REINHOLD ENVIRONMENTAL Ltd.

2015 Wastewater-Ash Round Table Presentation

September 22, 2015, in Charlotte, NC / Hosted by Duke Energy

Update on the Coal Combustion Residuals and Effluent Limitation Guidelines Rules

2015 Wastewater – Ash Roundtable Charlotte, NC

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September 22, 2015

Coal Combustion Residuals (CCR) Rule

- Implementation Schedule
- Litigation
- HR 1734 Improving CCR Regulation Act of 2015, and S 1803, the Senate Corollary to HR 1734

Implementation Schedule, CCR Rule

- October 14, 2015 – Final CCR Rule becomes effective
- October 19, 2015 – Complete Fugitive Dust Control Plan, place in operating record
- October 2015 – Initiate weekly inspections of the CCR unit
- Initiate monthly monitoring of CCR unit instrumentation
- Conduct required recordkeeping
- Provide required notifications
- Establish CCR website
- December 2015 – Install permanent marker
- January 2016 – Complete initial annual inspections of CCR units

Industry Litigation

- USWAG
- Lafarge
- AES Puerto Rico, LP
- Associated Electric Cooperative, Inc.
- City of Springfield MO Board of Public Utilities
- Beneficial Reuse Management

Anticipated Litigation Schedule

- No schedule for briefs yet, but could be due late 2015 or early 2016
- Oral arguments in 2016
- Decision in 2017
- Major CCR Rule requirements through 2017
  - Recordkeeping, notification, and internet requirements (website)
  - Inspection program
  - Hydrologic and hydraulic capacity, run-on and run-off control plans
  - Closure and post-closure care plans
  - Structural integrity requirements, determine if lined or unlined
  - Groundwater monitoring program established

Highlights of Litigation

- Utility Solid Waste Activities Group et al.
  - Includes Edison Electric Institute (EEI), National Rural Electric Cooperative Association (NRECA), American Public Power Association (APPA)
  - Regulation of inactive CCR impoundments in excess of regulatory authority, etc.
  - Following aspects are arbitrary, capricious, not in accordance with the law, etc.
    - Respond to releases
    - Complete impoundment safety assessments by October 17, 2016 or cease operation and commence closure
    - Inclusion of CCR piles in definition of CCR landfill

Highlights of Litigation (cont.)

- Utility Solid Waste Activities Group et al.
  - Following aspects are arbitrary, capricious, not in accordance with the law, etc.
    - Greater than 12,400 tons constituting beneficial use
    - Omission of consideration of non-CCR waste streams in evaluating whether a unit qualifies for alternate closure
    - Vegetation not to exceed a height of 6 inches above the slope of the dike
    - Existing unlined surface impoundments must stop receiving CCR and commence closure within a prescribed period of time upon detection of constituents above a groundwater protection standard

Highlights of Litigation (cont.)

- Utility Solid Waste Activities Group et al.
  - Following aspects are arbitrary, capricious, not in accordance with the law, etc.
    - Elimination of the consideration of costs in the assessment of corrective measures
    - Increase in costs or existing capacity cannot be considered in qualifying for alternative closure
    - Use of background values to establish a groundwater protection standard when no MCL for a constituent

Highlights of Litigation (cont.)

- Lafarge
  - Definition of beneficial use of CCR issued without notice and opportunity for public comment
  - Following aspects are arbitrary, capricious, not in accordance with the law, etc.
    - 12,400 trigger level due to calculation error; should be much higher
    - Demonstration that releases from beneficially used unencapsulated CCR are lower than analogous products
    - Condition 4 applies to CCR being stored on land as an ingredient in Portland cement

Highlights of Litigation (cont.)

- AES Puerto Rico, LP
  - Challenged regulating CCR . . .
    - Piles when the CCR is intended for beneficial use
    - Intended for beneficial use and not disposal
    - Product stored on site that is intended for beneficial use
  - Definitions of "CCR pile" included in "CCR landfill," and "CCR beneficial use"

Highlights of Litigation (cont.)

- Associated Electric Cooperative, Inc.
  - EPA failed to give notice, opportunity to comment on seismic safety factor (in final rule – not in the proposed rule)
  - Seismic safety factor based on event expected to occur once every 2,500 years
  - 2-year deadline to cease placing CCR in an existing surface impoundment that does not meet seismic safety factor; 2 years is insufficient
  - Inconsistency of seismic criteria; impoundment can operate 4 years if does not meet seismic impact zone location restrictions
  - Exclude from eligibility for alternate closure impoundment that is closed for failure to meet the seismic safety factor

Highlights of Litigation (cont.)

