U.S. EPA Site Visit Report
Coal Combustion Waste Minefill Management Practices
- Ohio -

Draft Final
August 28, 2002

OBJECTIVE

From September 2001 to October 2002, EPA conducted visits to selected states to collect information on coal combustion waste (CCW) minefill management practices. On July 1-2, 2002, EPA staff conducted an information collection visit to Ohio. The purpose of this visit was to gather information regarding the regulation of CCW minefill practices within the State of Ohio. The visit consisted of two parts: a meeting with Ohio State regulators, and visits to an electric utility and to several mine sites where CCW has been or is currently being placed. The CCW Minefill Management Practices Discussion Guide developed by EPA was used as a guide during the visit. A completed version of the Discussion Guide is attached to this report.

PLACES AND DATES

Columbus, Ohio
Ohio Department of Natural Resources (ODNR),
Division of Mineral Resource Management — July 1, 2002

American Electric Power (AEP) Conesville Power Plant — July 2, 2002
American Electric Power (AEP) Conesville Landfill
Oxford Mining Company Site
Kimble Clay and Limestone Central Fuel Site
Kimble Clay and Limestone Coal Mine Site - ODNR Permit D-0852
Kimble Clay and Limestone Coal Mine Site - ODNR Permit D-2079

SUMMARY OF MEETINGS WITH OHIO STATE REGULATORS

The information collection meetings were conducted on July 1, 2002, at the Ohio Department of Natural Resources (ODNR), Division of Mineral Resource Management in Columbus, Ohio. In attendance at the meetings were:

- Anthony Carrell, U.S. EPA
- Randall Mills, U.S. Department of Interior, Office of Surface Mining (OSM)
- Mike Dillman, ODNR
- Robert Baker, ODNR
- Pat Ransom, SAIC

Also in attendance during portions of the meetings were Mike Sponsler, Tom Tugend, and Scott Kell, ODNR. It was evident that ODNR expended substantial effort in thorough preparations for the meetings. ODNR prepared a package of information for each participant and, as the meetings progressed, was quick to provide additional materials relevant to the discussion. ODNR prepared and presented briefings, including slides, describing their regulatory program and several projects in the State using CCW to reclaim mined lands. Also, ODNR had reviewed

EPA's discussion guide prior to the meetings and provided preliminary responses to many of the questions. ODNR's investment in thorough preparation contributed greatly to the productivity of the meetings. Information provided during the meetings included the following:

- Copies of ODNR's briefing slides;
- ODNR's current guidelines on beneficial use of coal combustion byproducts (September 17, 2001);
- Ohio Revised Code §1513.02, describing the duties of the Division of Mineral Resources Management;
- ODNR's Policy Procedure Directive 89-6, describing ODNR's bond release procedures;
- A listing of local contacts/agencies that may be involved in the permitting process;
- A memorandum discussing coordination between ODNR and other State agencies regarding mix designs for fly ash grouting projects;
- Permit materials for two sites that were discussed during the meetings (Hollow Ridge Road Project in Wayne County and Ohio Power Company's Gavin Plant in Cheshire Township);
- Various historical regulatory and policy documents that pre-date Ohio's current law assigning responsibility for CCW beneficial use in mines to ODNR, including:
  - Ohio Environmental Protection Agency (OEPA) Division of Solid Waste policy on beneficial use of nontoxic bottom ash, fly ash, and spent foundry sand, and other exempt wastes (November 7, 1994);
  - A draft Memorandum of Agreement between ODNR and OEPA on beneficial use and disposal (1996);
  - Procedures for review of applications or applications to revise permits which include fly ash disposal plans (approximately 1988 or 1989).

The ODNR representatives described the regulatory program for mine placement of CCW in Ohio. Under State law as amended March 18, 1999, ODNR has sole jurisdiction over the beneficial use of CCW on mine sites. Mine placement that does not obtain ODNR's approval as a beneficial use would be regulated jointly as disposal by OEPA and ODNR. There are, however, no current mine placement operations that would be categorized as disposal. Historically, there may have been several disposal operations in the late 1980's, but these would have been managed under old guidelines and policy. Since the new guidelines have been in effect, ODNR has rejected one proposed beneficial use because, in their judgement, it constituted disposal. ODNR believes that the project proponent did not proceed with this project and there have been no other mine disposal projects proposed since at least 1996. Therefore, discussion of the regulatory program, as it would apply to mine disposal of CCW, would be largely theoretical.

In addition, while ODNR would have jurisdiction over beneficial uses in non-coal mines, ODNR is unaware of any placement of CCW in quarries or other non-coal mines. Thus, discussion of the specific requirements that would apply to non-coal mines also would be largely theoretical. Because programs specific to disposal and non-coal mines have not been tested through

implementation, the remainder of the meetings focused on Ohio's program for beneficial use of CCW in coal mines. Details regarding this program are summarized in the attached CCW Minefill Management Practices Questionnaire.

As an aside, ODNR noted that there are a few examples of traditional CCW landfills, regulated by OEPA, that happen to be located at former mine sites. These include: the Conesville flue gas desulfurization (FGD) waste landfill (one of the sites visited on this trip) and the Gavin Plant landfill. At this last site, abandoned underground coal mines had to be excavated before construction of an expansion to the landfill. Because this excavation involved primarily the removal of clay, sandstone, and shale, with only incidental removal of coal, it was done under an industrial minerals mining permit from ODNR.

SUMMARY OF SITE VISITS

The site visits were conducted on July 2, 2002. In attendance for the visits were:

- Anthony Carrell, U.S. EPA
- Randall Mills, U.S. Department of Interior, Office of Surface Mining (OSM)
- Mike Dillman, ODNR
- Robert Baker, ODNR
- Scott Kell, ODNR
- Tom Tugend, ODNR
- Dana Sheets, American Electric Power (AEP)
- Dana Limes, AEP
- Pat Ransom, SAIC

In addition, site personnel (Kim Chilcote and Rob Senita from AEP and Keith B. Kimble and Dick Smith from Kimble Clay and Limestone) joined the group for each site visit.

American Electric Power (AEP) Conesville Power Plant

The first site visited was the AEP Conesville Power Plant. This plant operates six coal-fired combustion units. Units 1 and 2 are cyclone units and the remaining units are pulverized coal (PC) boilers. All six units are equipped with electrostatic precipitators (ESPs) that capture fly ash. The plant generates ash at rate of approximately 7 to 10 percent (i.e., 7 to 10 tons of ash per 100 tons of coal). For the cyclone units, this quantity is approximately 80 percent bottom ash or slag. For the PC units, the ash is approximately 80 percent fly ash.

Following the ESPs, Units 5 and 6 are equipped with wet scrubbers to remove sulfur from the off-gas. For this reason, coal burned by these two units does not require washing prior to combustion. The wet scrubbers generate flue gas desulfurization (FGD) waste at a rate of approximately 30 to 40 percent (i.e., 30 to 40 tons of FGD waste per 100 tons of coal burned).

