Coal Combustion By-Products Minefill Regulatory Concerns

SIDE BY SIDE COMPARISON RCRA TO SMCRA
Unofficial Draft prepared by Kimery Vories and Randall Mills

RCRA References	SMCRA References
I. Ground Water Monitoring The owner/operator is to monitor ground water on-site to detect adverse impacts of ash placement on on-site ground water such that the owner/operator will have opportunity to intervene to avoid adverse impacts on off-site users and uses of ground water, including users and uses of surface waters affected by ground water.	**I. Ground Water Monitoring** A ground water monitoring program should be done against a backdrop of site-specific background data. For that reason, extensive information is required on the hydrologic and geologic conditions of a proposed permit site. This information includes existing wells, seasonal rainfall amounts, stream flows, groundwater levels and other items that can be used in modeling and predicting impacts to the permit area and adjacent areas during and after mining. This is the probable hydrologic consequences (PHC) part of the permit document. The regulatory authority, as part of the process, is then required to provide a cumulative hydrologic impact assessment (CHIA). The information collected allows determination of a site-specific monitoring plan for ground water and surface waters. Rather than using a "one size fits all" approach that may under sample one permit while over sampling another, the monitoring program can fit the site and the situation as known. All known factors are required to be included in the PHC determination and the CHIA. Therefore, coal combustion byproduct placement as minefill is required in the analysis with adjustments to ground water monitoring on a site-specific basis. ***SMCRA References: 30 CFR*** *Part 777.15 – Completeness Of Application* *Parts 779.11, 783.11 – Environmental Resources* *Parts 779.18, 783.18 – Climatological Information*

	Parts 779.21(a), 783.21(a) – Soil Resources *Parts 779.24, 783.24 – General Features* *Parts 779.24(g), 786.24(g) – Surface Water Movement* *Parts 779.25(a)(6), 783.25(a)(6) – Ground Water* *Parts 779.25(a)(7), 783.25(a)(7) – Surface Water Bodies And Structures* *Parts 779.25(a)(9), 783.25(a)(9) – Identification Of Placement Areas* *Parts 780.21, 784.14 – Hydrologic Information* *Parts 780.22, 784.22 – Geologic Information* *Parts 780.21(f) & 784.14(e) – Probable Hydrologic Consequences* *Parts 780.21(g) & 784.14(f) – Cumulative Hydrologic Impact Assessment*
A. Well Design and Deployment: The purpose of monitoring wells is to allow the acquisition of ground-water samples from which adverse impacts on ground water could be detected. Wells too few in number or which are located or screened in the wrong horizontal or vertical planes may fail to produce samples that adequately characterize impacts on ground water. Location is critical to the ability to detect effects of ash placement before the effects can spread widely, thereby adversely affecting current or future uses of the water resource. ***RCRA References:*** *Part 258.51(a), (c), and (d) – Well design an deployment*	A. Well Design and Deployment: The required ground water monitoring (**including well design, installation, sampling, and maintenance**) is permit specific. A ground water monitoring plan is required that is based on the PHC determination and the analysis of **all** (**all includes all coal combustion material (CCB) placement**) hydrologic, geologic, and other information in the permit application. The plan must provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved post-mining uses. The plan shall provide for the monitoring of parameters (**including parameters necessary to evaluate the impact of CCB placement**) that relate to the suitability of the ground water for current and approved post-mining 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. The data is to be submitted to the RA at least every 3 months for each monitoring location. All water quality analysis must be conducted according to the methodology of the 15th edition of "Standard Methods for the Examination of Water and Wastewater," or the methodology of 40 CFR Parts 136 and

	434. The RA may require additional monitoring [30 CFR 780.21 and 816.41(c)]. The OSM technical reference on Permitting Hydrology outlines the detailed well information required for all ground water baseline information used to determine the PHC. ***SMCRA References: 30 CFR*** *Part 780.21 Hydrologic Information* *Parts 780.21(i), 784.14(h) – Ground Water Monitoring Plan* *Parts 816.41(c), 817.41(a) – Ground Water Monitoring* *Parts 780.23(b), 784.15(b) – Post-Mining Land Use*
B. Parameters: Samples are to be analyzed for specific constituents, which will detect and define adverse impacts on ground water and for which valid statistical comparisons can be made among well samples to detect adverse impacts. Of particular concern in defining and detecting adverse impacts are the 8 metals, which define the RCRA toxicity characteristic (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Additionally, boron and aluminum are of concern because they are often associated with ash. ***RCRA References:*** *Part 261.24 – Toxicity characteristic metals*; *Part 258.54(a) and Appendix I – Monitoring parameters*	B. Parameters: The required ground water monitoring (including identification of parameters) is permit specific. The plan must provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved post-mining uses. The plan shall provide for the monitoring of parameters (**including parameters necessary to evaluate the impact of CCB placement**) that relate to the suitability of the ground water for current and approved post-mining land uses and to the objectives for protection of the hydrologic balance. Based on the PHC, it must identify the quantity and quality parameters to be monitored, sampling frequency, and site locations (**including the parameters necessary to evaluate the impact of CCB placement)**. It shall describe how the data may be used to determine the impacts (**including the potential toxicity levels of any CCB specific parameters that would impact the use of the ground water)** of the operation upon the hydrologic balance. The data is to be submitted to the RA at least every 3 months for each monitoring location. The RA may require additional monitoring [30 CFR 780.21 and 816.41(c)]. **SMCRA References: 30 CFR** Parts 780.21(i), 784.14(h) – Ground Water Monitoring Plan