- Associated Electric Cooperative, Inc.
  - 4 years vs. 5 years in the proposed rule, to stop placing CCR in an impoundment that does not meet location restrictions for faults or seismic impact zones
  - Landfills have same stability standard under location restrictions as impoundments, though landfills pose less risk
  - Same stability requirements for CCR landfills as MSW landfills, though the two have different characteristics

Highlights of Litigation (cont.)

- City of Springfield MO Board of Public Utilities
  - Following aspects are arbitrary, capricious, not in accordance with the law, etc.
    - Including landfills and impoundments that are approved and/or permitted under existing state solid waste utility or Clean Water Act regimens
    - Not excluding underground hard rock mines (e.g., underground limestone quarries) from the definition of a CCR landfill
    - Requiring closure of impoundments if there is an intermittent hydraulic connection, rather than determining effects on health and the environment

Highlights of Litigation (cont.)

- City of Springfield MO Board of Public Utilities
  - Following aspects are arbitrary, capricious, not in accordance with the law, etc.
    - Location restrictions on existing surface impoundments without cost-to-benefit analysis, particularly small impoundments
    - Not allowing lack of alternative disposal based on an increase in cost or inconvenience
    - Different closure timeframes based on the size of the impoundments
    - Failure to define CCR or liquids, which allows determination of minimum levels, or concentrations that constitute an impoundment

Synopsis of HR 1734 and S 1803 Improving CCR Regulation Act of 2015

- Eliminates the self-implementing aspect of the CCR Rule
- Establishes permit program under RCRA Subtitle D; delegates permit program to states
- State regulatory requirements at least as stringent as requirements in the federal rule
- Provides EPA with the authority to review state programs
- Authorizes EPA to implement the program if states choose not to or have failed to implement adequately

Synopsis of HR 1734 and S 1803 Improving CCR Regulation Act of 2015 (cont.)

- Allows states to make reasoned, risk-based decisions regarding groundwater monitoring and corrective action (flexibility)
- Addresses language uncertainty in the preamble to the federal rule
  - That is, that EPA might reconsider its decision to regulate CCR as non-hazardous
- All these items add regulatory certainty

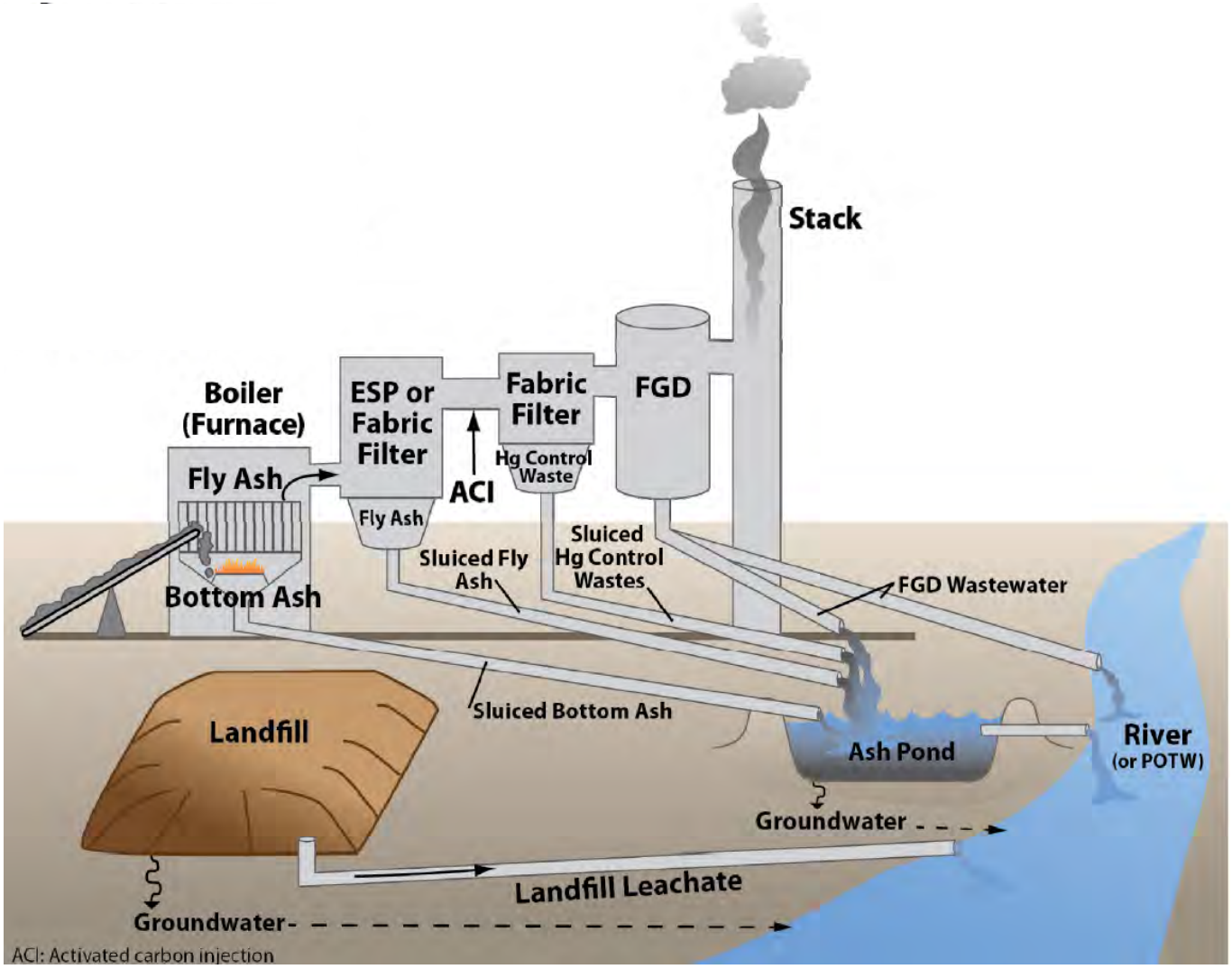
HR 1734 and S 1803
Improving CCR Regulation Act of 2015

