

Association of State and Territorial

***ASTSWMO***

Solid Waste Management Officials

**Beneficial Use of Coal Combustion Residuals  
Survey Report**

**September 2012**

**Prepared by the**

**Beneficial Use Task Force of the  
Materials Management Subcommittee**

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## ACKNOWLEDGEMENTS

The ASTSWMO Beneficial Use Task Force of the Materials Management Subcommittee thanks all those who helped complete this Beneficial Use of Coal Combustion Residuals (CCRs) survey. Without their cooperation, this report would not be possible. The Task Force takes full responsibility for the information and conclusions presented in this report.

Information from this survey, and the ones completed in April 2000 and November 2007, have provided a better understanding of how individual States and Territories approach decision making about the beneficial use of wastes and in particular CCRs. The Task Force will use this information to assist States and Territories in their approach to CCR management.

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## TABLE OF CONTENTS

I. INTRODUCTION	3
II. DEFINITION OF COAL COMBUSTION RESIDUALS AND BENEFICIAL USE OF CCRs	3
III. CLASSIFICATION SYSTEM AND TIERED APPROACH	5
IV. LARGE SCALE FILLS	8
V. END-OF-LIFE MANAGEMENT	15
VI. SUMMARY AND RECOMMENDATIONS	15
APPENDICES	
Appendix A: Examples of State Definitions of CCR	18
Appendix B: State Response Examples for Classification and Tiers	22
Appendix C: Examples of States' End-of-Life Provisions or Criteria	25

# **Beneficial Use of Coal Combustion Residuals (CCRs) Survey Report**

## **INTRODUCTION**

In light of events associated with beneficial uses of coal combustion residuals (CCRs), the Association of State and Territorial Solid Waste Management Officials' (ASTSWMO) Beneficial Use Task Force (BUTF) decided to update the information it had on current State regulations regarding the beneficial use of CCRs. It was important to the BUTF to have information from all States in order to provide a national picture of how States are regulating CCRs as beneficial uses. Forty-six (46) States responded to a survey conducted October 2011 through March 2012.

ASTSWMO has previously gathered information from the States regarding CCRs that it has shared with the U.S. Environmental Protection Agency (EPA) and the States. This information includes the ASTSWMO BUTF Beneficial Use Survey Report of 2006, published in 2007, regarding the beneficial uses of various waste streams, including CCRs – 40 States responded to that survey; and a Coal Combustion Waste (CCW) Survey that was conducted in 2009, to which all 50 States responded. The [2006 Beneficial Use Survey Report](#) is available on the Materials Management Subcommittee Publications area of the ASTSWMO website. In this recent survey, the BUTF also identified a need to capture how States actually define non-hazardous industrial waste, and in particular CCRs, so that a consistent “apples to apples” comparison could be made.

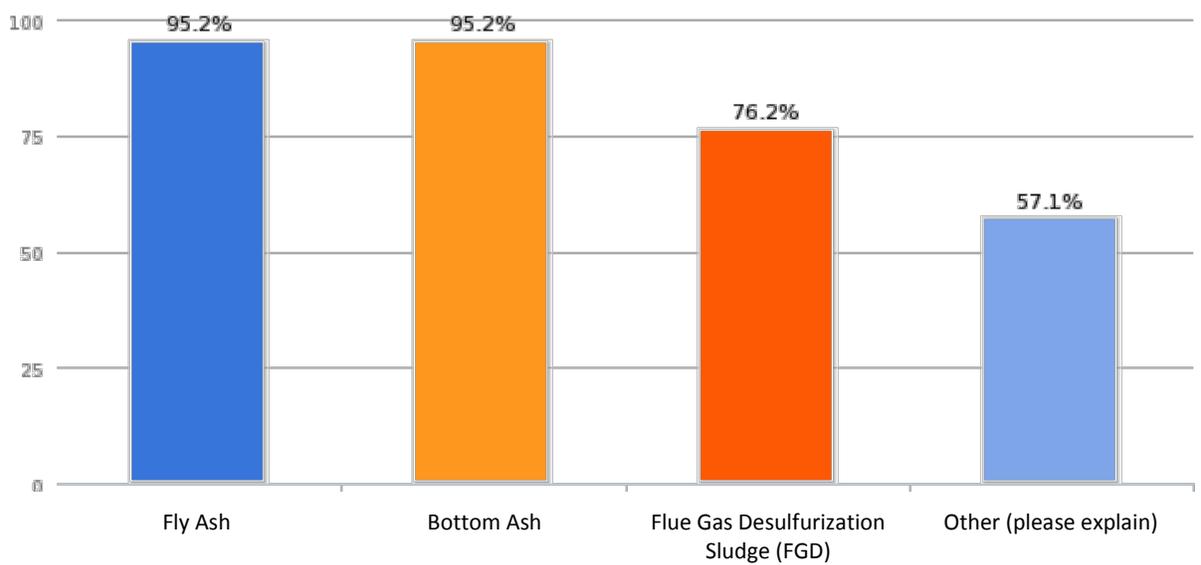
This survey included questions on definitions and classification of wastes to address this comparison. Also included in the survey were questions regarding general information on regulating CCRs, large scale beneficial uses, and end-of-life management. The summary and results of this survey are the focus of this report.

## **DEFINITION OF COAL COMBUSTION RESIDUALS AND BENEFICIAL USE OF CCRs**

### **Definition of CCRs by States**

Approximately one-half of States responding to the survey (48%) have a statutory or regulatory definition of coal combustion residuals. Of those States that define coal combustion residuals in law or regulation, 20 out of 21 (95%) include definitions of coal combustion fly ash and bottom ash. A lesser number, 16 out of 22 (76%), include flue-gas desulfurization (FGD) sludge or other residual in a CCRs definition. Figure 1 shows these results. Several States mentioned a specific inclusion of boiler slag in their definitions of CCRs, in addition to or separate from bottom ash. One State mentioned an umbrella definition to encompass “any other residual of the burning of coal.”

**Figure 1**  
Included in State Definitions of CCR



Twenty-one (21) of 22 States with a definition of CCRs provided more detail concerning the relevant statute or regulation. Several States have a CCRs stand-alone definition; for others, CCRs are included under definitions of waste categories such as residual waste, special waste, or solid waste. Several States term CCRs “by-products”, and one State uses the term “coal combustion products”. One State includes wood ash and coal ash under one definition of “combustion ash”. Several States without a specific regulatory definition of CCRs affirmed that CCRs would be regulated under categories of “solid waste” or “special waste” or a under unique moniker such as “utility waste” for residuals of combustion of all fossil fuels.

Some States reference professional society standards such as ASME and ASTM in their regulatory definitions or provide their own specific operational or technical criteria within the regulatory definition. These criteria, in several State definitions, include a specific description of the type or types of facilities (e.g., a “coal-fired electric or steam generation facility”) that generate CCRs and conditions under which such facilities operate. Frequently, a limit is stated on the co-firing of other fuels in order for the combustion residuals from any nominally “coal-fired” facility to still be considered CCRs.