	Parts 816.41(c), 817.41(a) – Ground Water Monitoring Part 780.21 – Hydrologic Information Parts 780.23(b), 784.15(b) – Post-Mining Land Use
C. Frequency: Samples are to be acquired and analyzed at a frequency, which will provide early warning of adverse impacts on water use. Without regulation, samples may be obtained so infrequently as to allow adverse impacts to go undetected, thereby jeopardizing off-site users/uses. The owner/operator may use ground water flow and attenuation studies to seek re-definition of the sampling frequency. ***RCRA References:*** *Part 258.53(c) and (f) and Part 258.54(b) – Monitoring frequency*	C. Frequency: The required ground water monitoring (including frequency of sampling) is permit specific. The ground water monitoring plan will identify the quantity and quality parameters to be monitored, sampling frequency, and site locations (**including the sampling frequency necessary to evaluate the impact of CCB placement)**. It shall describe how the data may be used to determine the impacts (**including the frequency of sampling of any CCB specific parameters that would impact the use of the ground water)** of the operation upon the hydrologic balance. The data is to be submitted to the RA at least every 3 months for each monitoring location. The RA may require additional monitoring [30 CFR 780.21 and 816.41(c)]. ***SMCRA References: 30 CFR*** *Parts 780.21(i), 784.14(h) – Ground Water Monitoring Plan* *Parts 816.41(c), 817.41(a) – Ground Water Monitoring*
D. Duration: Samples are to be acquired and analyzed over the time period for which the effects on ground water from ash placement could be reasonably expected to be measured or observed; i.e., considering aquifer recharge times and rate of migration of ground water through and away from the placed ash. This time period may extend beyond the completion of reclamation and the time of bond release for the overall mine site (see Section IX, below, on Post-closure maintenance). Where the owner/operator can demonstrate that there is no longer a potential for adverse impacts from the placed ash, monitoring may cease. ***RCRA References****: Part 258.50(b) – Suspension of monitoring; Part 258.61(a), (b), and (e) – Duration*	D. Duration: 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 (10 years after establishment of vegetation in areas with less than 26" precipitation; 5 years after establishment of vegetation in areas with more than 26" precipitation) or until achievement of the reclamation requirements of the Act, regulatory programs, and permit, which ever is later (this would include determination of compliance with the hydrologic performance standards at 30 CFR 816.41(a, b, and h) and 816.42. Performance

of post-closure period	standards related to the protection of ground water must include that 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 the approved post-mining land uses in accordance with the terms and conditions of the approved permit. Any person who conducts surface mining activities shall replace the water supply of an owner of 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, where the water supply has been adversely impacted by contamination, diminution, or interruption proximately (defined as a result that directly produces and event and without which the event would not have occurred) resulting from the surface mining activities. 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. EPA set forth in 40 CFR Part 434. ***SMCRA References: 30 CFR*** *Part 800.13 – Period Of Liability* *Parts 816.131(2)(i) & (3)(i) – Bonding Period And Annual Precipitation* *Parts 816.41(a),(b) & (h) – Hydrologic-Balance Protection* *Part 816.42 – Water Quality Standards And Effluent Limitations*

II. Performance Standards Regulations can require compliance with either specific operating practices or performance standards. Where operating practices (which include practices for design and construction operations, as well as practices for operation of the facility) are specified, the owner/operator is restricted to the specified practices. Where performance standards are specified, the owner/operator has flexibility to use creative design, construction, and operational approaches and need only be concerned with compliance with the performance level specified. For minefill practices, the performance standard approach is preferred in order to allow increased flexibility. Performance standards are specified here for ground-water impacts only.	**II. Performance Standards** 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 (defined as a loss of physical property) to the hydrologic balance outside the permit area, to assure the protection or replacement of water rights (assure the continuation of pre-mining water use either by leaving it unchanged or by replacement), and to support the approved post-mining land uses in accordance with the terms and conditions of the approved permit. Any person who conducts surface mining activities shall replace the water supply of an owner of 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, where the water supply has been adversely impacted by contamination (a change in water quality that would render it no longer acceptable for the pre-mining use), diminution, or interruption proximately (defined as a result that directly produces and event and without which an event would not have occurred) resulting from the surface mining activities. Earth materials and runoff will be handled in a manner that minimizes (any effect of mining and reclamation would be at a level that would reduce the pre-mining potential for use of the resource) 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. 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. EPA set forth in 40 CFR Part 434 [30 CFR