Bottom ash and slag is slurried and pumped to on-site surface impoundments. Fly ash from Units 4 through 6 can be slurried and pumped to the surface impoundments or managed dry, which is the preferred method. Fly ash from Units 1 through 3 is always managed dry. FGD waste from Units 5 and 6 is approximately 3 percent solids as generated. It is pumped to thickeners that raise it to about 30 percent solids, then to vacuum filters that raise it to 45 percent solids. The FGD waste then is mixed with dry fly ash and some lime and placed in a storage pile for 2 to 4 days before it is transported to the facility's landfill, approximately 3 miles from the plant. The group toured the FGD sludge treatment plant and observed these operations.

At this time, AEP does not have direct haulback arrangements with its coal suppliers and none of the waste generated at the Conesville plant currently is placed in mines. While some FGD waste is used to build cattle feed lots, in general, transportation costs are much greater than disposal costs. Therefore, mine placement of Conesville FGD waste in the past has been limited to small volume uses. AEP provided a list of these projects. As a whole company, AEP sends about 20 percent of its CCW to beneficial uses, mostly cement and concrete applications. Ohio coal, however, does not generate the type of fly ash (Class C) preferred in these applications.

The on-site surface impoundments cover approximately 80 acres and have separate sections that receive fly ash and bottom ash, respectively. These ponds are dredged on a nearly continuous basis and the dredged solids are transported to the facility's landfill. The ponds are located next to an old, on-site landfill that previously received the plant's FGD waste and other CCW. This landfill was closed in approximately 1988 and is undergoing post-closure monitoring under OEPA regulations.

American Electric Power (AEP) Conesville Landfill

The facility's current landfill is located approximately 3 miles from the plant and was constructed in a valley between old mine highwalls. Under OEPA's disposal regulations, landfills are classified into one of four classes based on the characteristics of the waste they can receive. Class I landfills have the most stringent requirements and Class IV the least stringent. The Conesville landfill is regulated as a Class III landfill, as are AEP's other CCW landfills in Ohio. According to the AEP representatives, no one has yet been able to permit a Class IV landfill because of the ground-water non-degradation requirements associated with this class of landfill.

The current landfill was opened in 1987 and expanded in 1993. The landfill was permitted in phases. Approximately 3 months of capacity remain on Phase D and about 2.5 years of capacity remain on Phase E. Phase A (the last section to begin operating) will begin construction soon and will offer about 3 years of capacity. In total, the landfill has about 6 years of capacity remaining. Before opening Phase A, AEP was required to grout some old mine auger holes to prevent differentially settlement. This grouting was accomplished using a fly ash grout mix.

All sections of the landfill are composite lined and capped, although the environmental controls on the older section have a slightly different design than those on the expansion. For example, the older section is equipped with a toe drain only, while the expansion includes a complete leachate collection system with a sand layer, lateral drains, etc. Leachate from the landfill requires treatment only to lower the pH before it can be discharged under the facility's NPDES permit limits. The landfill is equipped with a ground-water interceptor system that diverts ground water into the old mine sites. This keeps the mine flooded to prevent acid mine drainage generation and also prevents hydrostatic pressure on the landfill liner.

There are approximately 55 monitoring wells for the landfill, monitoring three underlying aquifers. The facility uses chloride as an indicator parameter for monitoring. Chloride is observed in the leachate at about 800 mg/L, compared to single digit concentrations in the aquifers. In the history of the landfill, only one well has had a statistically significant excursion from background concentrations. After assessment monitoring, this excursion was not clearly attributable to a release from the landfill, and the facility has returned to detection monitoring. AEP provided summary data for the ground-water monitoring wells and the landfill leachate.

The group walked across a capped and revegetated section of the landfill and viewed the working area of the active cell. The road between the plant and the landfill was being actively sprayed with water and no fugitive dust was noticeable.

Oxford Mining Company Site

After visiting the Conesville landfill, the group stopped briefly at the nearby Oxford Mining Company site (formerly R&F) and observed an inactive coal refuse area. According to ODNR, the company has recently submitted an Application for Revised Permit (ARP) to reclaim the coal refuse area, which is 12.7 acres in area, using FGD waste. Because ODNR is currently reviewing the ARP, this operation has not yet begun. There was no activity observed at the site during the visit.

Kimble Clay and Limestone Central Fuel Site

The group next visited the Central Fuel site, which is operated by Kimble Clay and Limestone. This site receives CCW backhauled in covered trucks from customers that purchase coal from the company. The customers are primarily small municipal utilities in Ohio. The CCW is not placed at the site permanently, however. Instead, it is mixed with coal refuse from the site and the mixture is then transported to another Kimble mine site for placement. The group observed the mixing operation, which was accomplished on an open hilltop using a front-end loader. There was some fugitive dust observed at the site from truck traffic and the mixing operation. There was, however, no fugitive dust observed during the dumping of a truck load of CCW, which occurred while the group was present.

Kimble Clay and Limestone Coal Mine Site - ODNR Permit D-0852

From Central Fuel, the group traveled to another Kimble Clay and Limestone coal mine site. This site, permitted under ODNR number D-852, had some pre-SMCRA mining activity prior to Kimble mining it. The permit area is about 1,000 acres and is mostly reclaimed, with a only a little remaining active mining. In the early 1990's, this reclamation used a coal refuse and CCW mixture, which was then mixed with spoil at the site. (Coal waste also was used up to some point after 1996.) The CCW mixture was placed 14 feet above the underclay layer at the site and 50 feet from the existing highwall. The mixture was then covered with 6 feet of material (including topsoil). According to the Kimble representative, the company did some "downstream studies" at the site and found no impacts associated with the reclamation. Good vegetative cover was evident on the area of the site that the group observed.

Kimble Clay and Limestone Coal Mine Site - ODNR Permit D-2079

The final site visited was also a Kimble Clay and Limestone coal mine site, permitted under ODNR number D-2079. This site is currently receiving the CCW and coal refuse mixture from Central Fuel at a rate of around 40,000 to 50,000 tons per year. According to the ODNR representatives, CCW placement at this site is permitted as an alkaline addition beneficial use because the CCW provides some neutralization benefit, although the overburden alone at the site is probably sufficiently alkaline to neutralize the coal refuse. At the site, the CCW mixture is mixed with overburden in various ways. During the visit, the mixture was being pushed into place and then mixed with the overburden using a front-end loader. According to the Kimble representative, the company is also considering cell-type placement at the site, instead of mixing with overburden. Under the permit, CCW placement is approved as far down as the #5 coal seam. Kimble, however, is keeping the placement above the #6 seam because of the presence of previously unmapped underground mines and concerns about water intrusion into the placement area. The company conducts expanded monitoring (i.e., for a larger list of parameters than the minimum required by SMCRA) associated with CCW placement at two of its monitoring points. Monitoring at the other points is for the standard SMCRA parameters only.

