An Overview Of SMCRA Regulations Applied To CCBs

SMCRA did not directly contemplate the disposal of solid wastes in a coal mine, other than wastes generated by coal mining operations (i.e., coal processing waste, non-coal mine waste, underground development waste, and spoil). CCBs are directly referenced in OSM's regulations only at 30 CFR §817.41(h)(2)(iii) and (v), which specifies "fly ash" and "flue-gas desulfurization sludge" as two of the seven allowable types of discharges into an underground coal mine. This is not a blanket approval.

In the same vein, the lack of direct regulations for the placement of CCBs in coal mines does not counteract the application of SMCRA to regulating CCB placement in coal mines. All permitting and performance regulatory standards apply to CCBs and any other materials that may be placed in coal mines.

Purposes of SMCRA

The purposes are given in the Act as follows, 30 U.S.C. 1202:

- Establish a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations.
- Assure that the rights of surface landowners and other persons with a legal interest in the land or appurtenances thereto are fully protected from such operations.
- Assure that surface mining operations are not conducted where reclamation as required by the Act is not feasible.
- Assure that surface coal mining operations are so conducted as to protect the environment.
- Assure that adequate procedures are undertaken to reclaim surface areas as contemporaneously as possible with the surface coal mining operations.
- Assure that the coal supply essential to the Nation's energy requirements, and to its economic and social well-being is provided and strike a balance between protection of the environment and agricultural productivity and the Nation's need for coal as an essential source of energy.
- Assist the States in developing and implementing a program to achieve the purposes of the Act.
- Promote the reclamation of mined areas left without adequate reclamation prior to the enactment of the Act 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.
- Assure that appropriate procedures are provided for the public participation in the development, revision, and enforcement of regulations, standards, reclamation plans, or programs established by the Secretary or any State under the Act.
- Provide a means for development of the data and analyses necessary to establish effective and reasonable regulation of surface mining operations for other minerals.
- Encourage the full utilization of coal resources through the development and application of underground extraction technologies.

- Stimulate, sponsor, provide for and/or supplement present programs for the conduct of research investigations, experiments, and demonstrations, in the exploration, extraction, processing, development, and production of minerals and the training of mineral engineers and scientists in the field of mining, minerals resources, and technology, and the establishment of an appropriate research and training center in various States.
- Wherever necessary, exercise the full reach of Federal constitutional powers to insure the protection of the public interest through effective control of surface coal mining operations.

Regulatory Program Responsibility

The placement of coal combustion by-products at a SMCRA mine site would not be exempt from any of the OSM regulations contained at 30 CFR Part 700 to end. The following regulations highlight those that would be expected to apply in most cases.

State Pre-eminence, §701.4.

A state regulatory authority has primary regulatory responsibility for coal exploration and surface coal mining and reclamation operations during the permanent regulatory program. Once the State program is in effect, the Office (Office of Surface Mining or OSM) has an oversight function to evaluate the administration of those programs. OSM must institute a federal regulatory program in a state that does not have a program, for Federal lands and Indian lands.

Mining Restriction, §773.4(a). <<

Once a state regulatory program is effective, no person shall engage in or carry out any surface coal mining operations, unless such person has first obtained a permit issued by the regulatory authority.

Cumulative Hydrologic Impact Assessment, §780.21(g).

The regulatory authority shall provide an assessment of the probable cumulative hydrologic impacts (CHIA) of the proposed operation and all anticipated mining upon surface- and ground-water systems in the cumulative impact area. The CHIA shall be sufficient to determine, for purposes of permit approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The regulatory authority may allow the applicant to submit data and analyses relevant to the CHIA with the permit application.

Definition of Terms

Applicable terms defined at §701.5

Affected Area
Aquifer
Best Technology Currently Available
Cumulative Impact Area
Disturbed Area

Drinking, domestic or residential water supply
Fugitive Dust
Ground Water
Hydrologic balance
Hydrologic regime
Imminent danger to the health and safety of the public
Irreparable damage to the environment
Material damage
Materially damage the quantity or quality of water
Recharge capacity
Replacement of water supply
Significant, imminent environmental harm to land, air, or water resources
Toxic forming materials
Water table

Permitting Requirements

Permits: General

Permit Required, §773.4. <<

All coal mining operations must obtain a permit issued by the regulatory authority.