	816.41 and 816.42] ***SMCRA References: 30 CFR*** *Part 701.11(d) – Application Of Standards* *Parts 816.41 – Hydrologic-Balance Protection* *Parts 816.41(h), 817.41(j) – Water Rights And Replacement* *Part 816.42 – Water Quality Standards And Effluent Limitations* *Parts 816.95 – Stabilization Of Surface Area* *Part 780.18(b)(9) – Description Of Pollution Control* *Part 780.15 – Fugitive Dust Control Practices*
A. Maximum Contaminant Levels (MCLs): For the 8 RCRA "toxicity characteristic" metals listed in item I.B. above, the MCLs specified under the Safe Drinking Water Act serve as the ground-water performance standard for mine placement of ash. The facility is to be operated so that it does not cause ground-water quality to exceed the MCLs. The point at which compliance is demonstrated is to be no more than 150 meters from the ash placement boundary and located on the facility property. ***RCRA References:*** *Part 141 – MCLs; Part 258.40(d) – Point of compliance; Part 258.2 – Definition of "boundary"*	A. Maximum Contaminant Levels (MCLs): 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. EPA set forth in 40 CFR Part 434. The ground water monitoring plan included in the mine permit shall provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved post-mining land uses and to the objectives for protection of the hydrologic balance set forth in 30 CFR §780.21(h). It shall 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 degrees C, pH, total iron, total manganese, and water levels shall be monitored and data submitted to the regulatory authority at least every three months for each monitoring location. The regulatory authority may require additional monitoring. See also, I.A. Parameters and II. Performance Standards. **SMCRA References: 30 CFR** Part 780.21(i) – Ground-Water Monitoring Plan Part 816.41 – Hydrologic-Balance Protection Part 816.42 – Water Quality Standards And Effluent Limitations

B. Non-degradation: There are likely to be situations where the facility owner/operator can demonstrate that ground water within 150 meters of the outermost boundary of placed ash or for potential placement of ash exceeds the MCLs solely for reasons other than impact of the ash; i.e., background levels attributable to prior mining activity or some up-gradient phenomenon unrelated to ash placement. Where this situation exists, the measured high background levels would be an affirmative defense for measured exceedences of the MCL performance standards. In such cases, the performance standard would be no degradation beyond the measured high background levels, rather than no exceedence of the MCLs. ***RCRA References:*** *Part 258.53(e) – Statistical procedures for detecting contamination; Part 258.40(d) – Point of compliance; Part 258.2 – Definition of "boundary"*	B. Non-degradation: See II and IIA above.

III. Prohibitions Because of the permanent, irreversible nature of mine placement of ash, and the more fragile character of certain environments, specific prohibitions are appropriate to protect human health and the environment.	**III. Prohibitions** No permit application or application for a significant revision of a permit shall be approved unless the applicant affirmatively demonstrates and the regulatory authority (RA) 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: (1) the application is complete and accurate and that the applicant has complied with all requirements of the Act and regulatory program; (2) the applicant has demonstrated that reclamation as required by the Act and the regulatory program can be accomplished under the reclamation plan contained in the permit; and (3) the RA has made an assessment of the Probable Cumulative Impacts of all anticipated coal mining on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. ***SMCRA References: 30 CFR*** *Part 773.15 – Written Findings For Permit Application Approval.*
A. Aquifer Avoidance: Ash is not to be placed in direct contact with an aquifer unless the owner/operator can demonstrate in advance that placement will have no adverse impact on ground-water quality. As in 40 CFR Part 259, "aquifer" means a geologic formation, group of formations, or portion of a formation capable of yielding significant quantities of ground water to wells or springs. ***RCRA References:*** *Part 258.2 – Definition of "aquifer"*	A. Aquifer Avoidance: An aquifer is defined as a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use. See II. Performance Standards and IV. Permitting/Planning. ***SMCRA References: 30 CFR*** *Part 701.05 – Definitions*
B. Unacceptable Ash Characteristics: Ash characteristics vary as a result of coal composition and combustion practices. Ash may demonstrate characteristics,	B. Unacceptable Ash Characteristics: Toxic-forming materials are defined as earth materials or wastes which, if acted upon by air, water, weathering, or