CCW MINEFILL MANAGEMENT PRACTICES DISCUSSION GUIDE*

Outline

- **General**
  Regulating agencies, program structure

- **Planning/Permitting**
  Permit requirements, type/source of CCW, number of permits, quantity of waste, acid/base balances, reclamation plans, operational plans, closure/post-closure plans, future uses

- **Waste Characterization**
  Timing (before/during placement), testing methods, parameters, performance standards/waste characterization limits

- **Site Characterization**
  Types of data, hydrology, criteria for acceptability, liners

- **Risk Assessment**
  Formal assessment/modeling, methods/criteria

- **Ground Water Monitoring**
  Monitoring system design, timing (during placement/post-closure), frequency, location, parameters, performance standards/enforceable limits

- **Surface Water Monitoring**
  Monitoring system design, timing (during placement/post-closure), frequency, location, parameters, performance standards/enforceable limits

- **Placement Practices**
  Appropriate practices for: underground mines, surface mines, active mines, closed mines, proximity to water table, grouting, soil conditioning, mine sealing, subsidence control, spoil encapsulation

- **Operational Requirements/Design Requirements**
  Dust controls, erosion/flooding controls, runoff controls, leachate collection, re-vegetation, access controls, post-closure maintenance

X. **Corrective Action**
Circumstances/triggers for action, action measures, existing damage cases

XI. **Financial Assurance**
Mechanisms, liability, bond release

XII. **Reporting**
Inspection frequency (pre-, during, and post-placement), monitoring data review, compliance evaluation

XIII. **Public Participation**
Availability of data (pre-, during, and post-placement), compliance participation

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* This document was prepared by the U.S. Environmental Protection Agency (EPA). It is being used to guide discussions with State and Tribal mining regulatory authorities on coal combustion waste (CCW) minefill management practices. This list of discussion items is part of an information collection effort. It is not a proposed model for CCW minefill regulation.

CCW MINEFILL MANAGEMENT PRACTICES DISCUSSION GUIDE
July 1, 2002 – Ohio

Interviewee Names:	Mike Dillman, Geologist Robert Baker, Engineering Manager
Interviewee Agency:	Ohio Department of Natural Resources, Division of Mineral Resources Management
Interview Date:	July 1, 2002

I General

1. Is there a distinction between disposal and beneficial use? **Yes.**
   - 1.1 How is the distinction made (e.g., waste quantity, placement type)? **Waste quantity in relation to the project area. See also the following sections of Ohio Revised Code (ORC):**

     Beneficial use is defined in ORC Section 1513.02, Paragraph (A)(7) as the use of coal combustion byproducts in a manner that is not equivalent to the establishment of a disposal system or a solid waste disposal facility and that is unlikely to affect human health or safety or the environment adversely or to degrade the existing quality of the land, air, or water. "Beneficial use" includes, without limitation, land application uses for agronomic value; land reclamation uses; and discrete, controlled uses for structural fill, pavement aggregate, pipe bedding aggregate, mine sealing, alternative drainage or capping material, and pilot demonstration projects.

     Disposal system is defined at ORC Section 6111.01 as "a system for disposing of sewage, sludge, sludge materials, industrial waste, or other wastes and includes sewerage systems and treatment works."

     Regarding solid waste disposal facilities, ORC Section 3734.01 provides the following definitions: (E) "Solid wastes" means such unwanted residual solid or semisolid material as results from industrial, commercial, agricultural, and community operations, excluding earth or material from construction, mining, or demolition operations, or other waste materials of the type that normally would be included in demolition debris, nontoxic fly ash and bottom ash, including at least ash that results from the combustion of coal and ash that results from the combustion of coal in combination with scrap tires where scrap tires comprise not more than fifty per cent of heat input in any month, spent nontoxic foundry sand, and slag and other substances that are not harmful or inimical to public health, and includes, but is not limited to, garbage, scrap tires, combustible and noncombustible material, street dirt, and debris. "Solid wastes" does not include any material that is an infectious waste or a hazardous waste ... (F) "Disposal" means the discharge,

deposit, injection, dumping, spilling, leaking, emitting, or placing of any solid wastes or hazardous waste into or on any land or ground or surface water or into the air, except if the disposition or placement constitutes storage or treatment or, if the solid wastes consist of scrap tires, the disposition or placement constitutes a beneficial use or occurs at a scrap tire recovery facility licensed under section 3734.81 of the Revised Code ... (N) "Facility" means any site, location, tract of land, installation, or building used for incineration, composting, sanitary landfilling, or other methods of disposal of solid wastes or, if the solid wastes consist of scrap tires, for the collection, storage, or processing of the solid wastes; for the transfer of solid wastes; for the treatment of infectious wastes; or for the storage, treatment, or disposal of hazardous waste.

2. Under what program(s) does the state regulate mine placement (e.g., state SMCRA implementing regulations, state solid waste program)? **ODNR's Division of Mineral Resources Management (DMRM) has sole jurisdiction over beneficial use under the State's SMCRA program (specifically ORC Section 1513.02, Paragraph (A)(7)). Mine placement that does not obtain ODNR's approval as a beneficial use would be regulated jointly as disposal by ODNR and the Ohio Environmental Protection Agency (Ohio EPA).**

   <u>Note regarding disposal</u>: There are no current mine placement operations that would be categorized as disposal. Historically, there may have been several disposal operations in the late 1980's, but these would have been managed under old guidelines and policy. Because the program specific to disposal has not been tested through implementation, the responses in this questionnaire pertain to Ohio's program for beneficial use. Some of the requirements described here might be applied to disposal scenarios.

3. Are there differing requirements/policies applicable to different types of CCW (e.g., fly ash vs. FGD wastes)? **No. The policy applies to all coal combustion byproducts. ORC Section 1513.02, Paragraph (A)(7) defines coal combustion byproducts as "fly ash, bottom ash, coal slag, flue gas desulphurization and fluidized bed combustion byproducts, air or water pollution control residues from the operation of a coal-fired electric or steam generation facility, and any material from a clean coal technology demonstration project or other innovative process at a coal-fired electric or steam generation facility."**

4. Are there differing requirements/policies applicable for different types of placement? **Yes. These are discussed in detail below (e.g., Section VIII, Question 4).**

5. Are there differing requirements/policies applicable for different kinds of mines (e.g., coal vs. non-coal mines such as quarries)? **There are no specific policies for beneficial use of CCWs in non-coal mines. While ODNR likely would have jurisdiction over**

beneficial uses in non-coal mines, ODNR is unaware of any placement of CCW in quarries or other non-coal mines. (Note: some kilns use coal, coke, or natural gas as fuel, the byproducts of which become associated with the lime kiln dust, which may then be disposed or beneficially used in quarries.) Because the program specific to non-coal mines has not been tested through implementation, the responses in this questionnaire pertain to Ohio's program for coal mines.

