assessments conducted for research purposes by a university or government agency, provided those assessments are updated to reflect any changes that have occurred since completion of the study.

(iii) You must provide copies of the survey and any technical assessment or engineering evaluation to the property owner and to the regulatory authority.

(b) *Conditions under which no subsidence control plan is needed.* You do not need to submit a subsidence control plan if the survey conducted and information provided under paragraph (a) of this section show that—

(1) No structures, drinking, domestic, or residential water supplies, renewable resource lands, wetlands, streams, or water bodies exist within the proposed permit and adjacent areas; or

(2) There would be no material damage or diminution in value or reasonably foreseeable use of structures, lands, or features protected under § 817.121(c) through (e) of this chapter, and no contamination, diminution, or interruption of water supplies protected under § 817.40 of this chapter would occur as a result of mine subsidence, provided that the regulatory authority agrees with this conclusion.

(c) *Subsidence control plan.* (1) Your application must include a subsidence control plan unless the conditions specified in paragraph (b) of this section exist.

(2) The subsidence control plan must contain the following information:

(i) A description of the method of coal removal, such as longwall mining, room-and-pillar removal or hydraulic mining, including the size, sequence and timing of the development of underground workings.

(ii) A map of the underground workings that describes the location and extent of the areas in which planned-subsidence mining methods will be used and that identifies all areas where the measures described in paragraphs (c)(2)(iv), (v), and (vii) of this section will be taken to prevent or minimize subsidence and subsidence-related damage; and, when applicable, to correct subsidence-related material damage.

(iii) A description of the physical conditions, such as depth of cover, seam thickness and lithology of overlying strata, that affect the likelihood or extent of subsidence and subsidence-related damage.

(iv) A description of the monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce or correct material damage in accordance with § 817.121(c) of this chapter.

(v) Except for those areas where planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage to the extent technologically and economically feasible. Those measures may include, but are not limited to:

(A) Backstowing of voids;

(B) Leaving support pillars of coal;

(C) Leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving coal in place; and

(D) Taking measures on the surface to prevent or minimize material damage or diminution in value of the surface.

(vi) A description of the anticipated effects of planned subsidence, if any, including impacts to wetlands, streams, and water bodies that support the value and reasonably foreseeable uses of surface lands.

(vii) For those areas where planned subsidence is projected to be used, a description of methods to be employed to minimize damage from planned subsidence to non-commercial buildings and occupied residential dwellings and structures related thereto; or the written consent of the owner of the structure or facility that minimization measures not be taken; or, unless the anticipated damage would constitute a threat to health or safety, a demonstration that the costs of minimizing damage exceed the anticipated costs of repair.

(viii) A description of the measures to be taken in accordance with §§ 817.40 and 817.121(c) of this chapter to replace adversely affected protected water supplies or to mitigate or remedy any subsidence-related material damage to land, wetlands, streams, water bodies, and protected structures.

(ix) Other information specified by the regulatory authority as necessary to demonstrate that the operation will be conducted in accordance with § 817.121 of this chapter.

§ 784.31 What information must I provide concerning the protection of publicly owned parks and historic places?

(a) For any publicly owned parks or any places listed on the National Register of Historic Places that may be adversely affected by the proposed operation, you must describe the measures to be used—

(1) To prevent adverse impacts, or

(2) If a person has valid existing rights, as determined under § 761.16 of this chapter, or if joint agency approval is to be obtained under § 761.17(d) of this chapter, to minimize adverse impacts.

(b) The regulatory authority may require the applicant to protect historic or archeological properties listed on or eligible for listing on the National Register of Historic Places through appropriate mitigation and treatment measures. Appropriate mitigation and treatment measures may be required to be taken after permit issuance, provided that the required measures are completed before the properties are affected by any mining operation.

§ 784.33 What information must I provide concerning the relocation or use of public roads?

Your application must describe, with appropriate maps and cross-sections, the measures to be used to ensure that the interests of the public and landowners affected are protected if, under § 761.14 of this chapter, you seek to have the regulatory authority approve—

(a) Conducting the proposed surface mining activities within 100 feet of the right-of-way line of any public road, except where mine access or haul roads join that right-of-way; or

(b) Relocating a public road.

§ 784.35 What information must I provide concerning the minimization and disposal of excess spoil?

(a) *Applicability.* This section applies to you, the permit applicant, if you propose to generate excess spoil as part of your operation.

(b) *Demonstration of minimization of excess spoil.* (1) You must submit a demonstration, with supporting calculations and other documentation, that the operation has been designed to minimize, to the extent possible, the volume of excess spoil that the operation will generate.

(2) The demonstration under paragraph (b)(1) of this section must explain, in quantitative terms, how the maximum amount of overburden will be returned to the mined-out area after considering—

(i) Applicable regulations concerning backfilling, compaction, grading, and restoration of the approximate original contour.

(ii) Safety and stability needs and requirements.

(iii) The need for access and haul roads with their attendant drainage structures and safety berms during mining and reclamation. You may construct roads and their attendant drainage structures and safety berms on the perimeter of the backfilled area as necessary to conduct surface coal mining and reclamation operations, but, when the roads are no longer needed to support heavy equipment traffic, you must reduce the total width of roads and their attendant drainage structures and berms to be retained as part of the postmining land use to no more than 20 feet unless you demonstrate an essential need for a greater width for the postmining land use.

(iv) Needs and requirements associated with revegetation and the proposed postmining land use.

(v) Any other relevant regulatory requirements, including those pertaining to water quality and protection of fish, wildlife, and related environmental values.

(3) When necessary to avoid or minimize construction of excess spoil fills on undisturbed land, paragraph (b)(2)(i) of this section does not prohibit the placement of what would otherwise be excess spoil on the mined-out area to heights in excess of the premining elevation, provided that the final surface configuration is compatible with the surrounding terrain and generally resembles landforms found in the surrounding area.

(4) You may not create a permanent impoundment under § 817.49(b) of this chapter or place coal combustion residues or noncoal materials in the surface excavation if doing so would result in the creation of excess spoil.

(c) *Preferential use of preexisting benches for excess spoil disposal.* To the extent that your proposed operation will generate excess spoil, you must maximize the placement of excess spoil on preexisting benches in the vicinity of the proposed permit area in accordance with § 817.74 of this chapter rather than constructing excess spoil fills on previously undisturbed land.

(d) *Fill capacity demonstration.* You must submit a demonstration, with supporting calculations and other documentation, that the designed maximum cumulative volume of all proposed excess spoil fills within the permit area is no larger than the capacity needed to accommodate the anticipated cumulative volume of excess spoil that the operation will generate, as calculated under paragraph (b) of this section.

(e) *Requirements related to perennial and intermittent streams.* You must comply with the requirements of § 784.28 of this part concerning activities in or near perennial or intermittent streams if you propose to construct an excess spoil fill in or within 100 feet of a perennial or intermittent stream. The 100-foot distance must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(f) *Location and profile.* (1) You must submit maps and cross-section drawings or models showing the location and profile of all proposed excess spoil fills.

(2) You must locate fills on the most moderately sloping and naturally stable areas available. The regulatory authority will determine which areas area available, based upon the alternatives analysis under § 784.28 of this part and other requirements of the Act and this chapter.

(3) Whenever possible and consistent with the alternatives analysis and alternative selection requirements of § 784.28 of this part, you must place fills on or above a natural terrace, bench, or berm if that location would provide additional stability and prevent mass movement.

(g) *Design plans.* You must submit detailed design plans, including appropriate maps and cross-section drawings, for each proposed fill, prepared in accordance with the requirements of this section and §§ 817.71 through 817.74 of this chapter. You must design the fill and appurtenant structures using current prudent engineering practices and any additional design criteria established by the regulatory authority.

(h) *Geotechnical investigation.* You must submit the results of a geotechnical investigation, with supporting calculations and analyses, of the site of each proposed fill, with the exception of those sites at which excess spoil will be placed only on a preexisting bench under § 817.74 of this chapter. The information submitted must include—

(1) Sufficient foundation investigations, as well as any necessary laboratory testing of foundation material, to determine the design requirements for foundation stability for each site.

(2) A description of the character of the bedrock and any adverse geologic conditions in the area of the proposed fill.

(3) The geographic coordinates and a narrative description of all springs, seepage, mine discharges, and groundwater flow observed or anticipated during wet periods in the area of the proposed fill.

(4) An analysis of the potential effects of any underground mine workings within the proposed permit and adjacent areas, including the effects of any subsidence that may occur as a result of previous, existing, and future underground mining operations.

(5) A technical description of the rock materials to be used in the construction of fills underlain by a rock drainage blanket.

(6) Stability analyses that address static and seismic conditions. The analyses must include, but are not limited to, strength parameters, pore pressures, and long-term seepage conditions. The analyses must be accompanied by a description of all engineering design assumptions and calculations and the alternatives considered in selecting the design specifications and methods.

(i) *Operation and reclamation plans.* You must submit plans for the construction, operation, maintenance, and reclamation of all excess spoil fills in accordance with the requirements of §§ 817.71 through 817.74 of this chapter.

(j) *Additional requirements for bench cuts or rock-toe buttresses.* If bench cuts or rock-toe buttresses are required under § 817.71(b)(2) of this chapter, you must provide the—

(1) Number, location, and depth of borings or test pits, which must be determined according to the size of the fill and subsurface conditions.

(2) Engineering specifications used to design the bench cuts or rock-toe buttresses. Those specifications must be based upon the stability analyses

required under paragraph (h)(6) of this section.

(k) *Design certification.* A qualified registered professional engineer experienced in the design of earth and rock fills must certify that the design of each proposed fill and appurtenant structures meets the requirements of this section.

§ 784.37 What information must I provide concerning access and haul roads?

(a) *Design and other application requirements.* (1) You, the applicant, must submit a map showing the location of all roads that you intend to construct or use within the proposed permit area, together with plans and drawings for each road to be constructed, used, or maintained within the proposed permit area.

(2) You must include appropriate cross-sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, drainage structures, and fords and low-water crossings of perennial and intermittent streams.

(3) You must demonstrate how all proposed roads will comply with the applicable requirements of §§ 784.28, 817.150, and 817.151 of this chapter.

(4) You must identify—

(i) Each road that you propose to locate in or within 100 feet, measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark of a perennial or intermittent stream.

(ii) Each proposed ford of a perennial or intermittent stream that you plan to use as a temporary route during road construction.

(iii) Any plans to alter or relocate a natural stream channel.

(iv) Each proposed low-water crossing of a perennial or intermittent stream channel.

(5) You must explain why the roads, fords, and stream crossings identified in paragraph (a)(4) of this section are necessary and how they comply with the applicable requirements of § 784.28 of this part and §§ 817.150 and 817.151 of this chapter.

(6) You must describe the plans to remove and reclaim each road that would not be retained as part of the postmining land use, and provide a schedule for removal and reclamation.

(b) *Primary road certification.* The plans and drawings for each primary road must be prepared by, or under the direction of, and certified by a qualified registered professional engineer, or in any state that authorizes land surveyors to certify the design of primary roads, a qualified registered professional land surveyor, with experience in the design and construction of roads, as meeting the requirements of this chapter; current, prudent engineering practices; and any design criteria established by the regulatory authority.

(c) *Standard design plans.* The regulatory authority may establish engineering design standards for primary roads through the regulatory program approval process, in lieu of engineering tests, to establish compliance with the minimum static safety factor of 1.3 for all embankments specified in § 817.151(c) of this chapter.

§ 784.38 What information must I provide concerning support facilities?

You must submit a description, plans, and drawings for each support facility to be constructed, used, or maintained within the proposed permit area. The plans and drawings must include a map, appropriate cross-sections, design drawings, and specifications sufficient to demonstrate compliance with § 817.181 of this chapter for each facility.

§ 784.40 May I submit permit application information in increments as mining progresses?

(a) You may request that the regulatory authority approve a schedule for incremental submission of the information required by this part, based on the anticipated progress and impact of underground mining activities.

(b) Section 783.26(b) of this chapter applies to a request submitted under paragraph (a) of this section.

(c) The monitoring plans submitted under § 784.23 of this part may be structured and implemented in a manner consistent with the schedule approved under paragraph (b) of this section.

§ 784.200 [Reserved]

PART 785—REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

■ 27. The authority citation for part 785 continues to read as follows:

Authority: 30 U.S.C. 1201 *et seq.*

■ 28. Revise § 785.10 to read as follows:

§ 785.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of part 785 and assigned it control number 1029–0040. Collection of this information is required by sections510, 515, 701 and 711 of SMCRA, which requires applicants for special types of mining activities to provide pertinent descriptions, maps, plans, and data. The regulatory authority will use this information to determine whether you, the applicant, can meet the applicable performance standards for the special type of mining activity. You must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

■ 29. Revise § 785.14 to read as follows:

§ 785.14 What special provisions apply to mountaintop removal mining operations?

(a) *Applicability.* This section applies to you if you conduct or intend to conduct mountaintop removal mining, as that term is defined in § 701.5 of this chapter.

(b) *Application and approval requirements.* The regulatory authority may approve an application for a permit to conduct mountaintop removal mining operations, without regard to the approximate original contour restoration requirements of §§ 816.102 and 816.105 of this chapter, if it first finds, in writing, on the basis of a complete application, that you have met the following requirements:

(1) The proposed postmining land use of the lands to be disturbed is an industrial, commercial, agricultural, residential, or public facility (including recreational facilities) use.

(2) After consultation with the appropriate land-use planning agencies, if any, the regulatory authority deems that the proposed postmining land use constitutes an equal or better economic or public use of the land compared with the premining use.

(3) You have demonstrated compliance with the requirements for alternative postmining land uses in § 780.24(b) of this chapter.

(4) You have presented specific plans for the proposed postmining land use and appropriate assurances that the use will be—

(i) Compatible with adjacent land uses.

(ii) Obtainable according to data regarding expected need and market.

(iii) Assured of investment in necessary public facilities.

(iv) Supported by commitments from public agencies where appropriate.

(v) Practicable with respect to private financial capability for completion of the proposed use.

(vi) Planned pursuant to a schedule attached to the reclamation plan so as to integrate the mining operation and reclamation with the postmining land use.

(5) The proposed operation has been designed by a registered engineer in conformance with professional standards established to assure the stability, drainage, and configuration necessary for the intended use of the site.

(6) The proposed use is consistent with adjacent land uses and with existing state and local land use plans and programs.

(7) The regulatory authority has provided, in writing, an opportunity of not more than 60 days to review and comment on the proposed use to—

(i) The governing body of the unit of general-purpose government in whose jurisdiction the land is located; and

(ii) Any state or federal agency that the regulatory authority, in its discretion, determines to have an interest in the proposed use.

(8) You have demonstrated that the proposed operation has been designed to comply with the requirements of part 824 of this chapter.

(9) You have demonstrated that the operation will not damage natural watercourses within the proposed permit and adjacent areas. You may meet this requirement by demonstrating that the proposed operation will comply with all of the following requirements:

(i) The proposed operation will not increase the amount or concentration of parameters of concern in discharges to groundwater and surface water from the proposed permit area, when compared to the discharges that would occur if the operation were designed to adhere to approximate original contour restoration requirements.

(ii) The proposed operation will not result in any greater adverse impact to the aquatic and terrestrial ecology of the proposed permit and adjacent area than would occur if the area to be mined was restored to its approximate original contour.

(iii) The proposed operation will not result in changes in the size or frequency of peak flows from the proposed permit area that would cause an increase in flooding, when compared to the impacts that would occur if the operation were designed to adhere to approximate original contour restoration requirements.

(iv) The total volume of flow from the proposed permit area, during every season of the year, will not vary in a way that would adversely affect any—

(A) Designated use of a surface water located outside the proposed permit area under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, any premining use of a surface water located outside the proposed permit area.

(B) Premining use of groundwater located outside the proposed permit area.

(v) Any other demonstrations that the regulatory authority finds necessary to determine that no damage will occur to natural watercourses within the proposed permit and adjacent areas.

(10) The revegetation plan proposed under § 780.12(g) of this chapter requires that those portions of the proposed permit area that are forested at the time of application or that would revert to forest under conditions of natural succession be revegetated using native tree and understory species to the extent that this requirement is not inconsistent with attainment of the proposed postmining land use.

(11) The proposed operation complies with all other requirements of the regulatory program.

(c) *Additional requirements for permit issuance.* (1) The permit must specifically identify the acreage and location of the lands on which mountaintop removal mining operations will occur within the permit area.

(2) The permit must include a condition prohibiting the release of any part of the bond posted for the permit under part 800 of this chapter until substantial implementation of the approved postmining land use is underway. The condition must provide that the prohibition does not apply to any portion of the bond that is in excess of an amount equal to the cost of regrading the site to its approximate original contour and revegetating the regraded land in the event that the approved postmining land use is not implemented.

(3) The regulatory authority must clearly mark the permit issued under this part as including mountaintop removal mining operations.

(d) *Subsequent permit reviews.* (1) The regulatory authority must review each permit issued under this section in accordance with § 774.10(a)(2) of this chapter.

(2) The regulatory authority may modify the terms and conditions of a permit for mountaintop removal mining at any time if it determines that more stringent measures are necessary to insure that the operation is conducted in compliance with the requirements of the regulatory program.

■ 30. Revise § 785.16 to read as follows:

§ 785.16 What special provisions apply to proposed variances from approximate original contour restoration requirements for steep-slope mining?

(a) *Application and approval requirements.* The regulatory authority may issue a permit for non-mountaintop removal steep-slope surface coal mining operations that includes a variance from the approximate original contour restoration requirements in §§ 816.102 and 816.105 of this chapter, as referenced in § 816.107 of this chapter, or § 817.102 of this chapter, as referenced in § 817.107 of this chapter, for all or a portion of the permit area. The permit may contain this variance only if the regulatory authority finds, in writing, that you, the applicant, have demonstrated compliance with the following requirements on the basis of a complete application:

(1) After reclamation, the lands within the proposed permit area to which the variance would apply will be suitable for an industrial, commercial, residential, or public (including recreational facilities) postmining land use.

(2) The alternative postmining land use requirements of § 780.24(b) or § 784.24(b) of this chapter have been met.

(3) After consultation with the appropriate land use planning agencies, if any, the proposed use is shown to constitute an equal or better economic or public use.

(4) Federal, state, and local government agencies with an interest in the proposed land use have an adequate period in which to review and comment on the proposed use.

(5) A qualified registered professional engineer has certified that the operation has been designed in conformance with professional standards established to assure the stability, drainage, and configuration necessary for the intended use of the site.

(6) The highwall will be completely backfilled with spoil material in a manner that results in a static factor of safety of at least 1.3, using standard geotechnical analysis methods.

(7) Only the amount of spoil that is necessary to achieve the postmining land use, ensure the stability of spoil retained on the bench, and meet all other requirements of this chapter will be placed off the mine bench. All spoil not retained on the bench will be placed in accordance with §§ 816.71 and 816.74 or §§ 817.71 and 817.74 of this chapter.

(8) The variance will not result in the construction of a fill in a perennial or intermittent stream.

(9) The proposed operation will improve the condition of the watershed of lands within the proposed permit and adjacent areas when compared either with the condition of the watershed before the proposed operation or with the condition that would exist if the site were mined and restored to the approximate original contour. The condition of the watershed will be deemed improved only if you demonstrate that the following criteria will be met, relative to one of the situations described in the preceding sentence:

(i) The amount or concentration of total suspended solids or other parameters of concern in discharges to groundwater or surface water from the proposed permit area will be reduced.

(ii) Flood hazards within the watershed containing the proposed permit area will be diminished by reduction of the size or frequency of peak-flow discharges from precipitation events or thaws.

(iii) The total volume of flow from the proposed permit area, during every season of the year, will not vary in a way that would adversely affect any—

(A) Designated use of a surface water located outside the proposed permit area under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or, if there are no designated uses, any premining use of a surface water located outside the proposed permit area;

(B) Premining use of groundwater located outside the proposed permit area.

(iv) The proposed operation will result in a lesser adverse impact on the aquatic ecology of the cumulative impact area than would occur if the area to be mined was restored to its approximate original contour.

(v) The impact on perennial and intermittent streams within the proposed permit and adjacent areas will be less than the impact that would occur if the area to be mined was restored to its approximate original contour. The fish and wildlife enhancement measures proposed and approved under § 780.16 or § 784.16 of this chapter may be considered in making this determination.

(vi) The appropriate state environmental agency has approved the plan.

(10)(i) The owner of the surface of the lands within the proposed permit area has knowingly requested, in writing, as part of the application, that a variance be granted.

(ii) The request to which paragraph (a)(10)(i) of this section refers must be made separately from any surface owner consent given for the operations under § 778.15 of this chapter and it must show an understanding that the variance could not be granted without the surface owner's request.

(iii) The permit application must include a copy of the request to which paragraph (a)(10)(i) of this section refers.

(11) The proposed deviations from the premining surface configuration are necessary and appropriate to achieve the approved postmining land use.

(12) The revegetation plan proposed under § 780.12(g) or § 784.12(g) of this chapter requires the use of native tree and understory species to revegetate all portions of the permit area that are forested at the time of application or that would revert to forest under conditions of natural succession. This requirement does not apply to—

(i) Permanent impoundments, roads, and other impervious surfaces to be retained following the completion of mining and reclamation.

(ii) Those portions of the permit area covered by the variance, but only to the extent that compliance with this requirement would be inconsistent with attainment of the postmining land use.

(b) *Additional requirements for permit issuance.* (1) The regulatory authority must specifically mark any permit issued under this section as containing an approved variance from approximate original contour restoration requirements.

(2) The permit must include a condition prohibiting the release of any part of the bond posted for the permit under part 800 of this chapter until substantial implementation of the approved postmining land use is underway. The condition must provide that the prohibition does not apply to any portion of the bond that is in excess of an amount equal to the cost of regrading the site to its approximate original contour and revegetating the regraded land in the event that the approved postmining land use is not implemented.

(c) *Subsequent permit reviews.* (1) The regulatory authority must review each permit incorporating a variance under this section in accordance with § 774.10(a)(2) of this chapter.

(2) The regulatory authority may modify the terms and conditions of a permit incorporating a variance under this section at any time if it determines that more stringent measures are necessary to ensure that the operations are conducted in compliance with the requirements of the regulatory program.

(d) *Miscellaneous provision.* The regulatory authority may grant variances in accordance with this section only if it has promulgated specific rules to govern the granting of variances in accordance with the provisions of this section and any necessary more stringent requirements.

■ 31. Revise § 785.25 to read as follows:

§ 785.25 What special provisions apply to proposed operations on lands eligible for remining?

(a) This section applies to you if you intend to apply for a permit to conduct surface coal mining operations on lands eligible for remining, as that term is defined in § 701.5 of this chapter.

(b)(1) Your application must comply with all applicable requirements of this subchapter.

(2) In addition, to be eligible under the provisions of § 773.13 of this chapter concerning unanticipated events or conditions at remining sites, the application must—

(i) To the extent possible, if not otherwise addressed in the permit application, identify potential environmental and safety problems that could reasonably be anticipated to occur as a result of prior mining activities within the proposed permit area. This identification must be based on a due diligence investigation that includes visual observations, a record review of past mining operations at or near the site, environmental sampling, and any other relevant available information, including data from prior mining activities and remining operations on similar sites.

(ii) With regard to potential environmental and safety problems referred to in paragraph (b)(1)(i) of this section, describe the measures that will be taken to ensure that the applicable reclamation requirements of the regulatory program can and will be met.

SUBCHAPTER J—PERFORMANCE BOND, FINANCIAL ASSURANCE, AND INSURANCE REQUIREMENTS FOR SURFACE COAL MINING AND RECLAMATION OPERATIONS

■ 32. Under the authority of 30 U.S.C. 1211(c)(2) and 1251(b), revise the heading for subchapter J to read as set forth above.

■ 33. Revise part 800 to read as follows:

PART 800—PERFORMANCE BOND, FINANCIAL ASSURANCE, AND INSURANCE REQUIREMENTS FOR SURFACE COAL MINING AND RECLAMATION OPERATIONS

Sec.

800.1 Scope and purpose.
800.4 Regulatory authority responsibilities.
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800.18 What special provisions apply to financial guarantees for treatment of long-term discharges?
800.20 What additional requirements apply to surety bonds?
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800.23 What additional requirements apply to self-bonds?
800.30 When may I replace a performance bond or financial assurance and when must I do so?
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800.44 Who may file an objection to a bond release application and how must the regulatory authority respond to an objection?
800.50 When and how will a performance bond be forfeited?
800.60 What liability insurance must I carry?
800.70 What special bonding provisions apply to anthracite operations in Pennsylvania?

Authority: 30 U.S.C. 1201 *et seq.*

§ 800.1 Scope and purpose.

This part sets forth the minimum requirements for filing and maintaining bonds, financial assurances, and liability insurance policies for surface coal mining and reclamation operations under regulatory programs in accordance with the Act.

§ 800.4 Regulatory authority responsibilities.

(a) The regulatory authority must prescribe and furnish forms for filing performance bonds and financial assurances.

(b) The regulatory authority must prescribe by regulation terms and conditions for performance bonds, financial assurances, and liability insurance policies.

(c) The regulatory authority must determine the amount of the bond for each area to be bonded, in accordance with § 800.14 of this part. The regulatory authority also must adjust the bond amount as acreage in the permit area is revised or when other relevant conditions change, in accordance with § 800.15 of this part. In addition, the regulatory authority must determine the amount of financial assurance required to ensure long-term treatment of discharges under § 800.18 of this part, monitor trust performance, and require adjustments of the financial assurance as necessary.

(d) The regulatory authority may accept a self-bond if the requirements of § 800.23 of this part and any additional requirements in the regulatory program are met. However, a state or tribal regulatory program need not authorize the use of self-bonds.

(e) The regulatory authority must release liability under a bond or financial assurance instrument in accordance with §§ 800.40 through 800.44 of this part.

(f) If the conditions specified in § 800.50 of this part occur, the regulatory authority must take appropriate action to cause all or part of a bond or financial assurance to be forfeited in accordance with procedures of that section.

(g) The regulatory authority must require in the permit that adequate bond and financial assurance coverage be in effect at all times. Except as provided in § 800.30(b) of this part, operating without adequate bond or financial assurance is a violation of these rules and the terms and conditions of the permit.

§ 800.5 Definitions.

Collateral bond means an indemnity agreement in a sum certain, executed by the permittee as principal, which is supported by the deposit with the regulatory authority of one or more of the following:

(1) A cash account, which must be the deposit of cash—

(i) In one or more federally-insured or equivalently protected accounts, payable only to the regulatory authority upon demand; or

(ii) Directly with the regulatory authority.

(2) Negotiable bonds of the United States, a state, or a municipality, endorsed to the order of, and placed in the possession of, the regulatory authority.

(3) Negotiable certificates of deposit, made payable or assigned to the regulatory authority and placed in its possession or held by a federally-insured bank.

(4) An irrevocable letter of credit of any bank organized or authorized to transact business in the United States, payable only to the regulatory authority upon presentation.

(5) A perfected, first-lien security interest in real property in favor of the regulatory authority.

(6) Other securities with a rating of ''A'' or higher from either Moody's Investors Service or Standard and Poor's or an equivalent rating issued by any other nationally recognized statistical rating organization registered with the Securities and Exchange Commission, endorsed to the order of, and placed in the possession of, the regulatory authority.

Financial assurance is a type of alternative bonding system that consists of a trust, an annuity, or a combination thereof.

Self-bond means an indemnity agreement in a sum certain executed by the applicant or by the applicant and any corporate guarantor and made payable to the regulatory authority, with or without separate surety.

Surety bond means an indemnity agreement in a sum certain payable to the regulatory authority, executed by the permittee as principal, which is supported by the performance guarantee of a corporation licensed to do business as a surety in the state where the operation is located.

§ 800.9 What requirements apply to alternative bonding systems?

(a) *Criteria for approval.* OSMRE may approve an alternative bonding system as part of a state or federal regulatory program if the system will achieve the following objectives and purposes of the bonding program:

(1) The alternative must assure that the regulatory authority will have available sufficient money to complete the reclamation plan for any areas which may be in default at any time, except as provided in paragraphs (c) and (d) of this section.

(2) The alternative must provide a substantial economic incentive for the permittee to comply with all reclamation provisions.

(b) *Relationship to other bonding regulations.* (1) The alternative bonding system will apply in lieu of the requirements of §§ 800.12 through 800.23 of this part, with the exception of those provisions of § 800.18 of this part that apply to financial assurances established to guarantee long-term treatment of discharges, to the extent specified in the regulatory program provisions establishing the alternative bonding system and the terms of approval under part 732 of this chapter.

(2) The alternative bonding system must include appropriate conforming modifications to the bond release

provisions of §§ 800.40 through 800.44 of this part and the bond forfeiture provisions of § 800.50 of this part.

(c) *Partial alternative bonding systems.* An alternative bonding system may be structured to include only certain phases of mining and reclamation under § 800.42 of this part, provided that the other phases of mining and reclamation are covered by one of the types of bond listed in § 800.12 of this part.

(d) *Discharges that require long-term treatment.* (1) Except as provided in paragraphs (d)(2) and (3) of this section, a discharge requiring long-term treatment is not eligible for coverage under an alternative bonding system, other than a financial assurance under § 800.18 of this part, unless the permittee contributes cash in an amount equal to the present value of all costs that the regulatory authority estimates that the alternative bonding system will incur to treat the discharge for as long as the discharge requires active or passive treatment, taking into account the expenses listed in § 800.18(c)(2)(i) through (v) of this part. If the alternative bonding system will receive interest or other earnings on the cash contribution, the regulatory authority may deduct the present value of those estimated earnings from the present value of all estimated expenses when calculating the amount of the required cash contribution.

(2)(i) The regulatory authority must amend an alternative bonding system, other than a financial assurance under § 800.18 of this part, that we approved as part of a regulatory program under subchapter T of this chapter before January 19, 2017 to specify that any permittee responsible for a discharge requiring long-term treatment must make the cash contribution required under paragraph (d)(1) of this section if the permittee elects to retain coverage of discharge treatment under the alternative bonding system.

(ii) An alternative bonding system, other than a financial assurance under § 800.18 of this part, that we approved as part of a regulatory program under subchapter T of this chapter before January 19, 2017 must continue to provide coverage for long-term treatment of discharges from operations included within the system until we approve the program amendment to which paragraph (d)(2)(i) of this section refers and the permittee makes the cash contribution required by the state program counterpart to paragraph (d)(1) of this section, unless the permittee posts a separate financial assurance, collateral bond, or surety bond to cover that liability.

(iii) An alternative bonding system, other than a financial assurance under § 800.18 of this part, that we approved as part of a regulatory program under subchapter T of this chapter before January 19, 2017 must continue to provide coverage for long-term treatment of discharges from operations included within the system if the permittee does not make the cash contribution required by the state program counterpart to paragraph (d)(1) of this section, unless the permittee posts a separate financial assurance, collateral bond, or surety bond to cover that liability.

(iv) Paragraphs (d)(2)(i) through (iii) of this section do not apply to an alternative bonding system that we approved as part of a regulatory program under subchapter T of this chapter if the system that we approved includes an exclusion for coverage of discharges that require long-term treatment.

(3) An alternative bonding system to which paragraphs (d)(1) and (2) of this section apply may elect to provide secondary coverage for long-term treatment of discharges when the permittee posts a financial assurance, collateral bond, or surety bond to cover anticipated treatment costs in lieu of making the cash contribution required by paragraph (d)(1) of this section to retain or obtain primary coverage under the alternative bonding system. The regulatory authority must establish terms and conditions for the secondary coverage.

§ 800.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0043. The regulatory authority uses information collected under this part to ensure that bond, insurance, and financial assurance instruments are valid and meet all requirements of section 509 of SMCRA, which requires that persons planning to conduct surface coal mining operations first post a performance bond to guarantee fulfillment of all reclamation obligations under the approved permit. The regulatory authority also uses information collected under this part to ensure compliance with the bond release requirements and procedures of section 519 of SMCRA, the liability insurance requirements of section 507(f) of SMCRA, and bond forfeiture requirements and procedures. Persons planning to conduct surface coal mining operations must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

§ 800.11 When and how must I file a performance bond?

(a) After approving a permit application submitted under subchapter G of this chapter, the regulatory authority may not issue the permit until you, the permit applicant, file one of the following:

(1) A performance bond or bonds for the entire permit area;

(2) A cumulative bond schedule and the performance bond required for full reclamation of the initial area to be disturbed; or

(3) An incremental bond schedule and the performance bond required for the first increment in the schedule.

(b) The bond or bonds that you file under paragraph (a) of this section must be—

(1) In an amount determined under § 800.14 of this part.

(2) On a form prescribed and furnished by the regulatory authority.

(3) Made payable to the regulatory authority.

(4) Conditioned upon the faithful performance of all the requirements of the regulatory program and the permit, including the reclamation plan.

(c) If the bond or bonds filed under paragraph (a) of this section cover only an identified increment of land within the permit area upon which you will initiate and conduct surface coal mining operations during the initial term of the permit, you must—

(1) Identify the initial and successive areas or increments for bonding on the permit application map submitted under part 780 or part 784 of this chapter and specify the bond amount to be provided for each area or increment.

(2) Ensure that independent increments are of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the regulatory authority become necessary pursuant to § 800.50 of this part.

(3) File additional bond or bonds with the regulatory authority to cover each succeeding increment before you initiate and conduct surface coal mining operations on that increment. The bond

or bonds must comply with paragraph (b) of this section.

(d) You may not disturb any surface area or extend any vertical underground mine shaft or other vertical underground mine opening for which a performance bond is required before the regulatory authority accepts the performance bond required for that area or extension.

§ 800.12 What types of performance bond are acceptable?

(a) Except as provided in paragraphs (b) through (d) of this section, the regulatory authority may allow you to post any of the following types of performance bond:

(1) A surety bond;

(2) A collateral bond;

(3) A self-bond; or

(4) A combination of any of these types of performance bond.

(b) An alternative bonding system approved under § 800.9 of this part may accept either more or fewer types of performance bond than those listed in paragraph (a) of this section.

(c) To guarantee long-term treatment of a discharge under § 800.18 of this part, the regulatory authority may accept a—

(1) Financial assurance;

(2) Collateral bond; or

(3) Surety bond.

(d) The regulatory authority may accept any type of performance bond listed in paragraph (a) of this section, other than a self-bond, to guarantee restoration of the ecological function of a perennial or intermittent stream under §§ 780.28(e) and (g), 784.28(e) and (g), 816.57(g), and 817.57(g) of this chapter.

§ 800.13 What is the liability period for a performance bond?

(a)(1) Liability under the performance bond will be for the duration of the surface coal mining and reclamation operation and for a period coincident with the period of extended responsibility for successful revegetation under § 816.115 or § 817.115 of this chapter or until achievement of the reclamation requirements of the regulatory program and the permit, whichever is later.

(2) With the approval of the regulatory authority, you may post a performance bond to guarantee specific phases of reclamation within the permit area, provided that the sum of the phase bonds posted equals or exceeds the total performance bond amount required under §§ 800.14 and 800.15 of this part. The scope of work to be guaranteed and the liability assumed under each phase bond must be specified in detail.

(b) Isolated and clearly defined portions of the permit area requiring extended liability may be separated from the original area and bonded separately with the approval of the regulatory authority, with the following provisos:

(1) These areas must be limited in extent and not constitute a scattered, intermittent, or checkerboard pattern of failure.

(2) The regulatory authority must include any necessary access roads or routes in the area under extended liability.

(c) If the regulatory authority approves a long-term, intensive agricultural postmining land use, the revegetation responsibility period specified under § 816.115 or § 817.115 of this chapter will start on the date of initial planting for the long-term agricultural use.

(d)(1) The bond liability of the permittee includes only those actions that the permittee is required to perform under the permit and regulatory program to complete the reclamation plan for the area covered by the bond.

(2) The performance bond does not cover implementation of the approved postmining land use or uses. The permittee is responsible only for restoring the site to conditions capable of supporting the uses specified in § 816.133 or § 817.133 of this chapter.

(3) Performance bond liability for prime farmland historically used for cropland includes meeting the productivity requirement specified in § 800.42(c) of this part.

(4) Section 800.18 of this part specifies the liability for long-term treatment of discharges.

§ 800.14 How will the regulatory authority determine the amount of performance bond required?

(a) The regulatory authority must determine the amount of the performance bond required for the permit or permit increment based upon, but not limited to—

(1) The requirements of the permit, including the reclamation plan.

(2) The probable difficulty of reclamation, giving consideration to the topography, geology, hydrology, and revegetation potential of the permit area.

(3) The estimated reclamation costs submitted by the permit applicant.

(b) The amount of the performance bond must be sufficient to assure the completion of the reclamation plan if the work has to be performed by a third party under contract with the regulatory authority in the event of forfeiture.

(c) The amount of financial assurance, collateral bond, or surety bond required to guarantee long-term treatment of discharges must be determined in accordance with § 800.18 of this part.

(d) The total performance bond initially posted for the entire area under one permit may not be less than $10,000.

(e) The permittee's financial responsibility under § 817.121(c) of this chapter for repairing or compensating for material damage resulting from subsidence may be satisfied by the liability insurance policy required under § 800.60 of this part.

§ 800.15 When must the regulatory authority adjust the performance bond amount and when may I request adjustment of the bond amount?

(a) The regulatory authority must adjust the amount of performance bond required and, if needed, the terms of the acceptance when—

(1) The area requiring bond coverage increases or decreases.

(2) The unit cost or scope of future reclamation changes as a result of technological advances, revisions to the operation or reclamation plans in the permit, or external factors. The regulatory authority may specify periodic times or set a schedule for reevaluating and adjusting the bond amount to fulfill this requirement.

(b) The permittee may request at any time that the regulatory authority reduce the amount of the performance bond based upon submission of evidence that the permittee's method of operation or other circumstances will reduce the estimated unit costs for the regulatory authority to reclaim the bonded area.

(c) Bond reductions under paragraphs (a) and (b) of this section are not subject to the bond release requirements and procedures of §§ 800.40 through 800.44 of this part.

(d) The regulatory authority may not use the provisions of this section to reduce the amount of the performance bond to reflect changes in the cost of reclamation resulting from completion of activities required under the reclamation plan. Bond reduction for completed reclamation activities must comply with the bond release requirements and procedures of §§ 800.40 through 800.44 of this part.

(e) Before making a bond adjustment, the regulatory authority must—

(1) Notify the permittee, the surety, and any person with a property interest in collateral who has requested notification under § 800.21(f) of this part of any proposed adjustment to the bond amount; and

(2) Provide the permittee an opportunity for an informal conference on the adjustment.

(f) In the event that an approved permit is revised in accordance with subchapter G of this chapter, the

regulatory authority must review the bond amount for adequacy and, if necessary, require adjustment of the bond amount to conform to the permit as revised. This provision may not be used to reduce bond amounts on the basis of completion of reclamation activities, in whole or in part.

(g) The regulatory authority must require that the permittee post a financial assurance, collateral bond, or surety bond in accordance with § 800.18 of this part whenever it identifies a discharge that will require long-term treatment.

(h) The regulatory authority may not reduce the bond amount when the permittee does not restore the approximate original contour as required or when the reclamation plan does not reflect the level of reclamation required under the regulatory program.

§ 800.16 What are the general terms and conditions of a performance bond?

(a) The performance bond must be in an amount determined by the regulatory authority as provided in § 800.14 of this part.

(b) The performance bond must be payable to the regulatory authority.

(c) The performance bond must be conditioned upon faithful performance of all the requirements of the regulatory program and the approved permit, including completion of the reclamation plan.

(d) The duration of the bond must be for the time provided in § 800.13 of this part.

(e) The bond must provide a mechanism for a bank, surety, or other responsible financial entity to give prompt notice to the regulatory authority and the permittee of any action filed alleging the insolvency or bankruptcy of the surety, the bank, or other responsible financial entity, or alleging any violations that would result in suspension or revocation of the firm's charter or license to do business.

§ 800.17 [Reserved]

§ 800.18 What special provisions apply to financial guarantees for long-term treatment of discharges?

(a) *Applicability.* (1) This section applies to any discharge resulting from surface coal mining operations, underground mining activities, or other activities or facilities regulated under this title whenever both the discharge and the need to treat the discharge continue or may reasonably be expected to continue after the completion of mining, backfilling, grading, and the establishment of revegetation. For purposes of this section, the term *discharge* includes both discharges to surface water and discharges to groundwater.

(2) This section also applies whenever information available to the regulatory authority documents that a discharge of the nature described in paragraph (a)(1) of this section will develop in the future, provided that the quantity and quality of the future discharge can be determined with reasonable probability.

(3) Paragraphs (a)(1) and (2) of this section apply only to discharges that are not anticipated at the time of permit application approval. Those paragraphs do not authorize approval of a permit application for a proposed operation that anticipates creating a discharge for which long-term treatment would be required.

(4) As provided in § 800.18(g) of this part, the regulatory authority must require adjustment of the bond amount whenever it becomes aware of a situation described in paragraph (a)(1) or (2) of this section.

(b) *Acceptable bonding mechanisms.* (1) Except as provided in paragraph (b)(2) of this section, you, the permittee, must post a financial assurance, a collateral bond, or a surety bond to guarantee treatment or abatement of discharges requiring long-term treatment.

(2) Operations with discharges in states with an alternative bonding system (other than a financial assurance) approved under subchapter T of this chapter must comply with the requirements of the applicable alternative bonding system.

(c) *Calculation of amount of financial assurance or performance bond.* (1) If you elect to post a financial assurance under paragraph (b)(1) of this section, the regulatory authority must calculate the amount of financial assurance required in the manner provided in paragraph (d) of this section.

(2) If you elect to post a collateral bond or surety bond under paragraph (b)(1) of this section, the bond amount must be no less than the present value of the funds needed to pay for—

(i) Treatment of the discharge in perpetuity, unless you demonstrate, and the regulatory authority finds, based upon available evidence, that treatment will be needed for a lesser time, either because the discharge will attenuate or because its quality will improve;

(ii) Treatment of the discharge during the time required to forfeit and collect the bond;

(iii) Maintenance, renovation, and replacement of treatment and support facilities as needed;

(iv) Final reclamation of sites upon which treatment facilities are located and areas used in support of those facilities; and

(v) Administrative costs borne by the regulatory authority.

(d) *Requirements for financial assurances.* (1) The trust or annuity must be established in a manner that guarantees that sufficient moneys will be available when needed to pay for—

(i) Treatment of discharges in perpetuity, unless the permittee demonstrates, and the regulatory authority finds, based upon available evidence, that treatment will be needed for a lesser time, either because the discharge will attenuate or because its quality will improve. The regulatory authority may accept arrangements that allow the permittee to build the amount of the trust or annuity over time, provided—

(A) The permittee continues to treat the discharge during that time; and

(B) The regulatory authority retains all performance bonds posted for the permit or permit increment until the trust or annuity reaches a self-sustaining level as determined by the regulatory authority.

(ii) Maintenance, renovation, and replacement of treatment and support facilities as needed.

(iii) Final reclamation of the sites upon which treatment facilities are located and areas used in support of those facilities.

