

# Technical Bulletin

## Inactive Surface Impoundments and EPA Direct Final Rules for Disposal of Coal Combustion Residuals from Electric Utilities

The U.S. Environmental Protection Agency (EPA) published its final rules governing disposal of coal combustion residuals (CCR) produced by electric utilities. The rules appear at 80 *Fed. Reg.* 21302 (April 17, 2015) [40 CFR §257] and were effective on October 19, 2015.

The rules regulate CCR from electric utilities as a new category of Resource Conservation and Recovery Act (RCRA) Subtitle D (solid waste) facility that requires detailed location, design, operation, closure and post-closure care requirements to be met, or the facility will be considered an “open dump” subject to citizens’ suit enforcement under RCRA.

As often is the case, the rules were challenged by a number of interested parties [Utility Solid Waste Activities Group et al. v. EPA, Court of Appeals for the DC Circuit, Case No. 15-1219], and a partial settlement was reached that resulted in the court vacating the portion of the rule that provided reduced requirements for inactive CCR surface impoundments that close by April 17, 2018.

The court ordered EPA to provide a new set of deadlines for inactive surface impoundments, and on August 5, 2016, EPA did so [81 *Fed. Reg.* 51802, 40 CFR §257.100(e)].

Whether EPA can regulate inactive CCR surface impoundments at all is an issue still before the court, as some of the parties contend that RCRA open dump authority does not address facilities no longer in use.

The new deadlines apply to inactive surface impoundments, which are defined as units

that hold CCR and liquids, but that did not receive CCR on or after October 19, 2015, the effective date of the CCR rules. Some former CCR surface impoundments were converted into inactive CCR landfills that are not regulated by the EPA rules. If the ability of the unit to hold liquids was removed before October 19, 2015, the unit would become a CCR landfill. Inactive CCR landfills that do not accept CCR on or after October 19 are not subject to the CCR rules.

### Eligible Inactive CCR Impoundments

The extended deadlines published on August 5, 2016, apply to inactive surface impoundments that completed the following activities:

- Placing in their facility’s written operating record a notification of intent to initiate closure of the CCR unit as required by 40 CFR 257.100(c)(1), no later than December 17, 2015;
- Providing notification to the relevant State Director and/or appropriate Tribal authority by January 19, 2016, of the intent to initiate closure of the CCR unit; and
- Placing the notification of intent to initiate closure of the CCR unit on the owner or operator’s publicly accessible CCR Web site no later than January 19, 2016.

Table 1 shows the revised deadlines that apply to eligible inactive CCR surface impoundments.

**Table 1. Compliance Milestones for Eligible Inactive CCR Impoundments**

When	What
4/18/17	Dust Control Plan [257.80(b)] Initiate Weekly and Monthly Inspections [257.83(a)]
6/16/17	Permanent Marker [257.73(a)(1)]
7/19/17	Initial Annual Inspection by PE [40 CFR 257.83(b)]
4/17/18	Document Liner [257.71(a) and (b)] Hazard Potential Classification [257.73 (a)(2)] Big and Tall Impoundments Construction History [257.73(b) and (c)] Assessment and Factor of Safety [257.73(b), (d), (e), and (f)] Flood Control System Plan [257.82(c)] Written Closure Plan [257.102] and Post-Closure Plan [257.104(d)]
10/16/18	Emergency Action Plan for Significant- or High-Hazard Potential [257.73]
4/17/19	Groundwater Monitoring [257.90(b) and 257.94(b)]
8/1/19	Annual Groundwater and Corrective Action Report [257.90(e)]
4/16/20	Location Restrictions [257.60 through 257.64]

If an inactive CCR surface impoundment is closed before April 17, 2018 (as was originally required), one assumes there would be no need for documenting whether the (closed) impoundment had a liner or met location restrictions. A closed impoundment

should not present a hazard or inadequate factor of safety, or require an emergency action plan. The important deadlines would be for post-closure care, groundwater monitoring and corrective action

CCR surface impoundments no longer are required to complete closure by April 17, 2018. They are required to have written closure and post-closure care plans by that date, but the dates for actually closing the impoundments can be extended in the same way that extensions are available for active impoundments.

EPA did not discuss in the Direct Final Rule under what circumstances an inactive impoundment could resume receiving CCR, nor did it discuss how the new deadlines can be reconciled with the requirement under §257.102(e)(1)(i) to commence closure of a CCR unit within 30 days of the receipt of the known final receipt of waste; for at least some inactive impoundments, the known last receipt of wastes was prior to October 19, 2015.

**Location Criteria**

The final CCR rules supplement the open dump criteria first published 35 years ago. For existing CCR surface impoundments, the following location criteria must be met:

**Groundwater.** The base of the unit must be located at least five feet above groundwater unless it can be demonstrated there will not be a connection between the base of the unit and the uppermost aquifer.

**Wetlands.** The unit must not be located in wetlands unless a demonstration of necessity can be made.

**Fault areas.** The unit must not be located within 200 feet of the outermost damage zone of a fault that has had displacement in Holocene time unless it can be demonstrated a shorter distance is protective.