- HR 1734 Passed House of Representatives July 22, 2015
- July 16, 2015 Corollary Senate Bill S 1803 introduced
- Presidential veto threatened in its current form
- Passed House by 258 votes; not enough to override a Presidential veto
- Revisions may be necessary to get Senate Democrats to move the bill; will need to be added to a broader bill to get a vote

Effluent Limitations Guidelines

- Sent to OMB July 2, 2015
- Final action by September 30, 2015
- Rule delay not expected because EPA is under a court order to issue
- Expect publication in the Federal Register in October 2015, though based on the CCR Rule experience, publication could be delayed
- Compliance period 2017 to 2022 via NPDES permits

Key Waste Streams Contributing to Current Discharges



Source: EPA, 2014

Steam Electric Regulatory Options

TABLE VIII–1—STEAM ELECTRIC MAIN REGULATORY OPTIONS

Wastestreams	Technology basis for the main BAT/NSPS/PSES/PSNS regulatory options							
	1	3a	2	3b	3	4a	4	5
FGD Wastewater	Chemical Precipitation.	BPJ Determination.	Chemical Precipitation + Biological Treatment.	Chemical Precipitation + Biological Treatment for units at a facility with a total wet-scrubbed capacity of 2,000 MW and more; BPJ determination for <2,000 MW.	Chemical Precipitation + Biological Treatment.	Chemical Precipitation + Biological Treatment.	Chemical Precipitation + Biological Treatment.	Chemical Precipitation + Evaporation
Fly Ash Transport Water.	Impoundment (Equal to BPT).	Dry handling ...	Impoundment (Equal to BPT).	Dry handling ...	Dry handling ...	Dry handling ...	Dry handling ...	Dry handling
Bottom Ash Transport Water.	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Dry handling/ Closed loop (for units >400 MW); Impoundment (Equal to BPT)(for units ≤400 MW).	Dry handling/ Closed loop.	Dry handling/ Closed loop
Combustion Residual Leachate.	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Impoundment (Equal to BPT).	Chemical Precipitation.	Chemical Precipitation
FGMC Wastewater	Impoundment (Equal to BPT).	Dry handling ...	Impoundment (Equal to BPT).	Dry handling ...	Dry handling ...	Dry handling ...	Dry handling ...	Dry handling
Gasification Wastewater.	Evaporation	Evaporation	Evaporation	Evaporation	Evaporation	Evaporation	Evaporation	Evaporation
Nonchemical Metal Cleaning Wastes [19].	Chemical Precipitation.	Chemical Precipitation.	Chemical Precipitation.	Chemical Precipitation.	Chemical Precipitation.	Chemical Precipitation.	Chemical Precipitation.	Chemical Precipitation