(iv) Administrative costs borne by the regulatory authority or trustee to implement paragraphs (d)(1)(i) through (iii) of this section.

(2) The regulatory authority must require that the investment portfolio held by the trust or annuity prudently account for:

(i) The expected duration of the treatment obligation;

(ii) The need to provide a guarantee of uninterrupted treatment; and

(iii) Whether any other financial guarantee covers a portion of the treatment obligation. If the financial assurance will provide the only financial guarantee of treatment, the regulatory authority must require that the trust or annuity hold a low-risk investment portfolio.

(3) In determining the required amount of the trust or annuity, the regulatory authority must base present value calculations on a conservative anticipated real rate of return on the proposed investments. The rate of return must be net of management or trustee fees.

(4)(i) The trust or annuity must be in a form approved by the regulatory authority and contain all terms and conditions required by the regulatory authority.

(ii) When appropriate, the terms and conditions must include a mechanism whereby the regulatory authority may require the permittee to grant the trustee the real and personal property rights necessary to continue treatment in the event that the permittee ceases treatment. These rights include, but are not limited to, access to and use of the treatment site and ownership of treatment facilities and equipment.

(5) The trust or annuity must irrevocably establish the regulatory authority as the beneficiary of the trust or of the proceeds from the annuity for the purpose of treating mine drainage or other mining-related discharges to protect the environment and users of surface water.

(6) The trust or annuity must provide that disbursement of money from the trust or annuity may be made only upon written authorization of the regulatory authority or according to a schedule established in the agreement accompanying the trust or annuity.

(7) A financial institution or company serving as a trustee or issuing an annuity must be one of the following:

(i) A national bank chartered by the Office of the Comptroller of the Currency.

(ii) An operating subsidiary of a national bank chartered by the Office of the Comptroller of the Currency.

(iii) A bank or trust company chartered by the state in which the operation is located.

(iv) An insurance company licensed or authorized to do business in the state in which the operation is located or designated by the pertinent regulatory body of that state as an eligible surplus lines insurer.

(v) Any other financial institution or company authorized to do business in the state in which the operation is located, provided that—

(A) The institution's or company's activities are examined or regulated by a state or federal agency; and

(B) The institution or company has trust powers satisfactory to the regulatory authority.

(8) The regulatory authority may allow a not-for-profit organization under section 501(c)(3) of the Internal Revenue Code to serve as a trustee if—

(i) The organization maintains appropriate professional liability insurance coverage; and

(ii) The regulatory authority determines that the organization has demonstrated the financial and technical capability to manage trusts and assume day-to-day operation of the trust and treatment facility in the event of a default.

(9) The permittee or the regulatory authority must procure a new trustee when the trustee's administration of the trust or annuity is unsatisfactory to the regulatory authority.

(e) *Termination of a financial assurance instrument.* Termination of a trust or annuity may occur only as specified by the regulatory authority upon a determination that one of the following situations exists—

(1) No further treatment or other reclamation measures are necessary, in which case paragraph (h) of this section will apply.

(2) A satisfactory replacement financial assurance or bond has been posted in accordance with paragraph (g) of this section.

(3) The terms of the trust or annuity establish conditions for termination and those conditions have been met.

(f) *Regulatory authority review and adjustment of amount of financial assurance.* (1) The regulatory authority must establish a schedule for reviewing the performance of the trustee, the adequacy of the trust or annuity, and the accuracy of the assumptions upon which the trust or annuity is based. This review must occur on at least an annual basis.

(2) The regulatory authority must require that the permittee provide additional resources to the trust or annuity whenever the review conducted under paragraph (f)(1) of this section or any other information available to the regulatory authority at any time demonstrates that the financial assurance is no longer adequate to meet the purpose for which it was established.

(g) *Replacement of financial assurance.* With the approval of the regulatory authority, a financial assurance may be replaced in accordance with the provisions of § 800.30(a) of this part.

(h) *Release of liability.* Release of reclamation liabilities and obligations under a financial assurance is subject to the applicable bond release provisions of §§ 800.40 through 800.44 of this part.

(i) *Effect of financial assurance on release of bond.* The permittee may apply for, and the regulatory authority may approve, release of any bonds posted for the permit or, if the permittee uses incremental bonding, the permit increment for which the regulatory authority has approved a financial assurance under this section, provided that the permittee and the regulatory authority comply with the bond release requirements and procedures in §§ 800.40 through 800.44 of this part. This provision applies only if the following conditions exist—

(1) The financial assurance is both in place and fully funded.

(2) The permit or permit increment fully meets all applicable reclamation requirements, with the exception of the discharge and the presence of associated treatment and support facilities.

(3) The financial assurance will serve as the bond for reclamation of the portion of the permit area required for postmining water treatment facilities and access to those facilities.

§ 800.20 What additional requirements apply to surety bonds?

(a) A surety bond must be executed by the permittee and a corporate surety licensed to do business in the state where the operation is located.

(b) Surety bonds must be noncancellable during their terms, except that surety bond coverage for undisturbed lands may be cancelled with the prior consent of the regulatory authority. Within 30 days after receipt of a notice to cancel bond, the regulatory authority will advise the surety whether the bond may be cancelled on an undisturbed area.

(c) The regulatory authority may decline to accept a surety bond if, in the judgment of the regulatory authority, the surety does not have resources sufficient to cover the default of one or more mining companies for which the surety has provided bond coverage.

§ 800.21 What additional requirements apply to collateral bonds?

(a) Collateral bonds, except for letters of credit, cash accounts, and real property, are subject to the following conditions:

(1) The regulatory authority must keep custody of collateral deposited by the applicant or permittee until authorized for release or replacement as provided in this part.

(2) The regulatory authority must value collateral at its current market value, not at face value.

(3) The regulatory authority must require that certificates of deposit be made payable to or assigned to the regulatory authority, both in writing and upon the records of the bank or other financial institution issuing the certificates. If assigned, the regulatory authority must require the bank or other financial institution issuing the certificate to waive all rights of setoff or liens against the certificate.

(4) The regulatory authority may not accept an individual certificate of deposit in an amount in excess of the maximum amount insured by the Federal Deposit Insurance Corporation.

(b) Letters of credit are subject to the following conditions:

(1) The letter may be issued only by a bank organized or authorized to do business in the United States;

(2) Letters of credit must be irrevocable during their terms.

(3) The letter of credit must be payable to the regulatory authority upon demand, in part or in full, upon receipt from the regulatory authority of a notice of forfeiture issued in accordance with § 800.50 of this part.

(4) If the permittee has not replaced a letter of credit with another letter of credit or other suitable bond at least 30 days before the letter's expiration date, the regulatory authority must draw upon the letter of credit and use the cash received as a replacement bond.

(c) Real property posted as a collateral bond must meet the following conditions:

(1) The applicant or permittee must grant the regulatory authority a first mortgage, first deed of trust, or perfected first-lien security interest in real property with a right to sell or otherwise dispose of the property in the event of forfeiture under § 800.50 of this part.

(2) In order for the regulatory authority to evaluate the adequacy of the real property offered to satisfy collateral requirements, the applicant or permittee must submit a schedule of the real property to be mortgaged or pledged to secure the obligations under the indemnity agreement. The schedule must include—

(i) A description of the property;

(ii) The fair market value as determined by an independent appraisal conducted by a certified appraiser; and

(iii) Proof of possession and title to the real property.

(3) The property may include land that is part of the permit area. However, land pledged as collateral for a bond under this section may not be disturbed under any permit while it is serving as security under this section.

(4) The appraised fair market value determined under paragraph (c)(2)(ii) of this section is not the bond value of the real estate. In calculating the bond value of real estate, the regulatory authority must discount the appraised fair market value to account for the administrative costs of liquidating real estate, the probability of a forced sale in the event of forfeiture, and a contingency reserve for unanticipated costs including, but not limited to, unpaid real estate taxes, liens, property maintenance expenses, and insurance premiums.

(d) Cash accounts are subject to the following conditions:

(1) The regulatory authority may authorize the permittee to supplement the bond through the establishment of a cash account in one or more federally insured or equivalently protected accounts made payable upon demand to, or deposited directly with, the regulatory authority. The total bond, including the cash account, may not be less than the amount determined under § 800.14 of this part, as modified by any adjustments under § 800.15 of this part, less any amounts released under §§ 800.40 through 800.44 of this part.

(2) Any interest paid on a cash account will be retained in the account and applied to the bond value of the account unless the regulatory authority has approved the payment of interest to the permittee.

(3) Certificates of deposit may be substituted for a cash account with the approval of the regulatory authority.

(4) The regulatory authority may not accept an individual cash account in an amount in excess of the maximum amount insured by the Federal Deposit Insurance Corporation.

(e)(1) The regulatory authority must determine the bond value of all collateral posted as assurance under this section. The bond value must reflect legal and liquidation fees, as well as value depreciation, marketability, and fluctuations that might affect the net cash available to the regulatory authority to complete reclamation.

(2)(i) The regulatory authority may evaluate the bond value of collateral at any time.

(ii) The regulatory authority must evaluate the bond value of collateral as part of the permit renewal process.

(iii) The regulatory authority must increase or decrease the performance bond amount required if an evaluation conducted under paragraph (e)(2)(i) or (ii) of this section determines that the bond value of collateral has increased or decreased.

(iv) In no case may the bond value of collateral exceed the market value of the collateral.

(f) Persons who have an interest in collateral posted as a bond, and who desire notification of actions pursuant to the bond, must request such notification in writing to the regulatory authority at the time that the collateral is offered.

§ 800.23 What additional requirements apply to self-bonds?

(a) *Definitions.* For the purposes of this section only:

Current assets means cash or other assets or resources that are reasonably expected to be converted to cash or sold or consumed within one year or within the normal operating cycle of the business.

Current liabilities means obligations that are reasonably expected to be paid or liquidated within one year or within the normal operating cycle of the business.

Fixed assets means plants and equipment, but does not include land or coal in place.

Liabilities means obligations to transfer assets or provide services to other entities in the future as a result of past transactions.

Net worth means total assets minus total liabilities and is equivalent to owners' equity.

Parent corporation means a corporation which owns or controls the applicant.

Tangible net worth means net worth minus intangibles such as goodwill and rights to patents or royalties.

(b) The regulatory authority may accept a self-bond from an applicant for a permit if all of the following conditions are met by the applicant or its parent corporation guarantor:

(1) The applicant designates a suitable agent to receive service of process in the state where the proposed surface coal mining operation is to be conducted.

(2) The applicant has been in continuous operation as a business entity for a period of not less than 5 years. Continuous operation means that business was conducted over the 5 years immediately preceding the date of application.

(i) The regulatory authority may allow a joint venture or syndicate with less than 5 years of continuous operation to qualify under this requirement, if each member of the joint venture or syndicate has been in continuous operation for at least 5 years immediately preceding the date of application.

(ii) When calculating the period of continuous operation, the regulatory authority may exclude past periods of interruption to the operation of the business entity that were beyond the applicant's control and that do not affect the applicant's likelihood of remaining in business during the proposed surface coal mining and reclamation operations.

(3) The applicant submits financial information in sufficient detail to show that the applicant meets one of the following criteria:

(i) The applicant has a current rating for its most recent bond issuance of ''A'' or higher as issued by either Moody's Investors Service or Standard and Poor's or an equivalent rating from any other nationally recognized statistical rating organization registered with the Securities and Exchange Commission.

(ii) The applicant has a tangible net worth of at least $10 million, a ratio of total liabilities to net worth of 2.5 times or less, and a ratio of current assets to current liabilities of 1.2 times or greater.

(iii) The applicant's fixed assets in the United States total at least $20 million, and the applicant has a ratio of total liabilities to net worth of 2.5 times or less, and a ratio of current assets to current liabilities of 1.2 times or greater.

(4) The applicant submits—

(i) Financial statements for the most recently completed fiscal year accompanied by a report prepared by an independent certified public accountant in conformity with generally accepted accounting principles and containing the accountant's audit opinion or review opinion of the financial statements with no adverse opinion;

(ii) Unaudited financial statements for completed quarters in the current fiscal year; and

(iii) Additional unaudited information as requested by the regulatory authority.

(c)(1) The regulatory authority may accept a written guarantee for an applicant's self-bond from a parent corporation guarantor, if the guarantor meets the conditions of paragraphs (b)(1) through (4) of this section as if it were the applicant. This written guarantee will be referred to as a ''corporate guarantee.'' The terms of the corporate guarantee must provide for the following:

(i) If the applicant fails to complete the reclamation plan, the guarantor must do so or the guarantor will be liable under the indemnity agreement to provide funds to the regulatory authority sufficient to complete the reclamation plan, but not to exceed the bond amount.

(ii) The corporate guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the applicant and to the regulatory authority at least 90 days in advance of the cancellation date, and the regulatory authority accepts the cancellation.

(iii) The cancellation may be accepted by the regulatory authority if the applicant obtains suitable replacement bond before the cancellation date or if the lands for which the self-bond, or portion thereof, was accepted have not been disturbed.

(2) The regulatory authority may accept a written guarantee for an applicant's self-bond from any corporate guarantor, whenever the applicant meets the conditions of paragraphs (b)(1), (2), and (4) of this section, and the guarantor meets the conditions of paragraphs (b)(1) through (4) of this section. This written guarantee will be referred to as a ''non-parent corporate guarantee.'' The terms of this guarantee must provide for compliance with the conditions of paragraphs (c)(1)(i) through (iii) of this section. The regulatory authority may require the applicant to submit any information specified in paragraph (b)(3) of this section in order to determine the financial capabilities of the applicant.

(d)(1) For the regulatory authority to accept an applicant's self-bond, the total amount of the outstanding and proposed self-bonds of the applicant for surface coal mining and reclamation operations may not exceed 25 percent of the applicant's tangible net worth in the United States.

(2) For the regulatory authority to accept a corporate guarantee, the total amount of the parent corporation guarantor's present and proposed self-bonds and guaranteed self-bonds for surface coal mining and reclamation operations may not exceed 25 percent of the guarantor's tangible net worth in the United States.

(3) For the regulatory authority to accept a non-parent corporate guarantee, the total amount of the non-parent corporate guarantor's present and proposed self-bonds and guaranteed self-bonds may not exceed 25 percent of the guarantor's tangible net worth in the United States.

(e) If the regulatory authority accepts an applicant's self-bond, the applicant must submit an indemnity agreement subject to the following requirements:

(1) The indemnity agreement must be executed by all persons and parties who are to be bound by it, including the parent corporation guarantor. It must bind each party jointly and severally.

(2) Corporations applying for a self-bond, and parent and non-parent corporations guaranteeing an applicant's self-bond, must submit an indemnity agreement signed by two corporate officers who are authorized to bind their corporations. A copy of the authorization must be provided to the regulatory authority along with an affidavit certifying that the agreement is valid under all applicable federal and state laws. In addition, the guarantor must provide a copy of the corporate authorization demonstrating that the corporation may guarantee the self-bond and execute the indemnity agreement.

(3) If the applicant is a partnership, joint venture or syndicate, the agreement must bind each partner or party who has a beneficial interest, directly or indirectly, in the applicant.

(4) Pursuant to § 800.50 of this part, the applicant and the parent or non-parent corporate guarantor will be required to complete the approved reclamation plan for the lands in default or to pay to the regulatory authority an amount necessary to complete the approved reclamation plan, not to exceed the bond amount. If permitted under state law, the indemnity agreement, when under forfeiture, will operate as a judgment against those parties liable under the indemnity agreement.

(f) A regulatory authority may require self-bonded applicants and parent and non-parent corporate guarantors to submit an update of the information required under paragraphs (b)(3) and (4) of this section within 90 days after the close of each fiscal year following the issuance of the self-bond or corporate guarantee.

(g) If at any time during the period when a self-bond is posted, the financial conditions of the applicant or the parent or non-parent corporate guarantor change so that the criteria of paragraphs (b)(3) and (d) of this section are not satisfied, the permittee must notify the regulatory authority immediately and post an alternate form of bond in the same amount as the self-bond within 90 days. Should the permittee fail to post an adequate substitute bond, the provisions of § 800.30(b) of this part will apply.

§ 800.30 When may I replace a performance bond or financial assurance and when must I do so?

(a) *Replacement upon request of permittee.* (1) The regulatory authority may allow you, the permittee, to replace existing performance bonds and financial assurances with other performance bonds and financial assurances that provide equivalent coverage.

(2) The regulatory authority may not release any existing performance bond or financial assurance until you have submitted, and the regulatory authority has approved, an acceptable replacement.

(b) *Replacement by order of the regulatory authority.* (1) Upon the incapacity of a bank, surety, or other responsible financial entity by reason of bankruptcy, insolvency, or suspension or revocation of a charter or license, you will be deemed to be without bond coverage and you must promptly notify the regulatory authority.

(2) Upon receipt of notification from a bank, surety, or other responsible financial entity under § 800.16(e) of this part or from you under paragraph (b)(1) of this section, the regulatory authority must issue an order requiring that you submit replacement bond or financial assurance coverage within a reasonable time, not to exceed 90 days.

(3) If you do not post adequate bond or financial assurance by the end of the time allowed under paragraph (b)(2) of this section, the regulatory authority must issue a notice of violation

requiring that you cease surface coal mining operations immediately. The notice of violation also must require that you either—

(i) Post adequate bond or financial assurance coverage before you may resume surface coal mining operations; or

(ii) Reclaim the site in accordance with the provisions of § 816.132 or § 817.132 of this chapter.

§ 800.40 How do I apply for release of all or part of a performance bond?

(a) *When may I file an application for bond release*? You, the permittee, may file an application with the regulatory authority for the release of all or part of a performance bond only at times or during seasons authorized by the regulatory authority. The times or seasons appropriate for the evaluation of certain types of reclamation will be established in either the regulatory program or your permit.

(b) *What must I include in my application for bond release*? Each application for bond release must include—

(1) An application on a form prescribed by the regulatory authority.

(2) All other information required by the regulatory authority, which must include a detailed description of the results that you have achieved under the approved reclamation plan and an analysis of the results of the monitoring conducted under §§ 816.35 through 816.37 or §§ 817.35 through 817.37 of this chapter.

(3) A certified copy of an advertisement that you have placed at least once a week for four successive weeks in a newspaper of general circulation in the locality of the surface coal mining and reclamation operation. You must submit the copy within 30 days after you file the application form under paragraph (b)(1) of this section. The advertisement must contain—

(i) Your name.

(ii) The permit number and approval date.

(iii) The number of acres and the precise location of the land for which you are requesting bond release.

(iv) The amount of the performance bond filed and the portion for which you seek release.

(v) The type and dates of reclamation work performed.

(vi) A brief description of the results that you have achieved under the approved reclamation plan.

(vii) The name and address of the regulatory authority to which written comments, objections, or requests for public hearings and informal conferences on the bond release application may be submitted pursuant to § 800.44 of this section and the location at which the application may be reviewed.

(4) Copies of letters that you have sent to adjoining property owners, local governmental bodies, planning agencies, sewage and water treatment authorities, and water companies in the locality of the surface coal mining and reclamation operation, notifying them of your intention to seek release of the bond.

(5) A notarized statement certifying that all applicable reclamation activities have been accomplished in accordance with the requirements of the regulatory program and the approved reclamation plan. You must submit a separate certification for each application and each phase of bond release.

§ 800.41 How will the regulatory authority process my application for bond release?

(a)(1) Upon receipt of a complete application for bond release, the regulatory authority will, within 30 days, or as soon thereafter as weather conditions permit, conduct an inspection of the site and an evaluation of the reclamation work performed and the reclamation work remaining. A complete application for bond release is one that includes all items required under § 800.40 of this part.

(2) The evaluation will consider, among other factors, the degree of difficulty to complete any remaining reclamation, whether pollution of surface and subsurface water is occurring, the probability of future occurrence of such pollution, and the estimated cost of abating such pollution.

(b)(1) The regulatory authority will notify the surface owner, agent, or lessee before conducting the inspection and will offer that person an opportunity to participate with the regulatory authority in making the inspection.

(2) The regulatory authority may arrange with you to allow access to the permit area, upon request by any person with an interest in bond release, for the purpose of gathering information relevant to the proceeding.

§ 800.42 What are the criteria for bond release?

(a) *General requirements.* (1) Except as provided in paragraphs (a)(2) through (5) of this section, the regulatory authority may release all or part of the performance bond for the permit area or an increment thereof if the regulatory authority is satisfied that you have accomplished the required reclamation for the permit area or increment in accordance with paragraphs (b) through (d) of this section.

(2)(i) The regulatory authority must conduct a scientifically defensible trend analysis of the monitoring data submitted under §§ 816.35 through 816.37 or §§ 817.35 through 817.37 of this chapter before releasing any bond amount.

(ii) The regulatory authority may not approve a bond release application if the analysis conducted under paragraph (a)(2)(i) of this section and other relevant information indicate that the operation is causing material damage to the hydrologic balance outside the permit area or is likely to do so in the future.

(3) If you are responsible for a discharge requiring long-term treatment, regardless of whether the discharge emerges either on the permit area or at a point that is hydrologically connected to the permit area, you must post a separate financial assurance, collateral bond, or surety bond under § 800.18 of this part to guarantee treatment of the discharge before any portion of the existing performance bond for the permit area may be released, unless the type and amount of bond remaining after the release would be adequate to meet the requirements of § 800.18 of this part as well as any remaining land reclamation obligations.

(4) If the permit area or increment includes mountaintop removal mining operations under § 785.14 of this chapter or a variance from restoration of the approximate original contour under § 785.16 of this chapter, the amount of bond that may be released is subject to the limitation specified in § 785.14(c)(2) of this chapter for mountaintop removal mining operations or the limitation specified in § 785.16(b)(2) of this chapter for a variance from restoration of the approximate original contour.

(5) The bond amount described in § 780.24(d)(2) or § 784.24(d)(2) of this chapter may not be released either until the structure is in use as part of the postmining land use or until the structure is removed and the site upon which it was located is reclaimed in accordance with part 816 or part 817 of this chapter.

(6) The regulatory authority must consider the results of the evaluation conducted under § 800.41(a)(2) of this part when determining the amount of performance bond to release.

(b) *Phase I reclamation.* (1) The regulatory authority may release a maximum of 60 percent of the performance bond for a bonded area after you complete Phase I reclamation for that area in accordance with the approved reclamation plan. Phase I reclamation consists of backfilling, grading, and establishment of drainage control. It includes construction of the postmining drainage pattern and stream-

channel configuration required by §§ 816.56(b), 816.57(c)(1), 817.56(b), and 817.57(c)(1) of this chapter and restoration of the form of perennial and intermittent streams under §§ 816.57(e) and 817.57(e) of this chapter. Soil replacement is optional for this phase.

(2) The amount of performance bond that the regulatory authority retains after Phase I release must be adequate to ensure that the regulatory authority will have sufficient funds for a third party to complete the remaining portion of the reclamation plan, including restoration of the hydrologic function and ecological function of perennial and intermittent streams under § 816.57(f) and (g) or § 817.57(f) and (g) of this chapter and completion of any fish and wildlife enhancement measures required in the permit in accordance with § 780.16 or § 784.16 of this chapter, in the event of forfeiture.

(c) *Phase II reclamation.* (1) The regulatory authority may release an additional amount of performance bond after you complete Phase II reclamation, which consists of—

(i) Soil replacement and redistribution of organic materials (if not accomplished as part of Phase I reclamation);

(ii) Restoration of the hydrologic function of perennial and intermittent streams under § 816.57(f) or § 817.57(f) of this chapter; and

(iii) Successfully establishing revegetation on the area in accordance with the approved reclamation plan, including any streamside vegetative corridors required by §§ 816.56(c), 816.57(d), 817.56(c), and 817.57(d) of this chapter. The regulatory authority must establish standards defining successful establishment of vegetation for Phase II reclamation.

(2) The amount of performance bond that the regulatory authority retains after Phase II release must be sufficient to cover the cost of having a third party reestablish revegetation for the revegetation responsibility period under § 816.115 or § 817.115 of this chapter. In addition, it must be adequate to ensure that the regulatory authority will have sufficient funds for a third party to complete the remaining portion of the reclamation plan, including restoration of the ecological function of perennial and intermittent streams under § 816.57(g) or § 817.57(g) of this chapter and completion of any fish and wildlife enhancement measures required in the permit in accordance with § 780.16 or § 784.16 of this chapter, in the event of forfeiture.

(3) The regulatory authority may not release any part of the performance bond under paragraph (c)(1) of this section if the lands to which the release would apply are contributing suspended solids to streamflow or runoff outside the permit area in excess of the requirements set by subchapter K of this chapter.

(4) The regulatory authority may not release any part of the performance bond under paragraph (c)(1) of this section until soil productivity for all prime farmland historically used for cropland on the area to which the release would apply has returned to levels of yield equivalent to yields from nonmined land of the same soil type in the surrounding area under equivalent management practices as determined from the soil survey performed under part 823 of this chapter.

(5) When the regulatory authority has approved retention of a silt dam as a permanent impoundment under § 816.49(b) or § 817.49(b) of this chapter, the regulatory authority may approve Phase II bond release for the area of the impoundment if the requirements of § 816.55 or § 817.55 of this chapter have been met and provisions for sound future maintenance by the operator or the landowner have been made with the regulatory authority.

(d) *Phase III reclamation.* (1) The regulatory authority must release the remaining portion of the performance bond upon the completion of Phase III reclamation, which consists of successful completion of all surface coal mining and reclamation activities and expiration of the revegetation responsibility period under § 816.115 or § 817.115 of this chapter.

(2) The regulatory authority may not fully release any performance bond under provisions of this section until all applicable reclamation requirements of the regulatory program and the permit are fully met. Among other things, those requirements include restoration of the ecological function of perennial and intermittent streams under § 816.57(g) or § 817.57(g) of this chapter and completion of any fish and wildlife enhancement measures required in the permit in accordance with § 780.16 or § 784.16 of this chapter.

§ 800.43 When and how must the regulatory authority provide notification of its decision on a bond release application?

(a) The regulatory authority will provide written notification of its decision on your bond release application to—

(1) You;

(2) The surety (if applicable);

(3) All other persons with an interest in bond collateral who have requested notification under § 800.21(f) of this part;

(4) Any person who filed objections in writing; and

(5) Objectors who were a party to the hearing proceedings, if any.

(b) The regulatory authority will provide notification under paragraph (a) of this section—

(1) Within 60 days after you file the application, if there is no public hearing under § 800.44 of this part, or

(2) Within 30 days after a public hearing has been held under § 800.44 of this part.

(c) If the regulatory authority disapproves your application for release of the bond or portion thereof, the regulatory authority must notify you, the surety, and any person with an interest in collateral as provided in § 800.21(f) of this part, in writing, stating the reasons for disapproval and recommending corrective actions necessary to secure the release and allowing an opportunity for a public hearing.

(d) When any application for total or partial bond release is filed with the regulatory authority, the regulatory authority must notify the municipality in which the surface coal mining operation is located by certified mail at least 30 days prior to the release of all or a portion of the bond.

§ 800.44 Who may file an objection to a bond release application and how must the regulatory authority respond to an objection?

(a)(1) Any person with a valid legal interest that might be adversely affected by release of the bond, or the responsible officer or head of any federal, state, tribal, or local governmental agency with jurisdiction by law or special expertise with respect to any environmental, social, or economic impact involved in the operation or which is authorized to develop and enforce environmental standards with respect to those operations, has the right to file written objections to the proposed bond release with the regulatory authority within 30 days after the last publication of the notice required by § 800.40(b)(2) of this part.

(2) If written objections are filed and a hearing is requested, the regulatory authority must inform all interested parties of the time and place of the hearing, and hold a public hearing within 30 days after receipt of the request for the hearing. The regulatory authority must advertise the date, time, and location of the public hearing in a newspaper of general circulation in the locality for two consecutive weeks.

(3) The public hearing must be held in the locality of the surface coal mining

operation for which bond release is sought, at the location of the regulatory authority office, or at the state capital, at the option of the objector.

(b)(1) For the purpose of the hearing under paragraph (a) of this section, the regulatory authority has the authority to administer oaths, subpoena witnesses or written or printed material, compel the attendance of witnesses or the production of materials, and take evidence including, but not limited to, inspection of the land affected and other surface coal mining operations carried on by the applicant in the general vicinity.

(2) A verbatim record of each public hearing must be made, and a transcript must be made available on the motion of any party or by order of the regulatory authority.

(c) Without prejudice to the right of an objector or the applicant for bond release, the regulatory authority may hold an informal conference as provided in section 513(b) of the Act, 30 U.S.C. 1263(b), to resolve written objections. The regulatory authority must make a record of the informal conference unless waived by all parties, which must be accessible to all parties. The regulatory authority also must furnish all parties to the informal conference with a written finding based on the informal conference, and the reasons for the finding.

§ 800.50 When and how will a bond be forfeited?

(a) If a permittee or operator refuses or is unable to conduct reclamation of an unabated violation, if the terms of the permit are not met, or if the permittee or operator defaults on the conditions under which the bond was accepted, the regulatory authority must take the following action to forfeit all or part of a bond or bonds for any permit area or an increment of a permit area:

(1)(i) Send written notification by certified mail, return receipt requested, to the permittee and the surety on the bond, if any, informing them of the determination to forfeit all or part of the bond, including the reasons for the forfeiture and the amount to be forfeited.

(ii) If the amount to be forfeited under paragraph (a)(1)(i) of this section is less than the total amount of bond posted, the amount forfeited must be no less than the estimated total cost of achieving the reclamation plan requirements. For a discharge that requires long-term treatment, the regulatory authority must calculate the estimated total cost of achieving the reclamation plan requirements for that discharge in a manner consistent with § 800.18(c) of this part.

(2) Advise the permittee and surety, if applicable, of the conditions under which forfeiture may be avoided. Those conditions may include, but are not limited to—

(i) Agreement by the permittee or another party to perform reclamation operations in accordance with a compliance schedule that meets the conditions of the permit, the reclamation plan, and the regulatory program and a demonstration that the party has the ability to satisfy the conditions; or

(ii) The regulatory authority may allow a surety to complete the reclamation plan, or the portion of the reclamation plan applicable to the bonded phase or increment if the surety can demonstrate an ability to complete the reclamation in accordance with the approved reclamation plan. Except where the reclamation work performed meets the criteria for partial bond release under § 800.42 of this part, no surety liability may be released until successful completion of all reclamation under the terms of the permit, including applicable liability periods of § 800.13 of this part.

(b) In the event forfeiture of the bond is required by this section, the regulatory authority shall—

(1) Proceed to collect the forfeited amount as provided by applicable laws for the collection of defaulted bonds or other debts if actions to avoid forfeiture have not been taken, or if rights of appeal, if any, have not been exercised within a time established by the regulatory authority, or if such appeal, if taken, is unsuccessful.

(2) Use funds collected from bond forfeiture to complete the reclamation plan, or the portion thereof covered by the bond, on the permit area or increment to which the bond applies.

(c) Upon default, the regulatory authority may cause the forfeiture of any and all bonds deposited to complete reclamation for which the bonds were posted. Unless specifically limited, as provided in § 800.11(c) of this part, bond liability will extend to the entire permit area under conditions of forfeiture.

(d)(1) In the event the estimated amount forfeited is insufficient to pay for the full cost of reclamation, the permittee or operator is liable for remaining costs. The regulatory authority may complete, or authorize completion of, reclamation of the bonded area and may recover from the permittee or operator all costs of reclamation in excess of the amount forfeited.

(2) In the event the amount of performance bond forfeited is more than the amount necessary to complete reclamation, the regulatory authority must return the unused funds to the party from whom they were collected.

§ 800.60 What liability insurance must I carry?

(a) The regulatory authority must require the applicant to submit as part of its permit application a certificate issued by an insurance company authorized to do business in the United States certifying that the applicant has a public liability insurance policy in force for the surface coal mining and reclamation operations for which the permit is sought. The policy must provide for personal-injury and property-damage protection in an amount adequate to compensate any persons injured or property damaged as a result of the surface coal mining and reclamation operations, including the use of explosives, and who are entitled to compensation under the applicable provisions of state law. Minimum insurance coverage for bodily injury and property damage is $300,000 for each occurrence and $500,000 aggregate.

(b) The policy must be maintained in full force during the life of the permit or any renewal thereof and the liability period necessary to complete all reclamation operations under this chapter.

(c) The policy must include a rider requiring that the insurer notify the regulatory authority whenever substantive changes are made in the policy, including any termination or failure to renew.

(d) The regulatory authority may accept from the applicant, in lieu of a certificate for a public liability insurance policy, satisfactory evidence from the applicant that it satisfies applicable state self-insurance requirements approved as part of the regulatory program and the requirements of this section.

§ 800.70 What special bonding provisions apply to anthracite operations in Pennsylvania?

(a) All provisions of this subchapter apply to bonding and insuring anthracite surface coal mining and reclamation operations in Pennsylvania except that—

(1) The regulatory authority must determine specified bond limits in accordance with applicable provisions of Pennsylvania statutes, rules and regulations adopted thereunder, and implementing policies of the Pennsylvania regulatory authority.

(2) The period of liability for responsibility under each bond must be

established for those operations in accordance with applicable laws of the Commonwealth of Pennsylvania, rules and regulations adopted thereunder, and implementing policies of the Pennsylvania regulatory authority.

(b) Upon amendment of the Pennsylvania permanent regulatory program with respect to specified bond limits and the period of revegetation responsibility for anthracite surface coal mining and reclamation operations, any person engaging in or seeking to engage in those operations must comply with additional regulations the Secretary may issue as are necessary to meet the purposes of the Act.

■ 34. Lift the suspension of § 816.101, and revise part 816 to read as follows:

PART 816—PERMANENT PROGRAM PERFORMANCE STANDARDS—SURFACE MINING ACTIVITIES

Sec.

816.1 What does this part do?
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816.56 What additional performance standards apply to mining activities conducted in or through an ephemeral stream?
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816.59 How must I maximize coal recovery?
816.61 Use of explosives: General requirements.
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816.71 How must I dispose of excess spoil?
816.72 [Reserved]
816.73 [Reserved]
816.74 What special requirements apply to the disposal of excess spoil on a preexisting bench?
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816.100 What are the standards for conducting reclamation contemporaneously with mining?
816.101 [Reserved]
816.102 How must I backfill the mined area and grade and configure the land surface?
816.104 What special provisions for backfilling, grading, and surface configuration apply to sites with thin overburden?
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816.115 How long am I responsible for revegetation after planting?
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816.131 What actions must I take when I temporarily cease mining operations?
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816.150 What are the general requirements for haul and access roads?
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816.180 To what extent must I protect utility installations?
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816.200 [Reserved]

Authority: 30 U.S.C. 1201 *et seq.*

§ 816.1 *What does this part do?*

This part sets forth the minimum environmental protection performance standards for surface mining activities under the Act.

§ 816.2 What is the objective of this part?

This part is intended to ensure that all surface mining activities are conducted in an environmentally sound manner in accordance with the Act.

§ 816.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0047. Collection of this information is required under section 515 of SMCRA, which provides that permittees conducting surface coal mining and reclamation operations must meet all applicable performance standards of the regulatory program approved under the Act. The regulatory authority uses the information collected to ensure that surface mining activities are conducted in compliance with the requirements of the applicable regulatory program. Persons intending to conduct such operations must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

§ 816.11 What signs and markers must I post?

(a) *General specifications.* Signs and markers required under this part must—

(1) Be posted and maintained by the person who conducts the surface mining activities;

(2) Be of a uniform design throughout the operation;

(3) Be easily seen and read;

(4) Be made of durable material; and

(5) Conform to local ordinances and codes.

(b) *Duration of maintenance.* You must maintain signs and markers during the conduct of all activities to which they pertain.

(c) *Mine and permit identification signs.* (1) You must display identification signs at each point of access to the permit area from public roads.

(2) The signs must show the name, business address, and telephone number of the person who conducts the surface mining activities and the identification number of the current SMCRA permit authorizing surface mining activities.

(3) You must retain and maintain the signs until the release of all bonds for the permit area.

(d) *Perimeter markers.* You must clearly mark the perimeter of the permit area before beginning surface mining activities.

(e) *Stream buffer zone markers.* You must clearly mark the boundaries of any buffer to be maintained between surface mining activities and a perennial or intermittent stream in accordance with §§ 780.28 and 816.57 of this chapter to avoid disturbance by surface mining activities.

(f) *Topsoil markers.* You must clearly mark stockpiles of topsoil, subsoil, or other plant growth media segregated and stored as required in the permit in accordance with § 816.22 of this part.

§ 816.13 What special requirements apply to drilled holes, wells, and exposed underground openings?

(a) Except as provided in paragraph (f) of this section, you must case, line, otherwise manage each exploration hole, drilled hole, borehole, shaft, well, or other exposed underground opening in a manner approved by the regulatory authority to—

(1) Prevent acid or other toxic drainage from entering groundwater and surface water.

(2) Minimize disturbance to the prevailing hydrologic balance.

(3) Ensure the safety of people, livestock, fish and wildlife, and machinery in the permit area and the adjacent area.

(b) If the approved permit identifies an exploration hole, drilled hole, borehole, well, or other exposed underground opening for use to monitor groundwater or to return coal processing waste or water to underground workings, you must temporarily seal the hole or opening before use and protect it during use by installing barricades, fences, or other protective devices approved by the regulatory authority. You must periodically inspect these devices and maintain them in good operating condition.

(c) You may retain and transfer a drilled hole or groundwater monitoring well for use as a water well under the conditions established in § 816.39 of this part.

(d) Except as provided in paragraph (c) of this section, you must permanently close each exploration hole, drilled hole, borehole, well, or underground opening that mining activities uncover or expose within the permit area, unless the regulatory authority—

(1) Approves use of the hole, well, or opening for water monitoring purposes; or

(2) Authorizes other management of the hole or well.

(e)(1) Except as provided in paragraph (c) of this section, you must cap, seal, backfill, or otherwise properly manage each shaft, drift, adit, tunnel, exploratory hole, entryway or other opening to the surface from underground when no longer needed for monitoring or any other use that the regulatory authority approves after finding that the use will not adversely affect the environment or public health and safety.

(2) Permanent closure measures taken under paragraph (e)(1) of this section must be—

(i) Consistent with § 75.1771 of this title;

(ii) Designed to prevent access to the mine workings by people, livestock, fish and wildlife, and machinery; and

(iii) Designed to keep acid or toxic mine drainage from entering groundwater or surface water.

(f) The requirements of this section do not apply to holes drilled and used for blasting for surface mining purposes.

§ 816.14 [Reserved]

§ 816.15 [Reserved]

§ 816.22 How must I handle topsoil, subsoil, and other plant growth media?

(a) *Removal and salvage.* (1)(i) You, the permittee, must remove and salvage all topsoil and other soil materials identified for salvage and use as postmining plant growth media in the soil handling plan approved in the permit under § 780.12(e) of this chapter.

(ii) The soil handling plan approved in the permit under § 780.12(e) of this chapter will specify which soil horizons and underlying strata, or portions thereof, you must separately remove and salvage. The plan also will specify whether some or all of those soil horizons and soil substitute materials may or must be blended to achieve an improved plant growth medium.

(iii) Except as provided in the soil handling plan approved in the permit under § 780.12(e) of this chapter, you must complete removal and salvage of topsoil, subsoil, and organic matter in advance of any mining-related surface disturbance other than the minor disturbances identified in paragraph (a)(2) of this section.

(2) Unless otherwise specified by the regulatory authority, you need not remove and salvage topsoil and other soil materials for minor disturbances that—

(i) Occur at the site of small structures, such as power poles, signs, monitoring wells, or fence lines; or

(ii) Will not destroy the existing vegetation and will not cause erosion.

(b) *Handling and storage.* (1) You must segregate and separately handle the materials removed under paragraph (a) of this section to the extent required in the soil handling plan approved in the permit pursuant to § 780.12(e). You must redistribute those materials promptly on regraded areas or stockpile them when prompt redistribution is impractical.

(2) Stockpiled materials must—

(i) Be selectively placed on a stable site within the permit area;

(ii) Be protected from contaminants and unnecessary compaction that would interfere with revegetation;

(iii) Be protected from wind and water erosion through prompt establishment and maintenance of an effective, quick-growing, non-invasive vegetative cover or through other measures approved by the regulatory authority; and

(iv) Not be moved until required for redistribution unless approved by the regulatory authority.

(3) When stockpiling of organic matter and soil materials removed under paragraphs (a) and (f) of this section would be detrimental to the quality or quantity of those materials, you may temporarily redistribute those soil materials on an approved site within the permit area to enhance the current use of that site until the materials are needed for later reclamation, provided that—

(i) Temporary redistribution will not permanently diminish the capability of the topsoil of the host site; and

(ii) The redistributed material will be preserved in a condition more suitable for redistribution than if it were stockpiled.

(c) *Soil substitutes and supplements.* When the soil handling plan approved in the permit in accordance with

§ 780.12(e) of this chapter provides for the use of substitutes for or supplements to the existing topsoil or subsoil, you must salvage, store, and redistribute the overburden materials selected and approved for that purpose in a manner consistent with paragraphs (a), (b), and (e) of this section.

(d) *Site preparation.* If necessary to reduce potential slippage of the redistributed material or to promote root penetration, you must rip, chisel-plow, deep-till, or otherwise mechanically treat backfilled and graded areas either before or after redistribution of soil materials, whichever time is agronomically appropriate.

(e) *Redistribution.* (1) You must redistribute the materials removed, salvaged, and, if necessary, stored under paragraphs (a) through (c) of this section in a manner that—

(i) Complies with the soil handling plan developed under § 780.12(e) of this chapter and approved as part of the permit.

(ii) Is consistent with the approved postmining land use, the final surface configuration, and surface water drainage systems.

(iii) Minimizes compaction of the topsoil and soil materials in the root zone to the extent possible and alleviates any excess compaction that may occur. You must limit your use of measures that result in increased compaction to those situations in which added compaction is necessary to ensure stability.

(iv) Protects the materials from wind and water erosion before and after seeding and planting to the extent necessary to ensure establishment of a successful vegetative cover and to avoid causing or contributing to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart.

(v) Achieves an approximately uniform, stable thickness across the regraded area. The thickness may vary when consistent with the approved postmining land use, the final surface configuration, surface water drainage systems, and the requirement in § 816.133 of this part for restoration of all disturbed areas to conditions that are capable of supporting the uses they were capable of supporting before any mining or higher or better uses approved under § 780.24(b) of this chapter. The thickness also may vary when variations are necessary or desirable to achieve specific revegetation goals and ecological diversity, as set forth in the revegetation plan developed under § 780.12(g) of this chapter and approved as part of the permit.

(2) You must use a statistically valid sampling technique to document that soil materials have been redistributed in the locations and depths required by the soil handling plan developed under § 780.12(e) of this chapter and approved as part of the permit.

(3) The regulatory authority may choose not to require the redistribution of topsoil on the embankments of permanent impoundments or on the embankments of roads to be retained as part of the postmining land use if it determines that—

(i) Placement of topsoil on those embankments is inconsistent with the requirement to use the best technology currently available to prevent sedimentation, and

(ii) The embankments will be otherwise stabilized.