Application Of Standards, §701.11(d).

The permanent program performance standards will apply to all permits at the earliest date a permit is required to be obtained.

Coverage Of Activities, §773.17(a).

All surface coal mining and reclamation operations will be conducted on those lands designated in the permit, (b) only as described in the approved application and (c) in compliance with all applicable performance standards.

Technical Data References, §777.13.

Technical data submitted for the application will be accompanied by the names of persons or organizations that collected and analyzed the data, dates and descriptions of the methodology. Analyses will be planned by or under the direction of a professional qualified in the subject to be analyzed.

Completeness Of Application, §777.15.

References minimum information required for an application to be considered complete. Additional information can still be required by the regulatory authority on a site by site need.

Right-Of-Entry Information, §778.15.

A description of the documents used by the applicant to establish his legal right to enter and begin mining and reclamation operations in the permit area. The description will

include any pending litigation. Where the mineral estate has been severed from the private surface estate, written consent of the surface owner or other documents establishing the operator's right to mine the coal.

Status Of Unsuitability Claims, §778.16

Available information will be provided as to whether the proposed permit area is within an area designated as unsuitable for surface coal mining and reclamation operations or is within an area under study for designation in an administrative proceeding under parts 762, 764 and 769. Supporting information for the exemption in §762.13(c) of substantial legal and financial commitments in surface coal mining operations were in existence prior to January 4, 1977 will be provided.

Permit Term, §778.17.

The application will state the anticipated or actual starting and termination date of each phase of the surface coal mining and reclamation operation and the anticipated acreage to be affected during each phase over the life of the mine.

Site Characterization

Environmental Resources, §779.11 & §783.11

A description of the existing, premining environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by mining activity.

Climate Data, §779.18 & §783.18.

Climatological information, when requested by the regulatory authority, representative of the proposed permit area such average seasonal precipitation or the average direction and velocity of prevailing winds..

Soil Resources, §779.21(a) & §783.21(a).

Adequate soil survey information will be provided for affected areas in the permit area.

General Features, §779.24 & §783.24

Land boundaries, ownerships, structures, roads and water will be shown on maps. This can include any other relevant information required by the regulatory authority.

Surface Water Movement, §779.24(g) & §783.24(g).

The locations of water supply intakes for current users of surface water flowing into, out of, and within a hydrologic area defined by the RA, and those surface waters which will receive discharges from affected areas in the proposed permit area.

Water Monitoring Stations, §779.25(a)(2) §783.25(a)(2).

The elevations and locations of monitoring stations used to gather data for water quality and quantity.

Ground Water, §779.25(a)(6) §783.25(a)(6)
Location and extent of sub-surface water, if encountered, within the proposed permit or adjacent areas.

Water, Water Bodies And Structures, §779.25(a)(7) §783.25(a)(7).
Location of surface water bodies such as streams, lakes, ponds, springs, constructed or natural drains, and irrigation ditches within the proposed permit and adjacent areas.

Identification Of Placement Areas, §779.25(a)(9) & §783.25(a)(9).
Location and dimensions of existing areas of spoil, waste, and non-coal waste disposal within the proposed permit area.

Fish And Wildlife Information, §780.16 & §784.21.
Applications will include fish and wildlife resource information for the permit area and adjacent area including species, habitats and protective measures.

Operational Plan

Material Handling, §780.11(b)(4) §784.11(b)(4).
A narrative explaining the construction, modification, use, maintenance, and removal of, among other items, spoil, coal processing waste, and non-coal waste removal, handling, storage, transportation, and disposal areas and structures.

Pollution Control, §780.11, §780.15, §780.18, §784.11, §784.13.
A narrative description of water and air pollution controls for surface mining, §780.11(b)(6) and a description of water pollution control facilities for underground mining surface facilities, §784.11(b)(6).
A control plan for fugitive dust control practices is required, §780.15.
Description of steps to comply with the requirements of the Clean Air Act, §780.18(b)(9) & §784.13(b)(9).

