

### **Link 1: Add Boron to Appendix IV**

- Boron is proposed to be added to Appendix IV because it is common to CCR waste and has the fastest travel time in groundwater and therefore would reach potential receptors before other constituents.
- Boron does not have a maximum contaminant level (MCL), therefore the background statistical limit is the groundwater protection standard.
- Boron is a contaminant of concern in more damage cases than any other constituent with the exception of arsenic and can pose developmental risk to humans, and phytotoxicity or death to aquatic biota and plants.

### **Link 2: Woody and Grass Vegetation**

- For surface impoundments, plants with deep roots can introduce subsurface embankment destabilization including:
  - Subsurface water intrusion and piping, or up-lifting of the root system;
  - Surface erosion due to runoff and wind actions;
  - Wave-action erosion where surface impoundments abut natural rivers, and
  - Rapid drawdown where there is high pore pressure.
- Slope protection includes, but is not limited to, grassy vegetation, rock riprap, concrete revetments, vegetated wave berms, concrete facing, gabions, geotextiles, or fascines.
- Proposing to require facilities to ensure that both CCR cover system slopes and pertinent surrounding areas are designed with one or more of the specified forms of slope protection. Proposing definition of grassy vegetation based on FEMA 534: Technical Manual for Dam Owners, Impacts of Plants on Earthen Dams (September 2005) and the U.S. Army Corp of Engineers ETL 1110-2-583: Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankments, and Appurtenant Structures (April 30, 2014).
  - This will eliminate the use of substantial woody vegetation in cover systems defined as vegetation with woody trunks, root balls, or root systems, which can penetrate slopes to substantial depths.
  - Examples of woody vegetation include trees, bushes, and shrubbery with a diameter greater than 0.5 inches.
  - Proposing an increase in the height limitation for grassy and woody vegetation of 12 inches.
- Proposing to define pertinent surrounding areas to include all areas immediately surrounding the CCR surface impoundment, including the toe of downstream slopes, the crest of the embankment, abutments, and unlined spillways.
- Proposed exclusions include certain areas on, adjacent, or near the CCR unit when infeasible, impractical, or unsafe to maintain vegetation, such as lined spillways, decant structures, and access ways such as roads, paths, stairs, or sluice pipes. Inspection and monitoring programs provide protection against deterioration of slopes and pertinent surrounding areas of surface impoundments.

- Slope protection measures must be maintained to allow adequate access during routine and emergency observations.

### **Link 3: Non-Groundwater Releases**

- Focus of non-groundwater releases (small-scale) that should be rapidly remediated without requiring adherence to groundwater corrective action procedures.
- Incidental releases include: fugitive dust; seepage through embankments, slopes, and at abutments; and minor ponding at the toe of the embankments.
- Identification of release is expected to be during weekly, annual, or period assessments.
- Upon discovery of a non-groundwater release, prepare a notification within 15 days to be placed in the operating record.
- Prepare a report within 30 days documenting completing the corrective action, including:
  - Assessment of corrective measures to prevent further releases;
  - Explanation of selection of the corrective measures and how the required CCR rule standards are met; and
  - Certify the corrective action by a certified engineer or the permitting authority in a participating state.
- Comply with record-keeping requirements in 257.105(h).
- Semiannual reporting of the remediation of the non-groundwater release is not required.

### **Link 4: Alternative Closure Provisions**

- U.S. EPA is proposing to add a new paragraph to 257.103(b) to allow facilities that manage non-CCR waste streams in a CCR unit that will cease operation of its coal-fired boilers within the time frames in the current rule, to qualify for the alternative closure provisions so that alternative capacity can be obtained.
  - Proposal includes a definition of capacity under the new paragraph, which will be the basis for the exemption.
  - U.S. EPA is soliciting comments on the proposed use of the definition, as well as whether any additional clarification is warranted.
  - U.S. EPA is also considering adding a condition requiring the facility to demonstrate that it lacks alternative capacity for each waste stream and annually document its continued lack of alternative capacity and its progress towards development of an alternative capacity.
  - U.S. EPA is considering limiting new alternative closure requirements to facilities that have potential to impact electric reliability in the EEI reliability report, including three NERC regions: MISO, SERC-E, and SERC-N.
  - Once alternative capacity is identified, the facility must arrange to use such capacity as soon as feasible.
- Facilities must continue to comply with the current rule until an amendment is finalized.

- Waste streams that are sluiced may be managed jointly with bottom ash in wet-dry conversions, which will require landfill capacity.

#### **Link 5: Risk-Based Groundwater Protection Standards**

- U.S. EPA proposes to allow participating states to set alternative groundwater protection standards for non-MCL constituents.