(f) *Organic matter.* (1)(i) You must salvage duff, other organic litter, and vegetative materials such as tree tops and branches, small logs, and root balls. When practicable and consistent with the approved postmining land use, you may salvage organic matter and topsoil in a single operation that blends those materials.

(ii) Paragraph (f)(1)(i) of this section does not apply to organic matter from areas identified under § 779.19(b) of this chapter as containing significant populations of invasive or noxious non-native species. You must bury organic matter from those areas in the backfill at a sufficient depth to prevent regeneration or proliferation of undesirable species.

(2)(i) Except as otherwise provided in paragraphs (f)(2)(ii) and (iii) and (3) of this section, you must redistribute the organic matter salvaged under paragraph (f)(1) of this section across the regraded surface or incorporate it into the soil to control erosion, promote growth of vegetation, serve as a source of native plant seeds and soil inoculants to speed restoration of the soil's ecological community, and increase the moisture retention capability of the soil.

(ii) You may use vegetative debris to construct stream improvement or fish and wildlife habitat enhancement features consistent with the approved postmining land use.

(iii) You may adjust the timing and pattern of redistribution of large woody debris to accommodate the use of mechanized tree-planting equipment on sites with a forestry postmining land use.

(3)(i) The redistribution requirements of paragraph (f)(2)(i) of this section do not apply to those portions of the permit area—

(A) Upon which row crops will be planted as part of the postmining land use before final bond release under §§ 800.40 through 800.43 of this chapter;

(B) That will be intensively managed for hay production as part of the postmining land use before final bond release under §§ 800.40 through 800.43 of this chapter; or

(C) Upon which structures, roads, other impervious surfaces, or water impoundments have been or will be constructed as part of the postmining land use before final bond release under §§ 800.40 through 800.43 of this chapter.

(ii) When the circumstances described in paragraph (f)(3)(i) of this section apply, you must make reasonable efforts to redistribute the salvaged organic matter on other portions of the permit area or use woody debris to construct stream improvement or fish and wildlife habitat enhancement features consistent with the approved postmining land use. If you demonstrate, and the regulatory authority finds, that it is not reasonably possible to use all available organic matter for these purposes, you may bury it in the backfill.

(4)(i) You may not burn organic matter.

(ii) You may bury organic matter in the backfill only as provided in paragraphs (f)(1)(ii) and (3)(ii) of this section.

§ 816.34 How must I protect the hydrologic balance?

(a) You, the permittee, must conduct all surface mining and reclamation activities in a manner that will—

(1) Minimize disturbance of the hydrologic balance within the permit and adjacent areas.

(2) Prevent material damage to the hydrologic balance outside the permit area.

(3) Protect streams in accordance with §§ 780.28 and 816.57 of this chapter.

(4) Assure the protection or replacement of water supplies to the extent required by § 816.40 of this part.

(5) Protect existing water rights under state law.

(6) Support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this part.

(7) Comply with the hydrologic reclamation plan as submitted under

§ 780.22 of this chapter and approved in the permit.

(8) Protect groundwater quality by using best management practices to handle earth materials and runoff in a manner that avoids the formation of acid or toxic mine drainage and by managing excavations and other disturbances to prevent or control groundwater degradation. The regulatory authority will determine the meaning of the term ''best management practices'' on a site-specific basis. At a minimum, the term includes equipment, devices, systems, methods, and techniques that the Director determines to be best management practices.

(9) Protect groundwater quantity by handling earth materials and runoff in a manner that will restore the approximate premining recharge capacity of the reclaimed area as a whole, excluding coal mine waste disposal areas and excess spoil fills, so as to allow the movement of water into the groundwater system.

(10) Protect surface-water quality by using best management practices, as described in paragraph (a)(8) of this section, to handle earth materials, groundwater discharges, and runoff in a manner that—

(i) Prevents postmining discharges of acid or toxic mine drainage.

(ii) Prevents additional contribution of suspended solids to streamflow or runoff outside the permit area to the extent possible, using the best technology currently available.

(iii) Otherwise prevents water pollution.

(11) Protect surface-water quality and flow rates by handling earth materials and runoff in accordance with the steps outlined in the hydrologic reclamation plan and the surface-water runoff control plan approved in the permit in accordance with §§ 780.22 and 780.29 of this chapter, respectively.

(b)(1) To the maximum extent practicable, you must use mining and reclamation practices that minimize water pollution, changes in flow, and adverse impacts on stream biota rather than relying upon water treatment to minimize those impacts.

(2) You must install, use, and maintain any necessary water-treatment facilities or water-quality controls if drainage control, materials handling, stabilization and revegetation of disturbed areas, diversion of runoff, mulching, and other reclamation and remedial practices are not adequate to meet the requirements of this section and § 816.42 of this part.

(c) The regulatory authority may require that you take preventive, remedial, or monitoring measures in addition to those set forth in this part to prevent material damage to the hydrologic balance outside the permit area.

(d)(1) You must examine the runoff-control structures identified under § 780.29 of this chapter within 72 hours of cessation of each occurrence of the following precipitation events:

(i) In areas with an average annual precipitation of more than 26.0 inches, an event of a size equal to or greater than that of a storm with a 2-year recurrence interval. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine peak flow for a storm with that recurrence interval.

(ii) In areas with an average annual precipitation of 26.0 inches or less, a significant event of a size specified by the regulatory authority.

(2)(i) You must prepare a report, which must be certified by a registered professional engineer, and submit the report to the regulatory authority within 30 days of cessation of the applicable precipitation event under paragraph (d)(1) of this section. The report must address the performance of the runoff-control structures, identify and describe any material damage to the hydrologic balance outside the permit area that occurred, and identify and describe the remedial measures taken in response to that damage.

(ii) The report prepared under paragraph (d)(2)(i) of this section may include all precipitation events that occur within 30 days of cessation of the applicable precipitation event under paragraph (d)(1) of this section.

§ 816.35 How must I monitor groundwater?

(a)(1)(i) You, the permittee, must monitor groundwater in the manner specified in the groundwater monitoring plan approved in the permit in accordance with § 780.23(a) of this chapter.

(ii) You must adhere to the data collection, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter when conducting monitoring under this section.

(2) At a minimum, you must conduct monitoring through mining, reclamation, and the revegetation responsibility period under § 816.115 of this part for the monitored area. Monitoring must continue beyond that minimum for any additional time needed for monitoring results to demonstrate that the criteria of § 816.35(d)(1) and (2) of this section have been met, as determined by the regulatory authority.

(b)(1) You must submit groundwater monitoring data to the regulatory authority every 3 months, or more frequently if prescribed by the regulatory authority.

(2) Monitoring reports must include analytical results from each sample taken during the reporting period.

(c) When the analysis of any sample indicates noncompliance with the terms and conditions of the permit, you must promptly notify the regulatory authority, take any applicable actions required under § 773.17(e) of this chapter, and implement any applicable remedial measures required by the hydrologic reclamation plan approved in the permit in accordance with § 780.22 of this chapter.

(d) You may use the permit revision procedures of § 774.13 of this chapter to request that the regulatory authority modify the groundwater monitoring requirements, including the parameters covered and the sampling frequency. The regulatory authority may approve your request if you demonstrate, using the monitoring data obtained under this section, that—

(1) Future adverse changes in groundwater quantity or quality are unlikely to occur.

(2) The operation has—

(i) Minimized disturbance to the hydrologic balance in the permit and adjacent areas.

(ii) Prevented material damage to the hydrologic balance outside the permit area.

(iii) Preserved or restored the biological condition of perennial and intermittent streams within the permit and adjacent areas for which baseline biological condition data was collected under § 780.19(c)(6)(vi) of this chapter when groundwater from the permit area provides all or part of the base flow of those streams.

(iv) Maintained or restored the availability and quality of groundwater to the extent necessary to support the approved postmining land uses within the permit area.

(v) Protected or replaced the water rights of other users.

(e) Whenever information available to the regulatory authority indicates that additional monitoring is necessary to protect the hydrologic balance, to detect hydrologic changes, or to meet other requirements of the regulatory program, the regulatory authority must issue an order under § 774.10(b) of this chapter requiring that you revise your permit to include the necessary additional monitoring.

(f) You must install, maintain, operate, and, when no longer needed, remove all equipment, structures, and

other devices used in conjunction with monitoring groundwater, consistent with §§ 816.13 and 816.39 of this part.

§ 816.36 How must I monitor surface water?

(a)(1)(i) You, the permittee, must monitor surface water in the manner specified in the surface-water monitoring plan approved in the permit in accordance with § 780.23(b) of this chapter.

(ii) You must adhere to the data collection, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter when conducting monitoring under this section.

(2) Monitoring must continue through mining and during reclamation until the regulatory authority releases the entire bond amount for the monitored area under §§ 800.40 through 800.43 of this chapter.

(b)(1) You must submit surface-water monitoring data to the regulatory authority every 3 months, or more frequently when prescribed by the regulatory authority.

(2) Monitoring reports must include analytical results from each sample taken during the reporting period.

(3) The reporting requirements of paragraph (b) of this section do not exempt you from meeting any National Pollutant Discharge Elimination System (NPDES) reporting requirements.

(c) When the analysis of any sample indicates noncompliance with the terms and conditions of the permit, you must promptly notify the regulatory authority, take any applicable actions required under § 773.17(e) of this chapter, and implement any applicable remedial measures required by the hydrologic reclamation plan approved in the permit in accordance with § 780.22 of this chapter.

(d) You may use the permit revision procedures of § 774.13 of this chapter to request that the regulatory authority modify the surface-water monitoring requirements (except those required by the NPDES permitting authority), including the parameters covered and the sampling frequency. The regulatory authority may approve your request if you demonstrate, using the monitoring data obtained under this section, that—

(1) Future adverse changes in surface-water quantity or quality are unlikely to occur.

(2) The operation has—

(i) Minimized disturbance to the hydrologic balance in the permit and adjacent areas.

(ii) Prevented material damage to the hydrologic balance outside the permit area.

(iii) Preserved or restored the biological condition of perennial and intermittent streams within the permit and adjacent areas for which baseline biological condition data was collected under § 780.19(c)(6)(vi) of this chapter.

(iv) Maintained or restored the availability and quality of surface water to the extent necessary to support the approved postmining land uses within the permit area.

(v) Not precluded attainment of any designated use of a surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(vi) Protected or replaced the water rights of other users.

(e) Whenever information available to the regulatory authority indicates that additional monitoring is necessary to protect the hydrologic balance, to detect hydrologic changes, or to meet other requirements of the regulatory program, the regulatory authority must issue an order under § 774.10(b) of this chapter requiring that you revise your permit to include the necessary additional monitoring.

(f) You must install, maintain, operate, and, when no longer needed, remove all equipment, structures, and other devices used in conjunction with monitoring surface water.

§ 816.37 How must I monitor the biological condition of streams?

(a)(1)(i) You must monitor the biological condition of perennial and intermittent streams in the manner specified in the plan approved in the permit in accordance with § 780.23(c) of this chapter.

(ii) You must adhere to the data collection, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter and use a bioassessment protocol that complies with § 780.19(c)(6)(vii) of this chapter when conducting monitoring under this section.

(2) Monitoring must continue through mining and during reclamation until the regulatory authority releases the entire bond amount for the monitored area under §§ 800.40 through 800.43 of this chapter.

(b) You must submit biological condition monitoring data to the regulatory authority on an annual basis, or more frequently if prescribed by the regulatory authority.

(c) Whenever information available to the regulatory authority indicates that additional monitoring is necessary to meet the requirements of the regulatory program, the regulatory authority must issue an order under § 774.10(b) of this chapter requiring that you revise your permit to include the necessary additional monitoring.

§ 816.38 How must I handle acid-forming and toxic-forming materials?

(a) You, the permittee, must use the best technology currently available to handle acid-forming and toxic-forming materials in a manner that will avoid the creation of acid or toxic mine drainage into surface water and groundwater. At a minimum, you must comply with the plan approved in the permit in accordance with § 780.12(n) of this chapter and adhere to disposal, treatment, and storage practices that are consistent with other material handling and disposal provisions of this chapter.

(b) You may temporarily store acid-forming and toxic-forming materials only if the regulatory authority specifically approves temporary storage as necessary and finds in writing in the permit that the proposed storage method will protect surface water and groundwater by preventing erosion, the formation of polluted runoff, and the infiltration of polluted water into aquifers. The regulatory authority must specify a maximum time for temporary storage, which may not exceed the period until permanent disposal first becomes feasible. In addition, storage must not result in any risk of water pollution, adverse impacts to the biology of perennial or intermittent streams, or other environmental damage.

§ 816.39 What must I do with exploratory or monitoring wells when I no longer need them?

(a) Except as provided in paragraph (b) of this section, you, the permittee, must permanently seal exploratory or monitoring wells in a safe and environmentally sound manner in accordance with § 816.13 of this part before the regulatory authority may approve full release of the bond posted for the land on which the wells are located under §§ 800.40 through 800.43 of this chapter.

(b) With the prior approval of the regulatory authority, you may transfer wells to another party for further use. The conditions of the transfer must comply with state and local laws. You will remain responsible for the proper management of the wells until full release of the bond posted for the land on which the wells are located under §§ 800.40 through 800.43 of this chapter.

§ 816.40 What responsibility do I have to replace water supplies?

(a) *Replacement of adversely-impacted water supplies.* (1) You, the permittee, must replace the water

supply of an owner of an interest in real property who obtains all or part of his or her supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source when the water supply has been adversely impacted by contamination, diminution, or interruption as a result of your surface mining activities.

(2) The replacement supply must be equivalent to the quantity and quality of the premining supply.

(3) Replacement includes provision of an equivalent water supply delivery system and payment of operation and maintenance expenses in excess of customary and reasonable delivery costs for the premining water supply. If you and the water supply owner agree, your obligation to pay operation and maintenance costs may be satisfied by a one-time payment in an amount that covers the present worth of the increased annual operation and maintenance costs for a period upon which you and the water supply owner agree.

(4) If the affected water supply was not needed for the land use in existence at the time of loss, contamination, or diminution, and if the supply is not needed to achieve the postmining land use, you may satisfy the replacement requirements by demonstrating that a suitable alternative water source is available and could feasibly be developed, provided you obtain written concurrence from the owner of the affected water supply.

(b) *Measures to address anticipated adverse impacts to protected water supplies.* For anticipated loss of or damage to a protected water supply, you must adhere to the requirements set forth in the permit in accordance with § 780.22(b) of this chapter.

(c) *Measures to address unanticipated adverse impacts to protected water supplies.* For unanticipated loss of or damage to a protected water supply, you must—

(1) Provide an emergency temporary water supply within 24 hours of notification of the loss. The temporary supply must be adequate in quantity and quality to meet normal household needs.

(2) Develop and submit a plan for a permanent replacement supply to the regulatory authority within 30 days of receiving notice that an unanticipated loss of or damage to a protected water supply has occurred.

(3) Provide a permanent replacement water supply within 2 years of the date of receiving notice of an unanticipated loss of or damage to a protected water supply. The regulatory authority may grant an extension if you have made a good-faith effort to meet this deadline, but have been unable to do so for reasons beyond your control.

(d) *Basis for determination of adverse impact.* The regulatory authority must use the baseline hydrologic and geologic information required under § 780.19 of this chapter and all other available information to determine whether and to what extent the mining operation adversely impacted the damaged water supply.

§ 816.41 Under what conditions may I discharge water and other materials into an underground mine?

(a) You may not discharge any water or other materials from a surface coal mining and reclamation operation into an underground mine unless the regulatory authority specifically approves the discharge in writing, based upon a demonstration that—

(1) The discharge will be made in a manner that—

(i) Minimizes disturbances to the hydrologic balance within the permit area;

(ii) Prevents material damage to the hydrologic balance outside the permit area, including the hydrologic balance of the area in which the underground mine receiving the discharge is located;

(iii) Does not adversely impact the biology of perennial or intermittent streams; and

(iv) Otherwise eliminates public hazards resulting from surface mining activities.

(2) The discharge will not cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart.

(3)(i) The discharge will be at a known rate and of a quality that will meet the effluent limitations for pH and total suspended solids in 40 CFR part 434.

(ii) The regulatory authority may approve discharges of water that exceed the effluent limitations for pH and total suspended solids in 40 CFR part 434 if the available evidence indicates that there is no direct hydrologic connection between the underground mine and other waters and that those exceedances will not be inconsistent with paragraph (a)(1) of this section.

(4) The discharge will not cause or contribute to a violation of applicable state or tribal water quality standards for groundwater.

(5) The Mine Safety and Health Administration has approved the discharge.

(6) You have obtained written permission from the owner of the mine into which the discharge is to be made and you have provided a copy of that authorization to the regulatory authority.

(b) Discharges are limited to the following materials:

(1) Water.

(2) Coal processing waste.

(3) Fly ash from a coal-fired facility.

(4) Sludge from an acid-mine-drainage treatment facility.

(5) Flue-gas desulfurization sludge.

(6) Inert materials used for stabilizing underground mines.

(7) Underground mine development waste.

§ 816.42 What Clean Water Act requirements apply to discharges from my operation?

(a) Nothing in this section, nor any action taken pursuant to this section, supersedes or modifies—

(1) The authority or jurisdiction of federal, state, or tribal agencies responsible for administration, implementation, and enforcement of the Clean Water Act, 33 U.S.C. 1251 *et seq.;* or

(2) The decisions that those agencies make under the authority of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* including decisions on whether a particular set of facts constitutes a violation of the Clean Water Act.

(b) Discharges of water from surface mining activities and from areas disturbed by surface mining activities must—

(1) Be made in compliance with all applicable water quality laws and regulations, including the effluent limitations established in the National Pollutant Discharge Elimination System permit for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart. The regulatory authority must notify the appropriate Clean Water Act authority whenever it takes action to enforce a permit condition required by § 773.17(i) of this chapter with respect to an effluent limitation in a National Pollutant Discharge Elimination System permit. The regulatory authority must initiate coordination with the Clean Water Act authority before taking enforcement action if coordination is needed to determine whether a violation of the National Pollutant Discharge Elimination System permit exists.

(2) Not cause or contribute to a violation of applicable water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or other applicable state or tribal water quality standards.

(c) Discharges of overburden, coal mine waste, and other materials into waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* must be made in compliance with section 404 of the Clean Water Act, 33 U.S.C. 1344, and its implementing regulations.

(d) The regulatory authority will coordinate an investigation with the appropriate Clean Water Act authority whenever information available to the regulatory authority indicates that mining activities may be causing or contributing to a violation of the water quality standards to which paragraph (b)(2) of this section refers, or to a violation of section 404 of the Clean Water Act, 33 U.S.C. 1344, and its implementing regulations. If, after coordination with the appropriate Clean Water Act authority, it is determined that mining activities are causing or contributing to a Clean Water Act violation, the regulatory authority must, in addition to any action taken by the appropriate Clean Water Act authority, independently take enforcement or other appropriate action to correct the cause of the violation.

(e) You must construct water treatment facilities for discharges from the operation as soon as the need for those facilities becomes evident.

(f)(1) You must remove precipitates and otherwise maintain all water treatment facilities requiring the use of settling ponds or lagoons as necessary to maintain the functionality of those facilities.

(2) You must dispose of all precipitates removed from facilities under paragraph (f)(1) of this section either in an approved solid waste landfill or within the permit area in accordance with a plan approved by the regulatory authority.

(g) You must operate and maintain water treatment facilities until the regulatory authority authorizes removal based upon monitoring data demonstrating that influent to the facilities meets all applicable effluent limitations without treatment and that discharges would not cause or contribute to a violation of applicable water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or other applicable state or tribal water quality standards if left untreated.

§ 816.43 How must I construct and maintain diversions?

(a) *Classification.* The term *diversion* applies to the following categories of channels that convey surface water flow:

(1) *Diversion Ditches.* Diversion ditches are channels constructed to convey surface water runoff or other flows from areas not disturbed by mining activities away from or around disturbed areas. Diversion ditches may be temporary or permanent.

(i) You must remove a temporary diversion ditch as soon as it is no longer needed. You must restore the land disturbed by the removal process in accordance with the approved permit and § 816.55 of this part. Before removing a temporary diversion ditch, you must modify or remove downstream water treatment facilities previously protected by the ditch to prevent overtopping or failure of the facilities. You must continue to maintain water treatment facilities until they are no longer needed.

(ii) You may retain a *diversion ditch* as a permanent structure if you demonstrate and the regulatory authority finds that retention of that diversion ditch would—

(A) Be environmentally beneficial;

(B) Meet the requirements of the reclamation plan approved under § 780.12 of this chapter; and

(C) Be consistent with the surface drainage pattern restoration requirements of §§ 816.56 and 816.57 of this part.

(iii) When approved in the permit, you may divert the following flows away from the disturbed area by means of temporary or permanent diversion ditches without treatment:

(A) Any surface runoff or other flows from mined areas abandoned before May 3, 1978.

(B) Any surface runoff or other flows from undisturbed areas.

(C) Any surface runoff or other flows from reclaimed areas for which the criteria of § 816.46 of this part for siltation structure removal have been met.

(2) *Stream diversions.* Stream diversions are temporary or permanent relocations of perennial or intermittent streams. Diversions of perennial and intermittent streams must comply with the applicable requirements of this section, § 780.28 of this chapter, and § 816.57 of this part.

(i) You must remove *temporary stream diversions* after the original stream channel is reconstructed after mining. As set forth in § 780.28(f) of this chapter, different requirements apply to temporary stream diversions depending on whether they will be in existence for less or more than 3 years.

(ii) *Permanent stream diversions* remain in their locations following mining and reclamation.

(3) *Conveyances and channels within the disturbed area.* All other conveyances and channels that are constructed within the disturbed area to transport surface water are also diversions. During mining, these channels or conveyances must deliver all captured surface water flow to siltation structures.

(i) You must remove temporary conveyances or channels when they are no longer needed for their intended purpose.

(ii) When approved in the permit, you may retain conveyances or channels that support or enhance the approved postmining land use.

(b) *Design criteria.* When the permit requires the use of siltation structures for sediment control, you must construct diversions designed to the standards of this section to convey runoff from the disturbed area to the siltation structures unless the topography will naturally direct all surface runoff or other flows to a siltation structure.

(1) You must design all diversions to—

(i) Ensure the safety of the public.

(ii) Minimize adverse impacts to the hydrologic balance, including the biology of perennial and intermittent streams, within the permit and adjacent areas.

(iii) Prevent material damage to the hydrologic balance outside the permit area.

(2) You must design, locate, construct, maintain, and use each diversion and its appurtenant structures to—

(i) Be stable.

(ii) Provide and maintain the capacity to safely pass the peak flow of surface runoff from a 2-year, 6-hour precipitation event for a temporary diversion and a 10-year, 6-hour precipitation event for a permanent diversion. Flow capacity for stream diversions includes both the in-channel capacity and the flood-prone area overbank capacity. Flow capacity for diversion ditches and conveyances or channels includes only in-channel capacity, with adequate freeboard to prevent out-of-channel flow. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine peak flows.

(iii) Prevent, to the extent possible using the best technology currently available, additional contributions of

suspended solids to streamflow or runoff outside the permit area.

(iv) Comply with all applicable federal, state, tribal, and local laws and regulations.

(c) *Application to § 816.41.* You may not divert surface runoff or other flows into underground mines without approval of the regulatory authority under § 816.41 of this part.

(d) *Additional requirements.* The regulatory authority may specify additional design criteria for diversions to meet the requirements of this section.

§ 816.45 What sediment control measures must I implement?

(a) You must design, construct, and maintain appropriate sediment control measures, using the best technology currently available to—

(1) Prevent, to the extent possible, additional contributions of sediment to streamflow or to runoff outside the permit area.

(2) Meet the applicable effluent limitations referenced in § 816.42(a) of this part.

(3) Minimize erosion to the extent possible.

(b) Sediment control measures include practices carried out within the disturbed area. Sediment control measures consist of the use of proper mining and reclamation methods and sediment control practices, singly or in combination. Sediment control methods include but are not limited to—

(1) Disturbing the smallest practicable area at any one time during the mining operation through progressive backfilling, grading, and prompt revegetation.

(2) Shaping and stabilizing the backfilled material to promote a reduction in the rate and volume of runoff.

(3) Retaining sediment within disturbed areas.

(4) Diverting surface runoff from undisturbed areas away from disturbed areas.

(5) Using protected channels or pipes to convey surface runoff from undisturbed areas through disturbed areas so as not to cause additional erosion.

(6) Using straw dikes, riprap, check dams, mulches, vegetative sediment filters, dugout ponds, and other measures that reduce overland flow velocity, reduce runoff volume, or trap sediment.

(7) Treating surface runoff collected in sedimentation ponds with flocculants or other chemicals.

§ 816.46 What requirements apply to siltation structures?

(a) *Scope.* For the purpose of this section only, the phrase ''disturb the land surface'' does not include those areas—

(1) In which the only surface mining activities consist of diversions, siltation structures, or roads that are designed, constructed, and maintained in accordance with this part; and

(2) For which you do not plan to otherwise disturb the land surface upgradient of the diversion, siltation structure, or road.

(b) *General requirements.* (1) When siltation structures will be used to achieve the requirements of § 816.45 of this part, you must construct those structures before beginning any surface mining activities that will disturb the land surface.

(2) Upon completion of construction of a siltation structure, a qualified registered professional engineer, or, in any state that authorizes land surveyors to prepare and certify plans in accordance with § 780.25(a) of this chapter, a qualified registered professional land surveyor, must certify that the structure has been constructed as designed and as approved in the reclamation plan in the permit.

(3) Any siltation structure that impounds water must be designed, constructed and maintained in accordance with § 816.49 of this chapter.

(4) You must maintain siltation structures until removal is authorized by the regulatory authority and the disturbed area has been stabilized and revegetated.

(5)(i) When a siltation structure is removed, you must regrade the land upon which the structure was located and revegetate the land in accordance with the reclamation plan and §§ 816.111 and 816.116 of this chapter.

(ii) Paragraph (b)(5)(i) of this section does not apply to sedimentation ponds approved by the regulatory authority for retention as permanent impoundments under § 816.49(b) of this part if the maintenance requirements of § 800.42(c)(5) of this chapter are met.

(c) *Sedimentation ponds.* (1) When used, sedimentation ponds must—

(i) Be located as near as possible to the disturbed area and outside perennial or intermittent stream channels unless approved by the regulatory authority in the permit in accordance with §§ 780.28 and 816.57(c) of this chapter.

(ii) Be designed, constructed, and maintained to—

(A) Provide adequate sediment storage volume.

(B) Provide adequate detention time to allow the effluent from the ponds to meet applicable effluent limitations.

(C) Contain or treat the 10-year, 24-hour precipitation event (''design event'') unless a lesser design event is approved by the regulatory authority based on terrain, climate, other site-specific conditions, and a demonstration that the effluent limitations referenced in § 816.42 of this part will be met.

(D) Provide a nonclogging dewatering device adequate to maintain the detention time required under paragraph (c)(1)(ii)(B) of this section.

(E) Minimize short circuiting to the extent possible.

(F) Provide periodic sediment removal sufficient to maintain adequate volume for the design event.

(G) Ensure against excessive settlement.

(H) Be free of sod, large roots, frozen soil, and acid-forming or toxic-forming materials.

(I) Be compacted properly.

(2) *Spillways.* A sedimentation pond must include either a combination of principal and emergency spillways or a single spillway configured as specified in § 816.49(a)(9) of this part.

(d) *Other treatment facilities.* (1) You must design other treatment facilities to treat the 10-year, 24-hour precipitation event unless the regulatory authority approves a lesser design event based upon terrain, climate, other site-specific conditions, and a demonstration that the effluent limitations referenced in § 816.42 of this part will be met.

(2) You must design other treatment facilities in accordance with the applicable requirements of paragraph (c) of this section.

(e) *Exemptions.* The regulatory authority may grant an exemption from the requirements of this section if—

(1) The disturbed drainage area within the total disturbed area is small; and

(2) You demonstrate that neither siltation structures nor alternate sediment control measures are necessary for drainage from the disturbed drainage area to comply with § 816.42 of this part.

§ 816.47 What requirements apply to discharge structures for impoundments?

You must control discharges from sedimentation ponds, permanent and temporary impoundments, coal mine waste impounding structures, and diversions by energy dissipators, riprap channels, and other devices when necessary to reduce erosion, to control meander migration, to prevent deepening or enlargement of stream channels, or to minimize disturbance of

the hydrologic balance. You must design discharge structures according to standard engineering design procedures.

§ 816.49 What requirements apply to impoundments?

(a) *Requirements that apply to both permanent and temporary impoundments.—*

(1) *MSHA requirements.* An impoundment meeting the criteria of § 77.216(a) of this title must comply with the requirements of § 77.216 of this title and this section.

(2) *Stability.* (i) An impoundment that meets the criteria of § 77.216(a) of this title or that includes a dam with a significant or high hazard potential classification under § 780.25(a) of this chapter must have a minimum static safety factor of 1.5 for a normal pool with steady state seepage saturation conditions and a seismic safety factor of at least 1.2.

(ii) Impoundments not included in paragraph (a)(2)(i) of this section, except for a coal mine waste impounding structure, must have a minimum static safety factor of 1.3 for a normal pool with steady state seepage saturation conditions or meet the requirements of § 780.25(e)(2) of this chapter.

(3) *Freeboard.* (i) Impoundments must have adequate freeboard to resist overtopping by waves that occur in conjunction with the typical increase in water elevation at the downwind edge of any body of water, waves resulting from sudden influxes of surface runoff from precipitation events, or waves resulting from any combination of these events or other events.

(ii) An impoundment that includes a dam with a significant or high hazard potential classification under § 780.25(a) of this chapter must comply with the freeboard hydrograph criteria in the following table:

MINIMUM AUXILIARY SPILLWAY HYDROLOGIC CRITERIA

Hazard potential classification of embankment	Design precipitation event for—	
	Auxiliary spillway hydrograph	Freeboard hydrograph
Significant	P_{100} [1] + 0.12(PMP [2] − P_{100})	P_{100} + 0.40(PMP − P_{100}).
High	P_{100} + 0.26(PMP − P_{100})	PMP.

[1] P_{100} = Precipitation event for 100-year return interval.
[2] PMP = Probable Maximum Precipitation event.

(4) *Foundation.* (i) Foundations and abutments for an impounding structure must be stable during all phases of construction and operation and must be designed based on adequate and accurate information on the foundation and abutment conditions.

(ii) You must conduct foundation and abutment investigations, as well as any necessary laboratory testing of foundation material, to determine the design requirements for foundation stability and control of underseepage for an impoundment that includes a dam with a significant or high hazard potential classification under § 780.25(a) of this chapter.

(iii) You must remove all vegetative and organic materials from the foundation area and excavate and prepare the foundation area to resist failure. You must install cutoff trenches if necessary to ensure stability.

(5) *Protection of impoundment slopes.* You must take measures to protect impoundment slopes from surface erosion and the adverse impacts of a sudden drawdown.

(6) *Protection of embankment faces.* Faces of embankments and surrounding areas shall be vegetated, except that faces where water is impounded may be riprapped or otherwise stabilized in accordance with accepted design practices.

(7) *Spillways.* An impoundment must include either a combination of principal and emergency spillways or a single spillway configured as specified in paragraph (a)(7)(i) of this section, designed and constructed to safely pass the applicable design precipitation event specified in paragraph (a)(7)(ii) of this section, except as set forth in paragraph (c)(2) of this section.

(i) The regulatory authority may approve a single open-channel spillway that is:

(A) Of nonerodible construction and designed to carry sustained flows; or

(B) Earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected.

(ii) Except as specified in paragraph (c)(2) of this section, the required design precipitation event for an impoundment meeting the spillway requirements of paragraph (a)(7) of this section is:

(A) For an impoundment that includes a dam with a significant or high hazard potential classification under § 780.25(a) of this chapter, the design precipitation event specified in the auxiliary spillway hydrograph column in the table in paragraph (a)(3)(ii) of this section, or any greater event specified by the regulatory authority.

(B) For an impoundment meeting the criteria of § 77.216(a) of this title, the 100-year, 6-hour event, or any greater event specified by the regulatory authority.

(C) For an impoundment not included in paragraphs (a)(7)(ii)(A) and (B) of this section, the 25-year, 6-hour event, or any greater event specified by the regulatory authority.

(8) *Highwalls.* The vertical portion of any highwall remnant within the impoundment must be located far enough below the low-water line along the full extent of the highwall to provide adequate safety and access for the proposed water users.

(9) *Inspections.* Except as provided in paragraph (a)(9)(iv) of this section, a qualified registered professional engineer or other qualified professional specialist under the direction of a professional engineer must inspect each impoundment as provided in paragraph (a)(9)(i) of this section. The professional engineer or specialist must be experienced in the construction of impoundments.

(i) Inspections must be made regularly during construction, upon completion of construction, and at least yearly until removal of the structure or release of the performance bond.

(ii) After each inspection required by paragraph (a)(9)(i) of this section, the qualified registered professional engineer, or qualified registered professional land surveyor as specified in paragraph (a)(9)(iv) of this section, must promptly provide to the regulatory authority a certified report that the impoundment has been constructed and/or maintained as designed and in accordance with the approved plan and this chapter. The report must include a discussion of any appearance of instability, any structural weakness or other hazardous condition, the depth and elevation of any impounded waters, the existing storage capacity, any

existing or required monitoring procedures and instrumentation, and any other aspects of the structure affecting stability.

(iii) You must retain a copy of the report at or near the minesite.

(iv) In any state that authorizes land surveyors to prepare and certify plans in accordance with § 780.25(b)(1) of this chapter, a qualified registered professional land surveyor may inspect any temporary or permanent impoundment that does not meet the criteria of § 77.216(a) of this title, or that is not classified as having a significant or high hazard potential under § 780.25(a) of this chapter, and certify and submit the report required by paragraph (a)(9)(ii) of this section, except that a qualified registered professional engineer must certify all coal mine waste impounding structures covered by § 816.84 of this chapter. The professional land surveyor must be experienced in the construction of impoundments.

(10) *Examinations.* (i) Impoundments that meet the criteria of § 77.216 of this title, or that are classified as having a significant or high hazard potential under § 780.25(a) of this chapter, must be examined in accordance with § 77.216–3 of this title.

(ii) Impoundments that are not subject to § 77.216 of this title, or that are not classified as having a significant or high hazard potential under § 780.25(a) of this chapter, must be examined at least quarterly. A qualified person designated by the operator must examine impoundments for the appearance of structural weakness and other hazardous conditions.

(11) *Emergency procedures.* If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment must promptly inform the regulatory authority of the finding and of the emergency procedures formulated for public protection and remedial action. The regulatory authority must be notified immediately if adequate procedures cannot be formulated or implemented. The regulatory authority then must notify the appropriate agencies that other emergency procedures are required to protect the public.

(b) *Requirements that apply only to permanent impoundments.* A permanent impoundment of water may be created if authorized by the regulatory authority in the approved permit based upon the following demonstration:

(1) The size and configuration of the impoundment will be adequate for its intended purposes.

(2) The quality of impounded water will be suitable on a permanent basis for its intended use and, after reclamation, discharges from the impoundment will not cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in the National Pollutant Discharge Elimination System permit for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart.

(3) The water level will be sufficiently stable and be capable of supporting the intended use.

(4) Final grading will provide for adequate safety and access for proposed water users.

(5) The impoundment will not result in diminution of the quality or quantity of surface water or groundwater used by surrounding landowners for agricultural, industrial, recreational, or domestic uses.

(6) The impoundment will be suitable for the approved postmining land use.

(7) Approval of the impoundment will not result in retention of spoil piles or ridges that are inconsistent with the definition of approximate original contour.

(8) Approval of the impoundment will not result in the creation of an excess spoil fill elsewhere within the permit area.

(9) The impoundment has been designed with dimensions, features, and other characteristics that will enhance fish and wildlife habitat to the extent that doing so is not inconsistent with the intended use.

(c) *Requirements that apply only to temporary impoundments that rely primarily upon storage.* (1) In lieu of meeting the requirements in paragraph (a)(7)(i) of this section, the regulatory authority may approve an impoundment that relies primarily on storage to control the runoff from the design precipitation event when you demonstrate, and a qualified registered professional engineer or qualified registered professional land surveyor in accordance with § 780.25(b) of this chapter certifies, that the impoundment will safely control the design precipitation event.

(2) You must use current prudent engineering practices to safely remove the water from an impoundment constructed in accordance with paragraph (c)(1) of this section.

(3) An impoundment constructed in accordance with paragraph (c)(1) of this section must be located where failure would not be expected to cause loss of life or serious property damage, unless the impoundment meets one of the following exceptions:

(i) An impoundment that meets the criteria of § 77.216(a) of this title, or that is classified as having a significant or high hazard potential under § 780.25(a) of this chapter, and is designed to control the precipitation of the probable maximum precipitation of a 6-hour event, or any greater event specified by the regulatory authority.

(ii) An impoundment not included in paragraph (c)(3)(i) of this section that is designed to control the precipitation of the 100-year, 6-hour event, or any greater event specified by the regulatory authority.

§ 816.55 What must I do with sedimentation ponds, diversions, impoundments, and treatment facilities after I no longer need them?

(a) Before seeking final bond release under § 800.42(d) of this chapter, you must—

(1) Remove all temporary structures and reclaim the land upon which those structures were located in accordance with the approved permit; and

(2) Ensure that all sedimentation ponds, diversions, and impoundments approved for retention after final bond release have been maintained properly and meet all applicable requirements of the approved permit and this chapter for retention as permanent structures. You must renovate the structures if necessary to meet the requirements for retention.

(b) [Reserved]

§ 816.56 What additional performance standards apply to mining activities conducted in or through an ephemeral stream?

(a) *Compliance with federal, state, and tribal water quality laws and regulations.* (1) You may conduct surface mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* only if you first obtain all necessary authorizations, certifications, and permits under that law.

(2) Surface mining activities must comply with all applicable state and tribal laws and regulations concerning surface water and groundwater.

(b) *Postmining surface drainage pattern and stream-channel configuration.* If you mine through an ephemeral stream, you must construct a postmining surface drainage pattern and stream-channel configurations that are consistent with the surface drainage pattern and stream-channel configurations approved in the permit

in accordance with § 780.27 of this chapter.

(c) *Establishment of streamside vegetative corridors.* (1) If you mine through an ephemeral stream, you must establish a vegetative corridor at least 100 feet wide along each bank of the reconstructed stream channel. The 100-foot distance must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark. The corridor must be consistent with natural vegetation patterns.

(2) When planting the streamside vegetative corridors required by paragraph (c)(1) of this section, you must—

(i) Use appropriate native species adapted to the area, unless an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344, requires the use of non-native species.

(ii) Ensure that the species planted are consistent with the revegetation plan approved in the permit.

(iii) Include appropriate native hydrophytic vegetation, vegetation typical of floodplains, or hydrophilic vegetation characteristic of riparian areas and wetlands to the extent that the corridor contains suitable habitat for those species and the stream and the geomorphology of the area are capable of supporting vegetation of that nature.

(iv) Use native trees and shrubs when planting areas within the streamside corridor that were forested at the time of application or that would revert to forest under conditions of natural succession.

(3) Paragraphs (c)(1) and (2) of this section do not require planting of hydrophytic or hydrophilic species within those portions of streamside corridors where the stream, soils, or climate are incapable of providing the moisture or other growing conditions needed to support and sustain hydrophytic or hydrophilic species. In those situations, you must plant the corridor with appropriate native species that are consistent with the baseline information concerning natural streamside vegetation included in the permit application under § 779.19 of this chapter, unless otherwise directed by an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344.

(4) Paragraphs (c)(1) through (3) of this section do not apply to—

(i) Prime farmland historically used for cropland; or

(ii) Situations in which establishment of a streamside vegetative corridor comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release under §§ 800.40 through 800.43 of this chapter.

§ 816.57 What additional performance standards apply to mining activities conducted in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream?

(a) *Compliance with federal, state, and tribal water quality laws and regulations.* (1) You may conduct surface mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* only if you first obtain all necessary authorizations, certifications, and permits under that law.

(2) Surface mining activities must comply with all applicable state and tribal laws and regulations concerning surface water and groundwater.

(b) *Prohibition on mining in or within 100 feet of a perennial or intermittent stream.* You may not conduct surface mining activities in or through a perennial or intermittent stream, or that would disturb the surface of land within 100 feet of a perennial or intermittent stream, unless the regulatory authority authorizes you to do so in the permit after making the findings required under § 780.28 of this chapter. The 100-foot distance must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(c) *Postmining surface drainage pattern and stream-channel configuration.* (1) If you mine through or permanently divert a perennial or intermittent stream, you must construct a postmining surface drainage pattern and stream-channel configurations that are consistent with the surface drainage pattern and stream-channel configurations approved in the permit in accordance with § 780.28 of this chapter.

(2) Upon completion of construction of a stream-channel diversion for a perennial or intermittent stream, or reconstruction of a stream channel after mining through a perennial or intermittent stream, you must obtain a certification from a qualified registered professional engineer that the stream-channel diversion or reconstructed stream channel has been constructed in accordance with the design approved in the permit and that it meets all engineering-related requirements of this section. This certification may be limited to the location, dimensions, and physical characteristics of the stream channel.

(d) *Establishment of streamside vegetative corridors.* (1)(i) If you mine through a perennial or intermittent stream, you must establish a vegetative corridor at least 100 feet wide along each bank of the reconstructed stream channel. The corridor must be consistent with natural vegetation patterns.

(ii) You must establish a vegetative corridor on any land that you disturb within 100 feet of a perennial or intermittent stream. The corridor must be consistent with natural vegetation patterns.

(iii) If you divert a perennial or intermittent stream, you must establish a vegetative corridor at least 100 feet wide along each bank of the stream-channel diversion, with the exception of temporary diversions that will be in place less than 3 years. The corridor must be consistent with natural vegetation patterns.

(iv) The 100-foot distance mentioned in paragraphs (d)(1)(i) through (iii) of this section must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(2) When planting the streamside vegetative corridors required by paragraph (d)(1) of this section, you must—

(i) Use appropriate native species adapted to the area, unless an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344, requires the use of non-native species.

(ii) Ensure that the species planted are consistent with the revegetation plan approved in the permit.

(iii) Include appropriate native hydrophytic vegetation, vegetation typical of floodplains, or hydrophilic vegetation characteristic of riparian areas and wetlands to the extent that the corridor contains suitable habitat for those species and the stream and the geomorphology of the area are capable of supporting vegetation of that nature.

(iv) Use native trees and shrubs when planting areas within the streamside corridor that were forested at the time of application or that would revert to forest under conditions of natural succession.

(3) Paragraphs (d)(1) and (2) of this section do not require planting of hydrophytic or hydrophilic species within those portions of streamside corridors where the stream, soils, or climate are incapable of providing the moisture or other growing conditions needed to support and sustain hydrophytic or hydrophilic species. In those situations, you must plant the corridor with appropriate native species that are consistent with the baseline information concerning natural

streamside vegetation included in the permit application under § 779.19 of this chapter, unless otherwise directed by an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344.