Hydrologic Information, §780.21 & §784.14.

- Sampling and analysis methodology
- Ground-water information
- Surface-water information
- Probable hydrologic consequences
- Cumulative hydrologic impacts: the hydrologic and geologic information necessary to access the probable cumulative hydrologic impacts for the cumulative impact area
- Modeling: Modeling techniques may be used but the regulatory authority may require the actual data used to be included.
- Alternative water source information
- Probable hydrologic consequences
- Whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies.
- Whether the proposed operation may proximately result in contamination, diminution or interruption of an underground or surface source of water within the proposed permit or adjacent areas.
- The impact on acidity, total suspended and dissolved solids and other important water quality parameters of local impact and other characteristics as required by the regulatory authority.
- Cumulative hydrologic impact assessment with relevant data and analyses from the applicant.
- Hydrologic reclamation plan.
- Ground-water monitoring plan. The application shall include a ground-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic and other information in the permit application. The plan shall provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance. It will identify the quantity and quality parameters to be monitored, sampling frequency and site locations. It shall describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. At a minimum, total dissolved solids or specific conductance corrected to 25 degree C, pH, total iron, total manganese, and water levels shall be monitored and data submitted to the regulatory authority at least every 3 months for each monitoring location. The regulatory authority may require additional monitoring.
- Surface-water monitoring plan. The application shall include a surface-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic and other information in the permit application. The plan shall provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance under the hydrologic reclamation plan as well as the effluent limitations found at 40 CFR part 434. The plan will identify the quantity and quality parameters to be monitored, sampling frequency and site locations. It shall describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. At all monitoring locations in the

surface-water bodies such as streams, lakes, and impoundments that are potentially impacted or into which water will be discharged and at upstream monitoring locations the total dissolved solids or specific conductance corrected to 25 degree C, total suspended solids, pH, total iron, total manganese and flow shall be monitored. For point-source discharges, monitoring shall be conducted in accordance with 40 CFR parts 122, 123 and 434 and as required by the National Pollutant Discharge Elimination System permitting authority. The monitoring reports shall be submitted to the regulatory authority every 3 months. The regulatory authority may require additional monitoring.

Geologic Information, §780.22 & §784.22.

Each application shall include geologic information in sufficient detail to assist in determining—1) The probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary, 2) All potentially acid- or toxic-forming strata down to and including the stratum immediately below the lowest coal seam to be mined, and 3) Whether reclamation as required can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Minimum geologic information is required including chemical analyses identifying those strata and coal seams that may contain acid- or toxic-forming or alkalinity-producing materials and to determine their content. For coal seams this includes the total sulfur and pyritic sulfur unless the regulatory authority may find that the analysis for pyritic sulfur content and alkalinity-producing materials is unnecessary. The regulatory authority may require the collection, analysis and description of geologic information in addition to that required under part 780.22(b).

Maps and Plans, §780.14 & §784.23

Proposed changes to lands affected throughout the operation will be show on the maps and plans. Some specific items are:

- Sequence of mining and reclamation, §780.14(b)(2) & §784.23(b)(2).
- Bonded areas, §780.14(b)(3) & §784.23(b)(3).
- Coal storage, topsoil, spoil, coal waste, and non-coal waste storage areas, §780.14(b)(5) & §784.23(b)(5).
- Water and Sedimentation Control, §780.14(b)(6)(11) & §784.23(b)(6)(10).
- Each source of waste and each waste disposal facility relating to coal processing or pollution control, & §784.23(b)(7).
- Air pollution collection and control facilities, §780.14(b)(7).
- Location of coal processing waste, §780.14(b)(11).

Reclamation

Timetable, §780.18(b)(1).

A detailed timetable for completing each step of the reclamation plan is required and would include CCBs when used in the process.

Backfill, §780.18(b)(3) & §784.13(b)(3).
A plan for backfilling, soil stabilization compaction and grading is needed that would include CCBs when used. The purpose is to achieve the approximate original contour of the surface.