#### **Link 6: Modification of Corrective Action Remedy**

- U.S. EPA is proposing that the Director of a participating state may, on a site-specific basis, decide not to require cleanup of Appendix IV constituents where:
  - The groundwater is contaminated by multiple sources and cleanup would provide no significant reduction in risk;
  - The contaminated groundwater is not a current or potential source of drinking water and is not hydraulically connected to a source or potential source of drinking water (RCRA Class III groundwaters);
  - Remediation is not technically feasible; and
  - Remediation would result in cross-media impacts.
- Examples of factors that may affect the efficacy of groundwater remediation are referenced in U.S. EPA Guidance for Evaluating the Technical Impracticality of Ground-Water Restoration (OSWER Directive 9234.2-25, September 1993)
- U.S. EPA seeks comments regarding discretion not to perform source control measures, including closure in certain situations for CCR units where there is no reasonable probability of adverse effect to human health or the environment.
- Partial remediation for groundwater constituents that is technically feasible and that significantly reduces risk will be required.
- In addition, U.S. EPA requests comment on whether a state permitting authority should be allowed to waive source control measures (e.g., closure of an unlined impoundment that has exceeded a groundwater protection standard).

#### **Link 7: Suspension of Groundwater Monitoring**

- U.S. EPA requests comments on allowing a Director in a participating state, or U.S. EPA in a non-participating state, to establish an alternative point of compliance if there is no reasonable probability of adverse effect(s) on human health or the environment.
- Proposed a waiver for groundwater monitoring where a participating state or where U.S. EPA is the permitting authority base on migration demonstration.
- Proposal considers that a technical expert could make the no-migration demonstration, which would allow implementation without the intervention of a permitting authority.
- The demonstration would consider:
  - Aquifer characteristics;
  - Waste characteristics;

- Climatic conditions;
- Leachate characteristics;
- Engineered controls;
- Attenuation of contaminants; and
- Microbiological degradation.
- Groundwater modeling is recommended as a useful assessment and verification method.
- Periodic subsequent demonstrations would be required every 10 years.

**Link 8: Alternate Schedule for Corrective Action**

- U.S. EPA proposal would allow a participating state to establish alternative corrective action compliance period by considering:
  - Extent and concentration of the release;
  - Fate and transport characteristics of the constituents;
  - Accuracy of monitoring and modeling techniques including seasonal and environmental variables; and
  - Characteristics of the groundwater, such as flow rate and pH.
- Proposal is requiring that the groundwater protection standard be achieved in three years for all points within the groundwater plume, unless an alternative time period is established by a participating state.
- U.S. EPA is seeking comments on whether the 90-day time periods for groundwater analysis and demonstrations should be extended to 120 days.

**Link 9: Post-Closure Care Period**

- U.S. EPA is proposing to allow participating states to decrease the post-closure care period upon demonstration that human health and the environment are sufficiently protected.
- The participating state can also extend the post-closure care period.
- CCR unit cover system must continue to function effectively.
- The participating state must consider the type of cover system installed regarding the long-term functionality, the depth to groundwater beneath the CCR unit, and the distance of monitoring wells from the waste boundary in determining whether the post-closure period can be reduced.

**Link 10: State-Issued Technical Certifications**

- U.S. EPA proposal will allow participating state to certify that the regulatory criteria are met.
- Expected that participating state will rely on own engineers to certify compliance.
- Alternatively, gives participating states the option to choose a qualified engineer for certification.

- U.S. EPA is soliciting comments on whether an independent technical expert can establish alternative standards in a non-participating state and implement those standards without intervention of a permitting authority.

**Link 11: CCR for Closure**

- Allows for the use of CCR in construction of the final cover when closing with waste in place for CCR units triggered for closure [closure for cause in 257.101(a)-(c)] when there is an exceedance of a groundwater protection standard, non-compliance with a location restriction, and surface impoundments that do not meet safety factors.
  - Only CCR generated on site may be used for construction of the cover system;
  - CCR may be used exclusively for grading and contouring the cover system;
  - CCR must be placed within the vertical plane of the CCR unit boundary; and
  - CCR must be graded no steeper than five percent, unless approved by the Director of a participating state. Steeper grades will require a stability analysis meeting a minimum risk factor and including groundwater and seepage conditions.
- Allows facilities to close more quickly compared to construction of final grades using earthen material, which can complicate closure within time frames in the CCR rule for leaking or otherwise deficient units.
- Additional U.S. EPA proposal requirements to allow CCR during closure:
  - The source of the CCR material for final cover must be present at the facility at the time of closure.
  - The proposed rule is not intended to allow facilities to continue disposal into a CCR unit that is closing for cause. (257.101).
  - When closing under other provisions, placement of CCR is not restricted, but the proposed rules will require an exemption request for further placement of CCR.
  - This proposal does not allow placement of CCR for the purposes of waste stabilization or to otherwise fill the unit to capacity.
  - For incised CCR surface impoundments, CCR used for construction of final cover must be placed above the highest elevation of the surrounding natural topography at the perimeter of excavated portion of the CCR unit (the vertical plane).
  - CCR surface impoundments that are diked, cross-valley, sidehill, or some combination of these are required to establish a baseline elevation, defined as the highest elevation of CCR following dewatering and stabilization, above which CCR will be placed when constructing final cover systems.
- U.S. EPA is soliciting comments regarding its recent interpretation that the current rule does not prohibit moving CCR between units in a multi-unit treatment system (i.e., such units are treated as a single unit and movement of CCR is not considered “placing CCR”) when all units are closing. There is concern that movement of large volumes of CCR in a deficient unit may have significant risks and therefore may not meet the statutory standard.