(4) Paragraphs (d)(1) through (3) of this section do not apply to—

(i) Prime farmland historically used for cropland; or

(ii) Situations in which establishment of a streamside vegetative corridor comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release under §§ 800.40 through 800.43 of this chapter.

(e) *Restoration of form.* If you mine through or permanently divert a perennial or intermittent stream, you must demonstrate successful restoration or reconstruction of the form of the stream channel in accordance with the design approved in the permit before you qualify for Phase I bond release under § 800.42(b)(1) of this chapter.

(f) *Restoration of hydrologic function.* If you mine through or permanently divert a perennial or intermittent stream, you must demonstrate restoration of the hydrologic function of the reconstructed stream segment before you qualify for Phase II bond release under § 800.42(b)(2) of this chapter. Restoration of the hydrologic function includes, but is not limited to, restoration of the flow regime, except as otherwise approved in the permit under § 780.28(e)(2) of this chapter.

(g) *Restoration of ecological function.* If you mine through or permanently divert a perennial or intermittent stream, the reconstructed stream or stream-channel diversion must meet the criteria approved in the permit for determining restoration of ecological function, as established by the regulatory authority under § 780.28(g) of this chapter, before you qualify for final bond release under §§ 800.40 through 800.43 of this chapter.

(h) *Prohibition on placement of siltation structures in perennial or intermittent streams.* (1)(i) Except as provided in paragraph (h)(2) of this section, you may not construct a siltation structure in a perennial or intermittent stream or use perennial or intermittent streams as waste treatment systems to convey surface runoff from the disturbed area to a sedimentation pond.

(ii) Paragraph (h)(1)(i) of this section does not prohibit the construction of a siltation structure in a stream channel immediately downstream of a stream segment that is mined through.

(2) If approved in the permit, the prohibition in paragraph (h)(1) of this section will not apply to excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures in steep-slope areas when you demonstrate, and the regulatory authority finds in writing, that use of a perennial or intermittent stream segment as a waste treatment system for sediment control or construction of a sedimentation pond or other siltation structure in a perennial or an intermittent stream would have less overall adverse impact on fish, wildlife, and related environmental values than construction of diversions and sedimentation ponds or other siltation structures on slopes above the stream.

(3) When the circumstances described in paragraph (h)(2) of this section exist, the following requirements apply:

(i) You must minimize the length of stream used as a waste treatment system to the extent possible and, when practicable, maintain an undisturbed buffer along that stream segment in accordance with paragraph (b) of this section.

(ii) You must place the sedimentation pond or other siltation structure as close to the toe of the excess spoil fill, coal mine waste refuse pile, or coal mine waste impounding structure as possible.

(iii) Following the completion of construction and revegetation of the fill or coal mine waste structure, you must—

(A) Remove and properly dispose of accumulated sediment in the siltation structure and any stream segment between the inlet of the siltation structure and the toe of the excess spoil fill or coal mine waste structure;

(B) Remove the sedimentation pond or other siltation structure; and

(C) Restore the stream segment in accordance with paragraphs (e) through (g) of this section.

(i) *Programmatic alternative.* Paragraphs (b) through (h) of this section will not apply to a state program approved under subchapter T of this chapter if that program is amended to expressly prohibit all surface mining activities, including the construction of stream-channel diversions, that would result in more than a de minimis disturbance of land in or within 100 feet of a perennial or intermittent stream.

§ 816.59 How must I maximize coal recovery?

You must conduct surface mining activities so as to maximize the utilization and conservation of the coal, while using the best appropriate technology currently available to maintain environmental integrity, so that reaffecting the land in the future through surface coal mining operations is minimized.

§ 816.61 Use of explosives: General requirements.

(a) *Compliance with other laws and regulations.* You must comply with all applicable state and federal laws and regulations governing the use of explosives.

(b) *Compliance with blasting schedule.* Blasts that use more than 5 pounds of explosive or blasting agent must be conducted according to the schedule required by § 816.64 of this part.

(c) *Requirements for blasters.* (1) No later than 12 months after the blaster certification program for a state required by part 850 of this chapter has been approved under the procedures of subchapter C of this chapter, all blasting operations in that state must be conducted under the direction of a certified blaster. Before that time, all blasting operations in that state must be conducted by competent, experienced persons who understand the hazards involved.

(2) Certificates of blaster certification must be carried by blasters or be on file at the permit area during blasting operations.

(3) A blaster and at least one other person shall be present at the firing of a blast.

(4) Any blaster who is responsible for conducting blasting operations at a blasting site must:

(i) Be familiar with the blasting plan and site-specific performance standards; and

(ii) Give direction and on-the-job training to persons who are not certified and who are assigned to the blasting crew or who assist in the use of explosives.

(d) *Blast design.* (1) You must submit an anticipated blast design if blasting operations will be conducted within—

(i) 1,000 feet of any building used as a dwelling, public building, school, church, or community or institutional building outside the permit area; or

(ii) 500 feet of an active or abandoned underground mine.

(2) You must submit the blast design required by paragraph (d)(1) of this section either as part of the permit application or, if approved by the regulatory authority, at a later date before blasting begins. Regulatory authority approval of the blast design is not required, but, as provided in paragraph (d)(5) of this section, the regulatory authority may require changes to the design.

(3) The blast design must contain—

(i) Sketches of the drill patterns, delay periods, and decking.

(ii) The type and amount of explosives to be used.

(iii) Critical dimensions.

(iv) The location and general description of structures to be protected.

(v) A discussion of design factors to be used to protect the public and meet the applicable airblast, flyrock, and ground-vibration standards in § 816.67 of this part.

(4) A certified blaster must prepare and sign the blast design.

(5) The regulatory authority may require changes to the design submitted.

§ 816.62 Use of explosives: Preblasting survey.

(a) At least 30 days before initiation of blasting, you must notify, in writing, all residents or owners of dwellings or other structures located within ½ mile of the permit area how to request a preblasting survey.

(b)(1) A resident or owner of a dwelling or structure within ½ mile of any part of the permit area may request a preblasting survey. This request must be made, in writing, directly to you or to the regulatory authority. If the request is made to the regulatory authority, the regulatory authority will promptly notify you.

(2) You must promptly conduct a preblasting survey of the dwelling or structure and promptly prepare a written report of the survey.

(3) You must conduct an updated survey of any subsequent additions, modifications, or renovations to the dwelling or structure, if requested by the resident or owner.

(c) You must determine the condition of the dwelling or structure and document any preblasting damage and other physical factors that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines, and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.

(d)(1) The person who conducted the survey must sign the written report of the survey.

(2) You must promptly provide copies of the report to the regulatory authority and to the person requesting the survey.

(3) If the person requesting the survey disagrees with the contents or recommendations of the survey, he or she may submit a detailed description of the specific areas of disagreement to both you and the regulatory authority.

(e) You must complete any surveys requested more than 10 days before the planned initiation of blasting before the initiation of blasting.

§ 816.64 Use of explosives: Blasting schedule.

(a) *General requirements.* (1) You must conduct blasting operations at times approved by the regulatory authority and announced in the blasting schedule. The regulatory authority may limit the area covered, the timing, and the sequence of blasting if those limitations are necessary and reasonable to protect public health and safety or welfare.

(2) You must conduct all blasting between sunrise and sunset, unless the regulatory authority approves night-time blasting based upon a showing that the public will be protected from adverse noise and other impacts. The regulatory authority may specify more restrictive time periods for blasting.

(3)(i) You may conduct unscheduled blasts only where public or operator health and safety so require and for emergency blasting actions.

(ii) When you conduct an unscheduled blast, you must use audible signals to notify residents within ½ mile of the blasting site.

(iii) You must document the reason for the unscheduled blast in accordance with § 816.68(c)(16) of this part.

(b) *Blasting schedule publication and distribution.* (1) You must publish the blasting schedule in a newspaper of general circulation in the locality of the blasting site at least 10 days, but not more than 30 days, before beginning a blasting program.

(2) You must distribute copies of the schedule to local governments and public utilities and to each local residence within ½ mile of the proposed blasting site described in the schedule.

(3) You must republish and redistribute the schedule at least every 12 months and revise and republish the schedule at least 10 days, but not more than 30 days, before blasting whenever the area covered by the schedule changes or actual times for blasting significantly differ from the prior announcement.

(c) *Blasting schedule contents.* The blasting schedule must contain, at a minimum, the—

(1) Name, address, and telephone number of the operator;

(2) Identification of the specific areas in which blasting will take place;

(3) Dates and times when explosives are to be detonated;

(4) Methods to be used to control access to the blasting area; and

(5) Type and patterns of audible blast warning and all-clear signals to be used before and after blasting.

§ 816.66 Use of explosives: Blasting signs, warnings, and access control.

(a) *Blasting signs.* Blasting signs must meet the specifications of § 816.11 of this part.

(1) You must place conspicuous signs reading ''Blasting Area'' along the edge of any blasting area that comes within 100 feet of any public road right-of-way and at the point where any other road provides access to the blasting area.

(2) You must place conspicuous signs reading ''Warning! Explosives in Use'' at all entrances to the permit area from public roads or highways. The signs must clearly list and describe the meaning of the audible blast warning and all-clear signals that are in use and explain the marking of blasting areas and charged holes awaiting firing within the permit area.

(b) *Warnings.* You must give blast warning and all-clear signals of different character or pattern that are audible within a range of ½ mile from the point of the blast. You must notify each person within the permit area and each person who resides or regularly works within ½ mile of the permit area of the meaning of the signals in the blasting schedule.

(c) *Access control.* You must control access within the blasting area to prevent presence of livestock or unauthorized persons during blasting and until your authorized representative has reasonably determined that—

(1) No unusual hazards, such as imminent slides or undetonated charges, exist; and

(2) Access to and travel within the blasting area can be safely resumed.

§ 816.67 Use of explosives: Control of adverse effects.

(a) *General requirements.* You must conduct blasting in a manner that prevents—

(1) Injury to persons;

(2) Damage to public or private property outside the permit area;

(3) Adverse impacts on any underground mine; or

(4) Change in the course, channel, or availability of surface water or groundwater outside the permit area.

(b) *Airblast.*—(1) *Limits.* (i) Airblast must not exceed the maximum limits listed below at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area, except as provided in paragraph (e) of this section.

Lower frequency limit of measuring system in Hertz (Hz), plus or minus 3 decibels	Maximum level in decibels (dB)
0.1 Hz or lower—flat response [1]	134 peak.
2 Hz or lower—flat response	133 peak.
6 Hz or lower—flat response	129 peak.
C-weighted—slow response [1]	105 peak dBC.

[1] Only when approved by the regulatory authority.

(ii) If necessary to prevent damage, the regulatory authority must specify lower maximum allowable airblast levels than those of paragraph (b)(1)(i) of this section for use in the vicinity of a specific blasting operation.

(2) *Monitoring.* (i) You must conduct periodic monitoring to ensure compliance with the airblast standards. The regulatory authority may require airblast measurement of any or all blasts and may specify the locations at which measurements are taken.

(ii) The measuring systems must have an upper-end flat-frequency response of at least 200 Hz.

(c) *Flyrock.* Flyrock travelling in the air or along the ground must not be cast from the blasting site—

(1) More than one-half the distance to the nearest dwelling or other occupied structure;

(2) Beyond the area of control required under § 816.66(c) of this part; or

(3) Beyond the permit boundary.

(d) *Ground vibration.*—(1) *General requirements.* (i) In all blasting operations, except as otherwise authorized in paragraph (e) of this section, the maximum ground vibration must not exceed the values approved in the blasting plan required under § 780.15 of this chapter.

(ii) The maximum ground vibration for protected structures listed in paragraph (d)(2)(i) of this section must be established in accordance with either the maximum peak-particle-velocity limits of paragraph (d)(2) of this section, the scaled-distance equation of paragraph (d)(3) of this section, the blasting-level chart of paragraph (d)(4) of this section, or by the regulatory authority under paragraph (d)(5) of this section.

(iii) All structures in the vicinity of the blasting area not listed in paragraph (d)(2)(i) of this section, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines, must be protected from damage by establishment of a maximum allowable limit on the ground vibration, submitted by the operator in the blasting plan and approved by the regulatory authority.

(2) *Maximum peak particle velocity.* (i) The maximum ground vibration must not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area:

Distance (D), from the blasting site, in feet	Maximum allowable peak particle velocity for ground vibration, in inches/second [1]	Scaled-distance factor to be applied without seismic monitoring (Ds) [2]
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

[1] Ground vibration must be measured as the particle velocity. Particle velocity must be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity applies to each of the three measurements.

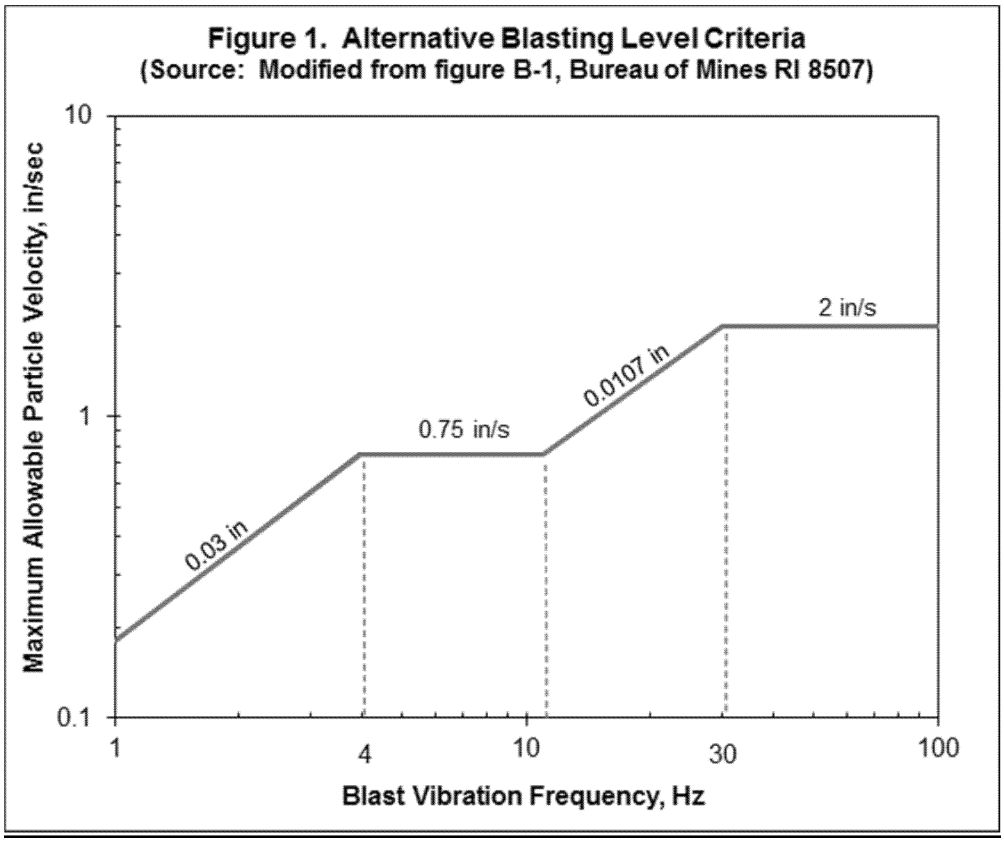
[2] Applicable to the scaled-distance equation of paragraph (d)(3)(i) of this section.

(ii) You must provide a seismographic record for each blast.

(3) *Scaled-distance equation.* (i) You may use the scaled-distance equation, $W=(D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring, where W=the maximum weight of explosives, in pounds; D=the distance, in feet, from the blasting site to the nearest protected structure; and Ds=the scaled-distance factor. The regulatory authority may initially approve the scaled-distance equation using the values for the scaled-distance factor listed in paragraph (d)(2)(i) of this section.

(ii) The regulatory authority may authorize development of a modified scaled-distance factor upon receipt of a written request by the operator, supported by seismographic records of blasting at the minesite. The modified scale-distance factor must be determined such that the particle velocity of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of paragraph (d)(2)(i) of this section at a 95-percent confidence level.

(4) *Blasting-level chart.* (i) You may use the ground-vibration limits in Figure 1 to determine the maximum allowable ground vibration.



(ii) If the Figure 1 limits are used, you must provide a seismographic record including both particle velocity and vibration-frequency levels for each blast. The regulatory authority must approve the method for the analysis of the predominant frequency contained in the blasting records before application of this alternative blasting criterion.

(5) The regulatory authority must reduce the maximum allowable ground vibration beyond the limits otherwise provided by this section, if determined necessary to provide damage protection.

(6) The regulatory authority may require that you conduct seismic monitoring of any or all blasts or may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

(e) The maximum airblast and ground-vibration standards of paragraphs (b) and (d) of this section do not apply at the following locations:

(1) At structures owned by the permittee and not leased to another person.

(2) At structures owned by the permittee and leased to another person, if a written waiver by the lessee is submitted to the regulatory authority before blasting.

§ 816.68 Use of explosives: Records of blasting operations

(a) You must retain a record of all blasts for at least 3 years.

(b) Upon request, you must make copies of these records available to the regulatory authority and to the public for inspection.

(c) The records must contain the following data:

(1) Name of the operator conducting the blast.

(2) Location, date, and time of the blast.

(3) Name, signature, and certification number of the blaster conducting the blast.

(4) Identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area, except those described in § 816.67(e) of this part.

(5) Weather conditions, including those which may cause possible adverse blasting effects.

(6) Type of material blasted.

(7) Sketches of the blast pattern, including number of holes, burden, spacing, decks, and delay pattern.

(8) Diameter and depth of holes.

(9) Types of explosives used.

(10) Total weight of explosives used per hole.

(11) The maximum weight of explosives detonated in an 8-millisecond period.

(12) Initiation system.

(13) Type and length of stemming.

(14) Mats or other protections used.

(15) Seismographic and airblast records, if required, which must include—

(i) Type of instrument, sensitivity, and calibration signal or certification of annual calibration;

(ii) Exact location of instrument and the date, time, and distance from the blast;

(iii) Name of the person and firm taking the reading;

(iv) Name of the person and firm analyzing the seismographic record; and

(v) The vibration and/or airblast level recorded.

(16) Reasons and conditions for each unscheduled blast.

§ 816.71 How must I dispose of excess spoil?

(a) *General requirements.* You, the permittee or operator, must mechanically transport and place excess spoil in designated disposal areas, including approved valley fills and other types of approved fills, within the permit area in a controlled manner in compliance with the requirements of this section. In general, you must place excess spoil in a manner that will—

(1) Minimize the adverse effects of leachate and surface water runoff from the fill on groundwater and surface water, including aquatic life, within the permit and adjacent areas.

(2) Ensure mass stability and prevent mass movement during and after construction.

(3) Ensure that the final surface configuration of the fill is suitable for revegetation and the approved postmining land use or uses and is compatible with the natural drainage pattern and surroundings.

(4) Minimize disturbances to, and adverse impacts on, fish, wildlife, and related environmental values to the extent possible, using the best technology currently available.

(5) Ensure that the fill will not change the size or frequency of peak flows from precipitation events or thaws in a way that would result in an increase in flooding when compared with the impacts of premining peak flows.

(6) Ensure that the fill will not cause or contribute to a violation of applicable state or tribal groundwater standards or preclude any premining use of groundwater.

(7) Ensure that the fill will not cause or contribute to a violation of applicable state or tribal water quality standards for surface water located downstream of the toe of the fill, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(b) *Stability requirements*—(1) *Static safety factor.* You must design and construct the fill to attain a minimum long-term static safety factor of 1.5. The foundation and abutments of the fill must be stable under all conditions of construction.

(2) *Special requirement for steep-slope conditions.* Where the slope in the disposal area exceeds 2.8h:1v (36 percent), or any lesser slope designated by the regulatory authority based on local conditions, you must construct bench cuts (excavations into stable bedrock) or rock-toe buttresses to ensure fill stability.

(c) *Compliance with permit.* You must construct the fill in accordance with the design and plans approved in the permit in accordance with § 780.35 of this chapter.

(d) *Requirements for handling of organic matter and soil materials.* You must remove all vegetation, other organic matter, and soil materials from the disposal area prior to placement of the excess spoil. You must store, redistribute, or otherwise use those materials in accordance with § 816.22 of this part. You may use soil substitutes and supplements if approved in the permit in accordance with § 780.12(e) of this chapter.

(e) *Surface runoff control requirements.* (1) You must direct surface runoff from areas above the fill and runoff from the surface of the fill into stabilized channels designed to—

(i) Meet the requirements of § 816.43 of this part; and

(ii) Safely pass the runoff from the 100-year, 6-hour precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine the peak flow from surface runoff from this event.

(2) You must grade the top surface of a completed fill such that the final slope after settlement will be toward properly designed drainage channels. You may not direct uncontrolled surface runoff over the outslope of the fill.

(f) *Control of water within the footprint of the fill.*—(1) *General requirements.* If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, you must design and construct underdrains and temporary diversions as necessary to control erosion, prevent water infiltration into the fill, and ensure stability.

(2) *Temporary diversions.* Temporary diversions must comply with the requirements of § 816.43 of this part.

(3) *Underdrains.* (i) You must construct underdrains that are comprised of hard rock that is resistant to weathering.

(ii) You must design and construct underdrains using current, prudent engineering practices and any design criteria established by the regulatory authority.

(iii) In constructing rock underdrains, you may use only hard rock that is resistant to weathering, such as well-cemented sandstone and massive limestone, and that is not acid-forming or toxic-forming. The underdrain must be free of soil and fine-grained, clastic rocks such as siltstone, shale, mudstone, and claystone. All rock used to construct underdrains must meet the criteria in the following table:

Test	ASTM standard	AASHTO standard	Acceptable results
Los Angeles Abrasion	C 131 or C 535	T 96	Loss of no more than 50 percent of test sample by weight.
Sulfate Soundness	C 88 or C 5240	T 104	Sodium sulfate test: Loss of no more than 12 percent of test sample by weight. Magnesium sulfate test: Loss of no more than 18 percent of test sample by weight.

(iv) The underdrain system must be designed and constructed to carry the maximum anticipated infiltration of water due to precipitation, snowmelt, and water from seeps and springs in the foundation of the disposal area away from the excess spoil fill.

(v) To provide a safety factor against future changes in local surface-water and groundwater hydrology, perforated pipe may be embedded within the rock underdrain to enhance the underdrain capacity to carry water in excess of the anticipated maximum infiltration away from the excess spoil fill. The pipe must be manufactured of materials that are not susceptible to corrosion and must be demonstrated to be suitable for the deep burial conditions commonly associated with excess spoil fill underdrains.

(vi) The underdrain system must be protected from material piping, clogging, and contamination by an adequate filter system designed and constructed using current, prudent engineering practices to ensure the long-term functioning of the underdrain system.

(g) *Placement of excess spoil.* (1) Using mechanized equipment, you must transport and place excess spoil in a controlled manner in horizontal lifts not exceeding 4 feet in thickness; concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after construction; and graded so that surface and subsurface drainage is compatible with the natural surroundings.

(2) You may not use any excess spoil transport and placement technique that involves end-dumping, wing-dumping, cast-blasting, gravity placement, or casting spoil downslope.

(3) *Acid-forming, toxic-forming, and combustible materials.* (i) You must handle acid-forming and toxic-forming materials in accordance with § 816.38 of this part and in a manner that will minimize adverse effects on plant

growth and the approved postmining land use.

(ii) You must cover combustible materials with noncombustible materials in a manner that will prevent sustained combustion and minimize adverse effects on plant growth and the approved postmining land use.

(h) *Final configuration.* (1) The final configuration of the fill must be suitable for the approved postmining land use, compatible with the natural drainage pattern and the surrounding terrain, and, to the extent practicable, consistent with natural landforms.

(2) You may construct terraces on the outslope of the fill if required for stability, to control erosion, to conserve soil moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches may not be steeper than 2h: 1v (50 percent).

(3)(i) You must configure the top surface of the fill to create a topography that includes ridgelines and valleys with varied hillslope configurations when practicable, compatible with stability and postmining land use considerations, and generally consistent with the topography of the area before any mining.

(ii) The final surface elevation of the fill may exceed the elevation of the surrounding terrain when necessary to minimize placement of excess spoil in perennial and intermittent streams, provided the final configuration complies with the requirements of paragraphs (a)(3) and (h)(1) of this section.

(iii) The geomorphic reclamation requirements of paragraph (h)(3)(i) of this section do not apply in situations in which they would result in burial of a greater length of perennial or intermittent streams than traditional fill design and construction techniques.

(i) *Impoundments and depressions.* No permanent impoundments are allowed on the completed fill. You may construct small depressions if they—

(1) Are needed to retain moisture, minimize erosion, create or enhance wildlife habitat, or assist revegetation;

(2) Are not incompatible with the stability of the fill;

(3) Are consistent with the hydrologic reclamation plan approved in the permit in accordance with § 780.22 of this chapter;

(4) Will not result in elevated levels of parameters of concern in discharges from the fill; and

(5) Are approved by the regulatory authority.

(j) *Surface area stabilization.* You must provide slope protection to minimize surface erosion at the site. You must revegetate all disturbed areas, including diversion channels that are not riprapped or otherwise protected, upon completion of construction.

(k) *Inspections and examinations.* (1) A qualified registered professional engineer, or other qualified professional specialist under the direction of the professional engineer, must inspect the fill at least quarterly during construction, with additional complete inspections conducted during critical construction periods. The professional engineer or specialist must be experienced in the construction of earth and rock fills. Critical construction periods include, at a minimum—

(i) Foundation preparation, including the removal of all organic matter and soil materials.

(ii) Placement of underdrains and protective filter systems.

(iii) Installation of final surface drainage systems.

(2) An engineer or specialist meeting the qualifications of paragraph (k)(1) of this section also must—

(i) Conduct daily examinations during placement and compaction of fill materials or, when more than one lift is completed per day, upon completion of each 4-foot lift. As an alternative, the engineer or specialist may conduct examinations on a weekly basis if a mine representative takes photographs on a daily basis to document the lift thickness and elevation with visual reference features. The certified report required by paragraph (k)(3) of this section must include this photographic documentation.

(ii) Maintain a log recording the examinations conducted under paragraph (k)(2)(i) of this section for each 4-foot lift in each fill. The log must include a description of the specific work locations, excess spoil placement methods, compaction adequacy, lift thickness, suitability of fill material, special handling of acid-forming and toxic-forming materials, deviations from the approved permit, and remedial measures taken.

(3)(i) The qualified registered professional engineer to which paragraph (k)(1) of this section refers must provide a certified report to the regulatory authority on a quarterly basis.

(ii) In each report prepared under paragraph (k)(3)(i) of this section, the engineer must certify that the fill has been constructed and maintained as designed and in accordance with the approved plan and this chapter.

(iii) The report prepared under paragraph (k)(3)(i) of this section must identify and discuss any evidence of instability, structural weakness, or other hazardous conditions. If one of more of those conditions exists, you must submit an application for a permit revision that includes appropriate remedial design specifications.

(iv) The report prepared under paragraph (k)(3)(i) of this section must contain—

(A) A review and summary of all complete inspections conducted during the quarter under paragraph (k)(1) of this section.

(B) A review and summary of all examinations conducted during the quarter under paragraph (k)(2) of this section, including the logs maintained under paragraph (k)(2)(ii) of this section.

(C) The photographs taken under paragraph (k)(2)(i) of this section.

(v) Each certified report prepared under paragraph (k)(3) of this section for a quarter in which construction activities include placement of underdrains and protective filter systems must include color photographs taken during and after construction, but before underdrains are covered with excess spoil. If the underdrain system is constructed in phases, each phase must be certified separately. The photographs must be taken in adequate size and number with enough terrain or other physical features of the site shown to provide a relative scale to the photographs and to specifically and clearly identify the site.

(4) You must retain a copy of each certified report prepared under paragraph (k)(3) of this section at or near the mine site.

(l) *Coal mine waste.* You may dispose of coal mine waste in excess spoil fills only if approved by the regulatory authority and only if—

(1) You demonstrate, and the regulatory authority finds in writing, that the disposal of coal mine waste in the excess spoil fill will not—

(i) Cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart;

(ii) Cause or contribute to a violation of applicable state or tribal water quality standards for groundwater; or

(iii) Result in material damage to the hydrologic balance outside the permit area.

(2) The waste is placed in accordance with §§ 816.81 and 816.83 of this part.

(3) The waste is nontoxic-forming, nonacid-forming, and non-combustible.

(4) The waste is of the proper characteristics to be consistent with the design stability of the fill.

(m) *Underground disposal.* You may dispose of excess spoil in underground mine workings only in accordance with a plan approved by the regulatory authority and the Mine Safety and Health Administration under § 784.26 of this chapter.

§ 816.72 [Reserved]

§ 816.73 [Reserved]

§ 816.74 What special requirements apply to the disposal of excess spoil on a preexisting bench?

(a) *General requirements.* The regulatory authority may approve the disposal of excess spoil through placement on a preexisting bench on a previously mined area or a bond forfeiture site if—

(1) The proposed permit area includes the portion of the preexisting bench on which the spoil will be placed;

(2) The proposed operation will comply with the applicable requirements of § 816.102 of this part; and

(3) The requirements of this section are met.

(b) *Requirements for removal and disposition of vegetation, other organic matter, and soil materials.* You must remove all vegetation, other organic matter, topsoil, and subsoil from the disposal area prior to placement of the excess spoil and store, redistribute, or otherwise use those materials in accordance with § 816.22 of this part. You may use soil substitutes and supplements if approved in the permit in accordance with § 780.12(e) of this chapter.

(c)(1) The fill must be designed and constructed using current, prudent engineering practices.

(2) The design must be certified by a registered professional engineer.

(3) If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, the fill design must include underdrains and temporary diversions as necessary to control erosion, prevent water infiltration into the fill, and ensure stability. Underdrains must comply with the requirements of § 816.71(f)(3) of this part.

(d)(1) The spoil must be placed on the solid portion of the bench in a controlled manner and concurrently compacted as necessary to attain a long-term static safety factor of 1.3 for all portions of the fill.

(2) Any spoil deposited on any fill portion of the bench must be treated as an excess spoil fill under § 816.71 of this part.

(e) You must grade the spoil placed on the preexisting bench to—

(1) Achieve a stable slope that does not exceed the angle of repose.

(2) Eliminate the preexisting highwall to the maximum extent technically practical, using all reasonably available spoil, as that term is defined in § 701.5 of this chapter.

(3) Minimize erosion and water pollution both on and off the site.

(f) All disturbed areas, including diversion channels that are not riprapped or otherwise protected, must be revegetated upon completion of construction.

(g) You may not construct permanent impoundments on preexisting benches on which excess spoil is placed under this section.

(h) The final configuration of the fill on the preexisting bench must—

(1) Be compatible with natural drainage patterns and the surrounding area.

(2) Support the approved postmining land use.

§ 816.79 What measures must I take to protect underground mines in the vicinity of my surface mine?

No surface mining activities may be conducted closer than 500 feet to any point of either an active or abandoned underground mine, except to the extent that—

(a) The activities result in improved resource recovery, abatement of water pollution, or elimination of hazards to the health and safety of the public; and

(b) The nature, timing, and sequence of the activities that propose to mine closer than 500 feet to an active underground mine are jointly approved by the regulatory authority, the Mine Safety and Health Administration, and the state agency, if any, responsible for the safety of underground mine workers.

§ 816.81 How must I dispose of coal mine waste?

(a) *General requirements.* If you, the permittee, intend to dispose of coal mine waste in an area other than the mine workings or excavations, you must place the waste in new or existing disposal areas within a permit area in accordance with this section and, as applicable, §§ 816.83 and 816.84 of this part.

(b) *Basic performance standards.* You must haul or convey and place the coal mine waste in a controlled manner to—

(1) Minimize the adverse effects of leachate and surface-water runoff on groundwater and surface water, including aquatic life, within the permit and adjacent areas to the extent possible, using the best technology currently available.

(2) Ensure mass stability and prevent mass movement during and after construction.

(3) Ensure that the final disposal facility is suitable for revegetation, compatible with the natural surroundings, and consistent with the approved postmining land use.

(4) Not create a public hazard.

(5) Prevent combustion.

(6) Ensure that the disposal facility will not change the size or frequency of peak flows from precipitation events or thaws in a way that would result in an increase in flooding when compared with the impacts of premining peak flows.

(7) Ensure that the disposal facility will not cause or contribute to a violation of applicable state or tribal groundwater standards or preclude any premining use of groundwater.

(8) Ensure that the disposal facility will not cause or contribute to a violation of applicable state or tribal water quality standards for surface water located downstream of the toe of the fill, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(9) Ensure that the disposal facility will not discharge acid or toxic mine drainage.

(c) *Coal mine waste from outside the permit area.* You may dispose of coal mine waste materials from activities located outside the permit area within the permit area only if approved by the regulatory authority. Approval must be based upon a showing that disposal will be in accordance with the standards of this section.

(d) *Design and construction requirements.* (1)(i) You must design and construct coal mine waste disposal facilities using current, prudent engineering practices and any design or construction criteria established by the regulatory authority.

(ii) A qualified registered professional engineer, experienced in the design and construction of similar earth and waste structures, must certify the design of the disposal facility. The engineer must specifically certify that any existing and planned underground mine workings in the vicinity of the disposal facility will not adversely impact the stability of the structure.

(iii) You must construct the disposal facility in accordance with the design and plans submitted under § 780.25 of this chapter and approved in the permit.

A qualified registered professional engineer experienced in the design and construction of similar earth and waste structures must certify that the facility has been constructed in accordance with the requirements of this paragraph.

(2) You must design and construct the disposal facility to attain a minimum long-term static safety factor of 1.5. The foundation and abutments must be stable under all conditions of construction.

(e) *Foundation investigations.* You must perform sufficient foundation and abutment investigations, as well as any necessary laboratory testing of foundation material, to determine the design requirements for foundation stability and control of underseepage. The analyses of the foundation conditions must take into consideration the effect of any underground mine workings located in the permit and adjacent areas upon the stability of the disposal facility.

(f) *Soil handling requirements.* You must remove all vegetation, other organic matter, and soil materials from the disposal area prior to placement of the coal mine waste. You must store, redistribute, or otherwise use those materials in accordance with § 816.22 of this part. You may use soil substitutes and supplements if approved in the permit in accordance with § 780.12(e) of this chapter.

(g) *Emergency procedures.* (1) If any examination or inspection discloses that a potential hazard exists, you must inform the regulatory authority promptly of the finding and of the emergency procedures formulated for public protection and remedial action.

(2) If adequate procedures cannot be formulated or implemented, you must notify the regulatory authority immediately. The regulatory authority then must notify the appropriate agencies that other emergency procedures are required to protect the public.

(h) *Underground disposal.* You may dispose of coal mine waste in underground mine workings only in accordance with a plan approved by the regulatory authority and the Mine Safety and Health Administration under § 784.26 of this chapter.

§ 816.83 What special requirements apply to coal mine waste refuse piles?

(a) *General requirements.* Refuse piles must meet the applicable requirements of § 816.81 of this part, the additional requirements of this section, and the requirements of §§ 77.214 and 77.215 of this title.

(b) *Surface runoff and drainage control.* (1) If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, you must design and construct the refuse pile with diversions and underdrains as necessary to control erosion, prevent water infiltration into the disposal facility, and ensure stability.

(2) You may not direct or divert uncontrolled surface runoff over the outslope of the refuse pile.

(3) You must direct runoff from areas above the refuse pile and runoff from the surface of the refuse pile into stabilized channels designed to meet the requirements of § 816.43 of this part and to safely pass the runoff from the 100-year, 6-hour precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine the peak flow from surface runoff from this event.

(4) Runoff diverted from undisturbed areas need not be commingled with runoff from the surface of the refuse pile.

(5) Underdrains must comply with the requirements of § 816.71(f) of this part.

(c) *Surface area stabilization.* You must provide slope protection to minimize surface erosion at the site. You must revegetate all disturbed areas, including diversion channels that are not riprapped or otherwise protected, upon completion of construction.

(d) *Final configuration and cover.* (1) The final configuration of the refuse pile must be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the refuse pile if required for stability, erosion control, conservation of soil moisture, or facilitation of the approved postmining land use. The grade of the outslope between terrace benches may not be steeper than 2h:1v (50 percent).

(2) No permanent impoundments or depressions are allowed on the completed refuse pile.

(3) Following final grading of the refuse pile, you must cover the coal mine waste with a minimum of 4 feet of the best available, nontoxic, and noncombustible material in a manner that does not impede drainage from the underdrains. The regulatory authority may allow less than 4 feet of cover material based on physical and chemical analyses showing that the revegetation requirements of §§ 816.111 and 816.116 of this part will be met.

(e) *Inspections.* You must comply with the inspection and examination requirements of § 816.71(k) of this part.

§ 816.84 What special requirements apply to coal mine waste impounding structures?

(a) Impounding structures constructed of coal mine waste or intended to impound coal mine waste must meet the requirements of § 816.81 of this part.

(b) You may not use coal mine waste to construct impounding structures unless you demonstrate, and the regulatory authority finds in writing, that the stability of such a structure conforms to the requirements of this part and that the use of coal mine waste will not have a detrimental effect on downstream water quality or the environment as a result of acid drainage or toxic seepage through the impounding structure. You must discuss the stability of the structure and the prevention and potential impact of acid drainage or toxic seepage through the impounding structure in detail in the design plan submitted to the regulatory authority in accordance with § 780.25 of this chapter.

(c)(1) You must design, construct, and maintain each impounding structure constructed of coal mine waste or intended to impound coal mine waste in accordance with paragraphs (a) and (c) of § 816.49 of this part.

(2) You may not retain these structures permanently as part of the approved postmining land use.

(3) Each impounding structure constructed of coal mine waste or intended to impound coal mine waste that meets the criteria of § 77.216(a) of this title must have sufficient spillway capacity to safely pass, adequate storage capacity to safely contain, or a combination of storage capacity and spillway capacity to safely control, the probable maximum precipitation of a 6-hour precipitation event or greater event as specified by the regulatory authority.

(d) You must design spillways and outlet works to provide adequate protection against erosion and corrosion. Inlets must be protected against blockage.

(e) You must direct surface runoff from areas above the disposal facility and runoff from the surface of the facility that may cause instability or erosion of the impounding structure into stabilized channels designed and constructed to meet the requirements of § 816.43 of this part and to safely pass the runoff from a 100-year, 6-hour precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine the peak flow from surface runoff from this event.

(f) For an impounding structure constructed of or impounding coal mine waste, you must remove at least 90 percent of the water stored during the design precipitation event within the 10-day period following the design precipitation event.

§ 816.87 What special requirements apply to burning and burned coal mine waste?

(a) You must extinguish coal mine waste fires in accordance with a plan approved by the regulatory authority and the Mine Safety and Health Administration. The plan must contain, at a minimum, provisions to ensure that only those persons authorized by the operator, and who have an understanding of the procedures to be used, are involved in the extinguishing operations.

(b) You may not remove burning or burned coal mine waste from a permitted coal mine waste disposal area without a removal plan approved by the regulatory authority. Consideration must be given to potential hazards to persons working or living in the vicinity of the structure.

§ 816.89 How must I dispose of noncoal mine wastes?

(a)(1) You must place and store noncoal mine wastes including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials generated during mining activities, in a controlled manner in a designated portion of the permit area.

(2) Placement and storage of noncoal wastes must ensure that leachate and surface runoff do not degrade surface water or groundwater, that fires are prevented, and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings.

(b)(1) Final disposal of noncoal mine wastes must be in a designated disposal site within the permit area or in a state-approved solid waste disposal area.

(2) Disposal sites within the permit area must meet the following requirements:

(i) The site must be designed and constructed to ensure that leachate and drainage from the noncoal mine waste area does not degrade surface water or groundwater.

(ii) Wastes must be routinely compacted and covered to prevent combustion and wind-borne waste.

(iii) When the disposal of noncoal wastes is completed, the site must be covered with a minimum of 2 feet of soil, slopes must be stabilized, and the site must be revegetated in accordance with §§ 816.111 through 816.116 of this part.

(iv) The disposal site must be operated in accordance with all local, state and federal requirements.

(c) At no time may any noncoal mine waste be deposited in a coal mine waste refuse pile or impounding structure, nor may an excavation for a noncoal mine waste disposal site be located within 8 feet of any coal outcrop or coal storage area.

§ 816.95 How must I protect surface areas from wind and water erosion?

(a) You must protect and stabilize all exposed surface areas to effectively control erosion and air pollution attendant to erosion.

(b)(1) You must fill, regrade, or otherwise stabilize rills and gullies that form in areas that have been regraded and upon which soil or soil substitute materials have been redistributed. This requirement applies only to rills and gullies that—

(i) Disrupt the approved postmining land use or reestablishment of the vegetative cover;

(ii) Cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart;

(iii) Cause or contribute to a violation of applicable state or tribal water quality standards for groundwater; or

(iv) Result in material damage to the hydrologic balance outside the permit area.

(2) You must reapply soil materials to the filled or regraded rills and gullies when necessary to reestablish a vegetative cover. You must then replant those areas.

§ 816.97 How must I protect and enhance fish, wildlife, and related environmental values?

(a) *General requirements.* You, the permittee, must, to the extent possible using the best technology currently available, minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and achieve enhancement of those resources where practicable, as described in detail in the fish and wildlife protection and enhancement plan approved in the permit in accordance with § 780.16 of this chapter.

(b) *Requirements related to federal, state, and tribal endangered species laws.*—(1) *Requirements related to the Endangered Species Act of 1973.* (i) You may not conduct any surface mining activity that is in violation of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.* Nothing in this chapter authorizes the taking of a species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or the destruction or adverse modification of designated critical habitat unless the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as applicable, authorizes the taking of a threatened or endangered species or the destruction or adverse modification of designated critical habitat under 16 U.S.C. 1536(b)(4) or 1539(a)(1)(B).

(ii) You must promptly report to the regulatory authority the presence of any previously unreported species listed as threatened or endangered, or any previously unreported species proposed for listing as threatened or endangered, under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* within the permit or adjacent areas. This requirement applies regardless of whether the species was listed before or after permit issuance.

(iii)(A) Upon receipt of a notification under paragraph (b)(2)(ii) of this section, the regulatory authority will contact and coordinate with the appropriate state, tribal, and federal fish and wildlife agencies.

(B) The regulatory authority, in coordination with the appropriate state, tribal, and federal fish and wildlife agencies, will identify whether, and under what conditions, you may proceed. When necessary to ensure compliance with the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* the regulatory authority will issue an order under § 774.10(b) of this chapter requiring that you revise the permit.

(iv) You must comply with any species-specific protection measures required by the regulatory authority in coordination with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as applicable.

(2) *Requirements related to state and tribal endangered species laws.* (i) You must promptly report to the regulatory authority any previously unreported state-listed or tribally-listed threatened or endangered species within the permit or adjacent areas whenever you become aware of its presence. This requirement applies regardless of whether the species was listed before or after permit issuance.

(ii)(A) Upon receipt of a notification under paragraph (b)(2)(i) of this section, the regulatory authority will contact and coordinate with the appropriate state or tribal fish and wildlife agencies.

(B) The regulatory authority, in coordination with the appropriate state or tribal fish and wildlife agencies, will

identify whether, and under what conditions, you may proceed. When necessary, the regulatory authority will issue an order under § 774.10(b) of this chapter requiring that you revise the permit.