which indicate that they are not compatible with mine placement. When characterized by the method described below, ash, which produced an unacceptable leachate quality is not to be placed in mines. Unacceptable leachate quality may be defined as exceeding the MCLs for the 8 RCRA toxicity characteristic metals identified in item I.B., above, and/or exceeding appropriate limits for other constituents of concern, such as boron and aluminum. 1. Method: To test ash for unacceptable characteristics, the ash is to be subjected to a 30-day leaching by water representative of the ground water to which the ash would be exposed at the mine. 2. Frequency: Ash received for mine placement shall be tested for unacceptable characteristics every 6 months and when the source of coal or combustion changes. ***RCRA References:*** *Part 261.24 – Toxicity characteristic metals; Part 141 - MCLs*	microbiological processes, are like to produce chemical or physical conditions in soils or water that are detrimental to biota or uses of water. Mine operations must conduct their activities to minimize disturbance of the hydrologic balance within the permit and adjacent areas, prevent material damage to the hydrologic balance outside the permit area, assure the protection or replacement of water rights, and support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards in 30 CFR Ch. VII, subchapter K. Encapsulation can be used for acid and toxic forming material exposed, used or produced during mining. This material must be adequately covered with nontoxic material or treated to control the impact on surface and ground water to minimize adverse effects on plant growth and the approved postmining land use. EPA made a site visit to a mine near Morgantown, WV in September 2000 that used an alkaline coal combustion ash to encapsulate and treat an acid forming shale. Application of the requirements for a SMCRA permit allowed the problem to be identified and a known solution to be used. SMCRA was written to deal with the severe environmental problems caused by unregulated mining. And, like the Resource Conservation and Recovery Act it has worked well. See also, II. Performance Standards and IV. Permitting/Planning. ***SMCRA References: 30 CFR*** *Part 816.41(f) – Toxic-Forming Materials* *Parts 816.102(f), 817.102(f) – Encapsulation* *Parts 780.21, 784.14 – Hydrologic Information* *Parts 780.22, 784.22 – Geologic Information* *Parts 780.21(f) & 784.14(e) – Probable Hydrologic Consequences*

	Parts 780.21(g) & 784.14(f) – Cumulative Hydrologic Impact Assessment *Part 816.41 – Hydrologic-Balance Protection* *Part 816.42 – Water Quality Standards And Effluent Limitations*
C. Location Restrictions: Due to their particular sensitivities, sites of specific characteristics are not amenable to the permanent and irreversible nature of ash placement and cannot be used for ash placement. 1. Flood Plain: Because they are more prone to washout, areas within the 100-year flood plain are not appropriate for ash placement. Furthermore, placement in the 100-year flood plain could dangerously restrict the flow of waters at the 100-year or more frequent design level and/or reduce the storage capacity of the flood plain so as to pose a hazard to human health or the environment. 2. Wetlands: Wetlands are sensitive areas of surface water, which often serve as habitats of protected species. At mine sites ash is not to be placed in surface water or wetland in violation of State or Federal law or in a manner that would jeopardize an endangered or threatened species or critical habitats or in a manner that would degrade wetlands. 3. Fault Areas: It is not possible to project how ash placed in a mine site would react when subjected to major ground disturbances characterized by faults. Because of the potential for fault movements to expose ash to unanticipated forces (e.g., surface water flows and washout) and subsequently jeopardize human health or the environment, ash is not to be placed within 60 meters of faults that have experienced displacement during	C. Location Restrictions: Each permit application must include a description of the existing, pre-mining environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by the proposed surface mining activities. The permit application must include the following baseline information upon which the mining and reclamation plan must be based: • General Environmental Resources Information including the cultural, historic, and archeological resources, 30 CFR §779.12. • Climatic Information, 30 CFR §779.18. • Vegetation Information, 30 CFR §779.19. • Soils Resource Information, 30 CFR §779.21. • Maps: General Requirements, 30 CFR §779.24. • Cross sections, maps and plans, 30 CFR §779.25. • Fish and Wildlife Resources, 30 CFR §779.16. • Hydrologic Information, 30 CFR §780.21, (including flood plains, critical receptors such as water wells, dams, streams, water intake structures, and wetlands) including: o Sampling and Analysis methodology o Ground water and surface water baseline information o Cumulative impact area information o Modeling or statistical analysis may be required o Alternate water sources o PHC