### **Beneficial Use of CCRs**

A majority (76%, or 35/46) of responding States restrict beneficial use of CCRs. Various means of imposing restrictions are used, in some States by statute (9 States), regulation (26 States), policy (13 States), or local ordinance (2 States). Nine States provided “other” means of restriction, such as beneficial use determinations (non-permit jurisdictional determinations or approvals), solid waste management permits, permits by rule, or indirect restriction through regulatory restrictions on a larger waste category to which CCRs belong.

One State indicated that it does not directly regulate beneficial use of CCRs but rather restricts and regulates use of CCRs in mine reclamation and when any waste, CCRs included, is placed on or in the ground. Another State specifically excludes structural fill use of CCRs from its regulatory definition of beneficial use (to “reclaim, recover, or recycle”) and defines this application as disposal requiring a permit by rule.

Results of the BUTF's 2011-12 Survey coincide with and support findings of the 2009 survey conducted by ASTSWMO regarding States' definition and regulation of CCRs. The 2009 survey provided information that was referenced in [ASTSWMO's April 1, 2009, letter to EPA Office of Resource Conservation and Recovery Director Matt Hale](#) recommending CCRs remain under RCRA Subtitle D in federal regulation. The 2009 survey results, as well as subsequent information gathered by ASTSWMO, were incorporated into the [ASTSWMO comments to EPA regarding the June 21, 2010 proposed rule on CCRs](#). The BUTF's 2011-12 Survey confirms the 2009 Survey's finding that States take an active role in regulating the management of CCRs beneficial use.

Please see **Appendix A** for specific State definitions of CCR.

### **CLASSIFICATION SYSTEM AND TIERED APPROACH**

The BUTF sought information regarding how States manage non-hazardous industrial wastes in a broad sense that may also apply to CCR. States were asked if they have a classification system or tiered approach for the management of industrial non-hazardous waste. States were further asked what methods they used to determine the classification and tiered approach they apply to the management of non-hazardous industrial wastes, and what range of values for the classification and tiered approach may be considered for beneficial use of CCRs. For example, is material allowed to be used for one type of beneficial use based on higher values such as use in concrete versus material placed on the ground (un-encapsulated uses).

Based on analysis of the response to these questions, the BUTF is presenting the findings with caveats. The terms "classification system" and "tiered approach" were not defined in the survey, which left them open to interpretation by individual respondents. Some States did not differentiate between them and some answered based on disposal but did not include the beneficial use range of values. Analysis of State responses indicates that answers given for questions related to classification are substantially similar to answers given to questions related to tiered approaches, so it is prudent for the purposes of the survey to focus more on the description of the State's classification/tier system. It became apparent that, although the survey requested information on methods for classification or tiers of the *management* of non-hazardous waste industrial waste, the corresponding question of values for *beneficial use* of CCRs was not always correlated. Some States reported that they have a classification/tiered approach for disposal but do not have one for beneficial use. Also, some States reported that there are either no set values for CCRs used for beneficial use or CCRs are exempt from solid waste definition. This is one area of questioning about which the BUTF would recommend additional follow-up.

Nonetheless, the following sections summarize what was reported.

Approximately 46% (or 21/46) of responding States indicated having a classification system; approximately 41% (19/46) have a tiered system; and 15 States have both. Some States' classifications or tiers include outright special requirements in regulations for certain specific waste types, while others classify based on chemical constituents and their ratio to the ground water standard such as the Maximum Contaminant Level (MCL), Maximum Contaminant Level Goal (MCLG), or Secondary Maximum Contaminant Level (SMCL). The chemical parameter levels or constituents dictate what degree of environmental management is necessary, such as use of liners, facility design, operations requirements, and siting criteria.

## Examples of State Responses Related to Classification or Tiered System

- *Classifying Waste by Parameter Levels Waste Classification system is the MCLG, MCL, SMCL or risk based contaminant. Totals were based on risk analysis and pathway. Specifically from the State regulations: (1) Class I residual waste has the greatest degree of potential for adverse effects on groundwater and the greatest potential impact on public health, safety and the environment. (Basically levels below HW by TCLP), (2) Class II residual waste has an intermediate degree of potential for adverse effects on groundwater and an intermediate degree of potential impact on public health, safety and the environment. The residual waste may not be of a type from which the maximum concentration obtained for a contaminant, based on a chemical analysis of its leachate submitted under a section of the regulations (relating to chemical analysis of waste), and approved by the Department, exceeds 50 times the waste classification standard for that contaminant, (3) Class III residual waste has the least degree of potential for adverse effects on groundwater and the least potential impact on public health, safety and the environment. For metals and other cations, 25 times the waste classification standard for a contaminant and the limits for sulfate and selenium are 10 times the waste classification standard.*
- *The classification system is applied to wastes with similar chemical and physical composition. The wastes must also be demonstrated to be within the concentration limits for the restricted waste site type. The system is not applied to wastes that are heterogeneous, subject to organic decomposition, or for which test methods are inadequate to determine the hazards posed by the waste or the decomposition products. The classification system (restricted waste site type) was originally developed for land disposal in permitted unit but has also been referenced in administrative rules and statutes allowing use of other solid wastes. The statute for use of coal combustion products prohibits the Department from requiring any testing under this classification system.*
- *The State has several distinct types of landfills designed for disposal of certain types of wastes. While a municipal solid waste landfill can take non-hazardous industrial wastes, an industrial waste landfill can take only non-hazardous industrial wastes. There is a separate residual waste landfill program for landfills restricted to wastes of specific industrial industries: fuel burning operations (principally flue gas desulfurization sludge and coal combustion wastes from coal fired electric utilities), foundry operations, pulp and papermaking operations, steelmaking operations, gypsum processing plant operations, lime processing operations, and Portland cement operations. Coal combustion ash disposal occurs in mostly impoundments and some dry landfills. In general, the landfill siting, design, operation, and length of post-closure are determined by the type(s) of industrial wastes. Residual waste landfills are tailored to handle homogeneous high volume low toxicity wastes of a known industrial operation.*
- *The State does not have a very structured "tiered" approach but the survey respondent thinks the State's approach could certainly be considered as tiered. Non-hazardous wastes that meet the State definition of rubbish (a low soluble, low risk material) could conceivably meet lower standards for disposal. Ash is excluded from the definition of rubbish. All other non-hazardous industrial wastes*

*that do not meet the definition of rubbish would have to meet a higher standard - Subtitle D design standards for landfill disposal.*

Please see **Appendix B** for Additional Examples of State Responses for Classifications/Tiers.

### **Methods to Determine Classification and Tiers**

States were asked what the basis was for their classification or tier system. While only 21 of the 46 responding States indicated having a classification system, 32 States indicated that they had methods for determination of their classifications. Of the 32 States answering this question, 75% of the States base the classifications on waste chemical composition and concentration, 44% base their system on “other methods”, which will be explained later, and 19% base their system on risk analysis (a number of States’ systems have more than one basis listed). While 19 of the 46 responding States have a tiered approach, 25 States indicated they had methods for determining the tier system. Of the 25 States answering this question, 80% of the States base the tier on waste chemical composition and concentration, 52% base their system on “other methods”, which will be explained later, and 28% base their system on risk analysis (a number of States’ systems have more than one basis listed). It is important to note that in reality the concentration limits are usually based on the ratio to the MCL or MCLG’s, which in turn are based on risk to human health and environment. The majority of systems are at some level “risk-based”.