(c) *Bald and golden eagles.* (1) You may not conduct any surface mining activity in a manner that would result in the unlawful taking of a bald or golden eagle, its nest, or any of its eggs.

(2) You must promptly report to the regulatory authority any golden or bald eagle nest within the permit area of which you become aware.

(3) Upon notification, the regulatory authority will contact and coordinate with the U.S. Fish and Wildlife Service and, when appropriate, the state or tribal fish and wildlife agency to identify whether, and under what conditions, you may proceed.

(4) Nothing in this chapter authorizes the taking of a bald or golden eagle, its nest, or any of its eggs in violation of the Bald and Golden Eagle Protection Act, 16 U.S.C. 668–668d.

(d) *Miscellaneous protective measures for other species of fish and wildlife.* To the extent possible, using the best technology currently available, you must—

(1) Ensure that electric power transmission lines and other transmission facilities used for, or incidental to, surface mining activities on the permit area are designed and constructed to minimize electrocution hazards to raptors and other avian species with large wingspans.

(2) Locate, construct, operate, and maintain haul and access roads and sedimentation control structures in a manner that avoids or minimizes impacts on important fish and wildlife species or other species protected by state or federal law.

(3) Design fences, overland conveyors, and other potential barriers to permit passage for large mammals, except where the regulatory authority determines that such requirements are unnecessary.

(4) Fence, cover, or use other appropriate methods to exclude wildlife from ponds that contain hazardous concentrations of toxic or toxic-forming materials.

(5) Reclaim and reforest lands that were forested at the time of application and lands that would revert to forest under conditions of natural succession in a manner that enhances recovery of the native forest ecosystem as expeditiously as practicable.

(e) *Wetlands.* (1) To the extent possible, using the best technology currently available, you must avoid disturbances to wetlands and, where practicable, enhance them. If avoidance is not possible, you must restore or replace wetlands that you disturb and, where practicable, enhance them.

(2) Nothing in paragraph (e)(1) of this section authorizes destruction or degradation of wetlands in violation of section 404 of the Clean Water Act, 33 U.S.C. 1344.

(f) *Habitat of unusually high value for fish and wildlife.* To the extent possible, using the best technology currently available, you must avoid disturbances to and, where practicable, enhance riparian and other native vegetation along rivers and streams, lentic vegetation bordering ponds and lakes, and habitat of unusually high value for fish and wildlife, as described in § 779.20(c)(3) of this chapter. If avoidance of these features is not possible, you must restore or replace those features and, where practicable, enhance them.

(g) *Vegetation requirements for fish and wildlife habitat postmining land use.* Where fish and wildlife habitat is a postmining land use, you must select and arrange the plant species to be used for revegetation to maximize the benefits to fish and wildlife. Plant species must be native to the area and must be selected on the basis of the following criteria:

(1) Their proven nutritional value for fish or wildlife.

(2) Their value as cover for fish or wildlife.

(3) Their ability to support and enhance fish or wildlife habitat after the release of performance bonds.

(4) Their ability to sustain natural succession by allowing the establishment and spread of plant species across ecological gradients. You may not use invasive plant species that are known to inhibit natural succession.

(h) *Vegetation requirements for cropland postmining land use.* Where cropland is the postmining land use, and where appropriate for wildlife-management and crop-management practices, you must intersperse the crop fields with trees, hedges, or fence rows to break up large blocks of monoculture and to diversify habitat types for birds and other animals.

(i) *Vegetation requirements for forestry postmining land uses.* Where forestry, whether managed or unmanaged, is the postmining land use, you must plant native tree and understory species to the extent that doing so is not inconsistent with the type of forestry to be practiced as part of the postmining land use. In all cases, regardless of the type of forestry to be practiced as part of the postmining land use, you must intersperse plantings of commercial species with plantings of native trees and shrubs of high value to wildlife.

(j) *Vegetation requirements for other postmining land uses.* Where residential, public service, commercial, industrial, or intensive recreational uses are the postmining land use, you must establish—

(1) Greenbelts comprised of non-invasive native plants that provide food or cover for wildlife, unless greenbelts would be inconsistent with the approved postmining land use plan for that site.

(2)(i) A vegetated buffer at least 100 feet wide along each bank of all perennial and intermittent streams within the permit area. The width of the buffer must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark. The buffer must be planted with species native to the area, including species adapted to and suitable for planting in any floodplains or other riparian habitat located within the buffer. The species planted must consist of native tree and understory species if the land was forested at the time of application or if it would revert to forest under conditions of natural succession.

(ii) Paragraph (j)(2)(i) of this section does not apply to situations in which a vegetated buffer comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release under §§ 800.40 through 800.43 of this chapter.

(k) *Planting arrangement requirements.* You must design and arrange plantings in a manner that optimizes benefits to wildlife to the extent practicable and consistent with the postmining land use.

§ 816.99 What measures must I take to prevent and remediate landslides?

(a) You, the permittee or operator, must provide an undisturbed natural barrier beginning at the elevation of the lowest coal seam to be mined and extending from the outslope for the distance that the regulatory authority determines is needed to assure stability. The barrier must be retained in place to prevent slides.

(b)(1) You must notify the regulatory authority by the fastest available means whenever a landslide occurs that has the potential to adversely affect public property, health, safety, or the environment.

(2) You must comply with any remedial measures that the regulatory authority requires in response to the notification provided in paragraph (b)(1) of this section.

§ 816.100 What are the standards for conducting reclamation contemporaneously with mining?

You must reclaim all land disturbed by surface mining activities as contemporaneously as practicable with the mining operations, except when the mining operations are conducted in accordance with a variance for concurrent surface and underground mining activities under § 785.18 of this chapter. Reclamation activities include, but are not limited to, backfilling, grading, soil replacement, revegetation, and stream restoration.

§ 816.101 [Reserved]

§ 816.102 How must I backfill the mined area and grade and configure the land surface?

(a) You, the permittee or operator, must backfill all mined areas and grade all disturbed areas in compliance with the plan approved in the permit in accordance with § 780.12(d) of this chapter to—

(1) Restore the approximate original contour as the final surface configuration, except in the following situations:

(i) Mountaintop removal mining operations approved under § 785.14 of this chapter.

(ii) Sites for which the regulatory authority has approved a variance under § 785.16 of this chapter.

(iii) Operations to which the thin overburden standards of § 816.104 of this part apply.

(iv) Operations to which the thick overburden standards of § 816.105 of this part apply.

(v) Remining operations on previously mined areas, but only to the extent specified in § 816.106(b) of this part.

(vi) Excess spoil fills constructed in accordance with § 816.71 or § 816.74 of this part.

(vii) Refuse piles constructed in accordance with § 816.83 of this part.

(viii) Permanent impoundments that meet the requirements of paragraph (a)(3)(ii) of this section and § 780.35(b)(4) of this chapter.

(ix) The placement, in accordance with § 780.35(b)(3) of this chapter, of what would otherwise be excess spoil on the mined-out area to heights in excess of the premining elevation when necessary to avoid or minimize construction of excess spoil fills on undisturbed land.

(2) Minimize the creation of uniform slopes and cut-and-fill terraces. The regulatory authority may approve cut-and-fill terraces only if—

(i) They are compatible with the approved postmining land use and are needed to conserve soil moisture, ensure stability, or control erosion on final-graded slopes; or

(ii) Specialized grading, foundation conditions, or roads are required for the approved postmining land use, in which case the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land use.

(3) Eliminate all highwalls, spoil piles, impoundments, and depressions, except in the following situations:

(i) You may construct or retain small depressions if—

(A) They are needed to retain moisture, minimize erosion, create or enhance wildlife habitat, or assist revegetation;

(B) They are consistent with the hydrologic reclamation plan approved in the permit in accordance with § 780.22 of this chapter; and

(C) You demonstrate that they will not result in elevated levels of parameters of concern in discharges from the backfilled and graded area.

(ii) The regulatory authority may approve the retention of permanent impoundments if—

(A) They meet the requirements of §§ 816.49 and 816.55 of this part;

(B) They are suitable for the approved postmining land use;

(C) You demonstrate compliance with the future maintenance provisions of § 800.42(c)(5) of this chapter; and

(D) You have obtained all necessary approvals and authorizations under section 404 of the Clean Water Act, 33 U.S.C. 1344, when the impoundment is located in waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(iii) You may retain highwalls on previously mined areas to the extent provided in § 816.106(b) of this part.

(iv) You may retain modified highwall segments to the extent necessary to replace similar natural landforms removed by the mining operation. The regulatory program must establish the conditions under which these highwall segments may be retained and the modifications that must be made to the highwall to ensure that—

(A) The retained segment resembles similar landforms that existed before any mining and restores the ecological niches that those landforms provided. Nothing in this paragraph authorizes the retention of modified highwall segments in excess of the number, length, and height needed to replace similar landforms that existed before any mining.

(B) The retained segment is stable. Features that result in the creation of talus slopes for wildlife habitat are acceptable if they meet the requirements of paragraph (a)(3)(iv)(A) of this section.

(C) The retained segment does not create an increased safety hazard compared to the features that existed before any mining.

(D) The exposure of water-bearing strata, if any, in the retained segment does not adversely impact the hydrologic balance.

(4) Achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and to prevent slides.

(5) Minimize erosion and water pollution, both on and off the site.

(6) Support the approved postmining land use.

(b) You must return all spoil to the mined-out area. This requirement does not apply to—

(1) Excess spoil disposed of in accordance with § 816.71 or § 816.74 of this part.

(2) Mountaintop removal mining operations approved under § 785.14 of this chapter.

(3) Spoil placed outside the mined-out area in non-steep slope areas to restore the approximate original contour by blending the spoil into the surrounding terrain, provided that you comply with the following requirements:

(i) You must remove all vegetation and other organic matter from the area outside the mined-out area before spoil placement begins. You may not burn these materials; you must store, redistribute, use, or bury them in the manner specified in § 816.22(f) of this part.

(ii) You must remove, segregate, store, and redistribute topsoil on the area outside the mined-out area in accordance with § 816.22 of this part.

(c) You must compact spoil and waste materials when necessary to ensure stability or to prevent the formation of acid or toxic mine drainage, but, to the extent possible, you must avoid compacting spoil, soil, and other materials placed in what will be the root zone of the species planted under the revegetation plan approved in the permit in accordance with § 780.12(g) of this chapter.

(d)(1) You must cover all exposed coal seams with material that is noncombustible, nonacid-forming, and nontoxic-forming.

(2) You must handle and dispose of all other combustible materials exposed, used, or produced during mining in accordance with § 816.89 of this part in a manner that will prevent sustained combustion, as approved in the permit

in accordance with § 780.12(j) of this chapter.

(3) You must handle all other acid-forming and toxic-forming materials—

(i) In compliance with the plan approved in the permit in accordance with § 780.12(n) of this chapter;

(ii) In compliance with § 816.38 of this part;

(iii) In compliance with the hydrologic reclamation plan approved in the permit in accordance with § 780.22(a) of this chapter; and

(iv) In a manner that will minimize adverse effects on plant growth and the approved postmining land use.

(e) You must dispose of any coal mine waste placed in the mined-out area in accordance with §§ 816.81 and 816.83 of this part, except that a long-term static safety factor of 1.3 will apply instead of the 1.5 factor specified in § 816.81(d)(2) of this part.

(f) You must prepare final-graded surfaces in a manner that minimizes erosion and provides a surface for replacement of soil materials that will minimize slippage.

§ 816.104 What special provisions for backfilling, grading, and surface configuration apply to sites with thin overburden?

(a) *Applicability.* This section applies only where the thickness of all overburden strata multiplied by the swell factor for those strata plus the thickness of any waste materials to be returned to the mined-out area is less than the combined thickness of the overburden and coal seam or seams prior to removing the coal to the extent that there is insufficient material to restore the approximate original contour. Specifically, there is insufficient material to achieve a surface configuration that—

(1) Closely resembles the surface configuration of the mined area prior to any mining; and

(2) Blends into and complements the drainage pattern of the surrounding terrain.

(b) *Performance standards.* Where thin overburden as described in paragraph (a) of this section occurs within the permit area, you must backfill all mined areas and grade all disturbed areas in accordance with the plan approved in the permit under § 780.12(d) of this chapter. At a minimum, you must—

(1) Use all spoil and waste materials available from the entire permit area to attain the lowest practicable grade that does not exceed the angle of repose.

(2) Comply with the requirements of paragraphs (a)(2) through (f) of § 816.102 of this part.

(3) Ensure that the final surface configuration blends into and complements the drainage pattern of the surrounding terrain to the extent possible.

§ 816.105 What special provisions for backfilling, grading, and surface configuration apply to sites with thick overburden?

(a) *Applicability.* This section applies only where the thickness of all overburden strata multiplied by the swell factor for those strata plus the thickness of any waste materials to be returned to the mined-out area exceeds the combined thickness of the overburden strata and the coal seam or seams in place to the extent that there is more material than can be used to restore the approximate original contour. Specifically, the amount of material to be returned to the mined-out area is so large that it is not possible to achieve a surface configuration that closely resembles the surface configuration of the mined land prior to any mining.

(b) *Performance standards.* Where thick overburden as described in paragraph (a) of this section occurs within the permit area, you must backfill all mined areas and grade all disturbed areas in accordance with the plan approved in the permit under § 780.12(d) of this chapter. At a minimum, you must—

(1) Backfill the mined-out area to the approximate original contour and then place the remaining spoil and waste materials on top of the backfilled area to the extent possible, as determined in accordance with the excess spoil minimization requirements of § 780.35(b) of this chapter.

(2) Grade the backfilled area to the lowest practicable grade that is ecologically sound, consistent with the postmining land use, and compatible with the surrounding region. No slope may exceed the angle of repose.

(3) Comply with the requirements of paragraphs (a)(2) through (f) of § 816.102 of this part.

(4) Dispose of any excess spoil in accordance with § 816.71 or § 816.74 of this part.

(5) Ensure that the final surface configuration blends into and complements the drainage pattern of the surrounding terrain to the extent possible.

§ 816.106 What special provisions for backfilling, grading, and surface configuration apply to previously mined areas with a preexisting highwall?

(a) Remining operations on previously mined areas that contain a preexisting highwall must comply with the requirements of §§ 816.102 through 816.107 of this part, except as provided in this section.

(b) The highwall elimination requirements of § 816.102(a) of this part do not apply to remining operations for which you demonstrate in writing, to the regulatory authority's satisfaction, that the volume of all reasonably available spoil is insufficient to completely backfill the reaffected or enlarged highwall. Instead, for those operations, you must eliminate the highwall to the maximum extent technically practical in accordance with the following criteria:

(1) You must use all spoil generated by the remining operation and any other reasonably available spoil to backfill the area. You must include reasonably available spoil in the immediate vicinity of the remining operation within the permit area.

(2) You must grade the backfilled area to a slope that is compatible with the approved postmining land use and that provides adequate drainage and long-term stability.

(3) Any highwall remnant must be stable and not pose a hazard to the public health and safety or to the environment. You must demonstrate, to the satisfaction of the regulatory authority, that the highwall remnant is stable.

(4) You must not disturb spoil placed on the outslope during previous mining operations if disturbance would cause instability of the remaining spoil or otherwise increase the hazard to the public health and safety or to the environment.

§ 816.107 What special provisions for backfilling, grading, and surface configuration apply to operations on steep slopes?

(a) Surface mining activities on steep slopes must comply with this section and the requirements of §§ 816.102 through 816.106 of this part, except where—

(1) Mining is conducted on flat or gently rolling terrain with an occasional steep slope through which the mining proceeds and leaves a plain or predominantly flat area; or

(2) Operations are conducted in accordance with part 824 of this chapter.

(b) You may not place the following materials on the downslope:

(1) Spoil.

(2) Waste materials of any type.

(3) Debris, including debris from clearing and grubbing, except for woody materials used to enhance fish and wildlife habitat.

(4) Abandoned or disabled equipment.

(c) You may not disturb land above the highwall unless the regulatory authority finds that disturbance will facilitate compliance with the environmental protection standards of this subchapter and the disturbance is limited to that necessary to facilitate compliance.

(d) You must handle woody materials in accordance with § 816.22(f) of this part.

§ 816.111 How must I revegetate areas disturbed by mining activities?

(a) You, the permittee, must establish a diverse, effective, permanent vegetative cover on regraded areas and on all other disturbed areas except—

(1) Water areas approved as a postmining land use or in support of the postmining land use.

(2) The surfaces of roads approved for retention to support the postmining land use.

(3) Rock piles, water areas, and other non-vegetative features created to restore or enhance wildlife habitat under the fish and wildlife protection and enhancement plan approved in the permit in accordance with § 780.16 of this chapter.

(4) Any other impervious surface, such as a building or a parking lot, approved as part of or in support of the postmining land use. This provision applies only to structures and facilities constructed before expiration of the revegetation responsibility period.

(b) The reestablished vegetative cover must—

(1) Comply with the revegetation plan approved in the permit in accordance with § 780.12(g) of this chapter.

(2) Be consistent with the approved postmining land use and, except as provided in the revegetation plan approved in the permit in accordance with § 780.12(g) of this chapter, the native plant communities described in § 779.19 of this chapter.

(3) Be at least equal in extent of cover to the natural vegetation of the area.

(4) Be capable of stabilizing the soil surface and, in the long term, preventing erosion in excess of what would have occurred naturally had the site not been disturbed.

(5) Not inhibit the establishment of trees and shrubs when the revegetation plan approved in the permit requires the use of woody plants.

(c) Volunteer plants of species that are desirable components of the plant communities described in the permit application under § 779.19 of this chapter and that are not inconsistent with the postmining land use may be considered in determining whether the requirements of §§ 816.111 and 816.116 have been met.

(d) You must stabilize all areas upon which you have redistributed soil or soil substitute materials. You must use one or a combination of the following methods, unless the regulatory authority determines that neither method is necessary to stabilize the surface and control erosion—

(1) Establishing a temporary vegetative cover consisting of noncompetitive and non-invasive species, either native or domesticated or a combination thereof.

(2) Applying a suitable mulch free of weed and noxious plant seeds.

(e) You must plant all disturbed areas with the species needed to establish a permanent vegetative cover during the first normal period for favorable planting conditions after redistribution of the topsoil or other plant-growth medium. The normal period for favorable planting conditions is the generally accepted local planting time for the type of plant materials approved in the permit as part of the revegetation plan under § 780.12(g) of this chapter.

§ 816.113 [Reserved]

§ 816.114 [Reserved]

§ 816.115 How long am I responsible for revegetation after planting?

(a) *General provisions.* (1) The period of extended responsibility for successful revegetation will begin after the last year of augmented seeding, fertilizing, irrigation, or other work, excluding husbandry practices that are approved by the regulatory authority in accordance with paragraph (d) of this section.

(2) The initial planting of small areas that are regraded and planted as a result of the removal of sediment control structures and associated structures and facilities, including ancillary roads used to access those structures, need not be considered an augmented seeding necessitating an extended or separate revegetation responsibility period. This paragraph also applies to areas upon which accumulated sediment and materials resulting from removal of sedimentation pond embankments are spread.

(b) *Areas of more than 26.0 inches of average annual precipitation.* In areas of more than 26.0 inches of annual average precipitation, the period of responsibility will continue for a period of not less than—

(1) Five full years, except as provided in paragraph (b)(2) of this section.

(i) The vegetation parameters for grazing land, pasture land, or cropland must equal or exceed the approved success standard during the growing season of any 2 years of the responsibility period, except the first year.

(ii) On all other areas, the parameters must equal or exceed the applicable success standard during the growing season of the last year of the responsibility period.

(2) Two full years for lands eligible for remining included in a permit approved under § 785.25 of this chapter. The lands must equal or exceed the applicable ground cover standard during the growing season of the last year of the responsibility period.

(c) *Areas of 26.0 inches or less average annual precipitation.* In areas of 26.0 inches or less average annual precipitation, the period of responsibility will continue for a period of not less than:

(1) Ten full years, except as provided in paragraph (c)(2) of this section.

(i) The vegetation parameters for grazing land, pasture land, or cropland must equal or exceed the approved success standard during the growing season of any two years after year six of the responsibility period.

(ii) On all other areas, the parameters must equal or exceed the applicable success standard during the growing season of the last year of the responsibility period.

(2) Five full years for lands eligible for remining included in a permit approved under § 785.25 of this chapter. The lands must equal or exceed the applicable ground cover standard during the growing seasons of the last two consecutive years of the responsibility period.

(d) *Normal husbandry practices.* (1) The regulatory authority may approve selective husbandry practices, excluding augmented seeding, fertilization, or irrigation, provided it obtains prior approval from OSMRE in accordance with § 732.17 of this chapter that the practices are normal husbandry practices, without extending the period of responsibility for revegetation success and bond liability, if those practices can be expected to continue as part of the postmining land use or if discontinuance of the practices after the liability period expires will not reduce the probability of permanent revegetation success.

(2) Approved practices must be normal husbandry practices within the region for unmined lands having land uses similar to the approved postmining land use of the disturbed area, including such practices as disease, pest, and vermin control; and any pruning, reseeding, and transplanting specifically necessitated by such actions.

§ 816.116 What requirements apply to standards for determining revegetation success?

(a) The regulatory authority must select standards for revegetation success and statistically valid sampling techniques for measuring revegetation success. The standards and techniques must be made available to the public in written form.

(b) The standards for success applied to a specific permit must reflect the revegetation plan requirements of § 780.12(g) of this chapter. They must be based upon the following data—

(1) The plant community and vegetation information required under § 779.19 of this chapter.

(2) The soil type and productivity information required under § 779.21 of this chapter.

(3) The land use capability and productivity information required under § 779.22 of this chapter.

(4) The postmining land use approved under § 780.24 of this chapter, but only to the extent that the approved postmining land use will be implemented before final bond release under §§ 800.40 through 800.43 of this chapter. Otherwise, the site must be revegetated in a manner that will restore native plant communities and the revegetation success standards for the site must reflect that requirement.

(c) Except for the areas identified in § 816.111(a) of this part, standards for success must include—

(1) Species diversity.

(2) Areal distribution of species.

(3) Ground cover, except for land actually used for cropland after the completion of regrading and redistribution of soil materials.

(4) Production, for land used for cropland, pasture, or grazing land either before permit issuance or after the completion of regrading and redistribution of soil materials.

(5) Stocking, for areas revegetated with woody plants.

(d) The ground cover, production, or stocking of the revegetated area will be considered equal to the approved success standard for those parameters when the measured values are not less than 90 percent of the success standard, using a 90-percent statistical confidence interval (*i.e.,* a one-sided test with a 0.10 alpha error).

(e) For all areas revegetated with woody plants, regardless of the postmining land use, the regulatory authority must specify minimum stocking and planting arrangements on the basis of local and regional conditions and after coordination with and approval by the state agencies responsible for the administration of forestry and wildlife programs. Coordination and approval may occur on either a program-wide basis or a permit-specific basis.

(f)(1) Only those species of trees and shrubs approved in the permit as part of the revegetation plan under § 780.12(g) of this chapter or volunteer trees and shrubs of species that meet the requirements of § 816.111(c) of this part may be counted in determining whether stocking standards have been met.

(2)(i) At the time of final bond release under §§ 800.40 through 800.43 of this chapter, at least 80 percent of the trees and shrubs used to determine success must have been in place for 60 percent of the applicable minimum period of responsibility under § 816.115 of this part.

(ii) Trees and shrubs counted in determining revegetation success must be healthy and have been in place for not less than two growing seasons. Any replanting must be done by means of transplants to allow for proper accounting of plant stocking.

(iii)(A) For purposes of paragraph (f)(2)(ii) of this section, volunteer trees and shrubs of species that meet the requirements of § 816.111(c) of this part may be deemed equivalent to planted specimens two years of age or older.

(B) Suckers on shrubby vegetation can be counted as volunteer plants when it is evident that the shrub community is vigorous and expanding.

(iv) The requirements of paragraphs (f)(2)(i) and (ii) of this section will be deemed met when records of woody vegetation planted show that—

(A) No woody plants were planted during the last two growing seasons of the responsibility period; and

(B) If any replanting of woody plants took place earlier during the responsibility period, the total number planted during the last 60 percent of that period is less than 20 percent of the total number of woody plants required to meet the stocking standard.

(3) Vegetative ground cover on areas planted with trees or shrubs must be of a nature that allows for natural establishment and succession of native plants, including trees and shrubs.

(g) *Special provision for areas that are to be developed within the revegetation responsibility period.* Portions of the permit area that are to be developed for industrial, commercial, or residential use within the revegetation responsibility period need not meet production or stocking standards. For those areas, the vegetative ground cover must not be less than that required to control erosion.

(h) *Special provision for previously mined areas.* Previously mined areas need only meet a vegetative ground cover standard, unless the regulatory authority specifies otherwise. At a minimum, the cover on the revegetated previously mined area must not be less than the ground cover existing before redisturbance and must be adequate to control erosion.

(i) *Special provision for prime farmland.* For prime farmland historically used for cropland, the revegetation success standard provisions of § 823.15 of this chapter apply in lieu of the requirements of paragraphs (b) through (h) of this section.

§ 816.131 What actions must I take when I temporarily cease mining operations?

(a)(1) Each person who temporarily ceases to conduct surface mining activities at a particular site must effectively secure surface facilities in areas in which there are no current operations, but where operations are to be resumed under an approved permit.

(2) Temporary cessation does not relieve a person of his or her obligation to comply with any provisions of the approved permit.

(b)(1) You must submit a notice of intent to temporarily cease operations to the regulatory authority before ceasing mining and reclamation operations for 30 or more days, or as soon as you know that a temporary cessation will extend beyond 30 days.

(2) The notice of temporary cessation must include a statement of the—

(i) Exact number of surface acres disturbed within the permit area prior to temporary cessation;

(ii) Extent and kind of reclamation accomplished before temporary cessation; and

(iii) Backfilling, regrading, revegetation, environmental monitoring, and water treatment activities that will continue during temporary cessation.

§ 816.132 What actions must I take when I permanently cease mining operations?

(a) Persons who permanently cease surface mining activities at a particular site must close, backfill, or otherwise permanently reclaim all disturbed areas in accordance with this chapter and the permit approved by the regulatory authority.

(b) All equipment, structures, underground openings, or other facilities must be removed and the affected land reclaimed, unless the regulatory authority approves retention of those features because they are suitable for the postmining land use or environmental monitoring.

§ 816.133 What provisions concerning postmining land use apply to my operation?

You, the permittee, must restore all disturbed areas in a timely manner to conditions that are capable of supporting—

(a) The uses they were capable of supporting before any mining, as described under § 779.22 of this chapter; or

(b) Higher or better uses approved under § 780.24(b) of this chapter.

§ 816.150 What are the general requirements for haul and access roads?

(a) *Road classification system.* (1) Each road meeting the definition of that term in § 701.5 of this chapter must be classified as either a primary road or an ancillary road.

(2) A primary road is any road that is—

(i) Used for transporting coal or spoil;

(ii) Frequently used for access or other purposes for a period in excess of 6 months; or

(iii) To be retained for an approved postmining land use.

(3) An ancillary road is any road not classified as a primary road.

(b) *Performance standards.* Each road must be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to—

(1) Control or prevent erosion, siltation, and air pollution attendant to erosion, including road dust and dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices.

(2) Control or prevent damage to fish, wildlife, or their habitat and related environmental values.

(3) Control or prevent additional contributions of suspended solids to streamflow or runoff outside the permit area;

(4) Neither cause nor contribute, directly or indirectly, to a violation of applicable state or tribal water quality standards for surface water and groundwater, including, but not limited to, surface water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(5) Refrain from seriously altering the normal flow of water in streambeds or drainage channels.

(6) Prevent or control damage to public or private property, including the prevention or mitigation of adverse effects on lands within the boundaries of units of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including designated study rivers, and National Recreation Areas designated by Act of Congress.

(7) Use nonacid- and nontoxic-forming substances in road surfacing.

(c) *Design and construction limits and establishment of design criteria.* To ensure environmental protection appropriate for their planned duration and use, including consideration of the type and size of equipment used, the design and construction or reconstruction of roads must include appropriate limits for grade, width, surface materials, surface drainage control, culvert placement, and culvert size, in accordance with current, prudent engineering practices, and any necessary design criteria established by the regulatory authority.

(d) *Location.* (1) No part of any road may be located in the channel of an intermittent or perennial stream unless specifically approved by the regulatory authority in accordance with § 780.28 of this chapter and § 816.57 of this part.

(2) Roads must be located to minimize downstream sedimentation and flooding.

(e) *Maintenance.* (1) A road must be maintained to meet the performance standards of this part and any additional criteria specified by the regulatory authority.

(2) A road damaged by a catastrophic event, such as a flood or earthquake, must be repaired as soon as is practicable after the damage has occurred.

(f) *Reclamation.* A road not to be retained as part of an approved postmining land use must be reclaimed in accordance with the approved reclamation plan as soon as practicable after it is no longer needed for mining and reclamation operations. Reclamation must include—

(1) Closing the road to traffic.

(2) Removing all bridges and culverts unless approved as part of the postmining land use.

(3) Removing or otherwise disposing of road-surfacing materials that are incompatible with the postmining land use and revegetation requirements.

(4) Reshaping the slopes of road cuts and fills as necessary to be compatible with the postmining land use and to complement the natural drainage pattern of the surrounding terrain.

(5) Protecting the natural drainage patterns by installing dikes or cross-drains as necessary to control surface runoff and erosion.

(6) Scarifying or ripping the roadbed, replacing topsoil or substitute material in accordance with § 816.22 of this part, and revegetating disturbed surfaces in accordance with §§ 816.111, 816.115, and 816.116 of this chapter.

§ 816.151 What additional requirements apply to primary roads?

(a) Primary roads must meet the requirements of § 816.150 of this part and the additional requirements of this section.

(b) *Certification.* The construction or reconstruction of primary roads must be certified in a report to the regulatory authority by a qualified registered professional engineer, or in any state that authorizes land surveyors to certify the construction or reconstruction of primary roads, a qualified registered professional land surveyor with experience in the design and construction of roads. The report must indicate that the primary road has been constructed or reconstructed as designed and in accordance with the approved plan.

(c) *Safety factor.* Each primary road embankment must have a minimum static factor of 1.3 or meet the requirements established under § 780.37(c) of this chapter.

(d) *Location.* (1) To minimize erosion, a primary road must be located, insofar as is practicable, on the most stable available surface.

(2) Fords of perennial or intermittent streams are prohibited unless they are specifically approved by the regulatory authority as temporary routes during periods of road construction.

(e) *Drainage control.* In accordance with the approved plan—

(1) Each primary road must be constructed, or reconstructed, and maintained to have adequate drainage control, using structures such as, but not limited to, bridges, ditches, cross drains, and ditch relief drains. The drainage control system must be designed to safely pass the peak runoff from the 10-year, 6-hour precipitation event, or any greater event specified by the regulatory authority.

(2) Drainage pipes and culverts must be installed as designed, and maintained in a free and operating condition and to prevent or control erosion at inlets and outlets.

(3) Drainage ditches must be constructed and maintained to prevent uncontrolled drainage over the road surface and embankment.

(4) Culverts must be installed and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road.

(5) Natural stream channels must not be altered or relocated without the prior approval of the regulatory authority in

accordance with § 780.28 of this chapter and § 816.57 of this part.

(6) Except as provided in paragraph (d)(2) of this section, structures for perennial or intermittent stream channel crossings must be made using bridges, culverts, low-water crossings, or other structures designed, constructed, and maintained using current prudent engineering practices. The regulatory authority must ensure that low-water crossings are designed, constructed, and maintained to prevent erosion of the structure or streambed and additional contributions of suspended solids to streamflow.

(f) *Surfacing.* Primary roads must be surfaced with material approved by the regulatory authority as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road.

§ 816.180 To what extent must I protect utility installations?

You must conduct all surface coal mining operations in a manner that minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines; railroads; electric and telephone lines; and water and sewage lines that pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and the regulatory authority.

§ 816.181 What requirements apply to support facilities?

(a) You must operate each support facility in accordance with the permit issued for the mine or coal preparation plant to which the facility is incident or from which its operation results.

(b) In addition to the other provisions of this part, you must locate, maintain, and use support facilities in a manner that—

(1) Prevents or controls erosion and siltation, water pollution, and damage to public or private property; and

(2) To the extent possible using the best technology currently available—

(i) Minimizes damage to fish, wildlife, and related environmental values; and

(ii) Minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions may not be in excess of limitations of state or federal law.

§ 816.200 [Reserved]

■ 35. Lift the suspension of § 817.121(c)(4)(i) through (iv), and revise part 817 to read as follows:

PART 817—PERMANENT PROGRAM PERFORMANCE STANDARDS—UNDERGROUND MINING ACTIVITIES

Sec.

817.1 What does this part do?
817.2 What is the objective of this part?
817.10 Information collection.
817.11 What signs and markers must I post?
817.13 What special requirements apply to drilled holes, wells, and exposed underground openings?
817.14 [Reserved]
817.15 [Reserved]
817.22 How must I handle topsoil, subsoil, and other plant growth media?
817.34 How must I protect the hydrologic-balance?
817.35 How must I monitor groundwater?
817.36 How must I monitor surface water?
817.37 How must I monitor the biological condition of streams?
817.38 How must I handle acid-forming and toxic-forming materials?
817.39 What must I do with exploratory or monitoring wells when I no longer need them?
817.40 What responsibility do I have to replace water supplies?
817.41 Under what conditions may I discharge water and other materials into an underground mine?
817.42 What Clean Water Act requirements apply to discharges from my operation?
817.43 How must I construct and maintain diversions and other channels to convey water?
817.44 What restrictions apply to gravity discharges from underground mines?
817.45 What sediment control measures must I implement?
817.46 What requirements apply to siltation structures?
817.47 What requirements apply to discharge structures for impoundments?
817.49 What requirements apply to impoundments?
817.55 How must I rehabilitate sedimentation ponds, diversions, impoundments, and treatment facilities after I no longer need them?
817.56 What additional performance standards apply to mining activities conducted in or through an ephemeral stream?
817.57 What additional performance standards apply to mining activities conducted in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream?
817.59 How must I maximize coal recovery?
817.61 Use of explosives: General requirements.
817.62 Use of explosives: Preblasting survey.
817.64 Use of explosives: General performance standards.
817.66 Use of explosives: Blasting signs, warnings, and access control.
817.67 Use of explosives: Control of adverse effects.
817.68 Use of explosives: Records of blasting operations.
817.71 How must I dispose of excess spoil?
817.72 [Reserved]
817.73 [Reserved]
817.74 What special requirements apply to disposal of excess spoil on a preexisting bench?
817.81 How must I dispose of coal mine waste?
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817.84 What special requirements apply to coal mine waste impounding structures?
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Authority: 30 U.S.C. 1201 *et seq.*

§ 817.1 What does this part do?

This part sets forth the minimum environmental protection performance standards for underground mining activities under the Act.

§ 817.2 What is the objective of this part?

This part is intended to ensure that all underground mining activities are conducted in an environmentally sound manner in accordance with the Act.

§ 817.10 Information collection.

In accordance with 44 U.S.C. 3501 *et seq.,* the Office of Management and Budget (OMB) has approved the information collection requirements of this part and assigned it control number 1029–0047. Collection of this information is required under section 516 of SMCRA, which provides that permittees conducting underground coal mining operations must meet all applicable performance standards of the regulatory program approved under the Act. The regulatory authority uses the information collected to ensure that underground mining activities are conducted in compliance with the requirements of the applicable regulatory program. Persons intending to conduct such operations must respond to obtain a benefit. A federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding burden estimates or any other aspect of this collection of information, including suggestions for reducing the burden, to the Office of Surface Mining Reclamation and Enforcement, Information Collection Clearance Officer, Room 203–SIB, 1951 Constitution Avenue NW., Washington, DC 20240.

§ 817.11 What signs and markers must I post?

(a) *General specifications.* Signs and markers required under this part must—

(1) Be posted and maintained by the person who conducts the underground mining activities;

(2) Be of a uniform design throughout the operation;

(3) Be easily seen and read;

(4) Be made of durable material; and

(5) Conform to local ordinances and codes.

(b) *Duration of maintenance.* You must maintain signs and markers during the conduct of all activities to which they pertain.

(c) *Mine and permit identification signs.* (1) You must display identification signs at each point of access from public roads to areas of surface operations and facilities on permit areas for underground mining activities.

(2) The signs must show the name, business address, and telephone number of the person who conducts the underground mining activities and the identification number of the current SMCRA permit authorizing underground mining activities.

(3) You must retain and maintain the signs until the release of all bonds for the permit area.

(d) *Perimeter markers.* You must clearly mark the perimeter of all areas to be disturbed by surface operations or facilities before beginning mining activities on the surface of land within the permit area.

(e) *Stream buffer zone markers.* You must clearly mark the boundaries of any buffer to be maintained between surface activities and a perennial or intermittent stream in accordance with §§ 784.28 and 817.57 of this chapter to avoid disturbance by surface operations and facilities.

(f) *Topsoil markers.* You must clearly mark stockpiles of topsoil, subsoil, or other plant growth media segregated and stored as required in the permit in accordance with § 817.22 of this part.

§ 817.13 What special requirements apply to drilled holes, wells, and exposed underground openings?

(a) Except as provided in paragraph (f) of this section, you must case, line, otherwise manage each exploration hole, drilled hole, borehole, shaft, well, or other exposed underground opening in a manner approved by the regulatory authority to—

(1) Prevent acid or other toxic drainage from entering groundwater and surface water.

(2) Minimize disturbance to the prevailing hydrologic balance.

(3) Ensure the safety of people, livestock, fish and wildlife, and machinery in the permit area and the adjacent area.

(b) You must prevent access to each temporarily inactive mine entry by constructing fences and barricades or other covering devices and posting signs that identify the hazardous nature of the opening. You must periodically inspect and maintain these fences and barricades in good operating condition.

(c) You must temporarily seal each exploration hole, drilled hole, borehole, shaft, well, or other exposed underground opening that the approved permit identifies for use to monitor groundwater or to return underground development waste, coal processing waste, or water to underground workings until you are ready to actually use the hole or opening for that purpose.

(d) You may retain a drilled hole or groundwater monitoring well for use as a water well under the conditions established in § 817.39 of this part.

(e) Except as provided in paragraph (d) of this section, you must permanently close each exploration hole, drilled hole, borehole, well, or underground opening that mining activities uncover or expose within the permit area, unless the regulatory authority—

(1) Approves use of the hole, well, or opening for water monitoring purposes; or

(2) Authorizes other management of the hole or well.

(f)(1) Except as provided in paragraph (d) of this section, you must cap, seal, backfill, or otherwise properly manage each shaft, drift, adit, tunnel, exploratory hole, entryway or other opening to the surface when no longer needed for monitoring or any other use that the regulatory authority approves after finding that the use would not adversely affect the environment or public health and safety.

(2) Permanent closure measures taken under paragraph (f)(1) of this section must be—

(i) Consistent with § 75.1771 of this title;

(ii) Designed to prevent access to the mine workings by people, livestock, fish and wildlife, and machinery; and

(iii) Designed to keep acid or toxic mine drainage from entering groundwater or surface water.

(g) The requirements of this section do not apply to holes drilled and used for blasting as part of surface operations.

§ 817.14 [Reserved]

§ 817.15 [Reserved]

§ 817.22 How must I handle topsoil, subsoil, and other plant growth media?

(a) *Removal and salvage.* (1)(i) You, the permittee, must remove and salvage all topsoil and other soil materials identified for salvage and use as postmining plant growth media in the soil handling plan approved in the permit under § 784.12(e) of this chapter.

(ii) The soil handling plan approved in the permit under § 784.12(e) of this chapter will specify which soil horizons and underlying strata, or portions thereof, you must separately remove and salvage. The plan also will specify whether some or all of those soil horizons and soil substitute materials may or must be blended to achieve an improved plant growth medium.

(iii) Except as provided in the soil handling plan approved in the permit under § 784.12(e) of this chapter, you must complete removal and salvage of topsoil, subsoil, and organic matter in advance of any mining-related surface disturbance other than the minor disturbances identified in paragraph (a)(2) of this section.

(2) Unless otherwise specified by the regulatory authority, you need not remove and salvage topsoil and other soil materials for minor disturbances that—

(i) Occur at the site of small structures, such as power poles, signs, monitoring wells, or fence lines; or

(ii) Will not destroy the existing vegetation and will not cause erosion.

(b) *Handling and storage.* (1) You must segregate and separately handle the materials removed under paragraph (a) of this section to the extent required in the soil handling plan approved in the permit pursuant to § 784.12(e). You must redistribute those materials promptly on regraded areas or stockpile them when prompt redistribution is impractical.

(2) Stockpiled materials must—

(i) Be selectively placed on a stable site within the permit area;

(ii) Be protected from contaminants and unnecessary compaction that would interfere with revegetation;

(iii) Be protected from wind and water erosion through prompt establishment and maintenance of an effective, quick-growing, non-invasive vegetative cover or through other measures approved by the regulatory authority; and

(iv) Not be moved until required for redistribution unless approved by the regulatory authority.

(3) When stockpiling of organic matter and soil materials removed under paragraphs (a) and (f) of this section would be detrimental to the quality or quantity of those materials, you may temporarily redistribute those soil materials on an approved site within the permit area to enhance the current use of that site until the materials are needed for later reclamation, provided that—

(i) Temporary redistribution will not permanently diminish the capability of the topsoil of the host site; and

(ii) The redistributed material will be preserved in a condition more suitable for redistribution than if it were stockpiled.

(c) *Soil substitutes and supplements.* When the soil handling plan approved in the permit in accordance with § 784.12(e) of this chapter provides for the use of substitutes for or supplements to the existing topsoil or subsoil, you must salvage, store, and redistribute the overburden materials selected and approved for that purpose in a manner consistent with paragraphs (a), (b), and (e) of this section.

(d) *Site preparation.* If necessary to reduce potential slippage of the redistributed material or to promote root penetration, you must rip, chisel-plow, deep-till, or otherwise mechanically treat backfilled and graded areas either before or after redistribution of soil materials, whichever time is agronomically appropriate.

(e) *Redistribution.* (1) You must redistribute the materials removed, salvaged, and, if necessary, stored under paragraphs (a) through (c) of this section in a manner that—

(i) Complies with the soil handling plan developed under § 784.12(e) of this chapter and approved as part of the permit.

(ii) Is consistent with the approved postmining land use, the final surface configuration, and surface water drainage systems.

(iii) Minimizes compaction of the topsoil and soil materials in the root zone to the extent possible and alleviates any excess compaction that may occur. You must limit your use of measures that result in increased compaction to those situations in which added compaction is necessary to ensure stability.

(iv) Protects the materials from wind and water erosion before and after seeding and planting to the extent necessary to ensure establishment of a successful vegetative cover and to avoid causing or contributing to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart.