Soil Supplements, §780.18(b)(5) & §784.13(b)(4).
A plan for revegetation will be included and under §816.22(b)(4) nutrients and amendments can be added to established the plant cover. Section §780.18(b)(4) also allows chemical and physical analyses and trials to demonstrate suitability, however full topsoil substitutes is limited by §816.22(b) to overburden materials and does not include CCBs. Also applies to underground mining permit applications under §784.13(b)(4).

Non-Coal Mine Waste, §780.18(b)(7) & §784.13(b)(7).
Description of measures to handle acid-forming and toxic-forming materials in accordance with §816.89 and §816.102. Creating a seal, encapsulation using alkaline coal combustion ash would be an example.

Pollution Control, §780.18(b)(9) & §784.13(b)(9).
Description of steps to stay in compliance with the Clean Air Act, Clean Water Act and other applicable air and water quality laws and regulations and health and safety standards.

Post-Mining Land Use, §780.23(b) & §784.15(b).
A detailed description of the proposed land use following reclamation of the land within the proposed permit area, including a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses. This will include explanation of the consideration given to making all of the proposed surface mining activities consistent with surface owner plans and applicable State and local land use plans and programs.

Hydrologic Impacts

Probable Hydrologic Consequences (PHC), §780.21(f) & §784.14(e).
The determination of probable impacts will include adverse impacts to the hydrologic balance, whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies and whether the proposed operation may proximately result in contamination, diminution or interruption of an underground or surface source of water within the proposed permit or adjacent areas which is used for domestic, agricultural, industrial or other legitimate purpose.

Cumulative Hydrologic Impact Assessment (CHIA), §780.21(g) & § 784.14(f).
The regulatory authority shall provide an assessment of the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining upon surface- and ground-water systems in the cumulative impact area.

Fugitive Dust Controls

- **Fugitive Dust Control Practices. §780.15**

Air pollution control plan for air quality monitoring depending on mine size and a decision of the regulatory authority. A plan for fugitive dust control practices, as required under 30CFR 816.95.

Address CCBs In The Permit.

- **Operation Plan: General. § 780.11.**

Each application shall contain a description of the mining operations proposed to be conducted during the life of the mine within the proposed permit area.

- **Reclamation Plan: General. §780.18.**

Each application shall contain a plan for reclamation of the lands within the proposed permit area, showing how the applicant will comply with section 515 of the Act, subchapter K of 30 CFR Chapter VII, and the environmental protection performance standards of the regulatory program.

- **Hydrologic-Balance Protection. § 816.41**

All surface mining and reclamation activities shall be conducted to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, to assure the protection or replacement of water rights, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of 30 CFR Chapter VII, subchapter K. The regulatory authority may require additional preventative, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented.

- **Toxic-Forming Materials. § 816.41(f).**

Drainage from toxic-forming materials into surface water and ground water shall be avoided by identifying and burying and/or treating, when necessary, materials which may adversely affect water quality, or be detrimental to vegetation or to public health and safety if not buried and/or treated.

Permits Revisions

- **Regulatory Authority Permit Review, § 774.10**

Every issued permit must be reviewed no later than mid term and at the end of 5 years. After the review or at any time the regulatory authority may require the permit to be revised in order to ensure compliance with the Act and the regulatory program.

- **Probable Hydrologic Consequences (PHC), §780.21(f)(4) & §784.14(e)(4).**

The regulatory authority must review and determine if a new or updated PHC will be required.

Cumulative Hydrologic Impact Assessment, §780.21(g)(2), §784.14(f)(2).
The regulatory authority must review and determine if a new or updated cumulative hydrologic impact assessment will be required.

Inspection And Enforcement

CCB placement at a SMCRA mine site is subject to the State inspection and enforcement provisions of § 842 and the Federal inspection and enforcement provisions of § 843.

Public Participation In Permits And Permit Renewals

Public Notification

Advertisement Of Permits, §773.6(a)(1). <<
Once a permit or permit renewal application is submitted, an advertisement will be placed in a local newspaper of general circulation in the locality of the proposed surface coal mining and reclamation operation at least once a seek for four consecutive weeks. A copy of the advertisement as it will appear in the newspaper shall be submitted to the regulatory authority. The advertisement must contain minimum information as given in §773.13(a)(1).