### **Other Explanations**

States have responded that in some cases the methods used are either a combination of methods listed or are in an area not covered by the two choices asked in the survey: Risk Analysis, and Waste Chemical Composition and Concentration.

Other methods used to determine classification or tiered approaches include:

- Material knowledge
- By definition or by exemption in regulations or statute
- Siting and Operating Criteria
- Location of use
- Solubility and Putrescibility
- Certification by generator

It is worth noting here that the [2006 ASTSWMO Beneficial Use Survey Report](#) included a section on factors that States consider when making beneficial use determinations that are echoed in the responses to this survey; please see pages 6-10 of the report.

*EXCERPT from the 2006 ASTSWMO Beneficial Use Survey Report:*

*The States were also asked to rank the list of 10 factors in the order of first, second and third levels of importance. Summing these rankings together (i.e., adding the first, second and third scores for each factor giving a total score for each factor) lead to the following top five factors:*

- 1<sup>st</sup> *test data on the chemical and physical characteristics of the wastes;*
- 2<sup>nd</sup> *benefit assessment based on suitable physical, chemical or agronomic properties of the wastes;*
- 3<sup>rd</sup> *specific numeric thresholds, standards or guidelines used in the evaluations;*
- 4<sup>th</sup> *special conditions that limit use; and*
- 5<sup>th</sup> *human health risk evaluations*

## **Conclusion**

Although there was a lack of clarity with classifications or tiered systems for the beneficial use of CCRs, those States that responded used some form of rankings for disposal of waste based on concentration limits, risk analysis, or other methods. Since distinctions between classification versus tiered systems were not made in the survey, it is not possible to draw a strong connection between classification/tier systems used by States to what wastes are allowed for beneficial use. Based on State responses, we can conclude that States review the beneficial use based on risk in one form or another since concentration limits are also risk-based.

## **LARGE SCALE FILLS**

One key area that had been identified by concerned parties was contamination associated with large scale fill beneficial uses. For an example see:

([http://www.environmentalintegrity.org/news\\_reports/05\\_30\\_2012.php](http://www.environmentalintegrity.org/news_reports/05_30_2012.php))

### **What Are Large Scale Fills?**

Of the 46 States that responded to the survey, nine (9) States reported that they have a definition for a large scale fill operation of CCR. This question was interpreted quite differently across the States that answered affirmatively, based on the definitions provided. Three (3) States provided definitions or other information that described a coal ash landfill, which may indicate that those States consider large scale fill projects to be landfills. Six (6) States provided definitions or other information regarding fill projects; however, only two (2) of these definitions appear to differentiate a large scale fill project from a small scale fill project, with the other four (4) definitions appearing to apply to any CCR fill project.

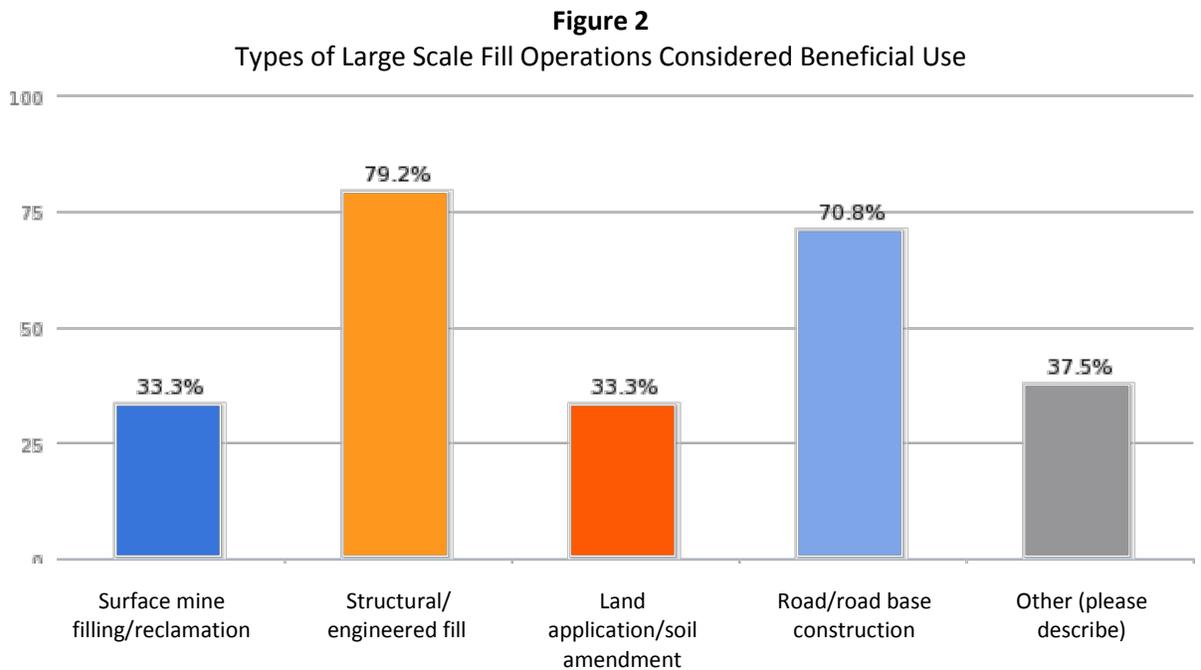
Six (6) States listed a limit, or conditional limits, on the distinction between large scale fill and small scale fill. Two (2) States reported limits in tons, and four (4) States reported limits in cubic yards. The limits reported ranged from 5,000 cubic yards to 60,000 cubic yards for States reporting volumetric limits, and from 10,000 tons to 100,000 tons for States reporting limits by weight. In some cases, the limits have been established by rule, while for others, the limits have been established by precedent.

The majority of States did not report that they currently have a specific definition of large scale fill, and a few States did report specific numeric limits on what they would consider to be small scale fill. While large scale fill was not specifically defined, the majority of States indicated that there were one or more types of large scale fill operations allowed as beneficial use in their States, with use as structural/ engineered fill and use as road or road base construction as the most prevalent large scale beneficial uses.

## Types of Large Scale Fill Operations Considered Beneficial Use

Of the 46 States that responded, 24 States reported that there were one or more types of large scale fill operations of CCR that were considered beneficial use in their State. The most prevalent types of beneficial uses of CCR that were reported were:

- structural/engineered fill: 19 States
- road/road base construction: 17 States
- surface mine filling/reclamation: 8 States
- land application or soil amendment: 8 States
- other beneficial uses of CCRs: 9 States, with 3 of these States reporting various uses related to fill in underground coal mines, 2 States allowing beneficial use in a landfill, and 2 giving responses that allow use for stabilization in road/highway construction.