the Holocene Epoch. 4. Seismic Impact Zones: Seismic movements can cause ash to unexpectedly contact surface or ground waters, with subsequent harm to human health or the environment. To help avoid this, ash is not be placed in seismic impact zones. These are areas having a 10 percent or greater probability that the maximum expected horizontal acceleration of hard rock, expressed as a percentage of the earth's gravitation pull (g), will exceed 0.10g in 250 years. 5. Unstable Areas: Placement of ash in unstable areas can cause unexpected exposure of ash to ground or surface waters, with subsequent harm to human health or the environment. To help avoid this, ash is not to be placed in unstable areas. Unstable areas are locations susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the natural or artificial components responsible for preventing releases from the ash placement. Unstable areas can include: poor foundation conditions, locations near blasting events, areas susceptible to mass movements, and Karst terrains. 6. Proximity to Critical Receptors: Nearby users of surface and ground waters, which could be adversely impacted by ash placement are of particular concern. In this context, the definition of the term "nearby" is variable and depends on hydrologic characteristics of the area and the dynamics of possibly multiple, human-induced pumping cones. Owners/operators of ash	o CHIA o Hydrologic reclamation plan o Surface and Ground water monitoring plan • Geologic Information, 30 CFR §780.22, including: o PHC o All potential acid and toxic forming strata to just below coal seam o Description of the geology (Detailed guidance is given in the OSM Permitting Hydrology reference including structural geologic features such as folding and faulting, strike and dip, and joints and fractures related to Fault areas, Seismic Impact Zones, and Unstable areas) in the proposed permit and adjacent areas down to just below the coal seam or any lower aquifer impacted by mining. The description shall include the area and structural geology of the permit and adjacent areas, and other parameters which influence the required reclamation and the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water based on information collected in 30 CFR 779 and: ▪ Geologic literature. ▪ Analysis of samples collected from test borings and drill cores down to just below the coal seam or to the lowest aquifer affected by mining. ▪ Logs showing the

mine placement facilities are to conduct site-specific hydrologic studies to demonstrate how the practice will avoid placing nearby users in jeopardy. ***RCRA References:*** *Part 258.11 - Flood plains; Part 258.12- Wetlands; Part 258.13 - Fault areas; Part 258.14 – Seismic impact zones; Part 259.15 – Unstable areas*	lithologic characteristics of each stratum and related ground water. ▪ Chemical analysis of any acid, alkaline, or toxic strata including total and pyretic sulfur. ▪ The RA may require additional information necessary to protect the hydrologic balance or meet the performance standards.

IV. Planning/Permitting Institutionalized processes need to be in place to provide protection of human health and the environment.	**IV. Planning/Permitting** During the course of OSM's investigation into the placement of CCBs at mine sites, presentations by the environmental community and EPA staff have demonstrated a misconception that SMCRA based regulatory programs do not protect the environment. In fact, the Surface Mining Control and Reclamation Act (SMCRA) of 1977 was the result and in answer to severe problems caused by irresponsible mining practices. The SMCRA based programs require the permitting of coal mining operations, plans to address safeguarding environmental resources, plans showing preparations for mining, plans for the ongoing mine operations and plans for mine closure, reclamation and post-mining land use. Mining is recognized as a temporary land use that must not impair future use of the land. The following are purposes given in the Act (30 U.S.C. 1202) showing a bias for environmental protection and post-mining land uses: • 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. • 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. • 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. **SMCRA References:** **PL 95-87** Section 102 **30 CFR** Part 701.11(d) – Application Of Standards Part 773 – Permits And Permit Processing Requirements Part 777.15 – Completeness Of Application Part 778.17 – Permit Term Part 779.11 – Characterization Of Environmental Resources Part 779.1, 780.1, 783.1, 784.1 – Scope Of Requirements For Permit Application. Parts 779.2, 780.2, 783.2, 784.2 – Objectives Of Informational Requirements For Permitting.
A. <u>Acid-Base Balance:</u> Where ash is placed for the purpose of providing a source of alkalinity to counteract a known acidic water environment, the owner/operator is to calculate an acid-base balance to demonstrate that, for the design life, the ash will provide adequate alkalinity to irreversibly achieve the intended acid mitigation. ***RCRA References:*** *None, generally not applicable to RCRA waste management units.*	A. <u>Acid-Base Balance:</u> 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 (defined as a loss of physical property) to the hydrologic balance outside the permit area, to assure the protection or replacement of water rights (assure the continuation of pre-mining water use either by leaving it unchanged or by replacement), and to support the approved post-mining land uses in accordance with

	the terms and conditions of the approved permit. Any person who conducts surface mining activities shall replace the water supply of an owner of 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, where the water supply has been adversely impacted by contamination (a change in water quality that would render it no longer acceptable for the pre-mining use), diminution, or interruption proximately (defined as a result that directly produces and event and without which the event would not have occurred) resulting from the surface mining activities. Earth materials and runoff must be handled in a manner that minimizes (any effect of mining and reclamation would be at a level that would reduce the pre-mining potential for use of the resource) 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. 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. EPA set forth in 40 CFR Part 434. In order to protect the hydrologic balance, surface mining activities shall be conducted according to the hydrologic reclamation plan approved at 780.21(h) and ground water quality shall be protected by handling earth materials (**including CCBs**) and runoff in a manner that minimizes acidic, toxic, or other harmful infiltration to ground water systems and by managing excavations and other disturbances to prevent or control the discharge of pollutants into the ground water. Drainage