Permit Renewals, §774.15(b)(2)(iv).
A copy of the proposed newspaper notice and proof of publication of same will be included in the permit renewal.

Notification On Issuance, §773.19(b).
The regulatory authority shall issue written notification of application approval to the applicant, each person who files comments or objections to the permit application, each party to an informal conference, local government and if the regulatory authority is a State agency, the local OSM office.

Proof Of Publication, §778.21.
A copy of the newspaper advertisements of the application for a permit, significant revision of a permit, or renewal of a permit, or proof of publication of the advertisements which is acceptable to the regulatory authority shall be filed with the regulatory authority and shall be made apart of the application not later than 4 weeks after the last date of publication as required by §773.13(a)(1).

Notice Of Decision For Renewals, §774.15(e).
The regulatory authority shall 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 OSM if OSM is not the regulatory authority.

Public Availability

Accessibility Of Permits, §773.6(a)(2). <<
Permits or permit renewals will be available for the public to inspect and copy by filing a full copy of the application with the recorder at the courthouse of the county where the mining is proposed to occur or an accessible public office approved by the regulatory authority.

Comments, §773.6(b)(3)(ii). <<
The regulatory authority shall upon receipt of written comments or objections file a copy for public inspection at the same public office where the application is filed.

Availability Of Files, §773.6(d)(1). <<
Permit applications, revisions, renewals, and transfers, assignments or sales of permit rights on file with the regulatory authority are available at reasonable times for public inspection and copying. Availability can be limited by a request for confidentiality through §773.6(d)(3).

Public Comments And Objections

Comments, §773.6(b)(1). <<
Within a reasonable time established by the regulatory authority, written comments or objections may be submitted with respect to the effects of the proposed mining operations on the environment within their areas of responsibility.

Objections, §773.6(b)(2). <<
Written objections to an application for a permit, significant revision to a permit under §774.13 or renewal of a permit under §774.15 may be submitted to the regulatory authority by any person having an interest which is or may be adversely affected by the decision on the application, or by an officer or head of any Federal, State, or local government agency or authority, within 30 days after the last publication of the required newspaper notice.

Conferences, §773.6(c). <<
Any person having an interest which is or may be adversely affected by the decision on the application, or an officer or a head of a Federal, State, or local government agency, may request in writing that the regulatory authority hold an informal conference on the application for a permit, significant revision or permit renewal. The date, time, and location of the conference shall be sent to the applicant and other parties and advertised by the regulatory authority in a newspaper of general circulation in the locality of the proposed surface coal mining and reclamation operation at least 2 weeks before the scheduled conference.

Public Availability Of Monitoring/Inspection Data

Permit Files. §773.6(d). <<

Materials that are part of the permit files held by the regulatory authority are available to the public.

Availability Of Records. §840.14(b).

Copies of all records, reports, inspection materials, or information obtained by the regulatory authority shall be made immediately available to the public in the area of mining until at least five years after expiration of the period during which the subject operation is active or is covered by any portion of a reclamation bond so that they are conveniently available to residents of that area, except as otherwise provided by Federal law and for in information not required to be made available under §§772.15 and 773.13(d). The state regulatory authority can make the subject material available at a Federal, State or local government office in the county where the mining is occurring or proposed to occur. Or, at the regulatory authority's option and expense, provide copies of subject information promptly by mail at the request of any resident of the area where the mining is occurring or is proposed to occur, provided a description of the information available for mailing and the procedure for obtaining the information is available for public inspection at a Federal, State or local government office in the county where the mining is occurring or proposed to occur.

Availability Of Records. §842.16.

A repeat of §840.14(b) but with a more specific list of the types of records. This includes materials under Title V of the Act, 30 CFR Chapter VII, a Federal program or Federal lands program, and a State program being enforced by the Office under section 504(b) or 521(b) of the Act and §733 of 30 CFR Chapter VII or §§842.11 or 842.12.

Public Participation in Compliance

Public Participation. §840.16.

Each State program shall provide for public participation in enforcement of the State program consistent with that provided by 30 CFR §§842, 843, and 845 and 43 CFR §4.