(v) Achieves an approximately uniform, stable thickness across the regraded area. The thickness may vary when consistent with the approved postmining land use, the final surface configuration, surface water drainage systems, and the requirement in § 817.133 of this part for restoration of all disturbed areas to conditions that are capable of supporting the uses they were capable of supporting before any mining or higher or better uses approved under § 784.24(b) of this chapter. The thickness also may vary when variations are necessary or desirable to achieve specific revegetation goals and ecological diversity, as set forth in the revegetation plan developed under § 784.12(g) of this chapter and approved as part of the permit.

(2) You must use a statistically valid sampling technique to document that soil materials have been redistributed in the locations and depths required by the soil handling plan developed under § 784.12(e) of this chapter and approved as part of the permit.

(3) The regulatory authority may choose not to require the redistribution of topsoil on the embankments of permanent impoundments or on the embankments of roads to be retained as part of the postmining land use if it determines that—

(i) Placement of topsoil on those embankments is inconsistent with the requirement to use the best technology currently available to prevent sedimentation, and

(ii) The embankments will be otherwise stabilized.

(f) *Organic matter.* (1)(i) You must salvage duff, other organic litter, and vegetative materials such as tree tops and branches, small logs, and root balls. When practicable and consistent with the approved postmining land use, you may salvage organic matter and topsoil in a single operation that blends those materials.

(ii) Paragraph (f)(1)(i) of this section does not apply to organic matter from areas identified under § 783.19(b) of this chapter as containing significant populations of invasive or noxious non-native species. You must bury organic matter from those areas in the backfill at a sufficient depth to prevent regeneration or proliferation of undesirable species.

(2)(i) Except as otherwise provided in paragraphs (f)(2)(ii) and (iii) and (3) of this section, you must redistribute the organic matter salvaged under paragraph (f)(1) of this section across the regraded surface or incorporate it into the soil to control erosion, promote growth of vegetation, serve as a source of native plant seeds and soil inoculants to speed restoration of the soil's ecological community, and increase the moisture retention capability of the soil.

(ii) You may use vegetative debris to construct stream improvement or fish and wildlife habitat enhancement features consistent with the approved postmining land use.

(iii) You may adjust the timing and pattern of redistribution of large woody debris to accommodate the use of mechanized tree-planting equipment on sites with a forestry postmining land use.

(3)(i) The redistribution requirements of paragraph (f)(2)(i) of this section do not apply to those portions of the permit area—

(A) Upon which row crops will be planted as part of the postmining land use before final bond release under §§ 800.40 through 800.43 of this chapter;

(B) That will be intensively managed for hay production as part of the postmining land use before final bond release under §§ 800.40 through 800.43 of this chapter; or

(C) Upon which structures, roads, other impervious surfaces, or water impoundments have been or will be constructed as part of the postmining land use before final bond release under §§ 800.40 through 800.43 of this chapter.

(ii) When the circumstances described in paragraph (f)(3)(i) of this section apply, you must make reasonable efforts to redistribute the salvaged organic matter on other portions of the permit area or use woody debris to construct stream improvement or fish and wildlife habitat enhancement features consistent with the approved postmining land use. If you demonstrate, and the regulatory authority finds, that it is not reasonably possible to use all available organic matter for these purposes, you may bury it in the backfill.

(4)(i) You may not burn organic matter.

(ii) You may bury organic matter in the backfill only as provided in paragraphs (f)(1)(ii) and (3)(ii) of this section.

§ 817.34 How must I protect the hydrologic balance?

(a) You, the permittee, must conduct all underground mining and reclamation activities in a manner that will—

(1) Minimize disturbance of the hydrologic balance within the permit and adjacent areas.

(2) Prevent material damage to the hydrologic balance outside the permit area. Material damage resulting from subsidence may not constitute material damage to the hydrologic balance outside the permit area if that damage is repaired or corrected under § 817.40 or § 817.121(c) of this part.

(3) Protect streams in accordance with §§ 784.28 and 817.57 of this chapter.

(4) Assure the replacement of water supplies to the extent required by § 817.40 of this part.

(5) Protect existing water rights under state law.

(6) Support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this part.

(7) Comply with the hydrologic reclamation plan as submitted under § 784.22 of this chapter and approved in the permit.

(8) Protect groundwater quality by using best management practices to handle earth materials and runoff in a manner that avoids the formation of acid or toxic mine drainage and by managing excavations and other disturbances to prevent or control groundwater degradation. The regulatory authority will determine the meaning of the term ''best management practices'' on a site-specific basis. At a minimum, the term includes equipment, devices, systems, methods, and techniques that the Director determines to be best management practices.

(9) Protect surface-water quality by using best management practices, as described in paragraph (a)(8) of this section, to handle earth materials, groundwater discharges, and runoff in a manner that—

(i) Prevents postmining discharges of acid or toxic mine drainage.

(ii) Prevents additional contribution of suspended solids to streamflow or runoff outside the permit area to the extent possible, using the best technology currently available.

(iii) Otherwise prevents water pollution.

(10) Protect surface-water quality and flow rates by handling earth materials and runoff in accordance with the steps outlined in the hydrologic reclamation plan and the surface-water runoff control plan approved in the permit in accordance with §§ 784.22 and 780.29 of this chapter, respectively.

(b)(1) To the maximum extent practicable, you must use mining and reclamation practices that minimize water pollution, changes in flow, and adverse impacts on stream biota rather than relying upon water treatment to minimize those impacts.

(2) You must install, use, and maintain any necessary water-treatment facilities or water-quality controls if drainage control, materials handling, stabilization and revegetation of disturbed areas, diversion of runoff, mulching, and other reclamation and remedial practices are not adequate to meet the requirements of this section and § 817.42 of this part.

(c) The regulatory authority may require that you take preventive, remedial, or monitoring measures in addition to those set forth in this part to prevent material damage to the hydrologic balance outside the permit area.

(d)(1) You must examine the runoff-control structures identified under § 784.29 of this chapter within 72 hours of cessation of each occurrence of the following precipitation events:

(i) In areas with an average annual precipitation of more than 26.0 inches, an event of a size equal to or greater than that of a storm with a 2-year recurrence interval. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine peak flow for a storm with that recurrence interval.

(ii) In areas with an average annual precipitation of 26.0 inches or less, a significant event of a size specified by the regulatory authority.

(2)(i) You must prepare a report, which must be certified by a registered professional engineer, and submit the report to the regulatory authority within 30 days of cessation of the applicable precipitation event under paragraph (d)(1) of this section. The report must address the performance of the runoff-control structures, identify and describe any material damage to the hydrologic balance outside the permit area that occurred, and identify and describe the remedial measures taken in response to that damage.

(ii) The report prepared under paragraph (d)(2)(i) of this section may include all precipitation events that occur within 30 days of cessation of the applicable precipitation event under paragraph (d)(1) of this section.

§ 817.35 How must I monitor groundwater?

(a)(1)(i) You, the permittee, must monitor groundwater in the manner specified in the groundwater monitoring plan approved in the permit in accordance with § 784.23(a) of this chapter.

(ii) You must adhere to the data collection, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter when conducting monitoring under this section.

(2) At a minimum, you must conduct monitoring through mining, reclamation, and the revegetation responsibility period under § 817.115 of this part for the monitored area. Monitoring must continue beyond that minimum for any additional time needed for monitoring results to demonstrate that the criteria of § 817.35(d)(1) and (2) of this section have been met, as determined by the regulatory authority.

(b)(1) You must submit groundwater monitoring data to the regulatory authority every 3 months, or more frequently if prescribed by the regulatory authority.

(2) Monitoring reports must include analytical results from each sample taken during the reporting period.

(c) When the analysis of any sample indicates noncompliance with the terms and conditions of the permit, you must promptly notify the regulatory authority, take any applicable actions required under § 773.17(e) of this chapter, and implement any applicable

remedial measures required by the hydrologic reclamation plan approved in the permit in accordance with § 784.22 of this chapter.

(d) You may use the permit revision procedures of § 774.13 of this chapter to request that the regulatory authority modify the groundwater monitoring requirements, including the parameters covered and the sampling frequency. The regulatory authority may approve your request if you demonstrate, using the monitoring data obtained under this section, that—

(1) Future adverse changes in groundwater quantity or quality are unlikely to occur.

(2) The operation has—

(i) Minimized disturbance to the hydrologic balance in the permit and adjacent areas.

(ii) Prevented material damage to the hydrologic balance outside the permit area.

(iii) Preserved or restored the biological condition of perennial and intermittent streams within the permit and adjacent areas for which baseline biological condition data was collected under § 784.19(c)(6)(vi) of this chapter when groundwater from the permit area provides all or part of the base flow of those streams.

(iv) Maintained or restored the availability and quality of groundwater to the extent necessary to support the approved postmining land uses within the permit area.

(v) Protected or replaced the water rights of other users.

(e) Whenever information available to the regulatory authority indicates that additional monitoring is necessary to protect the hydrologic balance, to detect hydrologic changes, or to meet other requirements of the regulatory program, the regulatory authority must issue an order under § 774.10(b) of this chapter requiring that you revise your permit to include the necessary additional monitoring.

(f) You must install, maintain, operate, and, when no longer needed, remove all equipment, structures, and other devices used in conjunction with monitoring groundwater, consistent with §§ 817.13 and 817.39 of this part.

§ 817.36 How must I monitor surface water?

(a)(1)(i) You, the permittee, must monitor surface water in the manner specified in the surface-water monitoring plan approved in the permit in accordance with § 784.23(b) of this chapter.

(ii) You must adhere to the data collection, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter when conducting monitoring under this section.

(2) Monitoring must continue through mining and during reclamation until the regulatory authority releases the entire bond amount for the monitored area under §§ 800.40 through 800.43 of this chapter.

(b)(1) You must submit surface-water monitoring data to the regulatory authority every 3 months, or more frequently when prescribed by the regulatory authority.

(2) Monitoring reports must include analytical results from each sample taken during the reporting period.

(3) The reporting requirements of paragraph (b) of this section do not exempt you from meeting any National Pollutant Discharge Elimination System (NPDES) reporting requirements.

(c) When the analysis of any sample indicates noncompliance with the terms and conditions of the permit, you must promptly notify the regulatory authority, take any applicable actions required under § 773.17(e) of this chapter, and implement any applicable remedial measures required by the hydrologic reclamation plan approved in the permit in accordance with § 784.22 of this chapter.

(d) You may use the permit revision procedures of § 774.13 of this chapter to request that the regulatory authority modify the surface-water monitoring requirements (except those required by the NPDES permitting authority), including the parameters covered and the sampling frequency. The regulatory authority may approve your request if you demonstrate, using the monitoring data obtained under this section, that—

(1) Future adverse changes in surface-water quantity or quality are unlikely to occur.

(2) The operation has—

(i) Minimized disturbance to the hydrologic balance in the permit and adjacent areas.

(ii) Prevented material damage to the hydrologic balance outside the permit area.

(iii) Preserved or restored the biological condition of perennial and intermittent streams within the permit and adjacent areas for which baseline biological condition data was collected under § 784.19(c)(6)(vi) of this chapter.

(iv) Maintained or restored the availability and quality of surface water to the extent necessary to support the approved postmining land uses within the permit area.

(v) Not precluded attainment of any designated use of surface water under section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(vi) Protected or replaced the water rights of other users.

(e) Whenever information available to the regulatory authority indicates that additional monitoring is necessary to protect the hydrologic balance, to detect hydrologic changes, or to meet other requirements of the regulatory program, the regulatory authority must issue an order under § 774.10(b) of this chapter requiring that you revise your permit to include the necessary additional monitoring.

(f) You must install, maintain, operate, and, when no longer needed, remove all equipment, structures, and other devices used in conjunction with monitoring surface water.

§ 817.37 How must I monitor the biological condition of streams?

(a)(1)(i) You must monitor the biological condition of perennial and intermittent streams in the manner specified in the plan approved in the permit in accordance with § 784.23(c) of this chapter.

(ii) You must adhere to the data collection, analysis, and reporting requirements of paragraphs (a) and (b) of § 777.13 of this chapter and use a bioassessment protocol that complies with § 784.19(c)(6)(vii) of this chapter when conducting monitoring under this section.

(2) Monitoring must continue through mining and during reclamation until the regulatory authority releases the entire bond amount for the monitored area under §§ 800.40 through 800.43 of this chapter.

(b) You must submit biological condition monitoring data to the regulatory authority on an annual basis, or more frequently if prescribed by the regulatory authority.

(d) Whenever information available to the regulatory authority indicates that additional monitoring is necessary to meet the requirements of the regulatory program, the regulatory authority must issue an order under § 774.10(b) of this chapter requiring that you revise your permit to include the necessary additional monitoring.

§ 817.38 How must I handle acid-forming and toxic-forming materials?

(a) You, the permittee, must use the best technology currently available to handle acid-forming and toxic-forming materials and underground development waste in a manner that will avoid the creation of acid or toxic mine drainage into surface water and groundwater. At a minimum, you must comply with the plan approved in the permit in accordance with § 784.12(n) of this chapter and adhere to disposal,

treatment, and storage practices that are consistent with other material handling and disposal provisions of this chapter.

(b) You may temporarily store acid-forming and toxic-forming materials only if the regulatory authority specifically approves temporary storage as necessary and finds in writing in the permit that the proposed storage method will protect surface water and groundwater by preventing erosion, the formation of polluted runoff, and the infiltration of polluted water into aquifers. The regulatory authority must specify a maximum time for temporary storage, which may not exceed the period until permanent disposal first becomes feasible. In addition, storage must not result in any risk of water pollution, adverse impacts to the biology of perennial or intermittent streams, or other environmental damage.

§ 817.39 What must I do with exploratory or monitoring wells when I no longer need them?

(a) Except as provided in paragraph (b) of this section, you, the permittee, must permanently seal exploratory or monitoring wells in a safe and environmentally sound manner in accordance with § 817.13 of this part before the regulatory authority may approve full release of the bond posted for the land on which the wells are located under §§ 800.40 through 800.43 of this chapter.

(b) With the prior approval of the regulatory authority, you may transfer wells to another party for further use. The conditions of the transfer must comply with state and local laws. You will remain responsible for the proper management of the wells until full release of the bond posted for the land on which the wells are located under §§ 800.40 through 800.43 of this chapter.

§ 817.40 What responsibility do I have to replace water supplies?

(a) *Replacement of adversely-impacted water supplies.* (1) You, the permittee, must promptly replace any drinking, domestic or residential water supply that is contaminated, diminished or interrupted as a result of underground mining activities that you conducted after October 24, 1992, if the affected well or spring was in existence before the date the regulatory authority received the permit application for the activities causing the loss, contamination or interruption.

(2) The replacement supply must be equivalent to the quantity and quality of the premining supply.

(3) Replacement includes provision of an equivalent water supply delivery system and payment of operation and maintenance expenses in excess of customary and reasonable delivery costs for the premining water supply. If you and the water supply owner agree, your obligation to pay operation and maintenance costs may be satisfied by a one-time payment in an amount that covers the present worth of the increased annual operation and maintenance costs for a period upon which you and the water supply owner agree.

(4) If the affected water supply was not needed for the land use in existence at the time of loss, contamination, or diminution, you may satisfy the replacement requirements by demonstrating that a suitable alternative water source is available and could feasibly be developed, provided you obtain written concurrence from the owner of the affected water supply.

(b) *Measures to address anticipated adverse impacts to protected water supplies.* For anticipated loss of or damage to a protected water supply, you must adhere to the requirements set forth in the permit in accordance with § 784.22(b) of this chapter.

(c) *Measures to address unanticipated adverse impacts to protected water supplies.* For unanticipated loss of or damage to a protected water supply, you must—

(1) Provide an emergency temporary water supply within 24 hours of notification of the loss. The temporary supply must be adequate in quantity and quality to meet normal household needs.

(2) Develop and submit a plan for a permanent replacement supply to the regulatory authority within 30 days of receiving notice that an unanticipated loss of or damage to a protected water supply has occurred.

(3) Provide a permanent replacement water supply within 2 years of the date of receiving notice of an unanticipated loss of or damage to a protected water supply. The regulatory authority may grant an extension if you have made a good-faith effort to meet this deadline, but have been unable to do so for reasons beyond your control.

(d) *Basis for determination of adverse impact.* The regulatory authority must use the baseline hydrologic and geologic information required under § 784.19 of this chapter and all other available information to determine whether and to what extent the mining operation adversely impacted the damaged water supply.

§ 817.41 Under what conditions may I discharge water and other materials into an underground mine?

(a) You may not discharge any water or other materials from your operation into an underground mine unless the regulatory authority specifically approves the discharge in writing, based upon a demonstration that—

(1) The discharge will be made in a manner that—

(i) Minimizes disturbances to the hydrologic balance within the permit area;

(ii) Prevents material damage to the hydrologic balance outside the permit area, including the hydrologic balance of the area in which the underground mine receiving the discharge is located;

(iii) Does not adversely impact the biology of perennial or intermittent streams; and

(iv) Otherwise eliminates public hazards resulting from surface mining activities.

(2) The discharge will not cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart.

(3)(i) The discharge will be at a known rate and of a quality that will meet the effluent limitations for pH and total suspended solids in 40 CFR part 434.

(ii) The regulatory authority may approve discharges of water that exceed the effluent limitations for pH and total suspended solids in 40 CFR part 434 if the available evidence indicates that there is no direct hydrologic connection between the underground mine and other waters and that those exceedances will not be inconsistent with paragraph (a)(1) of this section.

(4) The discharge will not cause or contribute to a violation of applicable state or tribal water quality standards for groundwater.

(5) The Mine Safety and Health Administration has approved the discharge.

(6) You have obtained written permission from the owner of the mine into which the discharge is to be made and you have provided a copy of that authorization to the regulatory authority.

(b) Discharges are limited to the following materials:

(1) Water.
(2) Coal processing waste.
(3) Fly ash from a coal-fired facility.
(4) Sludge from an acid-mine-drainage treatment facility.
(5) Flue-gas desulfurization sludge.
(6) Inert materials used for stabilizing underground mines.
(7) Underground mine development waste.

§ 817.42 What Clean Water Act requirements apply to discharges from my operation?

(a) Nothing in this section, nor any action taken pursuant to this section, supersedes or modifies—
(1) The authority or jurisdiction of federal, state, or tribal agencies responsible for administration, implementation, and enforcement of the Clean Water Act, 33 U.S.C. 1251 *et seq.;* or
(2) The decisions that those agencies make under the authority of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* including decisions on whether a particular set of facts constitutes a violation of the Clean Water Act.
(b) Discharges of water from underground mining activities and from areas disturbed by underground mining activities must—
(1) Be made in compliance with all applicable water quality laws and regulations, including the effluent limitations established in the National Pollutant Discharge Elimination System permit for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart. The regulatory authority must notify the appropriate Clean Water Act authority whenever it takes action to enforce a permit condition required by § 773.17(i) of this chapter with respect to an effluent limitation in a National Pollutant Discharge Elimination System permit. The regulatory authority must initiate coordination with the Clean Water Act authority before taking enforcement action if coordination is needed to determine whether a violation of the National Pollutant Discharge Elimination System permit exists.
(2) Not cause or contribute to a violation of applicable water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or other applicable state or tribal water quality standards.
(c) Discharges of overburden, coal mine waste, and other materials into waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* must be made in compliance with section 404 of the Clean Water Act, 33 U.S.C. 1344, and its implementing regulations.
(d) The regulatory authority will coordinate an investigation with the appropriate Clean Water Act authority whenever information available to the regulatory authority indicates that mining activities may be causing or contributing to a violation of the water quality standards to which paragraph (b)(2) of this section refers, or to a violation of section 404 of the Clean Water Act, 33 U.S.C. 1344, and its implementing regulations. If, after coordination with the appropriate Clean Water Act authority, it is determined that mining activities are causing or contributing to a Clean Water Act violation, the regulatory authority must, in addition to any action taken by the appropriate Clean Water Act authority, independently take enforcement or other appropriate action to correct the cause of the violation.
(e) You must construct water treatment facilities for discharges from the operation as soon as the need for those facilities becomes evident.
(f)(1) You must remove precipitates and otherwise maintain all water treatment facilities requiring the use of settling ponds or lagoons as necessary to maintain the functionality of those facilities.
(2) You must dispose of all precipitates removed from facilities under paragraph (f)(1) of this section either in an approved solid waste landfill or within the permit area in accordance with a plan approved by the regulatory authority.
(g) You must operate and maintain water treatment facilities until the regulatory authority authorizes removal based upon monitoring data demonstrating that influent to the facilities meets all applicable effluent limitations without treatment and that discharges would not cause or contribute to a violation of applicable water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), or other applicable state or tribal water quality standards if left untreated.

§ 817.43 How must I construct and maintain diversions?

(a) *Classification.* The term *diversion* applies to the following categories of channels that convey surface water flow:
(1) *Diversion Ditches.* Diversion ditches are channels constructed to convey surface water runoff or other flows from areas not disturbed by mining activities away from or around disturbed areas. Diversion ditches may be temporary or permanent.
(i) You must remove a temporary diversion ditch as soon as it is no longer needed. You must restore the land disturbed by the removal process in accordance with the approved permit and § 817.55 of this part. Before removing a temporary diversion ditch, you must modify or remove downstream water treatment facilities previously protected by the ditch to prevent overtopping or failure of the facilities. You must continue to maintain water treatment facilities until they are no longer needed.
(ii) You may retain a *diversion ditch* as a permanent structure if you demonstrate and the regulatory authority finds that retention of that diversion ditch would—
(A) Be environmentally beneficial;
(B) Meet the requirements of the reclamation plan approved under § 784.12 of this chapter; and
(C) Be consistent with the surface drainage pattern restoration requirements of §§ 817.56 and 817.57 of this part.
(iii) When approved in the permit, you may divert the following flows away from the disturbed area by means of temporary or permanent diversion ditches without treatment:
(A) Any surface runoff or other flows from mined areas abandoned before May 3, 1978.
(B) Any surface runoff or other flows from undisturbed areas.
(C) Any surface runoff or other flows from reclaimed areas for which the criteria of § 817.46 of this part for siltation structure removal have been met.
(2) *Stream diversions.* Stream diversions are temporary or permanent relocations of perennial or intermittent streams. Diversions of perennial and intermittent streams must comply with the applicable requirements of this section, § 784.28 of this chapter, and § 817.57 of this part.
(i) You must remove t*emporary stream diversions* after the original stream channel is reconstructed after mining. As set forth in § 784.28(f) of this chapter, different requirements apply to temporary stream diversions depending on whether they will be in existence for less or more than 3 years.
(ii) *Permanent stream diversions* remain in their locations following mining and reclamation.
(3) *Conveyances and channels within the disturbed area.* All other conveyances and channels that are constructed within the disturbed area to transport surface water are also diversions. During mining, these channels or conveyances must deliver all captured surface water flow to siltation structures.

(i) You must remove temporary conveyances or channels when they are no longer needed for their intended purpose.

(ii) When approved in the permit, you may retain conveyances or channels that support or enhance the approved postmining land use.

(b) *Design criteria.* When the permit requires the use of siltation structures for sediment control, you must construct diversions designed to the standards of this section to convey runoff from the disturbed area to the siltation structures unless the topography will naturally direct all surface runoff or other flows to a siltation structure.

(1) You must design all diversions to—

(i) Ensure the safety of the public.

(ii) Minimize adverse impacts to the hydrologic balance, including the biology of perennial and intermittent streams, within the permit and adjacent areas.

(iii) Prevent material damage to the hydrologic balance outside the permit area.

(2) You must design, locate, construct, maintain, and use each diversion and its appurtenant structures to—

(i) Be stable.

(ii) Provide and maintain the capacity to safely pass the peak flow of surface runoff from a 2-year, 6-hour precipitation event for a temporary diversion and a 10-year, 6-hour precipitation event for a permanent diversion. Flow capacity for stream diversions includes both the in-channel capacity and the flood-prone area overbank capacity. Flow capacity for diversion ditches and conveyances or channels includes only in-channel capacity, with adequate freeboard to prevent out-of-channel flow. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine peak flows.

(iii) Prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow or runoff outside the permit area.

(iv) Comply with all applicable federal, state, tribal, and local laws and regulations.

(c) *Application to § 817.41.* You may not divert surface runoff or other flows into underground mines without approval of the regulatory authority under § 817.41 of this part.

(d) *Additional requirements.* The regulatory authority may specify additional design criteria for diversions to meet the requirements of this section.

§ 817.44 What restrictions apply to gravity discharges from underground mines?

(a)(1) You must locate and manage surface entries and accesses to underground workings to prevent or control gravity discharge of water from the mine.

(2) The regulatory authority may approve gravity discharges of water from an underground mine, other than a drift mine subject to paragraph (b) of this section, if you—

(i) Demonstrate that the untreated or treated discharge will comply with the performance standards of this part and any additional National Pollutant Discharge Elimination System permit requirements under the Clean Water Act.

(ii) Design the discharge control structure to prevent a mine pool blowout.

(3) You must construct and maintain the discharge control structure in accordance with the design approved by the regulatory authority and any other conditions imposed by the regulatory authority.

(b) Notwithstanding anything to the contrary in paragraph (a) of this section, you must locate the surface entries and accesses of drift mines first used after the implementation of a state, federal, or federal lands program under this chapter and located in acid-producing or iron-producing coal seams in such a manner as to prevent any gravity discharge from the mine.

§ 817.45 What sediment control measures must I implement?

(a) You must design, construct, and maintain appropriate sediment control measures, using the best technology currently available to—

(1) Prevent, to the extent possible, additional contributions of sediment to streamflow or to runoff outside the permit area.

(2) Meet the applicable effluent limitations referenced in § 817.42(a) of this part.

(3) Minimize erosion to the extent possible.

(b) Sediment control measures include practices carried out within the disturbed area. Sediment control measures consist of the use of proper mining and reclamation methods and sediment control practices, singly or in combination. Sediment control methods include but are not limited to—

(1) Disturbing the smallest practicable area at any one time during the mining operation through progressive backfilling, grading, and prompt revegetation.

(2) Shaping and stabilizing the backfilled material to promote a reduction in the rate and volume of runoff.

(3) Retaining sediment within disturbed areas.

(4) Diverting surface runoff from undisturbed areas away from disturbed areas.

(5) Using protected channels or pipes to convey surface runoff from undisturbed areas through disturbed areas so as not to cause additional erosion.

(6) Using straw dikes, riprap, check dams, mulches, vegetative sediment filters, dugout ponds, and other measures that reduce overland flow velocity, reduce runoff volume, or trap sediment.

(7) Treating surface runoff collected in sedimentation ponds with flocculants or other chemicals.

§ 817.46 What requirements apply to siltation structures?

(a) *Scope.* For the purpose of this section only, the phrase ''disturb the land surface'' does not include those areas—

(1) In which the only underground mining activities conducted on the land surface consist of diversions, siltation structures, or roads that are designed, constructed, and maintained in accordance with this part; and

(2) For which you do not plan to otherwise disturb the land surface upgradient of the diversion, siltation structure, or road.

(b) *General requirements.* (1) When siltation structures will be used to achieve the requirements of § 817.45 of this part, you must construct those structures before beginning any underground mining activities that will disturb the land surface.

(2) Upon completion of construction of a siltation structure, a qualified registered professional engineer, or, in any state that authorizes land surveyors to prepare and certify plans in accordance with § 784.25(a) of this chapter, a qualified registered professional land surveyor, must certify that the structure has been constructed as designed and as approved in the reclamation plan in the permit.

(3) Any siltation structure that impounds water must be designed, constructed and maintained in accordance with § 817.49 of this chapter.

(4) You must maintain siltation structures until removal is authorized by the regulatory authority and the disturbed area has been stabilized and revegetated.

(5)(i) When a siltation structure is removed, you must regrade the land upon which the structure was located

and revegetate the land in accordance with the reclamation plan and §§ 817.111 and 817.116 of this chapter.

(ii) Paragraph (b)(5)(i) of this section does not apply to sedimentation ponds approved by the regulatory authority for retention as permanent impoundments under § 817.49(b) of this part if the maintenance requirements of § 800.42(c)(5) of this chapter are met.

(c) *Sedimentation ponds.* (1) When used, sedimentation ponds must—

(i) Be located as near as possible to the disturbed area and outside perennial or intermittent stream channels unless approved by the regulatory authority in the permit in accordance with §§ 784.28 and 817.57(c) of this chapter.

(ii) Be designed, constructed, and maintained to—

(A) Provide adequate sediment storage volume.

(B) Provide adequate detention time to allow the effluent from the ponds to meet applicable effluent limitations.

(C) Contain or treat the 10-year, 24-hour precipitation event (''design event'') unless a lesser design event is approved by the regulatory authority based on terrain, climate, other site-specific conditions, and a demonstration that the effluent limitations referenced in § 817.42 of this part will be met.

(D) Provide a nonclogging dewatering device adequate to maintain the detention time required under paragraph (c)(1)(ii)(B) of this section.

(E) Minimize short circuiting to the extent possible.

(F) Provide periodic sediment removal sufficient to maintain adequate volume for the design event.

(G) Ensure against excessive settlement.

(H) Be free of sod, large roots, frozen soil, and acid-forming or toxic-forming materials.

(I) Be compacted properly.

(2) *Spillways.* A sedimentation pond must include either a combination of principal and emergency spillways or a single spillway configured as specified in § 817.49(a)(9) of this part.

(d) *Other treatment facilities.* (1) You must design other treatment facilities to treat the 10-year, 24-hour precipitation event unless the regulatory authority approves a lesser design event based upon terrain, climate, other site-specific conditions, and a demonstration that the effluent limitations referenced in § 817.42 of this part will be met.

(2) You must design other treatment facilities in accordance with the applicable requirements of paragraph (c) of this section.

(e) *Exemptions.* The regulatory authority may grant an exemption from the requirements of this section if—

(1) The disturbed drainage area within the total disturbed area is small; and

(2) You demonstrate that neither siltation structures nor alternate sediment control measures are necessary for drainage from the disturbed drainage area to comply with § 817.42 of this part.

§ 817.47 What requirements apply to discharge structures for impoundments?

You must control discharges from sedimentation ponds, permanent and temporary impoundments, coal mine waste impounding structures, and diversions by energy dissipators, riprap channels, and other devices when necessary to reduce erosion, to prevent deepening or enlargement of stream channels, to control meander migration, or to minimize disturbance of the hydrologic balance. You must design discharge structures according to standard engineering design procedures.

§ 817.49 What requirements apply to impoundments?

(a) *Requirements that apply to both permanent and temporary impoundments.*—

(1) *MSHA requirements.* An impoundment meeting the criteria of § 77.216(a) of this title must comply with the requirements of § 77.216 of this title and this section.

(2) *Stability.* (i) An impoundment that meets the criteria of § 77.216(a) of this title or that includes a dam with a significant or high hazard potential classification under § 784.25(a) of this chapter must have a minimum static safety factor of 1.5 for a normal pool with steady state seepage saturation conditions and a seismic safety factor of at least 1.2.

(ii) Impoundments not included in paragraph (a)(2)(i) of this section, except for a coal mine waste impounding structure, must have a minimum static safety factor of 1.3 for a normal pool with steady state seepage saturation conditions or meet the requirements of § 784.25(e)(2) of this chapter.

(3) *Freeboard.* (i) Impoundments must have adequate freeboard to resist overtopping by waves that occur in conjunction with the typical increase in water elevation at the downwind edge of any body of water, waves resulting from sudden influxes of surface runoff from precipitation events, or waves resulting from any combination of these events or other events.

(ii) An impoundment that includes a dam with a significant or high hazard potential classification under § 784.25(a) of this chapter must comply with the freeboard hydrograph criteria in the following table:

MINIMUM AUXILIARY SPILLWAY HYDROLOGIC CRITERIA

Hazard potential classification of embankment	Design precipitation event for—	
	Auxiliary spillway hydrograph	Freeboard hydrograph
Significant	P_{100}[1] + 0.12(PMP[2] − P_{100})	P_{100} + 0.40(PMP − P_{100})
High	P_{100} + 0.26(PMP − P_{100})	PMP

[1] P_{100} = Precipitation event for 100-year return interval.
[2] PMP = Probable Maximum Precipitation event.

(4) *Foundation.* (i) Foundations and abutments for an impounding structure must be stable during all phases of construction and operation and must be designed based on adequate and accurate information on the foundation and abutment conditions.

(ii) You must conduct foundation and abutment investigations, as well as any necessary laboratory testing of foundation material, to determine the design requirements for foundation stability and control of underseepage for an impoundment that includes a dam with a significant or high hazard potential classification under § 784.25(a) of this chapter.

(iii) You must remove all vegetative and organic materials from the foundation area and excavate and prepare the foundation area to resist failure. You must install cutoff trenches if necessary to ensure stability.

(5) *Protection of impoundment slopes.* You must take measures to protect impoundment slopes from surface

erosion and the adverse impacts of a sudden drawdown.

(6) *Protection of embankment faces.* Faces of embankments and surrounding areas shall be vegetated, except that faces where water is impounded may be riprapped or otherwise stabilized in accordance with accepted design practices.

(7) *Spillways.* An impoundment must include either a combination of principal and emergency spillways or a single spillway configured as specified in paragraph (a)(7)(i) of this section, designed and constructed to safely pass the applicable design precipitation event specified in paragraph (a)(7)(ii) of this section, except as set forth in paragraph (c)(2) of this section.

(i) The regulatory authority may approve a single open-channel spillway that is:

(A) Of nonerodible construction and designed to carry sustained flows; or

(B) Earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected.

(ii) Except as specified in paragraph (c)(2) of this section, the required design precipitation event for an impoundment meeting the spillway requirements of paragraph (a)(7) of this section is:

(A) For an impoundment that includes a dam with a significant or high hazard potential classification under § 784.25(a) of this chapter, the design precipitation event specified in the auxiliary spillway hydrograph column in the table in paragraph (a)(3)(ii) of this section, or any greater event specified by the regulatory authority.

(B) For an impoundment meeting the criteria of § 77.216(a) of this title, the 100-year, 6-hour event, or any greater event specified by the regulatory authority.

(C) For an impoundment not included in paragraphs (a)(7)(ii) (A) and (B) of this section, the 25-year, 6-hour event, or any greater event specified by the regulatory authority.

(8) *Highwalls.* The vertical portion of any highwall remnant within the impoundment must be located far enough below the low-water line along the full extent of the highwall to provide adequate safety and access for the proposed water users.

(9) *Inspections.* Except as provided in paragraph (a)(9)(iv) of this section, a qualified registered professional engineer or other qualified professional specialist under the direction of a professional engineer must inspect each impoundment as provided in paragraph (a)(9)(i) of this section. The professional engineer or specialist must be experienced in the construction of impoundments.

(i) Inspections must be made regularly during construction, upon completion of construction, and at least yearly until removal of the structure or release of the performance bond.

(ii) After each inspection required by paragraph (a)(9)(i) of this section, the qualified registered professional engineer, or qualified registered professional land surveyor as specified in paragraph (a)(9)(iv) of this section, must promptly provide to the regulatory authority a certified report that the impoundment has been constructed and/or maintained as designed and in accordance with the approved plan and this chapter. The report must include a discussion of any appearance of instability, any structural weakness or other hazardous condition, the depth and elevation of any impounded waters, the existing storage capacity, any existing or required monitoring procedures and instrumentation, and any other aspects of the structure affecting stability.

(iii) You must retain a copy of the report at or near the minesite.

(iv) In any state that authorizes land surveyors to prepare and certify plans in accordance with § 784.25(b)(1) of this chapter, a qualified registered professional land surveyor may inspect any temporary or permanent impoundment that does not meet the criteria of § 77.216(a) of this title, or that is not classified as having a significant or high hazard potential under § 784.25(a) of this chapter, and certify and submit the report required by paragraph (a)(9)(ii) of this section, except that a qualified registered professional engineer must certify all coal mine waste impounding structures covered by § 817.84 of this chapter. The professional land surveyor must be experienced in the construction of impoundments.

(10) *Examinations.* (i) Impoundments that meet the criteria of § 77.216 of this title, or that are classified as having a significant or high hazard potential under § 784.25(a) of this chapter, must be examined in accordance with § 77.216–3 of this title.

(ii) Impoundments that are not subject to § 77.216 of this title, or that are not classified as having a significant or high hazard potential under § 784.25(a) of this chapter, must be examined at least quarterly. A qualified person designated by the operator must examine impoundments for the appearance of structural weakness and other hazardous conditions.

(11) *Emergency procedures.* If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment must promptly inform the regulatory authority of the finding and of the emergency procedures formulated for public protection and remedial action. The regulatory authority must be notified immediately if adequate procedures cannot be formulated or implemented. The regulatory authority then must notify the appropriate agencies that other emergency procedures are required to protect the public.

(b) *Requirements that apply only to permanent impoundments.* A permanent impoundment of water may be created if authorized by the regulatory authority in the approved permit based upon the following demonstration:

(1) The size and configuration of the impoundment will be adequate for its intended purposes.

(2) The quality of impounded water will be suitable on a permanent basis for its intended use and, after reclamation, discharges from the impoundment will not cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in the National Pollutant Discharge Elimination System permit for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart.

(3) The water level will be sufficiently stable and be capable of supporting the intended use.

(4) Final grading will provide for adequate safety and access for proposed water users.

(5) The impoundment will not result in diminution of the quality or quantity of surface water or groundwater used by surrounding landowners for agricultural, industrial, recreational, or domestic uses.

(6) The impoundment will be suitable for the approved postmining land use.

(7) Approval of the impoundment will not result in retention of spoil piles or ridges that are inconsistent with the definition of approximate original contour.

(8) Approval of the impoundment will not result in the creation of an excess spoil fill elsewhere within the permit area.

(9) The impoundment has been designed with dimensions, features, and other characteristics that will enhance fish and wildlife habitat to the extent

that doing so is not inconsistent with the intended use.

(c) *Requirements that apply only to temporary impoundments that rely primarily upon storage.* (1) In lieu of meeting the requirements in paragraph (a)(7)(i) of this section, the regulatory authority may approve an impoundment that relies primarily on storage to control the runoff from the design precipitation event when you demonstrate, and a qualified registered professional engineer or qualified registered professional land surveyor in accordance with § 784.25(b) of this chapter certifies, that the impoundment will safely control the design precipitation event.

(2) You must use current prudent engineering practices to safely remove the water from an impoundment constructed in accordance with paragraph (c)(1) of this section.

(3) An impoundment constructed in accordance with paragraph (c)(1) of this section must be located where failure would not be expected to cause loss of life or serious property damage, unless the impoundment meets one of the following exceptions:

(i) An impoundment that meets the criteria of § 77.216(a) of this title, or that is classified as having a significant or high hazard potential under § 784.25(a) of this chapter, and is designed to control the precipitation of the probable maximum precipitation of a 6-hour event, or any greater event specified by the regulatory authority.

(ii) An impoundment not included in paragraph (c)(3)(i) of this section that is designed to control the precipitation of the 100-year, 6-hour event, or any greater event specified by the regulatory authority.

§ 817.55 What must I do with sedimentation ponds, diversions, impoundments, and treatment facilities after I no longer need them?

(a) Before seeking final bond release under § 800.42(d) of this chapter, you must—

(1) Remove all temporary structures and reclaim the land upon which those structures were located in accordance with the approved permit; and

(2) Ensure that all sedimentation ponds, diversions, and impoundments approved for retention after final bond release have been maintained properly and meet all applicable requirements of the approved permit and this chapter for retention as permanent structures. You must renovate the structures if necessary to meet the requirements for retention.

(b) [Reserved]

§ 817.56 What additional performance standards apply to mining activities conducted in or through an ephemeral stream?

(a) *Compliance with federal, state, and tribal water quality laws and regulations.* (1) You may conduct mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* only if you first obtain all necessary authorizations, certifications, and permits under that law.

(2) Mining activities must comply with all applicable state and tribal laws and regulations concerning surface water and groundwater.

(b) *Postmining surface drainage pattern and stream-channel configuration.* If you mine through an ephemeral stream, you must construct a postmining surface drainage pattern and stream-channel configurations that are consistent with the surface drainage pattern and stream-channel configurations approved in the permit in accordance with § 784.27 of this chapter.

(c) *Establishment of streamside vegetative corridors.* (1) If you mine through an ephemeral stream, you must establish a vegetative corridor at least 100 feet wide along each bank of the reconstructed stream channel. The 100-foot distance must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark. The corridor must be consistent with natural vegetation patterns.

(2) When planting the streamside vegetative corridors required by paragraph (c)(1) of this section, you must—

(i) Use appropriate native species adapted to the area, unless an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344, requires the use of non-native species.

(ii) Ensure that the species planted are consistent with the revegetation plan approved in the permit.

(iii) Include appropriate native hydrophytic vegetation, vegetation typical of floodplains, or hydrophilic vegetation characteristic of riparian areas and wetlands to the extent that the corridor contains suitable habitat for those species and the stream and the geomorphology of the area are capable of supporting vegetation of that nature.

(iv) Use native trees and shrubs when planting areas within the streamside corridor that were forested at the time of application or that would revert to forest under conditions of natural succession.

(3) Paragraphs (c)(1) and (2) of this section do not require planting of hydrophytic or hydrophilic species within those portions of streamside corridors where the stream, soils, or climate are incapable of providing the moisture or other growing conditions needed to support and sustain hydrophytic or hydrophilic species. In those situations, you must plant the corridor with appropriate native species that are consistent with the baseline information concerning natural streamside vegetation included in the permit application under § 783.19 of this chapter, unless otherwise directed by an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344.

(4) Paragraphs (c)(1) through (3) of this section do not apply to—

(i) Prime farmland historically used for cropland; or

(ii) Situations in which establishment of a streamside vegetative corridor comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release under §§ 800.40 through 800.43 of this chapter.

§ 817.57 What additional performance standards apply to mining activities conducted in or through a perennial or intermittent stream or on the surface of land within 100 feet of a perennial or intermittent stream?

(a) *Compliance with federal, state, and tribal water quality laws and regulations.* (1) You may conduct mining activities in or affecting waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.,* only if you first obtain all necessary authorizations, certifications, and permits under that law.

(2) Mining activities must comply with all applicable state and tribal laws and regulations concerning surface water and groundwater.

(b) *Prohibition on mining in or within 100 feet of a perennial or intermittent stream.* You may not conduct mining activities in or through a perennial or intermittent stream, or that would disturb the surface of land within 100 feet of a perennial or intermittent stream, unless the regulatory authority authorizes you to do so in the permit after making the findings required under § 784.28 of this chapter. The 100-foot distance must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(c) *Postmining surface drainage pattern and stream-channel configuration.* (1) If you mine through or

permanently divert a perennial or intermittent stream, you must construct a postmining surface drainage pattern and stream-channel configurations that are consistent with the surface drainage pattern and stream-channel configurations approved in the permit in accordance with § 784.28 of this chapter.

(2) Upon completion of construction of a stream-channel diversion for a perennial or intermittent stream, or reconstruction of a stream channel after mining through a perennial or intermittent stream, you must obtain a certification from a qualified registered professional engineer that the stream-channel diversion or reconstructed stream channel has been constructed in accordance with the design approved in the permit and that it meets all engineering-related requirements of this section. This certification may be limited to the location, dimensions, and physical characteristics of the stream channel.