	from acid- and toxic-forming materials into surface water and ground water shall be avoided by identifying and burying and/or treating, when necessary, material which may adversely affect water quality or be detrimental to vegetation or to public health and safety, if not buried and/or treated. During back filling and grading, exposed coal seams, acid- and toxic-forming materials…. exposed, used, or produced during mining shall be adequately covered with nontoxic and non combustible material, or treated, to control the impact on surface and ground water in accordance with the hydrologic performance standards of 816.41 and to minimize adverse effects on plant growth and the approved post-mining land use [30 CFR 816.102]. **CCB (ash) characterization and leach testing would be required when the permit application involved CCB placement** under the provisions of 30 CFR 780.21(f) for the determination of the probable hydrologic consequences provisions that require baseline hydrologic, geologic and other information in order to support the PHC findings on whether acid- or toxic-forming materials are present that could result in the contamination of surface or ground water supplies. **SMCRA References: 30 CFR** Part 816.41 – Hydrologic-Balance Protection Part 816.42 – Water Quality Standards And Effluent Limitations Parts 780.21(h), 784.14(g) – Hydrologic Reclamation Plan Parts 816.102, 817.102 – Backfilling And Grading: General Requirements Parts 780.21(f), 784.14(e) – Probable Hydrologic Consequences Determination
B. Deed Recordation: The owner/operator is to ensure that official land records note the locations and dates for all ash placement on all portions	B. Deed Recordation: The SMCRA permit would be required to show the location of CCB placement areas. These maps are public information. The

of the property, particularly where the property may be subdivided for future use. ***RCRA References:*** *Part 258.60(i) Deed recordation*	procedure of making a deed recording is normally done to record a type of deed restriction. SMCRA requires that mining and reclamation be conducted in a manner that restores the land affected to a condition capable of supporting the uses which it was capable of supporting prior to mining, or higher or better uses [30 U.S.C. 1265 Section 515(b)(2)]. Under this scenario, there would be no need for deed restrictions. ***SMCRA References: 30 CFR*** *Parts 780.14, 784.23 – Map Requirements* *Part 773.6 – Public Participation In Permit Processing* *Parts 773.6, 840.14, 842.16 – Availability of Records* *Parts 780.23, 784.15 – Reclamation Plan: Postmining Land Use* *Parts 816.133, 817.133 – Postmining Land Use*
C. Baseline Monitoring: Prior to placing ash at a mine site, ground water monitoring is to be conducted to establish "baseline" conditions for comparison with future monitoring data. This will aid in detection of any adverse impacts. ***RCRA References:*** *Part 258.53(3) Establishing background*	C. Baseline Monitoring: Each permit application must include a description of the existing, pre-mining environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by the proposed surface mining activities. The permit application must include the following baseline information upon which the mining and reclamation plan must be based: • General Environmental Resources Information including the cultural, historic, and archeological resources, 30 CFR §779.12. • Climatic Information, 30 CFR §779.18. • Vegetation Information, 30 CFR §779.19. • Soils Resource Information, 30 CFR §779.21. • Maps: General Requirements, 30 CFR §779.24. • Cross sections, maps and plans, 30 CFR §779.25. • Fish and Wildlife Resources, 30 CFR

	§779.16. • Hydrologic Information, 30 CFR §780.21, (including flood plains, critical receptors such as water wells, dams, streams, water intake structures, and wetlands) including: o Sampling and Analysis methodology o Ground water and surface water baseline information o Cumulative impact area information o Modeling or statistical analysis may be required o Alternate water sources o PHC o CHIA o Hydrologic reclamation plan o Surface and Ground water monitoring plan • Geologic Information, 30 CFR §780.22, including: o PHC o All potential acid and toxic forming strata to just below coal seam o Description of the geology (Detailed guidance is given in the OSM Permitting Hydrology reference including structural geologic features such as folding and faulting, strike and dip, and joints and fractures related to Fault areas, Seismic Impact Zones, and Unstable areas) in the proposed permit and adjacent areas down to just below the coal seam or any lower aquifer impacted by mining. The description shall include the area and structural geology of the permit and adjacent areas, and other parameters which

	influence the required reclamation and the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water based on information collected in 30 CFR 779 and: ▪ Geologic literature. ▪ Analysis of samples collected from test borings and drill cores down to just below the coal seam or to the lowest aquifer affected by mining. ▪ Logs showing the lithologic characteristics of each stratum and related ground water. ▪ Chemical analysis of any acid, alkaline, or toxic strata including total and pyretic sulfur. ▪ The RA may require additional information necessary to protect the hydrologic balance or meet the performance standards.