## Large Scale Fill Operations Limited Numerically or Otherwise

States were asked if they limit a category of use by:

- Volume
- Area
- Lateral extent
- Separation to Groundwater
- Contaminant Concentrations
- Locations
- Institutional Controls
- Depth of Fill
- Other

Figure 3 provides an overview of the States that responded to each category.

**Figure 3**  
**The Number of States Responded Limit Large Scale Fills by Category**

	Surface mine filling/ Reclamation	Structural/ engineered fill	Land application/ soil amendment	Road/road base construction	Other	Responses
<b>Volume</b>	4	5	4	4	1	<b>5</b>
<b>Area</b>	3	3	3	3	1	<b>3</b>
<b>Lateral Extent</b>	3	3	3	3	1	<b>3</b>
<b>Separation to groundwater</b>	4	6	3	6	1	<b>7</b>
<b>Contaminant concentrations</b>	6	6	5	5	1	<b>7</b>
<b>Location</b>	6	6	5	6	1	<b>7</b>
<b>Institutional controls</b>	3	4	3	4	1	<b>4</b>
<b>Depth of fill</b>	4	4	4	5	1	<b>6</b>
<b>Other (please describe)</b>	1	1	1	2	2	<b>4</b>

Note: 34 States answered that they do not limit large scale fill operations as beneficial uses numerically or otherwise. However, this does not address or captures all the case-by-case restrictions that are imposed by States that do not have specific numeric restrictions in law or statute.

States that responded affirmatively to limiting operations do so as summarized in the following:

- **Surface Mine Filling/Reclamation** – responses varied from there being no limit of the amount of CCR that is allowed for large scale fill projects to they are regulated similar to landfills. One State limit is that only a specific classification of ash is used for Surface Mine Filling. Other

respondents stated they have never been asked to review these types of projects. The majority of States that responded affirmatively have some type of regulatory authority over Surface Mine Filling/Reclamation projects.

- **Structural/Engineered Fill** – many States’ responses talk about these types of projects being considered on a case-by-case basis. The majority stated that the CCR would need to be kept out of the groundwater table; have institutional controls in place; and regulate the volume of fill, lateral extent, and area of these types of fills.
- **Land Application/Soil Amendment** – many States regulate the location and have contaminant concentration limits. Groundwater separation distances varied from none, to no deeper than plow depth, to 10 feet. Some States’ agricultural regulatory agencies oversee this activity.
- **Road/Road Base Construction** – the majority regulate the separation to groundwater, contaminant concentrations, and the location where the CCR can be placed.
- **Other** – other limitation examples are setback distances from bedrock outcrops, water supply sources, floodplains, and wetlands. Many States have specific approvals that regulate sites on a case-by-case basis.

#### **State Response Examples:**

*“We do not have any regulatory limits currently on volume or depth of fill; however, these are considered case-by-case. Non-CCR cover is required for fill projects. Groundwater separation variances are possible. Our regulations do not distinguish small scale from large scale. If we feel that a fill project appears too large, even if it meets the Solid Waste as Fill criteria, we will require it to be permitted as an inert waste monofill.”*

*“Unencapsulated uses are not approved unless contaminant concentrations are below residential risk levels for direct human exposure and direct contact with groundwater, whichever is less.”*

*“Contaminant concentrations have been limited to soil cleanup objectives in a part of the regulations that reflect unrestricted use of a site, residential use and impact to groundwater. Large-scale fills under beneficial use determinations are location-specific or limited, in the case of road base or engineered fill, the volumes and dimensions shown in design documents. Many materials including CCRs must be placed below an impermeable surface and above the seasonal high groundwater table. It is likely a solid waste facility permit would be required for large fills to allow for greater environmental controls.”*

*“For all beneficial uses we consider concentration levels, quantities, and locations of proposed use.”*

#### **Other Special Requirements for Large Scale Fills as Beneficial Use**

States were asked if they have other special requirements for large scale fills such as ground water monitoring, liner systems, capping, isolation criteria or other. The responses are summarized in the following table.

**Figure 4**  
**The Number of States Responded to Large Scale Fill Special Requirements**

Groundwater monitoring with wells or lysimeters	4
Liner systems	4
Capping	9
Isolation criteria	9
Other	19

The survey did not ask whether the State has a different agency that regulates mine/quarry reclamation using coal ash. Depending on how each State’s regulatory system is set up, use of coal ash in mines/quarries may not be regulated by the solid waste regulations. Also, what each State considers a large scale fill project is different so the comparisons may not be equal from State to State. Isolation criteria was described by respondents as separation setbacks from groundwater, surface waters (lake, waterways, ponds, etc.), wells, property lines, roads, houses, wetlands, floodplains, sinkholes, etc.

The “other” special requirements included: volume limits; engineering specifications; environmental performance standards; public comment periods; case-by-case restrictions based on site-specific criteria; storm water diversion and collection; CCR testing requirements; and dust control.

**State Response Examples:**

***Isolation:***

*“Out of wetlands, water of the State, or within 5 feet of high ground water table, out of floodplain, greater than 200 feet from a sinkhole or a well being used for human or livestock consumption.”*

*“100 feet from property line, road, lake or stream. 300 feet from a house. Not in wetland or flood plain.”*

*“Fill projects must have a minimum of three feet between the bottom of the fill and seasonally high groundwater. Also, the fill must be capped with a minimum of one foot of topsoil.”*

***Other:***

*“Locational restrictions, such as not located in areas subject to base floods; vertical separation between CCBs and maximum seasonal water table or bedrock; cannot be closer than 100 feet of any perennial stream, 100 feet of any water well, 25 feet of a bedrock outcrop, 100 feet of a sinkhole, or 25 feet of any property boundary; or in wetlands.”*

*“The only types of fill activities allowed are some limited construction based fill and some road base fill. These are limited on a case specific basis through the BUD [beneficial use determination] issued on the material and the use. All of the items above could be considered if the conditions warranted such consideration.”*

*“Avoiding placement of the material where there is potential for it to come into direct contact with groundwater, or direct contact with surface water bodies. Utilizing up-slope storm water diversions to prevent unnecessary contact of storm water with CCB. Incorporate CCB into the final grade, site soils or road base as promptly as practicable to minimize exposure to storm waters. Avoiding delivery of the material in saturated or near saturated condition to a site. Preventing exposure to precipitation by ceasing activities when rainfall is anticipated and covering the material when stockpiled. Avoiding placement of material on steep slopes where erosion is likely. Notifying the landowner that the beneficial use is taking place and, if appropriate, marking property lines so that the material is not placed on someone else's property. Notifying city and county authorities such as planning and zoning and health departments that the beneficial use is taking place. Sometimes obtaining local approval for the use of the material may be necessary. Notifying the appropriate district of the U.S. Army Corps of Engineers if the site is bordered by a waterway such as a stream or river, or if you will potentially impact a wetland. Obtaining a land disturbance permit from the department's Water Pollution Control Program if the total land area to be disturbed is one (1) acre or larger in size; and Ensuring that the material meets all specifications for the job site and proper placement methods are used.”*