II Planning/Permitting

1. Are mine facilities required to obtain permits for CCW placement? **Yes. The CCW placement must either be included in the original permit application proposal, or must be addressed in a permit revision via an Application to Revise a Permit (ARP).**

2. Who issues the appropriate permits? **DMRM, if for beneficial use. If for disposal, Ohio EPA also would issue permits, in addition to the permit required by DMRM.**

3. Do the permits contain project-specific conditions or requirements? **Yes.**

4. Are there environmental justice considerations in the permitting process? **This has not been an issue. Under the general mine permit program, however, specific areas can be deemed unsuitable for mining. This provision could be applied to address any environmental justice concerns. In addition, public participation/landowner notification provisions and general restrictions on mining within certain distances of homes, schools, etc. should address environmental justice issues.**

5. Is the operator required to identify:
   - 5.1 The type of CCW to be minefilled? **Yes.**
   - 5.2 The source of the CCW? **Yes.**
   - 5.3 The quantity of CCW to be minefilled? **Yes.**

6. How many permits have been authorized in the State for CCW mine placement? **Approximately 10.**

7. What is the total quantity of CCW minefilled in the State per year? **ODNR does not specifically keep records on the amount actually disposed.**

8. Are operators required to address acid/base balances prior to placement? **Yes. Complete acid/base accounting is required for alkaline addition uses. Modified acid/base analysis is required for other uses.**
   - 8.1 What procedures are used to conduct acid/base balances? **Three forms have been developed to standardize the accounting and these are included as part of ODNR's form for standardized submittals (entitled Attachment 34). One form is for the CCW material, another form is for the associated material, and the third form is for the mixture of the material. Each form has sections for pH, hydrogen ion concentration, pyritic and/or total sulfur percentages,**

potential acidity, neutralization potential, and calcium carbonate deficiency, including absolute values and weighted values (where there is a mixture of material). The procedure requires the assessment of calcium carbonate deficiency, which, for the CCW material itself, must be *more negative* than -5 tons $CaCO_3$ per 1,000 tons of CCW material when the material is used for alkaline addition purposes. Furthermore, materials with a calcium carbonate deficiency *more positive* than +5 tons $CaCO_3$ per 1,000 tons are defined by ODNR as "toxic forming," and the applicable SMCRA restrictions on placement of these materials apply.

8.1.1 What are the shortcomings of these procedures, if any? **They may not take into account the fact that acid-forming and neutralization processes may not proceed at the same rates. Calcium carbonate deficiency reflects the net neutralization potential and does not tell anything about the actual neutralization potential. Studies have been done relating ultimate acid generation to the neutralization potential.**

8.1.2 What is the long-term reliability of these procedures? **Fair. As discussed above, acid-forming and neutralization reactions may not occur at the same time. At the same time, the restrictions on toxic forming materials prevents any long-term problems from being too severe.**

9. Is a reclamation plan required? **Yes.**

9.1 Is the plan required to specifically address the use of CCW? **Yes.**

9.2 What must the plan include? **Section M of Attachment 34 describes the specific requirements for Operation and Reclamation Plans. These include a detailed narrative description of the following:**

1. **Site preparation (including erosion and sediment controls);**
2. **Handling of CCW material (unloading, stockpiling, etc.), address storage methods and areas, address storage less than and greater than 30 days (long term and short term storage);**
3. **Placement of CCW material and quantities used, describe placement and compaction techniques that are to be used, indicate placement locations;**
4. **Placement of CCW material in relation to the regional ground-water table;**
5. **Dust control measures;**
6. **Final site grading;**
7. **Type and thickness of final cover material;**
8. **Revegetation procedures;**
9. **Mixing ratio, based on acid/base accounting or on other methodology**
10. **Mixing procedures;**
11. **Lift thicknesses;**
12. **Equipment used;**
13. **Sealing plans and specifications;**

14. Changes in CCW and other material (such as coal refuse) over time. Describe the tracking system for such material and indicate whether the sources of the material will change. (Tracking parameters should include loads, dates, times, sources, etc.) Records are to be kept at the mine site and are to be available to the Division for inspection upon request.;

15. Other pertinent information related to the proposed beneficial use of CCW; and

16. Address notification to the inspector of unforeseen changes in plans, complaints/problems, and critical phases of the operation (drilling and abandonment of monitoring wells, cell construction and closure, etc.).

In addition, maps and cross-sections are required. Section N of Attachment 34 requires that these include the following:

1. Include sufficient detail on the Application and Hydrology Maps to show the areal extent of beneficial use of CCW material. Also show any CCW unloading and stockpile areas, ground water and surface water monitoring points, and cross sections. Submit cross sections of the unloading and stockpiling areas. The cross sections must show positive drainage away from these areas, diversions directing surface water away from the areas, and an impermeable base for each area. The material constituting the impermeable base, and the thickness of the base, must be identified.

2. Provide plans and cross sections to adequately describe the beneficial use handling and placement procedures. At least one transverse cross section and one longitudinal cross section must be provided showing the elevation, final profile, saturated zones (existing and proposed), and reclaimed surface profiles of the beneficial use areas.

3. Include other appropriate information.

9.3 What are the standards for reclamation (i.e., how is the end-point of reclamation defined)? **The standards are described in three guidelines documents: one for General Guidelines, one for Soil Guidelines, and one for Hydrologic Guidelines. See also the discussion under bond release.**

10. Is an operational plan required? **Yes.**

10.1 Is the plan required to specifically address the use of CCW? **Yes.**

10.2 What must the plan include? **Section M of Attachment 34 describes the specific aspects that must be included (see above under reclamation plan – Section II, Question 9).**

11. Is a closure plan and/or post-closure plan required? **Yes - the reclamation plan is essentially a closure and post-closure plan.**
    11.1 Is the plan required to specifically address the use of CCW? **Yes.**
    11.2 What must the plan include? **Section M of Attachment 34 describes the specific aspects that must be included (see above under reclamation plan – Section II, Question 9).**

12. Are there procedures and criteria for determining what future uses are acceptable following closure? **Yes, as part of the normal permit application process.**
    12.1 How is the public involved in this determination? **Landowner consent is required. Also, notification in the newspaper is required for new applications or for ARPs, if the revision is significant. The addition of beneficial use of CCWs in an existing permit almost always constitutes a significant revision. The only exception would be a permit that already includes CCW placement where the revision is only to adjust the proposed placement area (e.g., add a couple of acres). Significant revisions need to meet public notification/comment requirements pursuant to Ohio Administrative Code rule 1501:13-4-06. The ARP must address the significant nature of the revision (i.e. addition of beneficial use of CCWs for a specified purpose), include public notice text and other publication information.**
    12.2 If use is restricted, what protects against inappropriate uses? **Inspections.**

III Waste Characterization

1. Is characterization of the CCW conducted prior to placement? **Yes.**
    1.1 What analytes are measured? **The following are required for all uses:**
    - **General Analysis (under Attachment 12) for CCW material and for associated material (spoil, coal refuse, etc.) for the following: pH, calcium carbonate deficiency (net neutralization potential) neutralization potential, potential acidity, pyritic and/or total sulfur percentages.**
    - **Leachate analysis for arsenic, barium, cadmium, chromium, lead, mercury, selenium, pH, acidity, alkalinity, aluminum, chloride, sodium, iron, manganese, sulfate, total dissolved solids, fluoride, silver, and zinc. (These parameters were selected after extensive discussions with concerned parties.)**

    Additional testing may be required after review of above analysis. Additional analyses are required for certain uses (i.e., alkaline addition, low permeability use, soil additive). These are described under Section VIII, Question 4.