A Change In Inspection Frequency. §842.11(f).

In lieu of the inspection frequency established in §842.11(c), an alternate inspection frequency can be proposed after following the procedures in (f)(1) of this section. Public notice and opportunity to comment is required in section (f)(2) with the procedures.

Requests For Federal Inspections. §842.12.

A person may request a Federal inspection under §842.11(b) by furnishing to an authorized representative of the Secretary a signed, written statement (or an oral report followed by a signed, written statement) giving the reason to believe that a violation , condition or practice referred to in §842.11(b)(1)(i) exists and that the State regulatory

authority, if any, has been notified, in writing, of the existence of the violation, condition or practice.

If a Federal inspection is conducted as a result of information provided to the Office by a person as described, the person shall be notified as far in advance as practicable when the inspection is to occur and shall be allowed to accompany the authorized representative of the Secretary during the inspection. Such person has a right of entry to, upon and through the coal exploration or surface coal mining and reclamation operation about which he or she supplied information, but only if he or she is in the presence of and is under the control, direction and supervision of the authorized representative while on the mine property. Such right of entry does not include a right to enter buildings without consent of the person in control of the building or without a search warrant.

Review Of Adequacy And Completeness Of Inspections. §842.14.
Any person who is or may be adversely affected by a surface coal mining and reclamation operation or a coal exploration operation may notify the Director or his or her designee in writing of any alleged failure on the part of the Office to make adequate and complete or periodic Federal inspections. The notification shall include sufficient information to create a reasonable belief that the regulations of this part are not being complied with and to demonstrate that the person is or may be adversely affected. The Director or his or her designee shall within 15 days of receipt of the notification determine whether adequate and complete or periodic inspections have been made. The Director or his or her designee shall furnish the complainant with a written statement of the reasons for such determination and the actions, if any, taken to remedy the noncompliance.

Siting Restrictions for Surface Coal Mining Operations

General restrictions incidental with surface coal mining unless the operator qualifies for an exemption.

Area Designated by Act of Congress. §761.11(a).
No operations in the National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, Wild and Scenic Rivers System, and National Recreation Areas designated by Act of Congress.

National Forest. §761.11(b).
No operations on any Federal lands within a national forest unless the Secretary finds that there are no significant values that may be incompatible with surface coal mining operations and the exemptions of items (1) & (2).

National Register of Historic Places. §761.11(c).
Operations are restricted for any lands where the operation would adversely affect any publicly owned park or any place in the National Register of Historic Places unless all agencies with jurisdiction give approval.

Public Roads. §761.11(d).
Operations will not occur within 100 feet of any public road unless exemptions apply or the given procedures are followed.

Occupied Dwellings. §761.11(e).
Operations will not occur within 300 feet of any occupied dwelling unless exemptions apply.

Public Buildings. §761.11(f).
Operations will not occur within 300 feet of any public building, school, church, community or institutional building or public park unless exemptions apply.

Cemetery. §761.11(g).
Operations will not occur within 300 feet of a cemetery. This prohibition does not apply if the cemetery is relocated in accordance with all applicable laws and regulations.

Surface Protections From Underground Coal Mining Operations

Protection of Publicly Owned Parks and Historic Places. § 784.17.
Any publicly owned parks or places listed on the National Register of Historic Places that may be adversely affected by the proposed operation shall describe in the underground mining permit application the measures to be taken to prevent or minimize adverse impacts. Measures may be required for protection through appropriate mitigation and treatment measures.

Subsidence Minimization. §784.20(b)(5).
The subsidence control plan, except for areas where planned subsidence is projected to be used, will describe the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage. The measures used could be backstowing or backfilling of voids.
Note: The use of sand-cement-fly ash mixtures is accepted to mitigate subsidence and stabilize abandoned mine openings. Fly ash increases the flowability of grout. ["Site development over an abandoned coal mine," Mining Engineering, vol. 52, no. 10, pp. 31-33. October 2000.] While backstowing or backfilling of voids is not a standard operation during coal mining, it should not be ruled out for the future.