V. Operational Requirements With a preference for the flexibility afforded by performance standards, the only area of concern for operational requirements is fugitive dust controls. Operational requirements are used for this area because monitoring to confirm compliance with a performance standard is not feasible.	**V. Operational Requirements**
A. Fugitive Dust Controls: Prior to discharge at a mine site, ash is to be conditioned by mixing with water to a moisture content of at least 5 percent by weight, but not to exceed 20 percent by weight. The purpose of conditioning is to reduce the likelihood that dust will become airborne during placement. ***RCRA References:*** *No comparable requirement under Subtitle D (see, Part 264.30 (j) – Controlling wind dispersal, under Subtitle C)*	A. Fugitive Dust Controls: Requirements for large mines (over 1 million tons/year) west of the 100th meridian must submit an air pollution control plan including an air quality monitoring program sufficient to evaluate the effectiveness of fugitive dust control practices in order to comply with Federal and State air quality standards and a plan for fugitive dust control practices. All other mines must submit an air pollution control plan including an air quality monitoring program sufficient to evaluate the effectiveness of fugitive dust control practices in order to comply with Federal and State air quality standards, only if required by the RA, and a plan for fugitive dust control practices. ***SMCRA References: 30 CFR*** *Part 780.15 – Air Pollution Control Plan* *Part 816.95 – Stabilization Of Surface Areas (Fugitive Dust Control)*

VI. Risk Assessments

Owners/operators are to conduct risk assessments to inform themselves, regulators, and the public of the likelihood that the placement of ash at the mine site will adversely impact critical receptors.

A. Impact on humans and other animals via air and surface water pathways, including potential intermingling of ground water and surface water.
B. Impact on plants via air and surface water pathways, including potential intermingling of ground water and surface water.
C. Impact on air quality
D. Impact on water quality, including potential intermingling of ground water and surface water.
E. Impact on fish, including potential intermingling of ground water and surface water and potential air transport of contaminants to surface water.

RCRA References: *None*

VI. Risk Assessments

Risk is defined as the chance of injury, damage, or loss. A risk assessment is necessary when an agency is contemplating an action not already adequately regulated to prevent risk.

The purposes or SMCRA 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.

As such, the purpose of SMCRA is to not approve a permit until it can be established that the mining operation, including the placement of CCBs if proposed, will not place either the public or the environment at risk.

Therefore, there is not a need for additional risk assessment, beyond what is already required by a SMCRA program on a permit-by-permit basis.

See II. Performance Standards and IV. Permitting/Planning.

VII. Public Participation To be comfortable with allowing the placement of ash at mine sites, the public needs information, opportunity to raise concerns, and assurance that those concerns will be addressed.	**VII. Public Participation**
A. Planning and Permitting: Prior to approving ash placement, the permitting authority is to inform the public of the planned operation, make public all risk assessment (item VI, above) and baseline monitoring (item IV, above) information and provide for interactive public discussion. ***RCRA References:*** *Part 239.6(a) and (b) – Public Participation in Permitting*	A. Planning and Permitting: *Notification*: The permit applicant must publish a local newspaper notice [with minimum info listed at 773.13(a)(1)] of availability of the application at the country courthouse and the RA. The RA must notify Federal, State, and local agencies of the application. The RA must notify any persons submitting comment, parties involved in informal conferences, and appropriate agencies of permit issuance or renewal. *Access:* Access to all permitting files, including **inspections and monitoring reports**, by the public must be made available by the RA. *Comments:* The public may submit comments or written objections to the RA within 30 days of last newspaper notice. Any person with interest may request an informal conference with the RA. *Enforcement:* The RA must provide for public participation in enforcement. The public may also request a Federal inspection. ***SMCRA References: 30 CFR*** *Part 773.6 – Public Participation In Permit Processing* *Part 773.6(a)(1) – Public Advertisement Of Permits* *Part 773.6, 773.9, 774.15 – Notification Requirements* *Parts 773.6, 840.14, 842.16 – Availability Of Records* *Part 773.6(d) – Public Availability Of Permit Applications* *Parts 840.15, 840.16, 842.11 – Public Participation In Enforcement* *Part 842.12 – Requests For Federal Inspections* *Part 842.14 – Review Of Adequacy And Completeness Of Inspections*