    1.2 What is the testing method used? **A TCLP test must be performed in accordance with the most recent edition of the U.S. EPA Publication SW-846**

from either an acid or deionized water extraction of the material, and in accordance with the testing procedures described in OEPA-DSW policy 0400.007, or the most current version. The applicant may use another valid leaching test that accurately represents the environment of beneficial use (for example, a neutral environment). Justification for using an alternative leaching test must be included in the application, and Tables CCB-5 and CCB-6 in the Attachment 34 must be revised to report the actual test used.

1.3 Are there numerical waste acceptance/rejection criteria? **Yes.**

1.3.1 If so, what are they? **For CCW material to be approved for beneficial use at active coal mining and reclamation permit areas, the maximum acceptable leachate concentrations of arsenic, barium, cadmium, chromium, lead, mercury, and selenium are 30 times the Ohio Primary Drinking Water Standards. These limits are shown in Table CCB-5 (CCB Material Leachate Analysis) of Attachment 34. Additional analyses limits apply to certain uses (i.e., alkaline addition, low permeability use, soil additive). These are described under Section VIII, Question 4.**

1.3.2 If not, how are waste characteristics considered in pre-placement and planning? **Not applicable.**

2. Is ongoing waste characterization required during placement? **Yes.**

2.1 How do the analytes, testing methods, or waste acceptance/rejection criteria differ from those used prior to placement? **They are the same. In addition, significant changes in the character of the leachate will require approval and issuance of an ARP prior to the continued usage of the CCW material that resulted in the changes in the nature of the leachate.**

2.2 What is the required frequency of characterization? **Analyses must be conducted prior to submission, on an annual basis (or on another timetable based on the review of the project), or whenever there are significant changes in the sources of the CCW material or in the combustion and/or pollution control processes that generate the CCW material.**

2.3 How often is the waste characterization data reviewed by the appropriate regulatory agency? **The data are submitted quarterly to both the district office and the central office in Columbus.**

3. What is the basis for any numerical acceptance/rejection criteria? **As discussed above, they are 30 times the Ohio Primary Drinking Water Standards.**

IV Site Characterization

1. Is characterization of the site required prior to placement? **Yes.**

1.1 What factors are examined in characterizing a site? **Geology, hydrology, water quality and quantity. Many of the same factors used for a normal permit application.**

1.2 What are the criteria for accepting/rejecting a site? **See Section IV, Question 6, below.**

2. Is consideration of the site hydrology (e.g., a probable hydrologic consequences determination under SMCRA) required? **Yes. The applicant is required to discuss the probable hydrologic consequences of the beneficial use of CCW material, based on disposal methods, acid/base accounting, TCLP tests, comparison of test results with Primary (Maximum Contaminant Level) and Secondary (Secondary Maximum Contaminant Level) Drinking Water Standards, etc. The assessment must address the areal extent as well as any changes to water quality and quantity.**

2.1 Does this consideration specifically address the use of CCW? **Yes.**

2.2 What are the hydrologic criteria for site acceptance/rejection? **If the following prohibitions cannot be met, the site would be rejected:**

- **The CCW material shall not be placed within 8 feet of the regional groundwater table unless the Division approves placement within 8 feet based upon information that demonstrates that groundwater contamination will not occur.**
- **The CCW material shall not be placed within 100 feet of perennial or intermittent streams unless a stream buffer zone variance request is approved. This distance may be increased in cases involving exceptionally high value streams. At a minimum, the material shall not be placed between the high water marks of perennial or intermittent streams.**
- **CCW material shall not be placed within 100 feet of existing high-quality wetland areas. This distance may be increased if necessary.**
- **CCW material shall not be placed within 500 feet upgradient of a surface drinking water source or within 300 feet of a ground water source.**
- **CCW material shall not be placed within 300 feet of an occupied dwelling unless the owner provides a written waiver.**

2.3 Does consideration of site hydrology specifically address both ground water and surface water? **Yes.**

2.4 What time period does PHC determination or other consideration of site hydrology address? **Normally any activity that has occurred prior to the application and anything that can be foreseen as happening. The Division has new policies on water sampling for a standard permit application, and these would also apply to CCW. They involve limiting the age of the water samples. If the samples are older than specified, a description of all activities that have occurred in the watershed that could impact the quality or quantity of the sampling results is required.**

3. Is background ground-water monitoring data required prior to placement? **Yes. Background water sampling under seasonal conditions is usually necessary in order to characterize existing conditions before CCW material usage begins.**
   - 3.1 What analytes are measured? **Background sampling prior to application approval covers the standard parameters (pH, total acidity, total alkalinity, specific conductivity or total dissolved solids, total manganese, total sulfates, total iron, total suspended solids, and total hardness). Once the project is approved, but prior to CCW placement, monitoring must include the standard parameters, plus the same list of analytes required in the leachate analysis of the waste (see Section III, Question 1.1) in order to obtain parameter values that can be used for baseline.**
   - 3.2 How are the sampling locations selected? **In addition to the regular sites that must be sampled, water analyses from surface water and ground water that will be associated with the CCW material must be submitted, both updip and downdip. Background sampling occurs at wells, springs, streams, ponds, etc., in the vicinity of the CCW usage. If the CCW usage is being proposed as part of an initial permit application, background sampling at appropriate sites would likely already be part of the application. If proposed as part of an ARP, then any appropriate sites not sampled in the original application would need to be sampled for background.**
   - 3.3 How much data is required before placement? **Seasonal data (high flow, intermediate flow, and low flow) must be submitted.**

4. Is background surface water monitoring data required prior to placement? **Yes.**
   - 4.1 What analytes are measured? **Same as ground water (see Section IV, Question 3.1, above).**
   - 4.2 How are the sampling locations selected? **Same as ground water (see Section IV, Question 3.2, above), plus upstream and downstream.**
   - 4.3 How much data is required before placement? **Same as ground water (see Section IV, Question 3.3, above)**

5. Is the use of liners considered in site characterization? **There are no explicit provisions for this – liners might be considered on a case-by-case basis if a candidate site were proposed.**
   - 5.1 If a site is determined to be unacceptable for CCW placement, can it be made acceptable through the use of liners? **Maybe. No such site, however, has been proposed.**

6. Are there any restrictions on the type of sites that can accept CCW? **Restrictions at sites would apply to wetlands, streams, the regional groundwater table, drinking water sources, and occupied dwellings (See Section IV, Question 2.2, above). In addition, there is a provision for site by site consideration. At this time the guidelines state that, "The policies and procedures outlined in this guidance document are intended to supplement existing requirements. This document establishes the framework**

within which the Division will exercise its administrative discretion. The Division reserves the discretion to deviate from this policy statement if circumstances warrant."