Special Categories Of Mining

Experimental Practices. §785.13
Experimental practice encourages advances in mining and reclamation technology or allows a postmining land use for industrial, commercial, residential, or public use on an experimental basis. The application shall show that the experimental practice is potentially more, or at least as, environmentally protective, during and after mining operations, as would otherwise be required. And that the practice will not reduce the

protection afforded public health and safety below the requirements of the permanent program performance standards.

Bonding

Bonding: General

Period Of Liability. § 800.13
Performance bond liability will be for the duration of the surface coal mining and reclamation operation and for a period which is coincident with the operator's period of extended responsibility for successful revegetation provided in §816.116 or §817.116 or until achievement of the reclamation requirements of the Act, regulatory programs, and permit, which ever is later.

Determination Of Bond Amount. § 800.14
The bond amount will be determined by the regulatory authority and depend on the requirements of the approved permit and reclamation plan to reflect the probable difficulty of reclamation. The amount shall be sufficient to assure the completion of the reclamation plan if the work has to be performed by the regulatory authority.

Bonding Period In Relation To Revegetation.

Good Annual Precipitation. §816.131(2)(i).
In areas of more than 26.0 inches of annual average precipitation, the period of responsibility shall continue for not less than five full years, with the exception in §816.131(2)(ii) for remining.

Low Annual Precipitation. §816.131(3)(i).
In areas of less than 26.0 inches of annual average precipitation, the period of responsibility shall continue for not less than ten full years, with the exception in §816.131(3)(ii) for remining.

Performance Standards

Water Protection

Hydrologic-Balance Protection. §816.41(a), §817.41(a).
All mining and reclamation activities shall be conducted to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, to assure the protection or replacement of water rights, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards in 30 CFR Chapter VII, subchapter K. The regulatory authority may require additional preventative,

remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented.

Ground Water Protection. §816.41(b)., §817.41(b).
Earth materials and runoff will be handled in a manner that minimizes acidic, toxic, or other harmful infiltration to ground-water systems and by managing excavations and other disturbance to prevent or control the discharge of pollutants into the ground water.

Ground Water Monitoring. §816.41(c) , §817.41(a).
Ground-water monitoring is required based on the plan approved under §780.21(i) or §784.14(h). The operator is required to develop a ground-water monitoring plan based on the PHC determination and relevant information appearing in the permit application. It must provide for the monitoring of parameters that relate to the suitability of the ground-water for current and approved postmining uses and to the objectives set forth in the hydrology reclamation plan. The monitoring plan must identify the quantity and quality parameters, sampling frequency and site locations. It must describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. Data will be submitted every three months unless more frequently prescribed by the regulatory authority. Data reporting is required at least every three months and the Regulatory Authority may require additional monitoring when necessary.

Surface Water Protection. §816.41(d)., §817.41(d).
Water quality shall be protected by handling earth materials, ground-water discharges and runoff in a manner that minimizes the formation of acidic or toxic drainage; prevent, to the extent possible using the best technology currently available, additional contribution of suspended solids to streamflow outside the permit area; and otherwise prevent water pollution.

Surface Water Monitoring. §816.41 (e), §817.41(d).
Surface water monitoring is required based on the plan approved under §780.21(j). The operator's plan will be based on the PHC determination, and analysis of the baseline hydrologic, geologic and other relevant information included in the permit application. The plan must relate to the suitability of the surface water for current and approved postmining land uses, to the objectives set forth in the hydrologic protection plan under paragraph (h), and to U.S. Environmental Protection Agency effluent limitations found at 40 CFR Part 434. The monitoring plan must identify the quantity and quality parameters, sampling frequency and site locations. It must describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. Data will be submitted every three months unless more frequently prescribed by the regulatory authority. Data reporting is required at least every three months and the Regulatory Authority may require additional monitoring when necessary.

Water Rights and Replacement, § 816.41(h) & 817.41(j)
Requirements for replacement of water supply where that supply has been adversely impacted resulting from surface mining activities.