*“Testing requirements (TCLP, SPLP, Total Metal Concentrations, pH) for quarry reclamation the Department requires the CCR be pug milled (hydrated) for dust control.”*

## **Prohibition**

The 46 States that responded were split (50%) as to whether they prohibit large scale beneficial uses in certain circumstances. Of those that do prohibit large scale uses, it is done so in a variety of ways:

- If use constitutes disposal and thus need a landfill permit
- Not meeting isolation criteria
- Parameter limits exceed human health or environmental threat levels
- In areas in direct contact with the groundwater
- Only in areas other than coal mining area for reclamation
- If there is no engineering need for the CCR
- Case-by-case review

## **Exceeding Allowable Criteria and Other Environmental Concerns**

There have been some public comments regarding the detrimental effects that large scale fill beneficial use projects have had on the environment. The BUTF sought data from the States as to whether monitoring is in place to detect and prevent environmental issues from occurring and what is being

done should degradation occur or limits are exceeded. Also, States were asked if there are complaints received on a large scale fill beneficial use projects.

As previously stated, 74% (34/46) of the States that responded do not limit large scale fill operations numerically or otherwise.

If a site exceeds the limits established, the majority of States could require landfill permits (81%, or 30/37 responses); 13 States (41%, or 13/32 responses) would not allow beneficial use if it exceeds the limits established, whereas 19 States (59%, or 19/32 responses) could allow under certain circumstances such as:

- Require ground water monitoring and/or assessment
- Exempt under certain circumstances
- Allow under case-by-case basis review
- Require additional operational plans
- Require liners or groundwater separation

**State Response Examples:**

*“A solid waste facility permit pursuant to the regulations may be considered for any fill project where elevated concentrations of chemicals may be present, where the facility wishes to charge a fee to receive materials as fill, where a liner, cover or other controls may be needed, and in general to allow a greater degree of Department control and monitoring.”*

*“We treat them on a case-by-case basis. If an applicant can provide reasonable assurance that a large scale beneficial use project will not result in water quality violations or pose an unacceptable risk to human health, then we would approve that beneficial use. So far no one has done that. Most of the time we consider large fill operations to be disposal not beneficial and require a permit. One applicant talked about building a road ramp out of CCR and we were considering allowing it as a test with ground water monitoring but they never went forward with the project using CCR.”*

*“The responsible person would be required to apply for a solid waste management permit to operate a solid waste landfill in order to move the project forward.”*

Of the 39 States that responded when asked about complaints received from beneficial use of large scale fills, only 15 (38%) have received complaints. The majority of States, 24 (62%), did not receive complaints. The complaints dealt mainly with:

- Fugitive dusts
- Not following approval conditions
- Environmental Integrity Project and Other Environmental Groups allegations

For further discussion on compliance monitoring of the use of CCR, please see the [ASTSWMO Beneficial Use Survey Report](#) published in 2007 (pages 10-12) for a discussion of States’ enforcement and compliance efforts for all beneficial uses.

## **END-OF-LIFE MANAGEMENT**

The BUTF sought to determine whether States are evaluating the end-of-life of CCRs when making beneficial use determinations. According to the survey, 37% (17/46) of States do consider this aspect in their decision making process, while 63% (29/46) do not. States use a variety of provisions or criteria in evaluating end of life management for CCRs. A detailed list of provisions can be found in **Appendix C**. Some of these provisions include:

- Conditions and restrictions on approvals
- Case-by-case inspections, reviews, and determinations
- Encapsulated uses are considered protection at end-of-life
- Residential exposure criteria is considered prior to allowing beneficial use of CCRs
- Require levels (leaching and totals) for minimum risk based on exposure pathways
- If the CCRs meet conservative standards in the regulations, it is presumed safe to remain in the approved use. If the material is removed from the beneficial use site, then the material may only be used in a similar use, approved use, or disposed of.

Some States presume that the approved use is the end-of-life of the CCR. If the material is to be subsequently removed from its approved use, it must be managed in a similar way, beneficially reused in another approved manner, or disposed. Of the 46 States that responded, 38 States (83%) do not monitor that end-of-life provisions or criteria have been followed. Of the eight (8) States that do monitor end-of-life, monitoring is performed by a variety of measures, including but not limited to:

- Monitoring results and requirements
- Annual reporting
- Inspections
- Response to citizen complaints

## **SUMMARY and RECOMENDATIONS**

### **Summary:**

#### **Definition of CCR**

Only half of the States that responded reported that they define CCR by statute or regulation. Results of the BUTF's 2011-12 Survey coincide with and support findings of the 2009 survey conducted by ASTSWMO regarding States' definition and regulation of CCRs.

#### **Classification and Tiered Approach**

Approximately 46% (or 21/46) of responding States indicated having a classification system; approximately 41% (19/46) have a tiered system; and 15 States have both. Some States' classifications or tiers include outright special requirements in regulations for certain specific waste types, while others classify based on chemical constituents and their ratio to the ground water standard such as the Maximum Contaminant Level (MCL), Maximum Contaminant Level Goal (MCLG), or Secondary Maximum Contaminant Level (SMCL). The chemical parameter levels or constituents dictate what

degree of environmental management is necessary, such as use of liners, facility design, operations requirements, and siting criteria.

Although there was a lack of clarity with classifications or tiered systems for the beneficial use of CCRs, those States that responded used some form of rankings for disposal of waste based on concentration limits, risk analysis, or other methods. Since distinctions between classification versus tiered systems were not made in the survey, it is not possible to draw a strong connection between classification/tier systems used by States to what wastes are allowed for beneficial use. Based on State responses, we can conclude that States review the beneficial use based on risk in one form or another since concentration limits are also risk-based.

### **Large Scale Fills**

Although the majority of States do not currently have a specific definition of large scale fill, and only a few States did report specific numeric limits on what they would consider to be small scale fill, 24 States indicated that there were one or more types of large scale fill operations allowed as beneficial use in their States, with use as structural/engineered fill and use as road or road base construction as the most prevalent large scale beneficial uses. Trying to establish beneficial use patterns/criteria for large scale fill, when this term is not really defined by most States, may have affected how some States answered. The survey results indicate that over half of the States allow some kind of CCR beneficial use as fill.

This survey did not address whether the States limit each project on a case-by-case basis. It is probable that some States have different numeric limits (e.g., depth of fill, groundwater separation, institutional controls, etc.) depending on the scope and the type of project. States may not have specific numeric restrictions in their law or statute (such as contaminant concentration, lateral extent, etc.) but they have the ability to regulate each project on a case-by-case basis.

Some States have a different agency that regulates mine/quarry reclamation using coal ash. Depending on how each State's regulatory system is set up, use of coal ash in mines/quarries may not be regulated by the solid waste regulations.

Although it is split that States prohibit large scale beneficial uses in certain circumstances, those that do allow large scale fills do so under requirements such as landfill permits or beneficial use under certain restrictions.