V Risk Assessment

1. Is a formal risk assessment performed? **Not as a standard procedure.**
   - 1.1 Is it based on site-specific, regional or other (please specify) data? **Not applicable.**
   - 1.2 Describe the steps taken in this assessment. **Not applicable.**
   - 1.3 Who conducts the assessment? **Not applicable.**

2. Are specific air, surface water, and ground-water models, equations, etc., used to assess risk or impacts? **Not applicable.**
   - 2.1 What models are used? **Not applicable.**
   - 2.2 What is the State's experience with these models (e.g., ease of use, value of results)? **Not applicable.**

3. How are the risk assessment results expressed? {e.g., monetization of potential damages, calculated incremental health risks (illness, deaths), negative risk (i.e., benefits outweigh negative impacts), rationalization (e.g., aquifer is not potable anyway), comparative (current/future use of the resource)}. **Not applicable.**

4. How are the results interpreted to determine the level and acceptability of impacts to receptors? **Not applicable.**
   - 4.1 Who is responsible for interpreting the results? **Not applicable.**

5. If no risk assessment is completed, is there a presumption that placement is acceptable if certain criteria are met? (e.g., leachate characteristics, distance to ground water, liner placement, historical experience of the regulatory authority). **Yes.**
   - 5.1 Please list the pass/fail criteria below. **The specific considerations include: discussion of probable hydrologic consequences, discussion of impacts to the hydrologic balance, including recharge capacity and infiltration, alternate water supply information.**

VI Ground-Water Monitoring

1. Is a ground-water sampling and analysis plan required? **Yes. Section L of Attachment 34 requires the applicant to:**
   - **1. Describe the water-monitoring plan, including sites to be monitored; monitoring well designs, locations, timing of installation, and plugging and abandonment; monitoring frequency; parameters to be monitored; etc. Appropriate monitoring should be performed updip and downdip of the proposed use area and as close to the area as possible.**
   - **2. Clearly identify and show the location of monitoring points on the Application and/or Hydrology Maps.**

2. Is ground-water monitoring required during placement? **Almost always – the likelihood of requiring monitoring is essentially 100 percent.**
   - 2.1 What analytes are measured? **Ground-water monitoring is required during placement for the same list of analytes required in the leachate analysis of the waste (see Section III, Question 1.1).**
   - 2.2 How are the number of wells, well locations, and screening zones selected? **As described in Section L of Attachment 34, appropriate monitoring should be performed updip and downdip of the proposed use area and as close to the area as possible. The exact number of wells is dependent on size and scope of the project.**
   - 2.3 What is the frequency of monitoring? **Usually quarterly, but other frequencies are also considered.**

3. Is post-closure ground-water monitoring required? **Generally, yes. Monitoring must continue until final bond is released on the project, or until the operator petitions the division to cease some or all monitoring and the division concurs.**
   - 3.1 If so, how does it differ from ground-water monitoring conducted during placement (analytes monitored, frequency, etc.)? **There is no difference.**

4. Can ground-water monitoring be discontinued? **Yes, with appropriate documentation from the operator and formal concurrence from the Division.**
   - 4.1 What are the criteria for discontinuing ground-water monitoring? **There are no explicit criteria, but the considerations include: duration of time that monitoring has already been occurring, location of monitoring points relative to CCW placement, length of time since CCW placement, projected direction of travel of contamination plume, etc.**

5. How is ground-water monitoring designed to specifically detect/distinguish the effects of CCW placement? **Monitoring begins after project approval by the Division (approval and issuance of a new application or ARP with CCW beneficial use), but prior to the placement of the CCW material, so that the background levels can be discerned. Monitoring sites are chosen to separate the effects of the CCW from other activities on and off the permit.**

6. How are large expanses dealt with? **Wells must be properly placed to take into account the specific areas of CCW placement. Therefore, if a large placement area were proposed, a sufficient number of additional wells would be required (e.g., if a project needs 10 wells for proper monitoring, ODNR will require 10 wells).**

7. How is existing ground-water contamination dealt with as part of the monitoring program? **This depends on the type of contamination. It is also important to capture this existing contamination through the baseline monitoring (described under**

Section VI, Question 5, above), which is conducted for the normal suite of parameters as well as the CCW parameters at the monitoring sites.

8. What water quality standards/criteria must be met? **This is determined on a case-by-case basis, customized to the waste and considering background concentrations, drinking water standards, the frequency of exceedences, and specific contaminants that may be of greater concern (e.g., arsenic). In addition, for CCW material to be approved for beneficial use at active coal mining and reclamation permit areas, the maximum acceptable leachate concentrations of 30 times the primary drinking water standards cannot be exceeded (See Section III, above). Such standards would also be important in evaluating the results of ground water monitoring.**

9. Are alternative monitoring methods allowed? **Yes.**
   9.1 What alternative monitoring methods are allowed? **Existing wells, or even springs, may used solely or may be incorporated into the monitoring program based on evidence and documentation submitted by the applicant. ODNR almost always requires monitoring wells, however, because existing wells and springs often are not properly located for monitoring.**

VII Surface Water Monitoring

1. Is a surface water sampling and analysis plan required? **Yes, see above under ground-water monitoring (Section VI, Question 1).**

2. Is surface water monitoring required during placement? **Yes.**
   2.1 What analytes are measured? **The same analytes required for ground-water monitoring (see Section VI, Question 2.1).**
   2.2 How are sampling locations selected? **As described under ground-water monitoring (Section VI, Question 2.2). Also considered are upstream and downstream sites.**
   2.3 What is the frequency of monitoring? **As described under ground-water monitoring (Section VI, Question 2.3).**

3. Is post-closure surface water monitoring required? **Yes.**
   3.1 How does it differ from surface water monitoring conducted during placement (analytes monitored, frequency, etc.)? **There is no difference.**

4. Can surface water monitoring be discontinued? **Yes.**
   4.1 What are the criteria for discontinuing surface water monitoring? **As described under ground-water monitoring (Section VI, Question 4.1)**.

5. How is surface water monitoring designed to specifically detect/distinguish the effects of CCW placement? **Monitoring begins after project approval by the Division (approval and issuance of a new application or ARP with CCW beneficial use), but prior to the placement of the CCW material, so that the background levels can be**

discerned. Monitoring sites are chosen to separate the effects of the CCW from other activities on and off the permit. Modified NPDES effluent limitations can be requested for certain parameters, but these would be approved by the Ohio Environmental Protection Agency.

6. How is background surface water quality assessed? **As described under ground-water monitoring (Section VI, Question 7).**

7. What water quality standards/criteria must be met? **As described under ground-water monitoring (Section VI, Question 8)**.