Discharges To Underground Mines. §816.41(i) & §817.41(h).
Discharges into an underground mine are prohibited, unless specifically approved by and it can be demonstrated to the satisfaction of the regulatory authority that the discharge will minimize disturbance to the hydrologic balance on the permit area, prevent material damage outside the permit area, meet with the approval of the Mine Safety and Health Administration, not violate applicable water-quality standards and effluent limitations, be of known quality and quantity and meet the effluent limitations in §§ 816.42 and 817.42 for pH and total suspended solids. The CCB related materials listed are fly ash from a coal-fired facility and flue-gas desulfurization sludge.

Water Quality Standards And Effluent Limitations, §816.42.
Discharges of water from areas disturbed by surface mining activities shall be made in compliance with all applicable State and Federal water quality laws and regulations and with the effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR part 434.

Diversions, §816.43.
With the approval of the regulatory authority, any flow from mined areas abandoned before May 3, 1978 and any flow from undisturbed areas or reclaimed areas, after meeting the criteria of §816.46 for siltation structure removal, may be diverted from disturbed areas by means of temporary or permanent diversions. All diversions shall be designed to minimize adverse impacts to the hydrologic balance within the permit and adjacent areas, to prevent material damage outside the permit area and to assure the safety of the public.

Non-Coal Mine Waste, §816.89.
Non-coal 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 shall be placed and stored in a controlled manner in a designated portion of the permit area. Placement and storage shall ensure that leachate and surface runoff do not degrade surface or ground water, that fires are prevented, and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings. Final disposal of noncoal mine wastes shall be in a designated disposal site in the permit area or a State-approved solid waste disposal area. Disposal sites in the permit area shall be designed and constructed to ensure that leachate and drainage from the noncoal mine waste area does not degrade surface or underground water. Wastes shall be routinely compacted and covered to prevent combustion and wind-borne waste. When the disposal is completed, a minimum of 2 feet of soil cover shall be placed over the site, slopes stabilized, and revegetation accomplished in accordance with §§816.111 through 816.116. Operation of the disposal site shall be conducted in accordance with all local, State and Federal requirements. At no time shall any noncoal mine waste be deposited in a refuse pile or impounding structure, nor shall an excavation for a noncoal mine waste disposal site be located within 3 feet of any coal outcrop or coal storage area.

Fugitive Dust Control

Non-Coal Mine Waste, §816.89.
Wastes shall be routinely compacted and covered to prevent wind-borne dust.

Stabilization Of Surface Areas. §816.95(a), §817.95(a).
All exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion.

Road Dust. §816.150(b)(1), §817.150(b)(1).
Control or prevent erosion and air pollution including road dust as well as 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.

Reclamation.

Non-Coal Mine Waste, §816.89.
Placement and storage shall ensure that leachate and surface runoff do not degrade surface or ground water and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings. Completed reclamation will have a minimum of 2 feet of soil cover over the site, slopes stabilized, and revegetation accomplished in accordance with §§816.111 through 816.116.

Stabilization of Surface Area, §816.95
Exposed surface areas must be protected from wind and water erosion with requirements that areas that develop rills and gullies be regraded and stabilized, the topsoil replaced and the areas reseeded or replanted.

Approximate Original Contour. §816.102(a), §817.102(a).
Disturbed areas shall be backfilled and graded to achieve the approximate original contour to eliminate highwalls, spoil piles, and depressions. This will also be done to minimize erosion and support the approved postmining land use. The use of fill material from outside the permit is not discussed and not precluded.

Compaction. §816.102(c), §817.102(c).
Spoil and waste materials shall be compacted where advisable to ensure stability or to prevent leaching of toxic materials.

Encapsulation. §816.102(f), §817.102(f).
Acid and toxic forming material exposed, used or produced during mining will be adequately covered with nontoxic and noncombustible material or treated to control the impact on surface and ground water in accordance with §816.41 and to minimize adverse effects on plant growth and the approved postmining land use. An alkaline ash can be use to treat an acid forming shale in the overburden.

Thin Overburden. §816.104.

Thin overburden means insufficient spoil and other waste materials available from the entire permit area to restore the disturbed area to its approximate original contour. The expectation was that no material would be available for addition. This part does not say to go out and find some coal ash. It does point out the adjustment required for a lack of material and that the goal of approximate original contour, when it can be attained, is the expectation.