The majority of the States have not received complaints but those complaints received have been handled through State investigation and enforcement.

### **End-of-Life**

According to the survey, 63% (29/46) of the States do not consider this aspect in their decision making process. Of the 46 States responding, 38 States (83%) do not monitor that end-of-life provisions or criteria have been followed.

### **Recommendations and Follow-Up**

The BUTF sought information on how States determine the range of values for the classification and tiered approach considered for beneficial use of CCRs. The question should be asked: is material allowed

to be used for one type of beneficial use based on higher values such as use in concrete versus material placed on the ground (un-encapsulated uses).

Some of the questions were open ended and, as previously mentioned, the terms “classification system” and “tiered approach” were not defined in the survey, which left them open to interpretation by individual respondents. Future surveys should better define terms to provide for a common interpretation. In addition, rather than open ended questions, future surveys should incorporate multiple choices. It is suggested that this particular section be reevaluated as part of a smaller specific survey.

Some States reported that there are either no set values for CCRs used for beneficial use or CCRs are exempt from solid waste definition. This is one area of questioning about which the BUTF would recommend additional follow-up.

Large scale fill beneficial use reviews on a case-by-case basis should be further explored. States may not have specific numeric restrictions in their law or statute (such as contaminant concentration, lateral extent, etc.), but they have the ability to regulate each project on a case-by-case basis.

The statistics regarding end-of-life monitoring suggest that future uses of the material may be an area needing more study. End-of-life should be explored as consideration for beneficial use reviews.

## Appendix A

### Examples of State Definitions of CCR

*“Coal or wood ash” means either or both of the following: (a) The residue remaining after the ignition of coal or wood, or both, and may include noncombustible materials, otherwise referred to as bottom ash. (b) The airborne residues from burning coal or wood, or both, that are finely divided particles entrained in flue gases arising from a combustion chamber, otherwise referred to as fly ash.*

*Coal Combustion By-Product - means any solid by-product produced by the burning of coal, by itself or in conjunction with natural gas or other fossil fuel, which is suitable for disposal as solid waste in a sanitary landfill. Examples include boiler slag, bottom ash, fly ash, and flue gas desulfurization by-products from pollution control equipment. Coal combustion by-products are also referred to as coal combustion residue.*

*In lieu of using the term CCR, the State defines "coal combustion byproducts" or "CCB" as residuals, including fly ash, bottom ash, boiler slag, and flue gas emission control waste produced by burning coal.*

*Coal combustion waste. "Coal combustion waste" means any fly ash, bottom ash, slag, or flue gas or fluid bed boiler desulfurization by-products generated as a result of the combustion of: (1) coal, or (2) coal in combination with: (i) fuel grade petroleum coke, (ii) other fossil fuel, or (iii) both fuel grade petroleum coke and other fossil fuel, or (3) coal (with or without: (i) fuel grade petroleum coke, (ii) other fossil fuel, or (iii) both fuel grade petroleum coke and other fossil fuel) in combination with no more than 20% of tire derived fuel or wood or other materials by weight of the materials combusted; provided that the coal is burned with other materials, the Agency has made a written determination that the storage or disposal of the resultant wastes in accordance with the provisions of item (r) of Section 21 would result in no environmental impact greater than that of wastes generated as a result of the combustion of coal alone, and the storage disposal of the resultant wastes would not violate applicable federal law.*

*The State statute for use of "coal combustion products" defines coal combustion products in accordance with ASTM E-2201-02(a).*

*Coal Combustion Products (CCPs) are defined as mixed coal fly ash and coal bottom ash/slag generated*

*The State has a definition of Coal Ash which is: Coal ash - For purposes of certain chapters of the regulations, fly ash, bottom ash or boiler slag resulting from the combustion of coal, that is or has been beneficially used, reused or reclaimed for a commercial, industrial or governmental purpose. The term includes such materials that are stored, processed, transported or sold for beneficial use, reuse or reclamation. For purposes of a chapter of the regulation (relating to residual waste landfills), the term also includes fly ash, bottom ash or boiler slag resulting from the combustion of coal, that is not and has not been beneficially used, reused or reclaimed for a commercial, industrial or governmental purpose. Coal Ash not beneficially used, and other*

*combustion material and material from air pollution control devices such as FGD material and pyrites are considered a Residual Waste and subject to Subtitle D type of standards and regulated under certain chapters of the regulations. Residual waste - Garbage, refuse, other discarded material or other waste, including solid, liquid, semisolid or contained gaseous materials resulting from industrial, mining and agricultural operations and sludge from an industrial, mining or agricultural water supply treatment facility, wastewater treatment facility or air pollution control facility, if it is not hazardous. The term does not include coal refuse as defined in the Coal Refuse Disposal Control Act. The term does not include treatment sludges from coal mine drainage treatment plants, disposal of which is being carried on under and in compliance with a valid permit issued under the Clean Streams Law.*

*Coal Combustion By-products - Fly ash, bottom ash, boiler slag, or flue gas emission control by-products which result primarily from the combustion of coal or other fossil fuels at electric generating plants.*

*The State does not directly define CCR, but rather classifies it. The definition for inert waste does so: "inert waste" means solid waste that has a low potential to pollute air or water, and that does not normally attract wildlife; "inert waste" includes coal power plant ash, scrap metal, auto fluff, construction and demolition waste, and pavement rubble; "inert waste" does not include asphalt material that contains asbestos;*

*"Coal Combustion" means the combustion of coal or coal along with department-approved alternate fuels, such as tires, at an energy generation facility provided the alternate fuels comprise no more than 30 percent of the fuel burned at the facility. There is no general definition for "ash" in the regulations, though "fly ash" and "bottom ash" are defined with respect to incineration of municipal waste.*

*The coal ash disposed of is fly ash, bottom ash, or boiler slag resulting primarily from the combustion of fossil fuel.*

*"Coal combustion by-products" means residuals, including fly ash, bottom ash, boiler slag and flue gas desulfurization residue produced by coal fired electrical or steam generation units*

*The State statute defines "wastes resulting from the following manufacturing processes: Electric Power Generation" as an "Industrial Solid Waste"; and "sludge from an...air pollution control facility" as a "Solid Waste".*

*(46) "Solid waste" means any garbage, refuse, or sludge from a waste treatment facility, water supply plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. This term does not include solid or dissolved material in domestic sewage, recovered materials, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to NPDES permits under the Federal Water Pollution Control Act, as amended, or the State's Pollution Control Act, as amended, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended. Also excluded from this definition are application of fertilizer and animal manure during normal agricultural operations or refuse as defined and regulated*

*pursuant to the State's Mining Act, including processed mineral waste, which will not have a significant adverse impact on the environment.*

*From the regulations: "(3) Coal Combustion Byproducts. (a) "Coal combustion byproducts" means the residue generated by or resulting from the burning of coal. (b) "Coal combustion byproducts" includes fly ash, bottom ash, boiler slag, pozzolan, and other solid residuals removed by air pollution control devices from the flue gas and combustion chambers of coal burning furnaces and boilers, including flue gas desulfurization sludge and other solid residuals recovered from flue gas by wet or dry methods. "*