VIII Placement Practices

1. What types of CCW placement are allowed (i.e., into active mines, closed mines, surface mines, underground mines, etc)? **All types. Note that while the guidelines are specifically designed to apply to active mines, these same guidelines can be applied to abandoned mine lands (AML) projects.**

2. Is placement into the water table allowed? **Not without specific approval from DMRM.**
   - 2.1 If so, under what conditions? **DMRM can approve placement within 8 feet of the regional ground-water table based upon information that demonstrates that ground-water contamination will not occur. In practice, DMRM has not yet approved any such placement.**
   - 2.2 If not, how close to the water table is placement allowed? **CCW material shall not be placed within 8 feet of the regional ground-water table**
   - 2.3 If a liner is required beneath the CCW, what are the design/performance standards for the liner? **Not applicable.**

3. Is placement into mine pools allowed? **SMCRA allows injection of fly ash and FGD sludge into underground mines. Such placement has occurred in one AML case (Roberts-Dawson) predating the current guidelines. No such projects have been proposed, however, since the current guidelines have been in place.**
   - 3.1 What placement techniques are used? **No projects have been proposed, so this has not been determined.**
   - 3.2 Are there additional/special monitoring requirements after placement into a mine pool? **No projects have been proposed, so this has not been determined.**

4. Are there specific design/operational requirements for the following types of projects and, if so, what are they?
   - 4.1 Placement into underground mines? **No additional requirements.**
   - 4.2 Placement into surface mines? **No additional requirements.**

4.3 Grouting? **Grouting projects have generally occurred only under the AML emergency program. The general requirement is that grout mixtures contain less than 50 percent fly ash.**

4.4 Acid mine drainage remediation? **Yes. If CCW material is to be used as an alkaline addition material, more detailed acid/base accounting is required for the CCW material and the associated material (spoil, coal refuse, etc.). Boundaries are set for pH and calcium carbonate deficiency of the CCW material. The calcium carbonate deficiency value must be *more negative than* -5 tons CaCO3 per 1000 tons of CCW material.**

4.5 Soil conditioning? **Yes. If the CCW material will be used as a soil additive, the following additional requirements apply:**

- **The soil or spoil top cover must be sampled and analyzed before any CCW material can be added as a soil additive. This background analysis is needed to determine that the soil or spoil top cover is not contaminated.**
- **Analyses must be done for, but not limited to, pH, boron (hot-water extraction method), soluble salts (electrical conductivity), phosphorous, potassium, calcium, cation exchange capacity, standard agricultural series test, primary drinking water standards (EPA Standard Methods), and secondary drinking water analysis (EPA Standard Methods).**
- **For CCW material to be certified for beneficial use as a liming agent, the calcium carbonate equivalent must be at least 100 parts per thousand (i.e. 100 tons of CaCO3 per 1,000 tons of ash) or 10% by dry weight. The calcium carbonate equivalence is to be determined by the Neutralization Potential Test in accordance with EPA-600/2-78/054 Section 3.2.3 or other test approved by the Division.**
- **If the CCW material is to be used as a soil additive for beneficial use(s) other than as a liming agent, the applicant must provide a description and justification for the intended use. Any certification for CCW material as a soil additive for these purposes will be contingent on approval for use at a specific mine site.**
- **The final pH range of the CCW material and soil/spoil mixture should be 6.5 to 8.0 unless otherwise approved by the Division on a case-by-case basis.**
- **If CCW material is used as a lime substitute or other nutrient substitute, the calcium carbonate or other nutrient of the CCW material should be used in accordance with the amount based on chemical equivalence that would be needed to substitute for lime or other constituents.**
- **The Division will not consider any CCW material for use in the surface materials that produces a boron analysis (hot water extraction**

method) exceeding 4.0 ppm or a soluble salts content (conductivity) in excess of 2.0 mmhos when mixed with the surface materials. If CCW materials with boron and soluble salt levels in excess of these limits are used in areas underlying surface growing medium, they must be separated from the surface by a minimum of 30 inches of non-toxic material.

- **If the CCW material is incorporated into acid-forming materials without a cap, the four (4) foot non-toxic cover is required.**
- **The depth of the CCW material and soil mixture should not exceed one foot (0.30 meters) unless otherwise approved by the Division on a case-by-case basis.**
- **CCW material used as a soil additive must not occur within 8 feet (2.44 meters) of the regional water table unless authorized by the Division.**

4.6 Mine sealing? **Yes. For CCW material to be approved for beneficial use as a low-permeability material, the following requirements apply:**

- **Hydraulic conductivity and grain size analyses must be submitted. The hydraulic conductivity must be based upon laboratory testing using compaction and other preparation techniques that will duplicate expected conditions at the site of the beneficial use.**
- **A hydraulic conductivity (coefficient of permeability) of the CCW material that is greater than 1 x 10^{-7} cm/sec may be accepted upon a demonstration that the CCW material will adequately function as a low permeability barrier sufficient to meet the intended function or application of the CCW material. Absent such a demonstration, the target will be an hydraulic conductivity of less than 1 x 10^{-7} cm/sec.**
- **The pH of the CCW material must be in the range of 6.5 to 12.5 S. U. at the generator's site. However, if an additive is used to harden the CCW material, the mixture must be in the pH range of 6.5 to 12.5 S. U.**
- **Materials that exhibit potentially toxic-forming or acid-forming characteristics (i.e., calcium carbonate deficiency of +5 tons or more $CaCO_3$ per 1,000 tons of CCW material) may not be approved for low permeability beneficial use.**

4.7 Subsidence control? **Yes, see above under grouting (Section VIII, Question 4.3).**

4.8 Spoil encapsulation? **Yes, the requirements for low permeability material apply. See above under Section VIII, Question 4.6.**

IX Operational Requirements/Design Requirements

1. How is the potential for flooding/washout addressed? **Through the following buffer zone requirements:**
   - **The CCW material shall not be placed within 100 feet of perennial or intermittent streams unless a stream buffer zone variance request is approved. This distance may be increased in cases involving exceptionally high value streams. At a minimum, the material shall not be placed between the high water marks of perennial or intermittent streams.**
   - **CCW material shall not be placed within 100 feet of existing high-quality wetland areas. This distance may be increased if necessary.**
   - **CCW material shall not be placed within 500 feet upgradient of a surface drinking water source or within 300 feet of a ground-water source.**

2. Are runoff controls used/required? **Yes, they are required.**

3. Are leachate collection systems used or required? **This depends on the project.**
   3.1 Under what conditions? **Because leachate collection systems are almost always required for coal waste projects, when CCW is used in conjunction with coal waste, there would coincidentally be a leachate collection system.**
   3.2 What are the design criteria? **These criteria are site-specific, but generally include a standard design (rock/gravel layer with pipes flowing to a sedimentation/pretreatment pond).**

4. Is waste conditioning required? **It is not specifically required. However, when projects involving mixtures are proposed (e.g., in sealing or grouting), the appropriate design requirements apply to the conditioned mixture (e.g., see Section VIII, Question 4).**
   4.1 What waste conditioning methods are allowed? **See above.**
   4.2 What design criteria exist for waste conditioning? **See above.**

5. What fugitive dust controls are used or required:
   5.1 During transport and discharge from transport vehicles? **There are no specific measures required explicitly. Appropriate measures for the specific project, however, must be described in the operations and reclamation plan (see Section II, Question 9.2) and applied by the applicant.**
   5.2 During/following placement? **See above.**

6. Is a cover or cap required over the CCW? **This depends on the project. Generally, placement on the surface is not proposed, except for soil additive projects. The only explicit requirement is for cover over acid-forming or toxic-forming materials. This requirement would apply, coincidentally, to projects where CCW is used in conjunction with coal waste. In addition, appropriate measures for the specific project must be described in the operations and reclamation plan (see Section II, Question 9.2) and applied by the applicant.**
   6.1 What are the design/performance criteria? **See below.**