B. Monitoring Information: All monitoring data, reports, and other forms of information should be made available to the public. Access to all information is to be readily available to the public at an accessible location such as a government library. ***RCRA References:*** *No comparable requirements under Subtitle D (see Part 260.2 – Availability of Information, under Subtitle C)*	B. Monitoring Information: See VII. A. above.
C. Citizen Suits: The public is to have the opportunity to file suit in appropriate courts to ensure compliance by the owner/operator. ***RCRA References:*** *RCRA Section 7002; Part 254 – Prior Notice of Citizen Suits; Part 239.9 – Citizen Intervention in Civil Enforcement Proceedings*	C. Citizen Suits: SMCRA provides for citizen lawsuits and judicial review of decisions. ***SMCRA References: 30 CFR*** *Part 775 – Administrative And Judicial Review Of Decisions* *Part 842.12 – Requests For Federal Inspections* *Part 842.15 – Review Of Decision Not To Inspect Or Enforce* ***43 CFR Subtitle A, Part 4, Subpart L*** *– Special Rules* ***Applicable to Surface Coal Mining*** *Hearings And Appeals*
VIII. Corrective Action In the case of exceedence of the performance standards specified in item II., above, the owner/operator must undertake corrective action to protect human health and the environment. The first step in response to an exceedence may be to assess the scope of the problem through additional monitoring. The owner/operator may demonstrate that the exceedence results from a source other than the ash placement or that the exceedence results from error in sampling, analysis, statistical evaluation, or natural variation in ground water quality. If the exceedence is determined to result from the ash placement, however, corrective measures should be implemented. The steps in the corrective action process include: assessment of corrective measures, selection of a remedy, selection of a schedule for the remedy, and implementation of corrective action, including interim measures that may be	**VIII. Corrective Action** SMCRA requires regular inspections and monitoring of the permit. Corrective actions may be required through notices of violation, cessation order, or required permit revision. The permittee is required to immediately notify the RA and take corrective actions as soon as a water quality non-compliance is determined. The permittee must take whatever steps are necessary to ensure that the public health and environment are protected based on compliance with applicable performance standards, permit terms and conditions. ***SMCRA References: 30 CFR*** *Part 840 – State Regulatory Authority: Inspection And Enforcement* *Part 842 – Federal Inspections And Monitoring* *Part 843 – Federal Enforcement* *Part 845 – Civil Penalties* *Part 846 – Individual Civil Penalties*

necessary for the immediate protection of human health or the environment. ***RCRA References:*** *Part 258.54(c)(3) – Response to exceedences of performance standards; Part 258.56 – Assessment of corrective measures; Part 258.57 – Selection of remedy; Part 258.58 – Implementation of corrective action*	
IX. Post-closure/Post-reclamation Care (Post-SMCRA Bond Release) Monitoring and maintenance of the ash placement area should continue throughout the time period for which the effects of ground water from ash placement could be reasonably expected to be measured or observed. This time period may extend beyond the completion of reclamation and the time of bond release for the overall mine site. A. Maintenance and Inspection: Post-closure activities are to include inspection and maintenance as needed of the vegetative cover over the ash placement area and of any other engineered controls, such as a final cover, that may have been placed. ***RCRA References:*** *Part 258.61(a) – Post-closure activities; Part 258.61(a), (b), and (e) –Duration of post-closure period* B. Monitoring and Corrective Action: As specified in Item I.D., above, maintenance and operation of the ground water monitoring system for the ash placement area should continue throughout the post-reclamation period. These activities are to include evaluation of results against the performance standards specified in Item II., above, and implementation, if needed, of corrective action as discussed in Item VII., above. ***RCRA References:*** *Part 258.61(a)(3) – Post-closure ground water monitoring; Part 258.61(a),*	**IX. Post-closure/Post-reclamation Care** (Post-SMCRA Bond Release) SMCRA enforcement ceases following the release of Phase III bond liability. 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 (10 years after establishment of vegetation in areas with less than 26" precipitation; 5 years after establishment of vegetation in areas with more than 26" precipitation) or until achievement of the reclamation requirements of the Act, regulatory programs, and permit, which ever is later (this would include determination of compliance with the hydrologic performance standards at 30 CFR 816.41(a, b, and h) and 816.42. Performance standards related to the protection of ground water would include that 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 the approved post-mining land uses in accordance with the terms and conditions of the approved permit. Any person who conducts surface mining activities shall replace the water supply of an owner of interest in real property who obtains all or part of his or her supply of water for

(b), and (e) – Duration of post-closure period C. Financial Assurance: In the event the post-closure/post-reclamation care period for the ash placement area extends beyond the time of bond release for the overall mine site, the owner/operator is to establish financial assurance to provide for maintenance and monitoring of the ash placement area specifically and for any potential corrective action associated with ash placement. ***RCRA References:*** *Part 258.72 – Financial assurance for post-closure care; Part 258.73 – Financial assurance for corrective action; Part 258.74 – Allowable mechanisms*	domestic, agricultural, industrial, or other legitimate use from an underground or surface source, where the water supply has been adversely impacted by contamination, diminution, or interruption proximately (defined as a result that directly produces and event and without which the event would not have occurred) resulting from the surface mining activities. 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. EPA set forth in 40 CFR Part 434. ***SMCRA References: 30 CFR*** *Ch. VII, subchapter J – Bonding And Insurance Requirements For Surface Coal Mining And Reclamation Operations.* *Part 800.13 – Period Of Liability* *Parts 816.41, 817.41 – Hydrologic-Balance Protection* *Parts 816.42, 817.42 – Water Quality Standards And Effluent Limitations* *Parts 816.111, 817.111 – Revegetation: General Requirements* *Parts 816.116, 817.116 – Revegetation: Standards For Success* *Parts 816.132, 817.132 – Cessation Of Operations: Permanent* *Parts 816.133, 817.133 – Postmining Land Use* *Parts 780.23(b), 784.15(b) – Reclamation Plan: Land Use Information, Following Reclamation*