*The State does not have a definition of CCRs - it has a definition of "special waste" which includes CCR. It reads "Special wastes are those wastes of high volume and low hazard which include but are not limited to mining wastes, utility wastes (fly ash, bottom ash, scrubber sludge), etc."*

*"Utility waste means fly ash waste, bottom ash waste, slag waste and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels"*

*Coal combustion slag. "Coal combustion slag" means the noncombustible coal residue collected in a water-filled hopper at the bottom of a cyclone-type furnace. It is characterized as glassy, angular-shaped particles with diameters ranging from one-tenth to ten millimeters in size.*

*State law uses the term "coal combustion wastes" for the purpose of wastes that may be accepted in a "byproduct disposal facility" defined as including all of the following: (a) Air pollution control wastes that are solid wastes, that result from the combustion of coal at a coal-fired electric generating facility owned, operated, or leased by an electric light company or a municipal power agency, and that are generated by air pollution control equipment installed or used at the electric generating facility for the purpose of complying with applicable emission standards or emission limitations established under the State air quality act as amended, and regulations adopted under it or a chapter of the Revised Code and rules adopted under it; (b) Air pollution control wastes that are solid wastes and that are generated in the operation of air pollution control equipment installed at a byproduct disposal facility for the purpose of complying with a chapter of the Revised Code and rules adopted under it; (c) Water pollution control wastes that are solid wastes and that are generated in the operation of a disposal system or treatment works installed at a byproduct disposal facility for the purpose of complying with a chapter of the Revised Code and rules adopted under it; (d) Any other similar types of solid wastes that are produced in the operation of a coal-fired electric generating facility or in the operation of air pollution control equipment, disposal systems, or treatment works installed or used at such a facility and that are identified in rules adopted under division (A) of section of the Revised Code. It should be noted that while the above wastes are defined as coal combustion wastes that can be disposed in a byproduct disposal facility, not all the included types of wastes are State defined solid wastes. The State's definition of solid waste excludes "...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...". State law separately defines "coal combustion byproducts" specifically for the beneficial use authorized at coal mining and reclamation operations and abandoned mine lands. In this context, "coal combustion byproducts" means 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.*

*"Coal Combustion By-Products" means the residuals, including fly ash, bottom ash, bed ash, and boiler slag flue gas emission control waste produced by coal-fired or coal/gas-fired electrical or steam generating units. For non-electrical steam generating units burning a combination of solid waste and coal, a carbon monoxide (CO) level of less than or equal to one hundred parts per million (100 ppm) on a 24-hour average basis is required for the by-products to meet this definition. The carbon monoxide level must be calculated on a dry gas basis corrected to seven percent (7%) oxygen.*

*This is the State's definition of solid waste which covers coal ash: "Solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded or salvageable materials, including solid, liquid, semisolid, or contained gaseous materials resulting from industrial, commercial, mining and agricultural operations, and from community activities, but does not include solids or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under State regulation, or source material, as defined in State regulation, special nuclear material, as defined in State regulation or by-product material, as defined in State regulation.*

## APPENDIX B

### Additional State Response Examples for Classification

- *A processing facility is a coal ash fill area, if disposal is limited to (1) coal ash in engineered structures for the following projects: a highway overpass, levee, runway, or foundation backfill or (2) such other similar uses as the Commissioner may approve in writing. Class II disposal facility refers to a landfill which receives waste which is generated by one or more industrial or manufacturing plants and is used or to be used for the disposal of solid waste generated by such plants, which may include industrial wastes, commercial wastes, institutional wastes, farming wastes, bulky wastes, landscaping and land clearing wastes, construction / demolition wastes, and shredded automotive tires. Additionally, a Class II disposal facility may also serve as a monofill for ash disposal from the incineration of municipal solid waste.*
- *There are basically three categories of non-hazardous solid waste in the State. These are municipal solid waste, inert waste, and technically "other". Non-hazardous industrial solid waste could be considered "other" or "inert", depending on characteristics. If not deemed inert and intended for disposal, it would have to be managed at either a "limited purpose landfill" designed to mitigate potential environmental risks, or a Subtitle D facility. If determined to be inert, it could be managed at an inert waste landfill.*
- *There are three classes (Class 1, 2, and 3) of non-hazardous industrial waste per the State waste classification system in the regulations; Class 1 is the highest hazard category and Class 3 is the lowest hazard category.*
- *TCLP >10x MCL = Class 3 landfill; TCLP < 10x MCL = Class 2 landfill*
- *Classifying Waste by Parameter Levels Waste Classification system is the MCLG, MCL, SMCL or risk based contaminant. Totals were based on risk analysis and pathway. Specifically from the State regulations: (1) Class I residual waste has the greatest degree of potential for adverse effects on groundwater and the greatest potential impact on public health, safety and the environment. (Basically levels below HW by TCLP), (2) Class II residual waste has an intermediate degree of potential for adverse effects on groundwater and an intermediate degree of potential impact on public health, safety and the environment. The residual waste may not be of a type from which the maximum concentration obtained for a contaminant, based on a chemical analysis of its leachate submitted under a section of the regulations (relating to chemical analysis of waste), and approved by the Department, exceeds 50 times the waste classification standard for that contaminant, (3) Class III residual waste has the least degree of potential for adverse effects on groundwater and the least potential impact on public health, safety and the environment. For metals and other cations, 25 times the waste classification standard for a contaminant and the limits for sulfate and selenium are 10 times the waste classification standard.*
- *The State has several distinct types of landfills designed for disposal of certain types of wastes. While a municipal solid waste landfill can take non-hazardous industrial wastes, an industrial waste landfill can take only non-hazardous industrial wastes. There is a separate residual waste landfill program for landfills restricted to wastes of specific industrial industries: fuel burning operations (principally flue gas desulfurization sludge and coal combustion wastes from coal fired electric*

utilities), foundry operations, pulp and papermaking operations, steelmaking operations, gypsum processing plant operations, lime processing operations, and Portland cement operations. Coal combustion ash disposal occurs in mostly impoundments and some dry landfills. In general, the landfill siting, design, operation, and length of post-closure are determined by the type(s) of industrial wastes. Residual waste landfills are tailored to handle homogeneous high volume low toxicity wastes of a known industrial operation.