**Seismic impact zones.** The unit cannot be located in a zone with a 2% or more probability of more than 0.1 g horizontal acceleration unless it can be demonstrated all structural components can withstand maximum horizontal acceleration.

**Unstable areas.** The unit cannot be located in an area with poor foundation conditions, susceptible to mass movements, in karst terrains or similar conditions unless the structure is designed to accommodate such conditions properly.

Each of these conditions must be certified by a qualified professional engineer.

### Design Criteria

Existing impoundments are to determine if they have a clay liner (two feet of compacted soil with a hydraulic conductivity of no more than  $1 \times 10^{-7}$  cm/sec), a composite liner, or an equivalent alternative liner.

CCR impoundments that have dikes above ground are subject to structural integrity criteria: (1) mark the impoundment with an identification sign, (2) periodically assess the hazard potential classification of the impoundment, (3) prepare an Emergency Action Plan (for high hazard and significant hazard potential impoundments only), and (4) maintain vegetation on dike slopes no higher than six inches.<sup>1</sup>

Big and tall CCR impoundments—those with dikes 20 feet or higher, and those with more than 20 acre-feet in volume with dikes 5 feet or higher—are subject to additional structural integrity requirements, including to (1) document the history of construction, (2) make periodic structural stability assessments, and (3) make periodic safety factor assessments. Assessments are required initially (timing varies depending on

circumstances) and every five years. Failure to complete the assessment or to demonstrate the required factor of safety subjects the impoundment to closure requirements.

### Operating Criteria

CCR surface impoundments must comply with several operating criteria.

**Air criteria.** Facilities must prepare and implement a CCR fugitive dust control plan to minimize dust, and must prepare an annual report of dust control to include a record of citizen complaints received.

**Impoundment flood control.** Impoundments must be designed to manage inflows and outflows resulting from significant storm events—the maximum probable storm for high potential hazard impoundments, the 1,000-year storm for significant potential hazard impoundments, the 100-year storm for low potential hazard impoundments, and the 25-year storm for in-ground (no dike) impoundments.

**Inspections.** Weekly, monthly, and annual inspections of key CCR unit components are required to be performed by qualified inspectors and documented.

### Groundwater Monitoring and Corrective Action

CCR units must install an appropriate groundwater monitoring network and perform semi-annual detection and assessment monitoring (if necessary). Well locations must be adequate to determine background groundwater quality and the quality of groundwater passing the downgradient CCR waste boundary.

Detection monitoring must include boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids. If a statistically significant increase in the concentration of any of these parameters over background

<sup>1</sup> EPA has agreed that it will vacate the requirement that vegetative cover be maintained at 6" or less, and will propose a new rule regarding slope protection.

levels is observed, assessment monitoring is required.

Assessment monitoring includes 14 metal elements plus fluoride. If assessment monitoring shows any are detected at statistically significant levels above the groundwater protection standard (either the primary drinking water standard or background), the facility must file a notification in its operating record and commence evaluation of corrective measures.

After determining the nature and extent of any release from the CCR unit, the facility must assess corrective measures to prevent further releases, remediate any releases, and restore the affected area to original conditions. Before selecting a remedy, the facility must solicit public comments.

### **Closure, Post-Closure Care**

All CCR units are required to have written closure and post-closure care plans and to keep the plans current. Two basic forms of closure are allowed: (1) closure by removal of CCR (clean closure), and (2) closure leaving CCR in place.

If the unit is closed leaving CCR in place, a final cover must be designed and installed that is no more permeable than the liner under the unit. A minimum of 18 inches of soil compacted to a permeability no greater than  $1 \times 10^{-5}$  cm/sec is required for an infiltration layer, covered by a vegetative soil layer at least 6 inches thick. The rules provide for alternative cover designs if certain demonstrations can be made.

Final covers must be designed to accommodate anticipated settlement, and if the impoundment contains free liquids, they must be removed or solidified before the final cover is installed. There also may be a need to stabilize the CCR material so that it can support the final cap.

If CCR remains in the unit following closure, the unit is subject to post-closure care for 30 years, including maintenance of and repairs to final covers and other unit components, and semi-annual detection and/or assessment monitoring of groundwater.

### **Records and Public Website**

The final rules rely heavily on utilities to post extensive information regarding unit location, design, operations, monitoring, and closure and post-closure care on a public website. Many of these documents must be certified or verified by a qualified professional engineer licensed in the jurisdiction where the CCR unit is located.

Copies of much of the same information must be sent in the form of a notification to the appropriate state agency within 30 days of placing the information into the operating record for the facility.

### **How SCS Can Help**

We help utilities manage CCR, including investigation and remediation of releases from CCR disposal sites, design of upgrades and closure for existing disposal impoundments and landfills, and design of new CCR management facilities. SCS can assist you with meeting compliance deadlines.

### **For more information contact:**

[Mike McLaughlin](#), PE, Senior Vice President

[Eric Nelson](#), PE, Vice President (WI)

[Steve Lamb](#), PE, Vice President (NC)

[Kevin Yard](#), PE, Vice President (TX)

Or your [local SCS Engineers](#) office.