6.2 What kind of cover materials are required? **In cases involving coal waste, four feet of non-toxic, non-acid-forming material.**

6.3 What minimum/maximum slopes are allowed for final cover? **Appropriate slopes are site-specific based on engineering analysis, with 1 to 2 percent typical.**

6.4 What compaction criteria/standards apply to the cover/cap? **Appropriate measures for the specific project, must be described in the operations and reclamation plan (see Section II, Question 9.2) and applied by the applicant. Generally, compaction should limit infiltration.**

6.5 What are the maintenance standards for covers/caps? **There are no standards specific to CCW. This maintenance, however, falls under the general umbrella of the 5-year maintenance period required after reclamation.**

7. Is re-establishment of surface streams required? **Yes, but CCW cannot be used near streams (see Section IX, Question 1), so this question is not relevant.**

7.1 What determines when it is appropriate and how it should be done? **Not applicable.**

7.2 What are the design criteria? **Not applicable.**

8. Is contouring of waste so water drains away from the fill required? **Appropriate measures for the specific project must be described in the operations and reclamation plan (see Section II, Question 9.2) and applied by the applicant.**

8.1 When is it appropriate to contour wastes? **See above.**

8.2 What are the minimum slope and compaction criteria? **There is a general requirement for positive final drainage.**

9. Is re-vegetation required? **Appropriate measures for the specific project must be described in the operations and reclamation plan (see Section II, Question 9.2) and applied by the applicant.**

9.1 What are the design criteria? **See above.**

9.2 What kinds of plants are used? **See above.**

9.3 What kinds of topsoil/compost are required? **See above.**

10. Is the operator required to restrict public access to the waste and facility? **Yes.**

10.1 What design/performance standards or criteria apply? **Not explicit standards.**

11. What are the post-closure maintenance requirements (e.g., maintaining cover integrity and effectiveness, slopes, vegetation, etc.)? **There are no standards specific to CCW. This maintenance, however, falls under the general umbrella of the 5-year maintenance period required after reclamation.**

12. How long is the owner/operator responsible for post-closure maintenance? **There is a 5-year maintenance period required after reclamation.**

13. What other operational requirements exist? **None.**

X Corrective Action

1. Under what circumstances are corrective actions required/what is the trigger for a corrective action? **Decisions regarding corrective action are primarily up to the inspection staff, based on inspection results and monitoring data, which is initially reviewed by district inspection staff. ODNR is developing a database to help identify instances where monitoring data might indicate a problem.**

2. What types of corrective action measures are appropriate? **Depends on the situation. Individual inspectors, however, have the authority to issue notices of violation, which can even include cessation orders.**

3. Does the state have any damage cases? **No.**

XI Financial Assurance

1. Is financial assurance required? **Yes.**
    1. What types of financial assurance mechanisms are allowed? **Typically, surety bonds. Cash bonds are no longer allowed.**

2. What is the period of liability? **Until bond release.**

3. What is the amount of financial assurance required? **$2,500 per acre, regardless of activity (i.e., whether or not there is CCW placement).**

4. What are the conditions for bond release? **50% percent is released when: (1) backfilling of all highwalls is completed; (2) grading of the area is completed; and (3) drainage controls have been established and are functional.**

    An additional 35% is released when: (1) resoiling has been completed to the required depth; (2) revegetation has been established and the standards for success of revegetation are met; (3) the lands are not contributing suspended solids to stream flow or run-off outside the permit area in excess of current water quality standards; (4) with respect to prime farmlands, soil productivity has been returned to the level of yields required by current standards; and (5) the provisions of a plan for the future management of any permanent structures (ponds, roads, etc.) have been implemented to the satisfaction of the Division.

    The final 15% is released when: (1) all surface coal mining and reclamation operations have been successfully completed in accordance with the approved relcamation plan and has met the Phase III revegetation success standards in accordance with rule 1501:13-9-15 of the Ohio Administrative Code; (2) With respect to non-prime farmland cropland, soil productivity has been returned to the level of yields required by current standards; (3) the permittee has achieved

compliance with the Ohio Mining and Reclamation Law and Rules; and (4) the applicable period of responsibility for revegetation has expired.

DMRM has developed a specific checklist for use in evaluating these release conditions.

5. Is there a separate State liability fund? **Yes, there is bond pool or reserve fund to cover bankruptcies or bond insufficiencies.**
   5.1 What is the source of money for this fund? **Mineral severance tax.**

XII Reporting

1. How frequently is monitoring data on wastes, ground and surface water reported to the government? **Surface water and ground-water monitoring data quarterly; waste characterization data annually.**

2. Is the data maintained at the facility? **No. It is maintained by ODNR.**

3. How often are sites inspected? **For active sites, complete inspections are required quarterly and partial inspections three times per quarter. For inactive sites, four complete inspections are required per year, with partial inspections as needed.**

4. How often is compliance with permit requirements, performance standards, enforceable limits, etc., evaluated? **Inspectors evaluate this every quarter with the complete inspection. The Columbus permitting office evaluates at the mid-term permit review (after 2½ years) and at permit renewal.**
   4.1 Who is responsible for this evaluation? **See above.**

5. What are the post-closure reporting requirements? **Reporting continues until bond release.**

6. How frequently does the regulatory authority inspect the closed facility, and what are the criteria for terminating inspection? **Inspections continue until bond release, although the frequency may be reduced.**

XIII Public Participation

1. Prior to permit issuance, does the public have an opportunity to review and comment on monitoring (surface and ground-water) and/or modeling data and Probable Hydrologic Consequences determination? **Yes. See Section II, Question 12.1.**
   1.1 What other opportunities for public involvement are there in the permitting process? **A list of the landowner(s), and a signed statement from the owner(s) of the land on which CCW material will be used. The signed statement must show that the landowner acknowledges and consents to the utilization of the CCW material. Proposals for using CCW material must include the consent of the owner(s) of the land where the CCW material will be applied. The**

consent must consist of a signed statement by the owner(s) acknowledging and consenting to the specific beneficial use or uses of CCW material on their land. DMRM recommends the signed documents be recorded so that subsequent landowners will have constructive knowledge of the authorization.

Local authorities will be contacted by the Division regarding permit applications or ARPs involving significant beneficial uses of CCW Material and given an opportunity to review and comment on the proposal and to make recommendations to the Division.

2. Is monitoring data available to the public? **Yes, through either the central or the district office.**

3. What opportunity does the public have to participate in overseeing compliance at the site? **Citizens may accompany inspections if there is a complaint.**

4. How does the public have access to post-closure reports? **Up until bond release, the same as during placement (see Section XIII, Question 2). After bond release records are retained in archives.**

5. Are citizen actions allowed? **Yes.**
   - 5.1 What types of actions are allowed (e.g., petitions, suits)? **Citizen complaints to the division.**
   - 5.2 Who adjudicates citizen actions (e.g., permitting agency, administrative law judge, State court, federal court)? **The Reclamation Commission, an administrative board at ODNR. Their decisions can be appealed to another court. Also, citizens can request informal review of bond release and complaint findings.**