- All industrial wastes must be disposed of in a permitted landfill unless otherwise exempted (beneficial use). The State has Utility Waste and Special Waste Permitting Requirements for landfills. Most of the non-hazardous industrial waste that is non-CCBs is disposed of in a permitted Sanitary Landfill. State regulation includes this definition: "Special waste means waste which is not regulated hazardous waste which has physical or chemical characteristics, or both that are different from municipal, demolition, construction and wood wastes, and which potentially require special handling".
- By statute and Rule this would be a "special waste". "Special waste," means any solid waste generated by sources other than household and typical commercial establishments that exists in such an unusual quantity or in such a chemical or physical state, or any combination thereof, that may disrupt or impair effective waste management or threaten the public health, human safety or the environment and requires special handling, transportation and disposal procedures. Special waste includes, but is not limited to: (1) Ash; (2) Industrial and industrial process waste; (3) Sludge and dewatered septage; (4) Debris from nonhazardous chemical spills and cleanup of those spills; (5) Contaminated soils and dredge materials; (6) Asbestos and asbestos-containing waste; (7) Sand blast grit and non-liquid paint waste; (8) High and low pH waste; (9) Spent filter media residue; and (10) Shredder residue.
- The classification system is applied to wastes with similar chemical and physical composition. The wastes must also be demonstrated to be within the concentration limits for the restricted waste site type. The system is not applied to wastes that are heterogeneous, subject to organic decomposition, or for which test methods are inadequate to determine the hazards posed by the waste or the decomposition products. The classification system (restricted waste site type) was originally developed for land disposal in permitted unit but has also been referenced in administrative rules and statutes allowing use of other solid wastes. The statute for use of coal combustion products prohibits the Department from requiring any testing under this classification system.
- The State classifies Industrial Solid Waste (ISW) in three categories for purposes of design requirements for landfills. The categories are based on "potential to contaminate groundwater"; low, medium and high. Low potential requirements are the same as C&D landfills, and high potential are the same as MSWLF. However, medium potential ISW landfills located in "Significant Groundwater Recharge Areas" have the same requirements as MSWLFs.
- The State has a two-pronged system of classifying industrial waste. To start, the State has specific rules for certain high-volume waste streams that require special requirements based on the nature of the waste stream. These include specific requirements for: 1) Oil and Gas Drilling Waste; 2) Asbestos Waste Monofills; 3) Sewage Solids Monofills; 4) Mining Waste; 5) Wood waste (from timber industry). The second prong is for the remaining industrial waste streams that do not meet the aforementioned requirements. This involves two classifications: 1) Inert waste; and 2) Industrial Solid Waste. Our regulations define inert waste as waste with a low potential to pollute air, land, or water, and does not attract wildlife. Inert waste monofills do not require liners, and only require groundwater monitoring in areas with greater than 25 inches of precipitation per year. Wastes

*specifically included in this classification include C&D waste, and coal ash. Industrial solid waste has a definition in State regulations that is similar to the industrial solid waste definition in 40 CFR 258.2. It includes higher risk non-hazardous wastes. To date, this classification has had limited use in the State, since higher risk industrial wastes are covered by the waste-specific requirements mentioned above. Industrial waste monofills require composite or alternative liners similar to the criteria in 40 CFR 258 for municipal solid waste, and also require groundwater monitoring.*

### **Additional State Response Examples for Tiered Approach**

- The State has a tiered approach for disposal but not beneficial use. The residual waste landfill has four classes (I, II, III, and IV) that are tiered as far as siting, design, operation, and length of post-closure are determined by the type(s) and characteristics of the industrial wastes. For example, less stringent class III landfills have specific limitations on waste based parameters and maximum concentrations above which cannot be accepted into the class III landfill.*
- While not directly applicable the State uses State developed soil cleanup target levels as guidance for decisions on beneficial use of non-hazardous industrial waste including CCRs. So this would look at residential and industrial/commercial scenarios. [The respondent considered this to be a tiered approach for purpose of the survey.]*
- The State's Solid Waste Management Rules establishes a tiered system based on volume and waste characteristics.*
- It is the restricted waste site type program discussed under the Classification response. For coal combustion products, it only applies to disposal in a permitted landfill, not to any beneficial use.*
- In general, the "riskier" the material, the more the complicated the licensing of those materials are. In the example of CCR, the use of CCR is exempt when used in concrete or asphalt batching. If the intent would be to allow the use of CCR in a school playground, would be a much more difficult application to demonstrate that the total "risk" would be acceptable.*
- Inert industrial by-products can be used in any beneficial manner. Low-Hazard industrial by-products that are bonded by limes, cement, or asphalt are inert. Many industrial by-products can be used to treat/solidify waste prior to disposal into a licensed landfill. We have approved many uses on a case-by-case basis for industrial by-products.*
- The State does not have a very structured "tiered" approach but the survey respondent thinks the State's approach could certainly be considered as tiered. Non-hazardous wastes that meet the State definition of rubbish (a low soluble, low risk material) could conceivably meet lower standards for disposal. Ash is excluded from the definition of rubbish. All other non-hazardous industrial wastes that do not meet the definition of rubbish would have to meet a higher standard - Subtitle D design standards for landfill disposal.*
- For Class III waste these are typically the limit for beneficial uses of unencapsulated material. Class II requires at least single composite liner system. Class I requires a double lined facility with one liner being a composite.*
- Same as the Classification response: TCLP >10x MCL = Class 3 landfill; TCLP < 10x MCL = Class 2 landfill*

## APPENDIX C

### Examples of States' End-of-Life Provisions or Criteria

- *Adequate cover and stability*
- *Considerations are made prior to initial approval.*
- *Encapsulated uses wind up as C&D waste. The pilot project for unencapsulated use is on-going.*
- *It would re-enter the waste stream and would be managed as a solid waste.*
- *Material still considered solid waste, must be managed in accordance with State regulation or landfilled.*
- *Must be managed per Department standards.*
- *Potential for adverse impacts to the public health, safety, welfare or the environment.*
- *The leaching or total value of the material at end use.*
- *The material may be reused or disposed of accordingly.*
- *Encapsulated uses are considered protective at end of life.*
- *There is a 30 year post closure monitoring period required.*
- *While the State has not had large scale fill beneficial use projects, State law does provide some mechanisms to restrict land use (environmental covenant).*
- *The State does not issue beneficial use determinations for CCR or any other wastes, other than scrap tire materials.*
- *The State's regulations do not specifically provide for what happens if someone were to remove CCR that was used in an approved fill project, so this is a potential loophole in our current regulations. Since our approvals do require that a person cover the coal ash with something else as part of the approval, we suspect that we would limit what they could do with excavated fill. We suspect that we would require them to dispose of the coal ash as required by the regulations at the time that the end of life cycle is reached.*
- *The State's regulations make the assumption that the material is going to remain in place and will not be removed. However, if the material were to be removed it would either need to be managed in a similar way under a BUD or disposed of accordingly.*
- *If discarded, the material will become a solid waste once again and be subject to evaluation for disposal or beneficial use.*

- *Anyone who disturbs a CCR that was used in accordance with the statute or rules needs to characterize the material and dispose/reuse it in accordance with the current regulations.*
- *In all cases of sizable beneficial reuses of CCR, the beneficial reuse is identified as the end-of-life. Any approval is provided given a determination that the described use would be protective. In such case that the beneficial use is not the end-of-life, such as use as a road base which is altered in a roadway redesign, the person altering the approved use should either dispose of the material in a permitted landfill or apply to beneficially reuse it in a different project.*
- *The State considers the character of the material, the proximity to receptors, placement considerations and the long term risk to human health and environment.*