(d) *Establishment of streamside vegetative corridors.* (1)(i) If you mine through a perennial or intermittent stream, you must establish a vegetative corridor at least 100 feet wide along each bank of the reconstructed stream channel. The corridor must be consistent with natural vegetation patterns.

(ii) You must establish a vegetative corridor on any land that you disturb within 100 feet of a perennial or intermittent stream. The corridor must be consistent with natural vegetation patterns.

(iii) If you divert a perennial or intermittent stream, you must establish a vegetative corridor at least 100 feet wide along each bank of the stream-channel diversion, with the exception of temporary diversions that will be in place less than 3 years. The corridor must be consistent with natural vegetation patterns.

(iv) The 100-foot distance mentioned in paragraphs (d)(1)(i) through (iii) of this section must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark.

(2) When planting the streamside vegetative corridors required by paragraph (d)(1) of this section, you must—

(i) Use appropriate native species adapted to the area, unless an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344, requires the use of non-native species.

(ii) Ensure that the species planted are consistent with the revegetation plan approved in the permit.

(iii) Include appropriate native hydrophytic vegetation, vegetation typical of floodplains, or hydrophilic vegetation characteristic of riparian areas and wetlands to the extent that the corridor contains suitable habitat for those species and the stream and the geomorphology of the area are capable of supporting vegetation of that nature.

(iv) Use native trees and shrubs when planting areas within the streamside corridor that were forested at the time of application or that would revert to forest under conditions of natural succession.

(3) Paragraphs (d)(1) and (2) of this section do not require planting of hydrophytic or hydrophilic species within those portions of streamside corridors where the stream, soils, or climate are incapable of providing the moisture or other growing conditions needed to support and sustain hydrophytic or hydrophilic species. In those situations, you must plant the corridor with appropriate native species that are consistent with the baseline information concerning natural streamside vegetation included in the permit application under § 783.19 of this chapter, unless otherwise directed by an agency responsible for implementing section 404 of the Clean Water Act, 33 U.S.C. 1344.

(4) Paragraphs (d)(1) through (3) of this section do not apply to—

(i) Prime farmland historically used for cropland; or

(ii) Situations in which establishment of a streamside vegetative corridor comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release under §§ 800.40 through 800.43 of this chapter.

(e) *Restoration of form.* If you mine through or permanently divert a perennial or intermittent stream, you must demonstrate successful restoration or reconstruction of the form of the stream channel in accordance with the design approved in the permit before you qualify for Phase I bond release under § 800.42(b)(1) of this chapter.

(f) *Restoration of hydrologic function.* If you mine through or permanently divert a perennial or intermittent stream, you must demonstrate restoration of the hydrologic function of the reconstructed stream before you qualify for Phase II bond release under § 800.42(b)(2) of this chapter. Restoration of the hydrologic function includes, but is not limited to, restoration of the flow regime, except as otherwise approved in the permit under § 784.28(e)(2) of this chapter.

(g) *Restoration of ecological function.* If you mine through or permanently divert a perennial or intermittent stream, the reconstructed stream or stream-channel diversion must meet the criteria approved in the permit for determining restoration of ecological function, as established by the regulatory authority under § 784.28(g) of this chapter, before you qualify for final bond release under §§ 800.40 through 800.43 of this chapter.

(h) *Prohibition on placement of siltation structures in perennial or intermittent streams.* (1)(i) Except as provided in paragraph (h)(2) of this section, you may not construct a siltation structure in a perennial or intermittent stream or use perennial or intermittent streams as waste treatment systems to convey surface runoff from the disturbed area to a sedimentation pond.

(ii) Paragraph (h)(1)(i) of this section does not prohibit the construction of a siltation structure in a stream channel immediately downstream of a stream segment that is mined through.

(2) If approved in the permit, the prohibition in paragraph (h)(1) of this section will not apply to excess spoil fills, coal mine waste refuse piles, or coal mine waste impounding structures in steep-slope areas when you demonstrate, and the regulatory authority finds in writing, that use of a perennial or intermittent stream segment as a waste treatment system for sediment control or construction of a sedimentation pond or other siltation structure in a perennial or an intermittent stream would have less overall adverse impact on fish, wildlife, and related environmental values than construction of diversions and sedimentation ponds or other siltation structures on slopes above the stream.

(3) When the circumstances described in paragraph (h)(2) of this section exist, the following requirements apply:

(i) You must minimize the length of stream used as a waste treatment system to the extent possible and, when practicable, maintain an undisturbed buffer along that stream segment in accordance with paragraph (b) of this section.

(ii) You must place the sedimentation pond or other siltation structure as close to the toe of the excess spoil fill, coal mine waste refuse pile, or coal mine waste impounding structure as possible.

(iii) Following the completion of construction and revegetation of the fill or coal mine waste structure, you must—

(A) Remove and properly dispose of accumulated sediment in the siltation structure and any stream segment

between the inlet of the siltation structure and the toe of the excess spoil fill or coal mine waste structure;

(B) Remove the sedimentation pond or other siltation structure; and

(C) Restore the stream segment in accordance with paragraphs (e) through (g) of this section.

(i) *Programmatic alternative.* Paragraphs (b) through (h) of this section will not apply to a state program approved under subchapter T of this chapter if that program is amended to expressly prohibit all surface mining activities, including the construction of stream-channel diversions, that would result in more than a de minimis disturbance of land in or within 100 feet of a perennial or intermittent stream.

§ 817.59 How must I maximize coal recovery?

You must conduct underground mining activities so as to maximize the utilization and conservation of the coal, while using the best appropriate technology currently available to maintain environmental integrity, so that reaffecting the land in the future through surface coal mining operations is minimized.

§ 817.61 Use of explosives: General requirements.

(a) *Applicability.* Sections 817.61 through 817.68 apply to surface blasting activities incident to underground coal mining, including, but not limited to, initial rounds of slopes and shafts.

(b) *Compliance with other laws and regulations.* You must comply with all applicable state and federal laws and regulations governing the use of explosives.

(c) *Requirements for blasters.* (1) No later than 12 months after the blaster certification program for a state required by part 850 of this chapter has been approved under the procedures of subchapter C of this chapter, all blasting operations in that state must be conducted under the direction of a certified blaster. Before that time, all blasting operations in that state must be conducted by competent, experienced persons who understand the hazards involved.

(2) Certificates of blaster certification must be carried by blasters or be on file at the permit area during blasting operations.

(3) A blaster and at least one other person shall be present at the firing of a blast.

(4) Any blaster who is responsible for conducting blasting operations at a blasting site must:

(i) Be familiar with the site-specific performance standards; and

(ii) Give direction and on-the-job training to persons who are not certified and who are assigned to the blasting crew or who assist in the use of explosives.

(d) *Blast design.* (1) You must submit an anticipated blast design if blasting operations will be conducted within—

(i) 1,000 feet of any building used as a dwelling, public building, school, church, or community or institutional building outside the permit area; or

(ii) 500 feet of an active or abandoned underground mine.

(2) You must submit the blast design required by paragraph (d)(1) of this section either as part of the permit application or, if approved by the regulatory authority, at a later date before blasting begins. Regulatory authority approval of the blast design is not required, but, as provided in paragraph (d)(5) of this section, the regulatory authority may require changes to the design.

(3) The blast design must contain—

(i) Sketches of the drill patterns, delay periods, and decking.

(ii) The type and amount of explosives to be used.

(iii) Critical dimensions.

(iv) The location and general description of structures to be protected.

(v) A discussion of design factors to be used to protect the public and meet the applicable airblast, flyrock, and ground-vibration standards in § 817.67 of this part.

(4) A certified blaster must prepare and sign the blast design.

(5) The regulatory authority may require changes to the design submitted.

§ 817.62 Use of explosives: Preblasting survey.

(a) At least 30 days before initiation of blasting, you must notify, in writing, all residents or owners of dwellings or other structures located within ½ mile of the permit area how to request a preblasting survey.

(b)(1) A resident or owner of a dwelling or structure within ½ mile of any part of the permit area may request a preblasting survey. This request must be made, in writing, directly to you or to the regulatory authority. If the request is made to the regulatory authority, the regulatory authority will promptly notify you.

(2) You must promptly conduct a preblasting survey of the dwelling or structure and promptly prepare a written report of the survey.

(3) You must conduct an updated survey of any subsequent additions, modifications, or renovations to the dwelling or structure, if requested by the resident or owner.

(c) You must determine the condition of the dwelling or structure and document any preblasting damage and other physical factors that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines, and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.

(d)(1) The person who conducted the survey must sign the written report of the survey.

(2) You must promptly provide copies of the report to the regulatory authority and to the person requesting the survey.

(3) If the person requesting the survey disagrees with the contents or recommendations of the survey, he or she may submit a detailed description of the specific areas of disagreement to both you and the regulatory authority.

(e) You must complete any surveys requested more than 10 days before the planned initiation of blasting before the initiation of blasting.

§ 817.64 Use of explosives: General performance standards.

(a)(1) You must notify, in writing, residents within ½ mile of the blasting site and local governments of the proposed times and locations of blasting operations.

(2) You may provide this notice weekly, but in no case less than 24 hours before blasting will occur.

(b) You must conduct all blasting between sunrise and sunset, unless the regulatory authority approves night-time blasting based upon a showing that the public will be protected from adverse noise and other impacts. The regulatory authority may specify more restrictive time periods for blasting.

(c)(1) You may conduct unscheduled blasts only where public or operator health and safety so require and for emergency blasting actions.

(2) When you conduct an unscheduled blast, you must use audible signals to notify residents within ½ mile of the blasting site.

(3) You must document the reason for the unscheduled blast in accordance with § 817.68(c)(16) of this part.

§ 817.66 Use of explosives: Blasting signs, warnings, and access control.

(a) *Blasting signs.* Blasting signs must meet the specifications of § 817.11 of this part.

(1) You must place conspicuous signs reading ''Blasting Area'' along the edge of any blasting area that comes within 100 feet of any public road right-of-way and at the point where any other road provides access to the blasting area.

(2) You must place conspicuous signs reading ''Warning! Explosives in Use'' at all entrances to the permit area from public roads or highways. The signs must clearly list and describe the meaning of the audible blast warning and all-clear signals that are in use and explain the marking of blasting areas and charged holes awaiting firing within the permit area.

(b) *Warnings.* You must give blast warning and all-clear signals of different character or pattern that are audible within a range of ½ mile from the point of the blast. You must notify each person within the permit area and each person who resides or regularly works within ½ mile of the permit area of the meaning of the signals in the blasting notification required in § 817.64(a) of this part.

(c) *Access control.* You must control access within the blasting area to prevent presence of livestock or unauthorized persons during blasting and until your authorized representative has reasonably determined that—

(1) No unusual hazards, such as imminent slides or undetonated charges, exist; and

(2) Access to and travel within the blasting area can be safely resumed.

§ 817.67 Use of explosives: Control of adverse effects.

(a) *General requirements.* You must conduct blasting in a manner that prevents—

(1) Injury to persons;

(2) Damage to public or private property outside the permit area;

(3) Adverse impacts on any underground mine; or

(4) Change in the course, channel, or availability of surface water or groundwater outside the permit area.

(b) *Airblast.*—(1) *Limits.* (i) Airblast must not exceed the maximum limits listed below at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area, except as provided in paragraph (e) of this section.

Lower frequency limit of measuring system in Hertz (Hz), plus or minus 3 decibels	Maximum level in decibels (dB)
0.1 Hz or lower—flat response[1].	134 peak.
2 Hz or lower—flat response	133 peak.
6 Hz or lower—flat response	129 peak.
C-weighted—slow response [1]	105 peak dBC.

[1] Only when approved by the regulatory authority.

(ii) If necessary to prevent damage, the regulatory authority must specify lower maximum allowable airblast levels than those of paragraph (b)(1)(i) of this section for use in the vicinity of a specific blasting operation.

(2) *Monitoring.* (i) You must conduct periodic monitoring to ensure compliance with the airblast standards. The regulatory authority may require airblast measurement of any or all blasts and may specify the locations at which measurements are taken.

(ii) The measuring systems must have an upper-end flat-frequency response of at least 200 Hz.

(c) *Flyrock.* Flyrock travelling in the air or along the ground must not be cast from the blasting site—

(1) More than one-half the distance to the nearest dwelling or other occupied structure;

(2) Beyond the area of control required under § 817.66(c) of this part; or

(3) Beyond the permit boundary.

(d) *Ground vibration.*—(1) *General requirements.* (i) In all blasting operations, except as otherwise authorized in paragraph (e) of this section, the maximum ground vibration must not exceed the values approved in the blasting plan required under § 784.15 of this chapter.

(ii) The maximum ground vibration for protected structures listed in paragraph (d)(2)(i) of this section must be established in accordance with either the maximum peak-particle-velocity limits of paragraph (d)(2) of this section, the scaled-distance equation of paragraph (d)(3) of this section, the blasting-level chart of paragraph (d)(4) of this section, or by the regulatory authority under paragraph (d)(5) of this section.

(iii) All structures in the vicinity of the blasting area not listed in paragraph (d)(2)(i) of this section, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines, must be protected from damage by establishment of a maximum allowable limit on the ground vibration, submitted by the operator in the blasting plan and approved by the regulatory authority.

(2) *Maximum peak particle velocity.* (i) The maximum ground vibration must not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area:

Distance (D), from the blasting site, in feet	Maximum allowable peak particle velocity for ground vibration, in inches/second [1]	Scaled-distance factor to be applied without seismic monitoring (Ds) [2]
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

[1] Ground vibration must be measured as the particle velocity. Particle velocity must be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity applies to each of the three measurements.

[2] Applicable to the scaled-distance equation of paragraph (d)(3)(i) of this section.

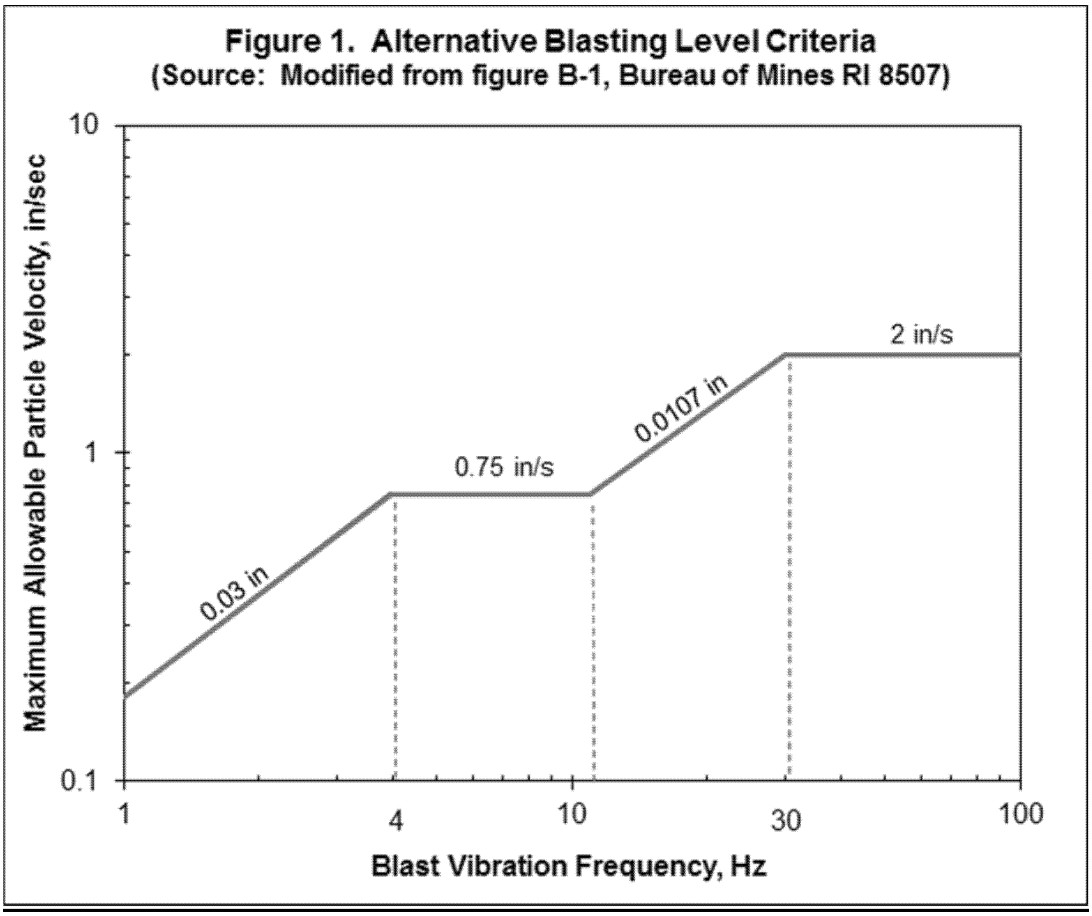
(ii) You must provide a seismographic record for each blast.

(3) *Scaled-distance equation.* (i) You may use the scaled-distance equation, $W = (D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring, where W = the maximum weight of explosives, in pounds; D = the distance, in feet, from the blasting site to the nearest protected structure; and Ds = the scaled-distance factor. The regulatory authority may initially approve the scaled-distance equation using the values for the scaled-distance factor listed in paragraph (d)(2)(i) of this section.

(ii) The regulatory authority may authorize development of a modified scaled-distance factor upon receipt of a written request by the operator, supported by seismographic records of blasting at the minesite. The modified scale-distance factor must be determined such that the particle velocity of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of paragraph (d)(2)(i) of this section at a 95-percent confidence level.

(4) *Blasting-level chart.* (i) You may use the ground-vibration limits in

Figure 1 to determine the maximum allowable ground vibration.



(ii) If the Figure 1 limits are used, you must provide a seismographic record including both particle velocity and vibration-frequency levels for each blast. The regulatory authority must approve the method for the analysis of the predominant frequency contained in the blasting records before application of this alternative blasting criterion.

(5) The regulatory authority must reduce the maximum allowable ground vibration beyond the limits otherwise provided by this section, if determined necessary to provide damage protection.

(6) The regulatory authority may require that you conduct seismic monitoring of any or all blasts or may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

(e) The maximum airblast and ground-vibration standards of paragraphs (b) and (d) of this section do not apply at the following locations:

(1) At structures owned by the permittee and not leased to another person.

(2) At structures owned by the permittee and leased to another person, if a written waiver by the lessee is submitted to the regulatory authority before blasting.

§ 817.68 Use of explosives: Records of blasting operations.

(a) You must retain a record of all blasts for at least 3 years.

(b) Upon request, you must make copies of these records available to the regulatory authority and to the public for inspection.

(c) The records must contain the following data:

(1) Name of the operator conducting the blast.

(2) Location, date, and time of the blast.

(3) Name, signature, and certification number of the blaster conducting the blast.

(4) Identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area, except those described in § 817.67(e) of this part.

(5) Weather conditions, including those which may cause possible adverse blasting effects.

(6) Type of material blasted.

(7) Sketches of the blast pattern, including number of holes, burden, spacing, decks, and delay pattern.

(8) Diameter and depth of holes.

(9) Types of explosives used.

(10) Total weight of explosives used per hole.

(11) The maximum weight of explosives detonated in an 8-millisecond period.

(12) Initiation system.

(13) Type and length of stemming.

(14) Mats or other protections used.

(15) Seismographic and airblast records, if required, which must include—

(i) Type of instrument, sensitivity, and calibration signal or certification of annual calibration;

(ii) Exact location of instrument and the date, time, and distance from the blast;

(iii) Name of the person and firm taking the reading;

(iv) Name of the person and firm analyzing the seismographic record; and

(v) The vibration and/or airblast level recorded.

(16) Reasons and conditions for each unscheduled blast.

§ 817.71 How must I dispose of excess spoil?

(a) *General requirements.* You, the permittee or operator, must mechanically transport and place excess spoil in designated disposal areas, including approved valley fills and other types of approved fills, within the permit area in a controlled manner in compliance with the requirements of this section. In general, you must place excess spoil in a manner that will—

(1) Minimize the adverse effects of leachate and surface water runoff from the fill on groundwater and surface water, including aquatic life, within the permit and adjacent areas.

(2) Ensure mass stability and prevent mass movement during and after construction.

(3) Ensure that the final surface configuration of the fill is suitable for revegetation and the approved postmining land use or uses and is compatible with the natural drainage pattern and surroundings.

(4) Minimize disturbances to, and adverse impacts on, fish, wildlife, and related environmental values to the extent possible, using the best technology currently available.

(5) Ensure that the fill will not change the size or frequency of peak flows from precipitation events or thaws in a way that would result in an increase in flooding when compared with the impacts of premining peak flows.

(6) Ensure that the fill will not cause or contribute to a violation of applicable state or tribal groundwater standards or preclude any premining use of groundwater.

(7) Ensure that the fill will not cause or contribute to a violation of applicable state or tribal water quality standards for surface water located downstream of the toe of the fill, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(b) *Stability requirements.*—(1) *Static safety factor.* You must design and construct the fill to attain a minimum long-term static safety factor of 1.5. The foundation and abutments of the fill must be stable under all conditions of construction.

(2) *Special requirement for steep-slope conditions.* Where the slope in the disposal area exceeds 2.8h:1v (36 percent), or any lesser slope designated by the regulatory authority based on local conditions, you must construct bench cuts (excavations into stable bedrock) or rock-toe buttresses to ensure fill stability.

(c) *Compliance with permit.* You must construct the fill in accordance with the design and plans approved in the permit in accordance with § 784.35 of this chapter.

(d) *Requirements for handling of organic matter and soil materials.* You must remove all vegetation, other organic matter, and soil materials from the disposal area prior to placement of the excess spoil. You must store, redistribute, or otherwise use those materials in accordance with § 817.22 of this part. You may use soil substitutes and supplements if approved in the permit in accordance with § 784.12(e) of this chapter.

(e) *Surface runoff control requirements.* (1) You must direct surface runoff from areas above the fill and runoff from the surface of the fill into stabilized channels designed to—

(i) Meet the requirements of § 817.43 of this part; and

(ii) Safely pass the runoff from a 100-year, 6-hour precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine the peak flow from surface runoff from this event.

(2) You must grade the top surface of a completed fill such that the final slope after settlement will be toward properly designed drainage channels. You may not direct uncontrolled surface runoff over the outslope of the fill.

(f) *Control of water within the footprint of the fill.*—(1) *General requirements.* If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, you must design and construct underdrains and temporary diversions as necessary to control erosion, prevent water infiltration into the fill, and ensure stability.

(2) *Temporary diversions.* Temporary diversions must comply with the requirements of § 817.43 of this part.

(3) *Underdrains.* (i) You must construct underdrains that are comprised of hard rock that is resistant to weathering.

(ii) You must design and construct underdrains using current, prudent engineering practices and any design criteria established by the regulatory authority.

(iii) In constructing rock underdrains, you may use only hard rock that is resistant to weathering, such as well-cemented sandstone and massive limestone, and that is not acid-forming or toxic-forming. The underdrain must be free of soil and fine-grained, clastic rocks such as siltstone, shale, mudstone, and claystone. All rock used to construct underdrains must meet the criteria in the following table:

Test	ASTM standard	AASHTO standard	Acceptable results
Los Angeles Abrasion	C 131 or C 535	T 96	Loss of no more than 50 percent of test sample by weight.
Sulfate Soundness	C 88 or C 5240	T 104	Sodium sulfate test: Loss of no more than 12 percent of test sample by weight. Magnesium sulfate test: Loss of no more than 18 percent of test sample by weight.

(iv) The underdrain system must be designed and constructed to carry the maximum anticipated infiltration of water due to precipitation, snowmelt, and water from seeps and springs in the foundation of the disposal area away from the excess spoil fill.

(v) To provide a safety factor against future changes in local surface-water and groundwater hydrology, perforated pipe may be embedded within the rock underdrain to enhance the underdrain capacity to carry water in excess of the anticipated maximum infiltration away from the excess spoil fill. The pipe must be manufactured of materials that are not susceptible to corrosion and must be demonstrated to be suitable for the deep burial conditions commonly associated with excess spoil fill underdrains.

(vi) The underdrain system must be protected from material piping, clogging, and contamination by an adequate filter system designed and constructed using current, prudent engineering practices to ensure the long-term functioning of the underdrain system.

(g) *Placement of excess spoil.* (1) Using mechanized equipment, you must transport and place excess spoil in a controlled manner in horizontal lifts not exceeding 4 feet in thickness; concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after

construction; and graded so that surface and subsurface drainage is compatible with the natural surroundings.

(2) You may not use any excess spoil transport and placement technique that involves end-dumping, wing-dumping, cast-blasting, gravity placement, or casting spoil downslope.

(3) *Acid-forming, toxic-forming, and combustible materials.* (i) You must handle acid-forming and toxic-forming materials in accordance with § 817.38 of this part and in a manner that will minimize adverse effects on plant growth and the approved postmining land use.

(ii) You must cover combustible materials with noncombustible materials in a manner that will prevent sustained combustion and minimize adverse effects on plant growth and the approved postmining land use.

(h) *Final configuration.* (1) The final configuration of the fill must be suitable for the approved postmining land use, compatible with the natural drainage pattern and the surrounding terrain, and, to the extent practicable, consistent with natural landforms.

(2) You may construct terraces on the outslope of the fill if required for stability, to control erosion, to conserve soil moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches may not be steeper than 2h: 1v (50 percent).

(3)(i) You must configure the top surface of the fill to create a topography that includes ridgelines and valleys with varied hillslope configurations when practicable, compatible with stability and postmining land use considerations, and generally consistent with the topography that existed before any mining.

(ii) The final surface elevation of the fill may exceed the elevation of the surrounding terrain when necessary to minimize placement of excess spoil in perennial and intermittent streams, provided the final configuration complies with the requirements of paragraphs (a)(3) and (h)(1) of this section.

(iii) The geomorphic reclamation requirements of paragraph (h)(3)(i) of this section do not apply in situations in which they would result in burial of a greater length of perennial or intermittent streams than traditional fill design and construction techniques.

(i) *Impoundments and depressions.* No permanent impoundments are allowed on the completed fill. You may construct small depressions if they—

(1) Are needed to retain moisture, minimize erosion, create or enhance wildlife habitat, or assist revegetation;

(2) Are not incompatible with the stability of the fill;

(3) Are consistent with the hydrologic reclamation plan approved in the permit in accordance with § 784.22 of this chapter;

(4) Will not result in elevated levels of parameters of concern in discharges from the fill; and

(5) Are approved by the regulatory authority.

(j) *Surface area stabilization.* You must provide slope protection to minimize surface erosion at the site. You must revegetate all disturbed areas, including diversion channels that are not riprapped or otherwise protected, upon completion of construction.

(k) *Inspections and examinations.* (1) A qualified registered professional engineer, or other qualified professional specialist under the direction of the professional engineer, must inspect the fill at least quarterly during construction, with additional complete inspections conducted during critical construction periods. The professional engineer or specialist must be experienced in the construction of earth and rock fills. Critical construction periods include, at a minimum—

(i) Foundation preparation, including the removal of all organic matter and soil materials.

(ii) Placement of underdrains and protective filter systems.

(iii) Installation of final surface drainage systems.

(2) An engineer or specialist meeting the qualifications of paragraph (k)(1) of this section also must—

(i) Conduct daily examinations during placement and compaction of fill materials or, when more than one lift is completed per day, upon completion of each 4-foot lift. As an alternative, the engineer or specialist may conduct examinations on a weekly basis if a mine representative takes photographs on a daily basis to document the lift thickness and elevation with visual reference features. The certified report required by paragraph (k)(3) of this section must include this photographic documentation.

(ii) Maintain a log recording the examinations conducted under paragraph (k)(2)(i) of this section for each 4-foot lift in each fill. The log must include a description of the specific work locations, excess spoil placement methods, compaction adequacy, lift thickness, suitability of fill material, special handling of acid-forming and toxic-forming materials, deviations from the approved permit, and remedial measures taken.

(3)(i) The qualified registered professional engineer to which paragraph (k)(1) of this section refers must provide a certified report to the regulatory authority on a quarterly basis.

(ii) In each report prepared under paragraph (k)(3)(i) of this section, the engineer must certify that the fill has been constructed and maintained as designed and in accordance with the approved plan and this chapter.

(iii) The report prepared under paragraph (k)(3)(i) of this section must identify and discuss any evidence of instability, structural weakness, or other hazardous conditions. If one of more of those conditions exists, you must submit an application for a permit revision that includes appropriate remedial design specifications.

(iv) The report prepared under paragraph (k)(3)(i) of this section must contain—

(A) A review and summary of all complete inspections conducted during the quarter under paragraph (k)(1) of this section.

(B) A review and summary of all examinations conducted during the quarter under paragraph (k)(2) of this section, including the logs maintained under paragraph (k)(2)(ii) of this section.

(C) The photographs taken under paragraph (k)(2)(i) of this section.

(iv) Each certified report prepared under paragraph (k)(3) of this section for a quarter in which construction activities include placement of underdrains and protective filter systems must include color photographs taken during and after construction, but before underdrains are covered with excess spoil. If the underdrain system is constructed in phases, each phase must be certified separately. The photographs must be taken in adequate size and number with enough terrain or other physical features of the site shown to provide a relative scale to the photographs and to specifically and clearly identify the site.

(4) You must retain a copy of each certified report prepared under paragraph (k)(3) of this section at or near the mine site.

(l) *Coal mine waste.* You may dispose of coal mine waste in excess spoil fills only if approved by the regulatory authority and only if—

(1) You demonstrate, and the regulatory authority finds in writing, that the disposal of coal mine waste in the excess spoil fill will not—

(i) Cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any

National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart;

(ii) Cause or contribute to a violation of applicable state or tribal water quality standards for groundwater; or

(iii) Result in material damage to the hydrologic balance outside the permit area.

(2) The waste is placed in accordance with §§ 817.81 and 817.83 of this part.

(3) The waste is nontoxic-forming, nonacid-forming, and non-combustible.

(4) The waste is of the proper characteristics to be consistent with the design stability of the fill.

(m) *Underground disposal.* You may dispose of excess spoil in underground mine workings only in accordance with a plan approved by the regulatory authority and the Mine Safety and Health Administration under § 784.26 of this chapter.

§ 817.72 [Reserved]

§ 817.73 [Reserved]

§ 817.74 What special requirements apply to disposal of excess spoil on a preexisting bench?

(a) *General requirements.* The regulatory authority may approve the disposal of excess spoil through placement on a preexisting bench on a previously mined area or a bond forfeiture site if—

(1) The proposed permit area includes the portion of the preexisting bench on which the spoil will be placed;

(2) The proposed operation will comply with the applicable requirements of § 817.102 of this part; and

(3) The requirements of this section are met.

(b) *Requirements for removal and disposition of vegetation, other organic matter, and soil materials.* You must remove all vegetation, other organic matter, topsoil, and subsoil from the disposal area prior to placement of the excess spoil and store, redistribute, or otherwise use those materials in accordance with § 817.22 of this part. You may use soil substitutes and supplements if approved in the permit in accordance with § 784.12(e) of this chapter.

(c)(1) The fill must be designed and constructed using current, prudent engineering practices.

(2) The design must be certified by a registered professional engineer.

(3) If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, the fill design must include underdrains and temporary diversions as necessary to control erosion, prevent water infiltration into the fill, and ensure stability. Underdrains must comply with the requirements of § 817.71(f)(3) of this part.

(d)(1) The spoil must be placed on the solid portion of the bench in a controlled manner and concurrently compacted as necessary to attain a long-term static safety factor of 1.3 for all portions of the fill.

(2) Any spoil deposited on any fill portion of the bench must be treated as an excess spoil fill under § 817.71 of this part.

(e) You must grade the spoil placed on the preexisting bench to—

(1) Achieve a stable slope that does not exceed the angle of repose.

(2) Eliminate the preexisting highwall to the maximum extent technically practical, using all reasonably available spoil, as that term is defined in § 701.5 of this chapter.

(3) Minimize erosion and water pollution both on and off the site.

(f) All disturbed areas, including diversion channels that are not riprapped or otherwise protected, must be revegetated upon completion of construction.

(g) You may not construct permanent impoundments on preexisting benches on which excess spoil is placed under this section.

(h) The final configuration of the fill on the preexisting bench must—

(1) Be compatible with natural drainage patterns and the surrounding area.

(2) Support the approved postmining land use.

§ 817.81 How must I dispose of coal mine waste?

(a) *General requirements.* If you, the permittee, intend to dispose of coal mine waste in an area other than the mine workings or excavations, you must place the waste in new or existing disposal areas within a permit area in accordance with this section and, as applicable, §§ 817.83 and 817.84 of this part.

(b) *Basic performance standards.* You must haul or convey and place the coal mine waste in a controlled manner to—

(1) Minimize the adverse effects of leachate and surface-water runoff on groundwater and surface water, including aquatic life, within the permit and adjacent areas to the extent possible, using the best technology currently available.

(2) Ensure mass stability and prevent mass movement during and after construction.

(3) Ensure that the final disposal facility is suitable for revegetation, compatible with the natural surroundings, and consistent with the approved postmining land use.

(4) Not create a public hazard.

(5) Prevent combustion.

(6) Ensure that the disposal facility will not change the size or frequency of peak flows from precipitation events or thaws in a way that would result in an increase in flooding when compared with the impacts of premining peak flows.

(7) Ensure that the disposal facility will not cause or contribute to a violation of applicable state or tribal groundwater standards or preclude any premining use of groundwater.

(8) Ensure that the disposal facility will not cause or contribute to a violation of applicable state or tribal water quality standards for surface water located downstream of the toe of the fill, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(9) Ensure that the disposal facility will not discharge acid or toxic mine drainage.

(c) *Coal mine waste from outside the permit area.* You may dispose of coal mine waste materials from activities located outside the permit area within the permit area only if approved by the regulatory authority. Approval must be based upon a showing that disposal will be in accordance with the standards of this section.

(d) *Design and construction requirements.* (1)(i) You must design and construct coal mine waste disposal facilities using current, prudent engineering practices and any design and construction criteria established by the regulatory authority.

(ii) A qualified registered professional engineer, experienced in the design and construction of similar earth and waste structures, must certify the design of the disposal facility. The engineer must specifically certify that any existing and planned underground mine workings in the vicinity of the disposal facility will not adversely impact the stability of the structure.

(iii) You must construct the disposal facility in accordance with the design and plans submitted under § 784.25 of this chapter and approved in the permit. A qualified registered professional engineer experienced in the design and construction of similar earth and waste structures must certify that the facility has been constructed in accordance with the requirements of this paragraph.

(2) You must design and construct the disposal facility to attain a minimum long-term static safety factor of 1.5. The foundation and abutments must be

stable under all conditions of construction.

(e) *Foundation investigations.* (1) You must perform sufficient foundation and abutment investigations, as well as any necessary laboratory testing of foundation material, to determine the design requirements for foundation stability and control of underseepage. The analyses of the foundation conditions must take into consideration the effect of any underground mine workings located in the permit and adjacent areas upon the stability of the disposal facility.

(f) *Soil handling requirements.* You must remove all vegetation, organic matter, and soil materials from the disposal area prior to placement of the coal mine waste. You must store, redistribute, or otherwise use those materials in accordance with § 817.22 of this part. You may use soil substitutes and supplements if approved in the permit in accordance with § 784.12(e) of this chapter.

(g) *Emergency procedures.* (1) If any examination or inspection discloses that a potential hazard exists, you must inform the regulatory authority promptly of the finding and of the emergency procedures formulated for public protection and remedial action.

(2) If adequate procedures cannot be formulated or implemented, you must notify the regulatory authority immediately. The regulatory authority then must notify the appropriate agencies that other emergency procedures are required to protect the public.

(h) *Underground disposal.* You may dispose of coal mine waste in underground mine workings only in accordance with a plan approved by the regulatory authority and the Mine Safety and Health Administration under § 784.26 of this chapter.

§ 817.83 What special requirements apply to coal mine waste refuse piles?

(a) *General requirements.* Refuse piles must meet the requirements of § 817.81 of this part, the additional requirements of this section, and the requirements of §§ 77.214 and 77.215 of this title.

(b) *Surface runoff and drainage control.* (1) If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, you must design and construct the refuse pile with diversions and underdrains as necessary to control erosion, prevent water infiltration into the disposal facility, and ensure stability.

(2) You may not direct or divert uncontrolled surface runoff over the outslope of the refuse pile.

(3) You must direct runoff from areas above the refuse pile and runoff from the surface of the refuse pile into stabilized channels designed to meet the requirements of § 817.43 of this part and to safely pass the runoff from the 100-year, 6-hour precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine the peak flow from surface runoff from this event.

(4) Runoff diverted from undisturbed areas need not be commingled with runoff from the surface of the refuse pile.

(5) Underdrains must comply with the requirements of § 817.71(f) of this part.

(c) *Surface area stabilization.* You must provide slope protection to minimize surface erosion at the site. You must revegetate all disturbed areas, including diversion channels that are not riprapped or otherwise protected, upon completion of construction.

(d) *Final configuration and cover.* (1) The final configuration of the refuse pile must be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the refuse pile if required for stability, erosion control, conservation of soil moisture, or facilitation of the approved postmining land use. The grade of the outslope between terrace benches may not be steeper than 2h:1v (50 percent).

(2) No permanent impoundments or depressions are allowed on the completed refuse pile.

(3) Following final grading of the refuse pile, you must cover the coal mine waste with a minimum of 4 feet of the best available, nontoxic, and noncombustible material in a manner that does not impede drainage from the underdrains. The regulatory authority may allow less than 4 feet of cover material based on physical and chemical analyses showing that the revegetation requirements of §§ 817.111 and 817.116 of this part will be met.

(e) *Inspections.* You must comply with the inspection and examination requirements of § 817.71(k) of this part.

§ 817.84 What special requirements apply to coal mine waste impounding structures?

(a) Impounding structures constructed of coal mine waste or intended to impound coal mine waste must meet the requirements of § 817.81 of this part.

(b) You may not use coal mine waste to construct impounding structures unless you demonstrate, and the regulatory authority finds in writing, that the stability of such a structure conforms to the requirements of this part and that the use of coal mine waste will not have a detrimental effect on downstream water quality or the environment as a result of acid drainage or toxic seepage through the impounding structure. You must discuss the stability of the structure and the prevention and potential impact of acid drainage or toxic seepage through the impounding structure in detail in the design plan submitted to the regulatory authority in accordance with § 784.25 of this chapter.

(c)(1) You must design, construct, and maintain each impounding structure constructed of coal mine waste or intended to impound coal mine waste in accordance with paragraphs (a) and (c) of § 817.49 of this part.

(2) You may not retain these structures permanently as part of the approved postmining land use.

(3) Each impounding structure constructed of coal mine waste or intended to impound coal mine waste that meets the criteria of § 77.216(a) of this title must have sufficient spillway capacity to safely pass, adequate storage capacity to safely contain, or a combination of storage capacity and spillway capacity to safely control, the probable maximum precipitation of a 6-hour precipitation event, or greater event as specified by the regulatory authority.

(d) You must design spillways and outlet works to provide adequate protection against erosion and corrosion. Inlets must be protected against blockage.

(e) You must direct surface runoff from areas above the disposal facility and runoff from the surface of the facility that may cause instability or erosion of the impounding structure into stabilized channels designed and constructed to meet the requirements of § 817.43 of this part and to safely pass the runoff from a 100-year, 6-hour precipitation event. You must use the appropriate regional Natural Resources Conservation Service synthetic storm distribution to determine the peak flow from surface runoff from this event.

(f) For an impounding structure constructed of or impounding coal mine waste, you must remove at least 90 percent of the water stored during the design precipitation event within the 10-day period following the design precipitation event.

§ 817.87 What special requirements apply to burning and burned coal mine waste?

(a) You must extinguish coal mine waste fires in accordance with a plan approved by the regulatory authority and the Mine Safety and Health Administration. The plan must contain, at a minimum, provisions to ensure that only those persons authorized by the

operator, and who have an understanding of the procedures to be used, are involved in the extinguishing operations.

(b) You may not remove burning or burned coal mine waste from a permitted coal mine waste disposal area without a removal plan approved by the regulatory authority. Consideration must be given to potential hazards to persons working or living in the vicinity of the structure.

§ 817.89 How must I dispose of noncoal mine wastes?

(a)(1) You must place and store noncoal mine wastes, including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials generated during mining activities, in a controlled manner in a designated portion of the permit area.

(2) Placement and storage of noncoal wastes must ensure that leachate and surface runoff do not degrade surface water or groundwater, that fires are prevented, and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings.

(b)(1) Final disposal of noncoal mine wastes must be in a designated disposal site within the permit area or in a state-approved solid waste disposal area.

(2) Disposal sites within the permit area must meet the following requirements:

(i) The site must be designed and constructed to ensure that leachate and drainage from the noncoal mine waste area does not degrade surface water or groundwater.

(ii) Wastes must be routinely compacted and covered to prevent combustion and wind-borne waste.

(iii) When the disposal of noncoal wastes is completed, the site must be covered with a minimum of 2 feet of soil, slopes must be stabilized, and the site must be revegetated in accordance with §§ 817.111 through 817.116 of this part.

(iv) The disposal site must be operated in accordance with all local, state and federal requirements.

(c) At no time may any noncoal mine waste be deposited in a coal mine waste refuse pile or impounding structure, nor may an excavation for a noncoal mine waste disposal site be located within 8 feet of any coal outcrop or coal storage area.

§ 817.95 How must I protect surface areas from wind and water erosion?

(a) You must protect and stabilize all exposed surface areas to effectively control erosion and air pollution attendant to erosion.

(b)(1) You must fill, regrade, or otherwise stabilize rills and gullies that form in areas that have been regraded and upon which soil or soil substitute materials have been redistributed. This requirement applies only to rills and gullies that—

(i) Disrupt the approved postmining land use or reestablishment of the vegetative cover;

(ii) Cause or contribute to a violation of applicable state or tribal water quality standards or effluent limitations, including, but not limited to, water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c), and effluent limitations established in any National Pollutant Discharge Elimination System permit issued for the operation under section 402 of the Clean Water Act, 33 U.S.C. 1342, or its state or tribal counterpart;

(iii) Cause or contribute to a violation of applicable state or tribal water quality standards for groundwater; or

(iv) Result in material damage to the hydrologic balance outside the permit area.

(2) You must reapply soil materials to the filled or regraded rills and gullies when necessary to reestablish a vegetative cover. You must then replant those areas.

§ 817.97 How must I protect and enhance fish, wildlife, and related environmental values?

(a) *General requirements.* You, the permittee, must, to the extent possible using the best technology currently available, minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and achieve enhancement of those resources where practicable, as described in detail in the fish and wildlife protection and enhancement plan approved in the permit in accordance with § 784.16 of this chapter.

(b) *Requirements related to federal, state, and tribal endangered species laws.*—(1) *Requirements related to the Endangered Species Act of 1973.* (i) You may not conduct any surface mining activity that is in violation of the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.* Nothing in this chapter authorizes the taking of a species listed as threatened or endangered under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* or the destruction or adverse modification of designated critical habitat unless the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as applicable, authorizes the taking of a threatened or endangered species or the destruction or adverse modification of designated critical habitat under 16 U.S.C. 1536(b)(4) or 1539(a)(1)(B).