Source: Federal Register, 2013

Preferred Options for Existing Sources

Existing Sources Preferred Regulatory Options				
Wastestream	Option 3a	Option 3b	Option 3	Option 4a
Flue Gas Desulfurization	No additional control	Mercury, Arsenic, Selenium and Nitrate-Nitrite Limits for the Largest Units*	Mercury, Arsenic, Selenium and Nitrate-Nitrite Limits	Mercury, Arsenic, Selenium and Nitrate-Nitrite Limits
Fly Ash Transport Water	Zero Discharge	Zero Discharge	Zero Discharge	Zero Discharge
Bottom Ash Transport Water	No additional control	No additional control	No additional control	Zero Discharge (for units greater than 400 MW)
Flue Gas Mercury Control	Zero Discharge	Zero Discharge	Zero Discharge	Zero Discharge
Combustion Residual Leachate	No additional control	No additional control	No additional control	No additional control
Gasification	Mercury, Arsenic, Selenium and Total Dissolved Solids Limits	Mercury, Arsenic, Selenium and Total Dissolved Solids Limits	Mercury, Arsenic, Selenium and Total Dissolved Solids Limits	Mercury, Arsenic, Selenium and Total Dissolved Solids Limits
Nonchemical Metal Cleaning	Copper and Iron Limits	Copper and Iron Limits	Copper and Iron Limits	Copper and Iron Limits

*Facilities with a total wet scrubbed capacity of 2,000 MW or greater

Source: EPA, 2014

Preferred Options for New Sources

- Proposal includes one preferred regulatory option for new sources
- As proposed, these requirements would also apply to small and oil-fired generating units

New Sources Preferred Regulatory Option	
Wastestream	Option 4
Flue Gas Desulfurization	Mercury, Arsenic, Selenium and Nitrate-Nitrite Limits
Fly Ash Transport Water	Maintain Existing Zero Discharge Requirement
Bottom Ash Transport Water	Zero Discharge
Flue Gas Mercury Control	Zero Discharge
Gasification	Mercury, Arsenic, Selenium and Total Dissolved Solids Limits
Combustion Residual Leachate	Mercury and Arsenic Limits
Nonchemical Metal Cleaning	Copper, Iron, TSS, and Oil and Grease Limits

Source: EPA, 2014

Effluent Limitations by Technology and Constituent

TABLE X–1—PROPOSED LONG-TERM AVERAGES, VARIABILITY FACTORS, AND EFFLUENT LIMITATIONS FOR EACH OF THE FGD, GASIFICATION, AND LEACHATE TREATMENT TECHNOLOGY OPTIONS

Treatment technology	Pollutant	Option LTA	Daily variability factor	Monthly variability factor	Daily limitation [d]	Monthly limitation [d]
Chemical Precipitation for FGD.	Arsenic (ug/L)	4.483	1.741	1.223	8	6
	Mercury (ng/L)	75.404	3.209	1.570	242	119
Chemical Precipitation and Biological Treatment for FGD.	Arsenic (ug/L)[a]	4.483	1.741	1.223	8	6
	Mercury (ng/L)[a]	75.404	3.209	1.570	242	119
	Nitrate-nitrite (mg/L)	0.110	1.499	1.157	0.17	0.13
	Selenium (ug/L)	7.455	2.145	1.321	16	10
Chemical Precipitation and Evaporation for FGD.	Arsenic (ug/L)	[b] 4.0	([c])	([c])	[e] 4	([f])
	Mercury (ng/L)	17.788	2.192	1.338	39	24
	Selenium (ug/L)	[b] 5.0	([c])	([c])	5 [e]	([f])
	TDS (mg/L)	14.884	3.341	1.572	50	24
Vapor-Compression Evaporation for Gasification.	Arsenic (ug/L)	[b] 4.0	([c])	([c])	[e] 4	([f])
	Mercury (ng/L)	1.075	1.632	1.194	1.76	1.29
	Selenium (ug/L)	146.780	3.083	1.545	453	227
	TDS (mg/L)	15.209	2.483	1.389	38	22
Chemical Precipitation for Leachate.	Arsenic (ug/L)[a]	4.483	1.741	1.223	8	6
	Mercury (ng/L)[a]	75.404	3.209	1.570	242	119

[a] Option long-term average, option variability factors, and limitations were transferred from chemical precipitation treatment technology option.
[b] Long-term average is the arithmetic mean since all observations were non-detected.

Source: Federal Register, 2013

ELG Issues/Questions

- Bottom ash conveyance water – OMB was interested in these data
- Time – Relief on 2017 to 2022 compliance period, in order to make plant modifications (e.g., for ash handling, treatment of FGD wastewater)
- In the final rule, will EPA prescribe one or more options, or allow the owner/operator to pick from options list?
- Will EPA propose less stringent compliance numbers for constituents of concern?
  - Some of the proposed numbers may not be achievable in the wastewater matrices

Questions/Discussion