(ii) You must promptly report to the regulatory authority the presence of any previously unreported species listed as threatened or endangered, or any previously unreported species proposed for listing as threatened or endangered, under the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* within the permit or adjacent areas. This requirement applies regardless of whether the species was listed before or after permit issuance.

(iii) (A) Upon receipt of a notification under paragraph (b)(2)(ii) of this section, the regulatory authority will contact and coordinate with the appropriate state, tribal, and federal fish and wildlife agencies.

(B) The regulatory authority, in coordination with the appropriate state, tribal, and federal fish and wildlife agencies, will identify whether, and under what conditions, you may proceed. When necessary to ensure compliance with the Endangered Species Act of 1973, 16 U.S.C. 1531 *et seq.,* the regulatory authority will issue an order under § 774.10(b) of this chapter requiring that you revise the permit.

(iv) You must comply with any species-specific protection measures required by the regulatory authority in coordination with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as applicable.

(2) *Requirements related to state or tribal endangered species laws.* (i) You must promptly report to the regulatory authority any previously unreported state-listed or tribally-listed threatened or endangered species within the permit or adjacent areas whenever you become aware of its presence. This requirement applies regardless of whether the species was listed before or after permit issuance.

(ii) (A) Upon receipt of a notification under paragraph (b)(2)(i) of this section, the regulatory authority will contact and coordinate with the appropriate state or tribal fish and wildlife agencies.

(B) The regulatory authority, in coordination with the appropriate state or tribal fish and wildlife agencies, will identify whether, and under what conditions, you may proceed. When necessary, the regulatory authority will issue an order under § 774.10(b) of this chapter requiring that you revise the permit.

(c) *Bald and golden eagles.* (1) You may not conduct any underground mining activity in a manner that would

result in the unlawful taking of a bald or golden eagle, its nest, or any of its eggs.

(2) You must promptly report to the regulatory authority any golden or bald eagle nest within the permit area of which you become aware.

(3) Upon notification, the regulatory authority will contact and coordinate with the U.S. Fish and Wildlife Service and, when appropriate, the state or tribal fish and wildlife agency to identify whether, and under what conditions, you may proceed.

(4) Nothing in this chapter authorizes the taking of a bald or golden eagle, its nest, or any of its eggs in violation of the Bald and Golden Eagle Protection Act, 16 U.S.C. 668–668d.

(d) *Miscellaneous protective measures for other species of fish and wildlife.* To the extent possible, using the best technology currently available, you must—

(1) Ensure that electric power transmission lines and other transmission facilities used for, or incidental to, surface mining activities on the permit area are designed and constructed to minimize electrocution hazards to raptors and other avian species with large wingspans.

(2) Locate, construct, operate, and maintain haul and access roads and sedimentation control structures in a manner that avoids or minimizes impacts on important fish and wildlife species or other species protected by state or federal law.

(3) Design fences, overland conveyors, and other potential barriers to permit passage for large mammals, except where the regulatory authority determines that such requirements are unnecessary.

(4) Fence, cover, or use other appropriate methods to exclude wildlife from ponds that contain hazardous concentrations of toxic or toxic-forming materials.

(5) Reclaim and reforest lands that were forested at the time of application and lands that would revert to forest under conditions of natural succession in a manner that enhances recovery of the native forest ecosystem as expeditiously as practicable.

(e) *Wetlands.* (1) To the extent possible, using the best technology currently available, you must avoid disturbances to wetlands and, where practicable, enhance them. If avoidance is not possible, you must restore or replace wetlands that you disturb and, where practicable, enhance them.

(2) Nothing in paragraph (e)(1) of this section authorizes destruction or degradation of wetlands in violation of section 404 of the Clean Water Act, 33 U.S.C. 1344.

(f) *Habitat of unusually high value for fish and wildlife.* To the extent possible, using the best technology currently available, you must avoid disturbances to and, where practicable, enhance riparian and other native vegetation along rivers and streams, lentic vegetation bordering ponds and lakes, and habitat of unusually high value for fish and wildlife, as described in § 783.20(c)(3) of this chapter. If avoidance of these features is not possible, you must restore or replace those features and, where practicable, enhance them.

(g) *Vegetation requirements for fish and wildlife habitat postmining land use.* Where fish and wildlife habitat is a postmining land use, you must select and arrange the plant species to be used for revegetation to maximize the benefits to fish and wildlife. Plant species must be native to the area and must be selected on the basis of the following criteria:

(1) Their proven nutritional value for fish or wildlife.

(2) Their value as cover for fish or wildlife.

(3) Their ability to support and enhance fish or wildlife habitat after the release of performance bonds.

(4) Their ability to sustain natural succession by allowing the establishment and spread of plant species across ecological gradients. You may not use invasive plant species that are known to inhibit natural succession.

(h) *Vegetation requirements for cropland postmining land use.* Where cropland is the postmining land use, and where appropriate for wildlife-management and crop-management practices, you must intersperse the crop fields with trees, hedges, or fence rows to break up large blocks of monoculture and to diversify habitat types for birds and other animals.

(i) *Vegetation requirements for forestry postmining land uses.* Where forestry, whether managed or unmanaged, is the postmining land use, you must plant native tree and understory species to the extent that doing so is not inconsistent with the type of forestry to be practiced as part of the postmining land use. In all cases, regardless of the type of forestry to be practiced as part of the postmining land use, you must intersperse plantings of commercial species with plantings of native trees and shrubs of high value to wildlife.

(j) *Vegetation requirements for other postmining land uses.* Where residential, public service, commercial, industrial, or intensive recreational uses are the postmining land use, you must establish—

(1) Greenbelts comprised of non-invasive native plants that provide food or cover for wildlife, unless greenbelts would be inconsistent with the approved postmining land use plan for that site.

(2)(i) A vegetated buffer at least 100 feet wide along each bank of all perennial and intermittent streams within the permit area. The width of the buffer must be measured horizontally on a line perpendicular to the stream, beginning at the ordinary high water mark. The buffer must be planted with species native to the area, including species adapted to and suitable for planting in any floodplains or other riparian habitat located within the buffer. The species planted must consist of native tree and understory species if the land was forested at the time of application or if it would revert to forest under conditions of natural succession.

(ii) Paragraph (i)(2)(i) of this section does not apply to situations in which a vegetated buffer comprised of native species would be incompatible with an approved postmining land use that is implemented before final bond release under §§ 800.40 through 800.43 of this chapter.

(k) *Planting arrangement requirements.* You must design and arrange plantings in a manner that optimizes benefits to wildlife to the extent practicable and consistent with the postmining land use.

§ 817.99 What measures must I take to prevent and remediate landslides?

(a) You must notify the regulatory authority by the fastest available means whenever a landslide occurs that has the potential to adversely affect public property, health, safety, or the environment.

(b) You must comply with any remedial measures that the regulatory authority requires in response to the notification provided in paragraph (a) of this section.

§ 817.100 What are the standards for conducting reclamation contemporaneously with mining?

(a) You must reclaim all areas disturbed by surface impacts incident to an underground coal mine as contemporaneously as practicable with the mining operations, except when the mining operations are conducted in accordance with a variance for concurrent surface and underground mining activities under § 785.18 of this chapter. Reclamation activities include, but are not limited to, backfilling, grading, soil replacement, revegetation, and stream restoration.

(b) The regulatory authority may establish schedules that define contemporaneous reclamation.

§ 817.102 How must I backfill surface excavations and grade and configure the land surface?

(a) You, the permittee or operator, must backfill all surface excavations and grade all disturbed areas in compliance with the plan approved in the permit in accordance with § 784.12(d) of this chapter to—

(1) Restore the approximate original contour as the final surface configuration, except in the following situations:

(i) Sites for which the regulatory authority has approved a variance under § 785.16 of this chapter.

(ii) Remining operations on previously mined areas, but only to the extent specified in § 817.106(b) of this part.

(iii) Excess spoil fills constructed in accordance with § 817.71 or § 817.74 of this part.

(iv) Refuse piles constructed in accordance with § 817.83 of this part.

(v) Permanent impoundments that meet the requirements of paragraph (a)(3)(ii) of this section and § 784.35(b)(4) of this chapter.

(vi) The placement, in accordance with § 784.35(b)(3) of this chapter, of what would otherwise be excess spoil on the mined-out area to heights in excess of the premining elevation when necessary to avoid or minimize construction of excess spoil fills on undisturbed land.

(vii) Regrading of settled and revegetated spoil storage sites at the conclusion of underground mining activities, provided the following conditions are met:

(A) The settled and revegetated storage sites are composed of spoil or non-acid-forming or non-toxic-forming underground development waste.

(B) The spoil or underground development waste is not located so as to be detrimental to the environment, the health and safety of the public, or the approved postmining land use.

(C) You demonstrate, through standard geotechnical analysis, that the spoil or underground development waste has a 1.3 static safety factor for material placed on a solid bench and a 1.5 static safety factor for material not placed on a solid bench.

(D) The surface of the spoil or underground development waste is revegetated in accordance with §§ 817.111 and 817.116 of this part.

(E) Surface runoff is controlled in accordance with § 784.29 of this chapter and §§ 817.43 and 817.45 of this part.

(F) The regulatory authority determines that disturbance of the existing spoil or underground development waste would increase environmental harm or adversely affect the health or safety of the public.

(G) The spoil is not needed to eliminate the highwall or to meet other regulatory program requirements.

(2) Minimize the creation of uniform slopes and cut-and-fill terraces. The regulatory authority may approve cut-and-fill terraces only if—

(i) They are compatible with the approved postmining land use and are needed to conserve soil moisture, ensure stability, or control erosion on final-graded slopes; or

(ii) Specialized grading, foundation conditions, or roads are required for the approved postmining land use, in which case the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land use.

(3) Eliminate all highwalls, spoil piles, impoundments, and depressions, except in the following situations:

(i) You may construct or retain small depressions if—

(A) They are needed to retain moisture, minimize erosion, create or enhance wildlife habitat, or assist revegetation;

(B) They are consistent with the hydrologic reclamation plan approved in the permit in accordance with § 784.22 of this chapter; and

(C) You demonstrate that they will not result in elevated levels of parameters of concern in discharges from the backfilled and graded area.

(ii) The regulatory authority may approve the retention of permanent impoundments if—

(A) They meet the requirements of §§ 817.49 and 817.55 of this part;

(B) They are suitable for the approved postmining land use; and

(C) You demonstrate compliance with the future maintenance provisions of § 800.42(c)(5) of this chapter.

(D) You have obtained all necessary approvals and authorizations under section 404 of the Clean Water Act, 33 U.S.C. 1344, when the impoundment is located in waters subject to the jurisdiction of the Clean Water Act, 33 U.S.C. 1251 *et seq.*

(iii) You may retain highwalls on previously mined areas to the extent provided in § 817.106(b) of this part.

(iv) You may retain modified highwall segments to the extent necessary to replace similar natural landforms removed by the mining operation. The regulatory program must establish the conditions under which these highwall segments may be retained and the modifications that must be made to the highwall to ensure that—

(A) The retained segment resembles similar landforms that existed before any mining and restores the ecological niches that those landforms provided. Nothing in this paragraph authorizes the retention of modified highwall segments in excess of the number, length, and height needed to replace similar landforms that existed before any mining.

(B) The retained segment is stable. Features that result in the creation of talus slopes for wildlife habitat are acceptable if they meet the requirements of paragraph (a)(3)(iv)(A) of this section.

(C) The retained segment does not create an increased safety hazard compared to the features that existed before any mining.

(D) The exposure of water-bearing strata, if any, in the retained segment does not adversely impact the hydrologic balance.

(v) You may retain settled and revegetated spoil storage sites under the conditions specified in paragraph (a)(1)(vii) of this section.

(4) Achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and to prevent slides.

(5) Minimize erosion and water pollution, both on and off the site.

(6) Support the approved postmining land use.

(b) You must return all spoil to the surface excavations from which the spoil was removed. This requirement does not apply to—

(1) Excess spoil disposed of in accordance with § 817.71 or § 817.74 of this part.

(2) Spoil placed outside surface excavations in non-steep slope areas to restore the approximate original contour by blending the spoil into the surrounding terrain, provided that you comply with the following requirements:

(i) You must remove all vegetation and other organic matter from the area upon which you intend to place spoil for blending purposes. You may not burn these materials; you must store, redistribute, use, or bury them in the manner specified in § 817.22(f) of this part.

(ii) You must remove, segregate, store, and redistribute topsoil, in accordance with § 817.22 of this part, from the area upon which you intend to place spoil for blending purposes.

(3) Settled and revegetated spoil storage sites under the conditions

specified in paragraph (a)(1)(vii) of this section.

(c) You must compact spoil and waste materials when necessary to ensure stability or to prevent the formation of acid or toxic mine drainage, but, to the extent possible, you must avoid compacting spoil, soil, and other materials placed in what will be the root zone of the species planted under the revegetation plan approved in the permit in accordance with § 784.12(g) of this chapter.

(d)(1) You must cover all exposed coal seams with material that is noncombustible, nonacid-forming, and nontoxic-forming.

(2) You must handle and dispose of all other combustible materials exposed, used, or produced during mining in accordance with § 817.89 of this part in a manner that will prevent sustained combustion, as approved in the permit in accordance with § 784.12(j) of this chapter.

(3) You must handle all other acid-forming and toxic-forming materials—

(i) In compliance with the plan approved in the permit in accordance with § 784.12(n) of this chapter;

(ii) In compliance with § 817.38 of this part;

(iii) In compliance with the hydrologic reclamation plan approved in the permit in accordance with § 784.22(a) of this chapter; and

(iv) In a manner that will minimize adverse effects on plant growth and the approved postmining land use.

(e) You must dispose of any coal mine waste placed in the surface excavation in accordance with §§ 817.81 and 817.83 of this part, except that a long-term static safety factor of 1.3 will apply instead of the 1.5 factor specified in § 817.81(d)(2) of this part.

(f) You must prepare final-graded surfaces in a manner that minimizes erosion and provides a surface for replacement of soil materials that will minimize slippage.

§ 817.106 What special provisions for backfilling, grading, and surface configuration apply to previously mined areas with a preexisting highwall?

(a) Remining operations on previously mined areas that contain a preexisting highwall must comply with the requirements of §§ 817.102 through 817.107 of this part, except as provided in this section.

(b) The highwall elimination requirements of § 817.102(a) of this part do not apply to remining operations for which you demonstrate in writing, to the regulatory authority's satisfaction, that the volume of all reasonably available spoil is insufficient to completely backfill the reaffected or enlarged highwall. Instead, for those operations, you must eliminate the highwall to the maximum extent technically practical in accordance with the following criteria:

(1) You must use all spoil generated by the remining operation and any other reasonably available spoil to backfill the area. You must include reasonably available spoil in the immediate vicinity of the remining operation within the permit area.

(2) You must grade the backfilled area to a slope that is compatible with the approved postmining land use and that provides adequate drainage and long-term stability.

(3) Any highwall remnant must be stable and not pose a hazard to the public health and safety or to the environment. You must demonstrate, to the satisfaction of the regulatory authority, that the highwall remnant is stable.

(4) You must not disturb spoil placed on the outslope during previous mining operations if disturbance would cause instability of the remaining spoil or otherwise increase the hazard to the public health and safety or to the environment.

§ 817.107 What special provisions for backfilling, grading, and surface configuration apply to operations on steep slopes?

(a) Underground mining activities on steep slopes must comply with this section and the requirements of §§ 817.102 through 817.106 of this part.

(b) You may not place the following materials on the downslope:

(1) Spoil.

(2) Waste materials of any type.

(3) Debris, including debris from clearing and grubbing, except for woody materials used to enhance fish and wildlife habitat.

(4) Abandoned or disabled equipment.

(c) You may not disturb land above the highwall unless the regulatory authority finds that disturbance will facilitate compliance with the environmental protection standards of this subchapter and the disturbance is limited to that necessary to facilitate compliance.

(d) You must handle woody materials in accordance with § 817.22(f) of this part.

§ 817.111 How must I revegetate areas disturbed by mining activities?

(a) You, the permittee, must establish a diverse, effective, permanent vegetative cover on regraded areas and on all other disturbed areas except—

(1) Water areas approved as a postmining land use or in support of the postmining land use.

(2) The surfaces of roads approved for retention to support the postmining land use.

(3) Rock piles, water areas, and other non-vegetative features created to restore or enhance wildlife habitat under the fish and wildlife protection and enhancement plan approved in the permit in accordance with § 784.16 of this chapter.

(4) Any other impervious surface, such as a building or a parking lot, approved as part of or in support of the postmining land use. This provision applies only to structures and facilities constructed before expiration of the revegetation responsibility period.

(b) The reestablished vegetative cover must—

(1) Comply with the revegetation plan approved in the permit in accordance with § 784.12(g) of this chapter.

(2) Be consistent with the approved postmining land use and, except as provided in the revegetation plan approved in the permit in accordance with § 784.12(g) of this chapter, the native plant communities described in § 783.19 of this chapter.

(3) Be at least equal in extent of cover to the natural vegetation of the area.

(4) Be capable of stabilizing the soil surface and, in the long term, preventing erosion in excess of what would have occurred naturally had the site not been disturbed.

(5) Not inhibit the establishment of trees and shrubs when the revegetation plan approved in the permit requires the use of woody plants.

(c) Volunteer plants of species that are desirable components of the plant communities described in the permit application under § 783.19 of this chapter and that are not inconsistent with the postmining land use may be considered in determining whether the requirements of §§ 817.111 and 817.116 have been met.

(d) You must stabilize all areas upon which you have redistributed soil or soil substitute materials. You must use one or a combination of the following methods, unless the regulatory authority determines that neither method is necessary to stabilize the surface and control erosion—

(1) Establishing a temporary vegetative cover consisting of noncompetitive and non-invasive species, either native or domesticated or a combination thereof.

(2) Applying suitable mulch free of weed and noxious plant seeds.

(e) You must plant all disturbed areas with the species needed to establish a

permanent vegetative cover during the first normal period for favorable planting conditions after redistribution of the topsoil or other plant-growth medium. The normal period for favorable planting conditions is the generally accepted local planting time for the type of plant materials approved in the permit as part of the revegetation plan under § 784.12(g) of this chapter.

§ 817.113 [Reserved]

§ 817.114 [Reserved]

§ 817.115 How long am I responsible for revegetation after planting?

(a) *General provisions.* (1) The period of extended responsibility for successful revegetation will begin after the last year of augmented seeding, fertilizing, irrigation, or other work, excluding husbandry practices that are approved by the regulatory authority in accordance with paragraph (d) of this section.

(2) The initial planting of small areas that are regraded and planted as a result of the removal of sediment control structures and associated structures and facilities, including ancillary roads used to access those structures, need not be considered an augmented seeding necessitating an extended or separate revegetation responsibility period. This paragraph also applies to areas upon which accumulated sediment and materials resulting from removal of sedimentation pond embankments are spread.

(b) *Areas of more than 26.0 inches of average annual precipitation.* In areas of more than 26.0 inches of annual average precipitation, the period of responsibility will continue for a period of not less than—

(1) Five full years, except as provided in paragraph (b)(2) of this section.

(i) The vegetation parameters for grazing land, pasture land, or cropland must equal or exceed the approved success standard during the growing season of any 2 years of the responsibility period, except the first year.

(ii) On all other areas, the parameters must equal or exceed the applicable success standard during the growing season of the last year of the responsibility period.

(2) Two full years for lands eligible for remining included in a permit approved under § 785.25 of this chapter. The lands must equal or exceed the applicable ground cover standard during the growing season of the last year of the responsibility period.

(c) *Areas of 26.0 inches or less average annual precipitation.* In areas of 26.0 inches or less average annual precipitation, the period of responsibility will continue for a period of not less than:

(1) Ten full years, except as provided in paragraph (c)(2) of this section.

(i) The vegetation parameters for grazing land, pasture land, or cropland must equal or exceed the approved success standard during the growing season of any two years after year six of the responsibility period.

(ii) On all other areas, the parameters must equal or exceed the applicable success standard during the growing season of the last year of the responsibility period.

(2) Five full years for lands eligible for remining included in a permit approved under § 785.25 of this chapter. The lands must equal or exceed the applicable ground cover standard during the growing seasons of the last two consecutive years of the responsibility period.

(d) *Normal husbandry practices.* (1) The regulatory authority may approve selective husbandry practices, excluding augmented seeding, fertilization, or irrigation, provided it obtains prior approval from OSMRE in accordance with § 732.17 of this chapter that the practices are normal husbandry practices, without extending the period of responsibility for revegetation success and bond liability, if those practices can be expected to continue as part of the postmining land use or if discontinuance of the practices after the liability period expires will not reduce the probability of permanent revegetation success.

(2) Approved practices must be normal husbandry practices within the region for unmined lands having land uses similar to the approved postmining land use of the disturbed area, including such practices as disease, pest, and vermin control; and any pruning, reseeding, and transplanting specifically necessitated by such actions.

§ 817.116 What requirements apply to standards for determining revegetation success?

(a) The regulatory authority must select standards for revegetation success and statistically valid sampling techniques for measuring revegetation success. The standards and techniques must be made available to the public in written form.

(b) The standards for success applied to a specific permit must reflect the revegetation plan requirements of § 784.12(g) of this chapter. They must be based upon the following data—

(1) The plant community and vegetation information required under § 783.19 of this chapter.

(2) The soil type and productivity information required under § 783.21 of this chapter.

(3) The land use capability and productivity information required under § 783.22 of this chapter.

(4) The postmining land use approved under § 784.24 of this chapter, but only to the extent that the approved postmining land use will be implemented before final bond release under §§ 800.40 through 800.43 of this chapter. Otherwise, the site must be revegetated in a manner that will restore native plant communities and the revegetation success standards for the site must reflect that requirement.

(c) Except for the areas identified in § 817.111(a) of this part, standards for success must include—

(1) Species diversity.

(2) Areal distribution of species.

(3) Ground cover, except for land actually used for cropland after the completion of regrading and redistribution of soil materials.

(4) Production, for land used for cropland, pasture, or grazing land either before permit issuance or after the completion of regrading and redistribution of soil materials.

(5) Stocking, for areas revegetated with woody plants.

(d) The ground cover, production, or stocking of the revegetated area will be considered equal to the approved success standard for those parameters when the measured values are not less than 90 percent of the success standard, using a 90-percent statistical confidence interval (*i.e.,* a one-sided test with a 0.10 alpha error).

(e) For all areas revegetated with woody plants, regardless of the postmining land use), the regulatory authority must specify minimum stocking and planting arrangements on the basis of local and regional conditions and after coordination with and approval by the state agencies responsible for the administration of forestry and wildlife programs. Coordination and approval may occur on either a program-wide basis or a permit-specific basis.

(f)(1) Only those species of trees and shrubs approved in the permit as part of the revegetation plan under § 784.12(g) of this chapter or volunteer trees and shrubs of species that meet the requirements of § 817.111(c) of this part may be counted in determining whether stocking standards have been met.

(2)(i) At the time of final bond release under §§ 800.40 through 800.43 of this chapter, at least 80 percent of the trees and shrubs used to determine success must have been in place for 60 percent of the applicable minimum period of

responsibility under § 817.115 of this part.

(ii) Trees and shrubs counted in determining revegetation success must be healthy and have been in place for not less than two growing seasons. Any replanting must be done by means of transplants to allow for proper accounting of plant stocking.

(iii)(A) For purposes of paragraph (f)(2)(ii) of this section, volunteer trees and shrubs of species that meet the requirements of § 817.111(c) of this part may be deemed equivalent to planted specimens two years of age or older.

(B) Suckers on shrubby vegetation can be counted as volunteer plants when it is evident the shrub community is vigorous and expanding.

(iv) The requirements of paragraphs (f)(2)(i) and (ii) of this section will be deemed met when records of woody vegetation planted show that—

(A) No woody plants were planted during the last two growing seasons of the responsibility period; and,

(B) If any replanting of woody plants took place earlier during the responsibility period, the total number planted during the last 60 percent of that period is less than 20 percent of the total number of woody plants required to meet the stocking standard.

(3) Vegetative ground cover on areas planted with trees or shrubs must be of a nature that allows for natural establishment and succession of native plants, including trees and shrubs.

(g) *Special provision for areas that are developed within the revegetation responsibility period.* Portions of the permit area that are developed for industrial, commercial, or residential use within the revegetation responsibility period need not meet production or stocking standards. For those areas, the vegetative ground cover must not be less than that required to control erosion.

(h) *Special provision for previously mined areas.* Previously mined areas need only meet a vegetative ground cover standard, unless the regulatory authority specifies otherwise. At a minimum, the cover on the revegetated previously mined area must not be less than the ground cover existing before redisturbance and must be adequate to control erosion.

(i) *Special provision for prime farmland.* For prime farmland historically used for cropland, the revegetation success standard provisions of § 823.15 of this chapter apply in lieu of the requirements of paragraphs (b) through (h) of this section.

§ 817.121 What measures must I take to prevent, control, or correct damage resulting from subsidence?

(a) *Measures to prevent or minimize damage.* (1) You, the permittee or operator, must either—

(i) Adopt measures consistent with known technology that prevent subsidence from causing material damage to the extent technologically and economically feasible, maximize mine stability, and maintain the value and reasonably foreseeable use of surface lands; or

(ii) Adopt mining technology that provides for planned subsidence in a predictable and controlled manner.

(2) If you employ mining technology that provides for planned subsidence in a predictable and controlled manner under paragraph (a)(1)(ii) of this section, you must take necessary and prudent measures, consistent with the mining method employed, to minimize material damage to the extent technologically and economically feasible to non-commercial buildings and occupied residential dwellings and structures related thereto unless—

(i) You have obtained the written consent of the owners of those structures; or

(ii) The costs of those measures would exceed the anticipated costs of repair. This exception does not apply if the anticipated damage would constitute a threat to health or safety.

(3) Nothing in this part prohibits the standard method of room-and-pillar mining.

(b) You must comply with all provisions of the subsidence control plan prepared pursuant to § 784.30 of this chapter and approved in the permit.

(c) *Repair of damage to surface lands and waters.* (1) To the extent technologically and economically feasible, you must correct any subsidence-related material damage to surface lands, wetlands, streams, or water bodies by restoring the land and water features to a condition capable of maintaining the value and reasonably foreseeable uses that the land was capable of supporting before the subsidence-related damage occurred.

(2) When correction of subsidence-related material damage to wetlands or a perennial or intermittent stream is technologically and economically infeasible, you must implement fish and wildlife enhancement measures, as approved by the regulatory authority in a permit revision, to offset the material damage.

(d) *Repair or compensation for damage to non-commercial buildings, occupied residential dwellings and related structures.* (1) You must promptly repair, or compensate the owner for, material damage resulting from subsidence caused to any non-commercial building or occupied residential dwelling or structure related thereto that existed at the time of mining.

(2) If you select the repair option, you must fully rehabilitate, restore, or replace the damaged structure.

(3) If you select the compensation option, you must compensate the owner of the damaged structure for the full amount of the decrease in value resulting from the subsidence-related damage. You may provide compensation by the purchase, before mining, of a non-cancellable, premium-prepaid insurance policy.

(4) The requirements of paragraph (d) of this section apply only to subsidence-related damage caused by underground mining activities conducted after October 24, 1992.

(e) *Repair or compensation for damage to other structures.* To the extent required under applicable provisions of state law, you must correct material damage resulting from subsidence caused to any structures or facilities not protected by paragraph (d) of this section by either repairing the damage or compensating the owner of the structures or facilities for the full amount of the decrease in value resulting from the subsidence. Repair of damage includes rehabilitation, restoration, or replacement of damaged structures or facilities. Compensation may be accomplished by the purchase before mining of a non-cancellable, premium-prepaid insurance policy.

(f) *Information to be considered in determination of causation.* The regulatory authority must consider all relevant and reasonably available information in determining whether damage to protected structures was caused by subsidence from underground mining.

(g) *Adjustment of bond amount for subsidence damage.* (1) When subsidence-related material damage to land (including wetlands, streams, and water bodies), structures or facilities protected under paragraphs (c) through (e) of this section occurs, or when contamination, diminution, or interruption to a water supply protected under § 817.40 of this part occurs, the regulatory authority must require the permittee to post additional performance bond until the repair, compensation, or replacement is completed.

(2)(i) For structures protected under paragraphs (d) and (e) of this section, the amount of additional bond required

under paragraph (g)(1) of this section must equal the—

(A) Estimated cost of the repairs if the repair option is selected.

(B) Decrease in value if the compensation option is selected.

(ii) For water supplies protected under § 817.40 of this part, the amount of additional bond required under paragraph (g)(1) of this section must equal the estimated cost to replace the protected water supply, unless the conditions described in § 817.40(a)(4) of this part apply.

(iii) For surface lands and waters to which paragraph (c) of this section applies, the amount of additional bond required under paragraph (g)(1) of this section must equal the estimated cost of restoring the land and waters to a condition capable of maintaining the value and reasonably foreseeable uses that they were capable of supporting before the material damage from subsidence occurred.

(3)(i) The requirements of paragraph (g)(1) of this section do not apply if repair, compensation, or replacement is completed within 90 days of the occurrence of damage. The regulatory authority may extend the 90-day time frame, provided that the total time allowed does not exceed one year, if you demonstrate, and the regulatory authority finds in writing, that repair of subsidence-related material damage to lands, waters, or protected structures or replacement of an adversely impacted protected water supply within 90 days would be unreasonable because—

(A) Subsidence is not complete;

(B) All probable subsidence-related material damage to lands, waters, or protected structures has not yet occurred; or

(C) All reasonably anticipated changes that may affect an adversely impacted protected water supply have not yet occurred.

(ii)(A) If you have not completed correction or repair of subsidence-related material damage to surface lands or waters or replaced adversely impacted protected water supplies within 2 years following the occurrence of that damage, the regulatory authority must initiate bond forfeiture proceedings under § 800.50 of this chapter and use the funds collected to repair the surface lands and waters or replace the protected water supplies.

(B) Paragraph (g)(3)(ii)(A) of this section does not apply if—

(*1*) The landowner refuses to allow access to conduct the corrective measures; or

(*2*) You demonstrate, and the regulatory authority finds, that correction or repair of the material damage to surface lands or waters is not technologically or economically feasible. In that situation, you must complete the enhancement measures required under paragraph (c)(2) of this section.

(h) *Prohibitions and limitations on underground mining.* (1) You may not conduct underground mining activities beneath or adjacent to—

(i) Public buildings and facilities.

(ii) Churches, schools, and hospitals.

(iii) Impoundments with a storage capacity of 20 acre-feet or more or bodies of water with a volume of 20 acre-feet or more.

(2) The prohibitions of paragraph (h)(1) of this section do not apply if the subsidence control plan demonstrates that subsidence will not cause material damage to, or reduce the reasonably foreseeable use of, the features or facilities listed in paragraphs (h)(1)(i) through (iii) of this section.

(3) The regulatory authority may limit the percentage of coal extracted under or adjacent to the features and facilities listed in paragraphs (h)(1)(i) through (iii) of this section if it determines that the limitation is necessary to minimize the potential for material damage to those features or facilities or to any aquifer or body of water that serves as a significant water source for any public water supply system.

(i) If subsidence causes material damage to any of the features or facilities listed in paragraphs (h)(1)(i) through (iii) of this section, the regulatory authority may suspend mining under or adjacent to those features or facilities until the subsidence control plan is modified to ensure prevention of further material damage to those features or facilities.

(j) The regulatory authority must suspend underground mining activities under urbanized areas, cities, towns, and communities, and adjacent to industrial or commercial buildings, major impoundments, or perennial streams, if it finds that the mining activities pose an imminent danger to inhabitants of the urbanized areas, cities, towns, or communities.

(k) You must submit a detailed plan of the underground workings of your mine in accordance with a schedule approved by the regulatory authority. The detailed plan must include maps and descriptions, as appropriate, of significant features of the underground mine, including the size, configuration, and approximate location of pillars and entries, extraction ratios, measures taken to prevent or minimize subsidence and related damage, areas of full extraction, and other information required by the regulatory authority. The regulatory authority may hold the information submitted with the detailed plan as confidential, in accordance with § 773.6(d) of this chapter, upon your request.

§ 817.122 How and when must I provide notice of planned underground mining?

(a) At least 6 months prior to mining, or within that period if approved by the regulatory authority, you, the underground mine operator, must mail a notification to all owners and occupants of surface property and structures above the planned underground workings.

(b) The notification must include, at a minimum—

(1) Identification of specific areas in which mining will take place;

(2) Dates that specific areas will be undermined; and

(3) The location or locations where the subsidence control plan may be examined.

§ 817.131 What actions must I take when I temporarily cease mining operations?

(a)(1) Each person who temporarily ceases to conduct underground mining activities at a particular site must effectively support and maintain all surface access openings to underground operations and secure surface facilities in areas in which there are no current operations, but where operations are to be resumed under an approved permit.

(2) Temporary cessation does not relieve a person of his or her obligation to comply with any provisions of the approved permit.

(b)(1) You must submit a notice of intent to temporarily cease operations to the regulatory authority before ceasing mining and reclamation operations for 30 or more days, or as soon as you know that a temporary cessation will extend beyond 30 days.

(2) The notice of temporary cessation must include a statement of the—

(i) Exact number of surface acres disturbed within the permit area prior to temporary cessation;

(ii) Extent and kind of reclamation accomplished before temporary cessation; and

(iii) Backfilling, regrading, revegetation, environmental monitoring, underground opening closures, and water treatment activities that will continue during temporary cessation.

§ 817.132 What actions must I take when I permanently cease mining operations?

(a) Persons who permanently cease conducting underground mining activities at a particular site must close, backfill, or otherwise permanently reclaim all disturbed areas in accordance with this chapter and the

permit approved by the regulatory authority.

(b) All underground openings, surface equipment, surface structures, or other surface facilities must be removed and the affected land reclaimed, unless the regulatory authority approves retention of those features because they are suitable for the postmining land use or environmental monitoring.

§ 817.133 What provisions concerning postmining land use apply to my operation?

You, the permittee, must restore all disturbed areas in a timely manner to conditions that are capable of supporting—

(a) The uses they were capable of supporting before any mining; as described under § 783.22 of this chapter; or

(b) Higher or better uses approved under § 784.24(b) of this chapter.

§ 817.150 What are the general requirements for haul and access roads?

(a) *Road classification system.* (1) Each road meeting the definition of that term in § 701.5 of this chapter must be classified as either a primary road or an ancillary road.

(2) A primary road is any road that is—

(i) Used for transporting coal or spoil;

(ii) Frequently used for access or other purposes for a period in excess of 6 months; or

(iii) To be retained for an approved postmining land use.

(3) An ancillary road is any road not classified as a primary road.

(b) *Performance standards.* Each road must be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to—

(1) Control or prevent erosion, siltation, and air pollution attendant to erosion, including road dust and dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices.

(2) Control or prevent damage to fish, wildlife, or their habitat and related environmental values.

(3) Control or prevent additional contributions of suspended solids to streamflow or runoff outside the permit area.

(4) Neither cause nor contribute, directly or indirectly, to a violation of applicable state or tribal water quality standards for surface water and groundwater, including, but not limited to, surface water quality standards established under the authority of section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

(5) Refrain from seriously altering the normal flow of water in streambeds or drainage channels.

(6) Prevent or control damage to public or private property, including the prevention or mitigation of adverse effects on lands within the boundaries of units of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including designated study rivers, and National Recreation Areas designated by Act of Congress.

(7) Use nonacid- and nontoxic-forming substances in road surfacing.

(c) *Design and construction limits and establishment of design criteria.* To ensure environmental protection appropriate for their planned duration and use, including consideration of the type and size of equipment used, the design and construction or reconstruction of roads must include appropriate limits for grade, width, surface materials, surface drainage control, culvert placement, and culvert size, in accordance with current, prudent engineering practices, and any necessary design criteria established by the regulatory authority.

(d) *Location.* (1) No part of any road may be located in the channel of an intermittent or perennial stream unless specifically approved by the regulatory authority in accordance with § 784.28 of this chapter and § 817.57 of this part.

(2) Roads must be located to minimize downstream sedimentation and flooding.

(e) *Maintenance.* (1) A road must be maintained to meet the performance standards of this part and any additional criteria specified by the regulatory authority;

(2) A road damaged by a catastrophic event, such as a flood or earthquake, must be repaired as soon as is practicable after the damage has occurred.

(f) *Reclamation.* A road not to be retained as part of an approved postmining land use must be reclaimed in accordance with the approved reclamation plan as soon as practicable after it is no longer needed for mining and reclamation operations. Reclamation must include—

(1) Closing the road to traffic.

(2) Removing all bridges and culverts unless approved as part of the postmining land use.

(3) Removing or otherwise disposing of road-surfacing materials that are incompatible with the postmining land use and revegetation requirements.

(4) Reshaping the slopes of road cuts and fills as necessary to be compatible with the postmining land use and to complement the natural drainage pattern of the surrounding terrain.

(5) Protecting the natural drainage patterns by installing dikes or cross-drains as necessary to control surface runoff and erosion.

(6) Scarifying or ripping the roadbed, replacing topsoil or substitute material in accordance with § 817.22 of this part, and revegetating disturbed surfaces in accordance with §§ 817.111, 817.115, and 817.116 of this chapter.

§ 817.151 What additional requirements apply to primary roads?

(a) Primary roads must meet the requirements of § 817.150 of this part and the additional requirements of this section.

(b) *Certification.* The construction or reconstruction of primary roads must be certified in a report to the regulatory authority by a qualified registered professional engineer, or in any state that authorizes land surveyors to certify the construction or reconstruction of primary roads, a qualified registered professional land surveyor, with experience in the design and construction of roads. The report must indicate that the primary road has been constructed or reconstructed as designed and in accordance with the approved plan.

(c) *Safety factor.* Each primary road embankment must have a minimum static factor of 1.3 or meet the requirements established under § 784.37(c) of this chapter.

(d) *Location.* (1) To minimize erosion, a primary road must be located, insofar as is practicable, on the most stable available surface.

(2) Fords of perennial or intermittent streams are prohibited unless they are specifically approved by the regulatory authority as temporary routes during periods of road construction.

(e) *Drainage control.* In accordance with the approved plan—

(1) Each primary road must be constructed (or reconstructed) and maintained to have adequate drainage control, using structures such as, but not limited to bridges, ditches, cross drains, and ditch relief drains. The drainage control system must be designed to safely pass the peak runoff from the 10-year, 6-hour precipitation event, or any greater event specified by the regulatory authority.

(2) Drainage pipes and culverts must be installed as designed, and maintained in a free and operating condition and to prevent or control erosion at inlets and outlets.

(3) Drainage ditches must be constructed and maintained to prevent

uncontrolled drainage over the road surface and embankment.

(4) Culverts must be installed and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road.

(5) Natural stream channels must not be altered or relocated without the prior approval of the regulatory authority in accordance with § 784.28 of this chapter and § 817.57 of this part.

(6) Except as provided in paragraph (d)(2) of this section, structures for perennial or intermittent stream channel crossings must be made using bridges, culverts, low-water crossings, or other structures designed, constructed, and maintained using current prudent engineering practices. The regulatory authority must ensure that low-water crossings are designed, constructed, and maintained to prevent erosion of the structure or streambed and additional contributions of suspended solids to streamflow.

(f) *Surfacing.* Primary roads must be surfaced with material approved by the regulatory authority as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road.

§ 817.180 To what extent must I protect utility installations?

You must conduct all underground coal mining operations in a manner that minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines; railroads; electric and telephone lines; and water and sewage lines that pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and the regulatory authority.

§ 817.181 What requirements apply to support facilities?

(a) You must operate each support facility in accordance with the permit issued for the mine or coal preparation plant to which the facility is incident or from which its operation results.

(b) In addition to the other provisions of this part, you must locate, maintain, and use support facilities in a manner that—

(1) Prevents or controls erosion and siltation, water pollution, and damage to public or private property; and

(2) To the extent possible using the best technology currently available—

(i) Minimizes damage to fish, wildlife, and related environmental values; and

(ii) Minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions may not be in excess of limitations of state or federal law.

§ 817.200 [Reserved]

PART 824—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—MOUNTAINTOP REMOVAL MINING OPERATIONS

■ 36. Revise the authority citation for part 824 to read as follows:

Authority: 30 U.S.C. 1201 *et seq.*

■ 37. Revise the heading for part 824 to read as set forth above.

■ 38. Revise § 824.11 to read as follows:

§ 824.11 What special performance standards apply to mountaintop removal mining operations?

(a) *Applicability.* This section applies to all operations for which the regulatory authority has approved a permit under § 785.14 of this chapter.

(b) *Performance standards.* (1) You, the permittee, must comply with all applicable requirements of this subchapter and the regulatory program, other than the approximate original contour restoration requirements of § 816.102(a)(1) of this chapter and the thick overburden requirements of § 816.105 of this chapter.

(2)(i) You must retain an outcrop barrier, consisting of the toe of the lowest coal seam and its associated overburden, of sufficient width to prevent slides and erosion. You must construct drains through the barrier to the extent necessary to prevent saturation of the backfill.

(ii) The outcrop barrier requirement in paragraph (b)(2)(i) of this section does not apply if the proposed mine site was mined prior to May 3, 1978, and the toe of the lowest coal seam has already been removed.

(iii) You may remove a coal barrier adjacent to a head-of-hollow fill after the elevation of the fill attains the elevation of the coal barrier if the head-of-hollow fill provides the stability otherwise ensured by the retention of a coal barrier.

(iv) The regulatory authority may allow removal of the outcrop barrier required by paragraph (b)(2)(i) of this section if the regulatory program establishes standards for and requires construction of a barrier comprised of alternative materials that will provide equivalent stability.

(3) The final graded slopes must be less than 1v:5h, so as to create a level plateau or gently rolling configuration. The outslopes of the plateau may not exceed 1v:2h except where engineering data substantiate, and the regulatory authority finds in writing and includes in the permit under § 785.14 of this chapter that an alternative configuration will achieve a minimum static safety factor of 1.5.

(4) You must grade the plateau or gently rolling contour to drain inward from the outslope, except at specified points where it drains over the outslope in stable and protected channels.

(5) You must place sufficient spoil on the mountaintop bench to achieve the approved postmining land use. You must place all spoil material not retained on the mountaintop bench in accordance with the excess spoil disposal requirements of § 816.71 or § 816.74 of this chapter.

(6) You must prevent damage to natural watercourses in accordance with the finding made by the regulatory authority under § 785.14 of this chapter.

PART 827—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE

■ 39. The authority citation for part 827 continues to read as follows:

Authority: 30 U.S.C. 1201 *et seq.*

■ 40. Revise § 827.12 to read as follows:

§ 827.12 What performance standards apply to coal preparation plants?

Except as provided in § 827.13 of this part, construction, operation, maintenance, modification, reclamation, and removal activities at coal preparation plants must comply with the following provisions of part 816 of this chapter: §§ 816.11, 816.22, 816.34 through 816.57, 816.71, 816.74, 816.79, 816.81 through 816.97, 816.100, 816.102, 816.104, 816.106, 816.111 through 816.116, 816.131 through 816.133, 816.150, 816.151, and 816.181.

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