

# **Coal Combustion Residual Fugitive Dust Control Plan**

**Basin Electric Power Cooperative  
Laramie River Station**

**October 2015**

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## Purpose and Definitions

In accordance with 40 CFR §257.80, the purpose of this Fugitive Dust Control Plan (Plan) is to adopt measures that will effectively minimize Coal Combustion Residuals (CCRs) from becoming airborne at the Basin Electric Power Cooperative (Basin Electric) Laramie River Station (LRS), including CCR fugitive dust originating from active CCR units, roads, and other CCR material management and material handling activities.

LRS operates three coal-fired boilers, resulting in the production CCRs. CCRs and CCR fugitive dust are defined in 40 CFR §257.53 (Definitions) as:

*“CCR means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.”*

*“CCR fugitive dust means solid airborne particulate matter that contains or is derived from CCR, emitted from any source other than a stack or chimney.”*

CCRs generated at LRS (and thus regulated under 40 CFR 257) include bottom ash, flue gas desulfurization (FGD) materials and fly ash.

Dust from coal piles, aggregate surfaced roads, soil stockpiles and other non-CCR sources are not subject to this Plan.

## Responsibility

Implementation of this Plan is the responsibility of the facility Environmental Coordinator, Coal Yard Supervisors, all Shift supervisors, Lead Yard Equipment Operators and Equipment Operators.

## CCR Production and Handling

On a daily average, approximately 1400 tons of fly ash, bottom ash, and FGD material are generated at LRS. Fly ash comprises the lighter fraction of coal ash, which is carried out of the boiler in the flue gas stream. Bottom ash is collected at the bottom of the boiler as it falls from the gas flow. The proportions of fly ash and bottom ash produced at LRS are approximately 80% and 20% respectively. The systems that remove SO<sub>2</sub> from the flue gas produce FGD material, which is composed of calcium sulfate (synthetic gypsum) and calcium sulfite. A description of CCR generation and handling at LRS follows.

Fly ash for Units 1, and 2 is captured using electrostatic precipitators (ESPs) and transferred pneumatically to storage silos. Dry fly ash is mixed with FGD slurry (process described below) in order to moisture-condition the fly ash before transportation and disposal.

A wet limestone scrubbing system is used on Units 1 and 2 downstream of the ESPs to remove SO<sub>2</sub> from the flue gas, which produces a calcium sulfate sludge. The scrubber sludge is dewatered using hydrocyclones and pumped to mixers where it is combined with fly ash. Operators control the flow of the scrubber slurry to produce a fly ash-sludge mixture with a moisture content of 15% to 18% at the mixer outlet. Additional water may be added to create a workable mixture. The moisture conditioned ash is loaded into haul trucks for transportation to the onsite CCR landfill.

A lime slurry dry scrubbing system is used on Unit 3 to remove SO<sub>2</sub> from the flue gas, producing calcium sulfite and calcium sulfate as a dry solid. This FGD material and carryover is collected, along with fly ash, by the Unit 3 ESP in hoppers.

Bottom ash from Units 1, 2 and 3 is hydraulically conveyed to a CCR surface impoundment located adjacent to the LRS landfill.

## Identification of Sources

Potential sources for CCR fugitive dust emission include CCR loading, hauling and landfill operations. The surface impoundments containing bottom ash may present a potential, however unlikely, source of CCR fugitive dust.

## Description and Justification of Controls

Fugitive dust from loading/unloading operations is controlled by the moisture conditioning of materials (described in previous section).

Both fly ash and FGD material are relatively fine-grained, and if excessively dry, these materials have the potential for becoming airborne during loading operations. As described earlier, FGD slurry is mixed with fly ash to moisture condition the combined FGD/ash mixture before discharging the into haul trucks. To further minimize the potential for dusting, fly ash and FGD material are loaded into haul trucks in a partial enclosure.

The primary means of controlling fugitive dust during CCR hauling operations is by moisture conditioning the materials (described earlier) before transport. Dust suppressant agents may also be utilized in conjunction with moisture conditioning to reduce the possibility of fugitive dust. The haul road speed limit is set at 30 mph, further limiting the probability of dusting. In addition, hauling may be suspended if wind speeds are greater than 40 mph (dependent on other mitigating conditions such as rain, freezing temperatures, etc.)

Truck operators are trained to prevent overfilling during loading operations, thus minimizing potential spillage from haul trucks. Any CCRs that are spilled in waste loading or handling areas, on haul roads, access ramps, or other areas out of the immediate disposal area will be cleaned up and returned to the transport vehicle or to the disposal area.

Bottom ash stored in the CCR surface impoundment is relatively coarse-grained and not normally susceptible to dusting. Further, the majority of the bottom ash is submerged, again preventing any possibility of dusting. These factors (large grain-size and high moisture content) greatly reduce the probability of fugitive dust emissions of this CCR.

As with loading and hauling operations, the primary means of controlling fugitive dust during landfill operations is the CCR moisture conditioning that occurs before the materials are loaded into haul trucks. Since the distance from CCR loading to the landfill is relatively small, moisture-conditioned CCRs arrive at the landfill with essentially the same moisture content as when initially loaded. Landfill operations may be temporarily suspended if wind speeds are greater than 40 mph, again, dependent on other mitigating conditions (rain, freezing temperatures, etc.) On areas where fly ash and FGD material will not be immediately placed or on areas subject to equipment traffic, bottom ash or other non-CCR material may be spread to seal the area in order to minimize fugitive dust. Water may be spread on the landfill if needed for additional dust suppression. Finally, the practice of partial sequential closure will be incorporated at this facility. As areas of the landfill are brought to grade, the final cover system will be installed, effectively eliminating the possibility of CCR fugitive dust emission from these capped and revegetated areas.

## Statement of Moisture Conditioning

Before CCRs are loaded into trucks for transport to the landfill, fly ash and FGD material are moisture-conditioned to 10 to 20% moisture content. This moisture content effectively minimizes these CCRs from becoming airborne. Bottom ash hydraulically conveyed to onsite surface impoundments.

## Establish Log for Complaints

To date, Basin Electric has not received any complaints due to CCR dust emissions from this facility. A log for recording citizen complaints is attached (Attachment 1). Log entries include data and time of complaint, name and telephone number of person making complaint, location of reported fugitive dusting event, corrective measures taken, and current weather condition parameter estimates (including wind speed and direction, temperature, relative humidity, etc.)

## Periodic Assessments and Amendment of Plan

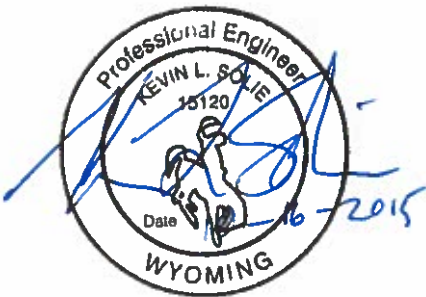
The facility environmental coordinator or other qualified person will include observations for fugitive dust emissions while performing weekly and monthly inspections required by the CCR Rule 40 CFR §257.83 and/or §257.84. If fugitive dust is observed, additional controls will be implemented to correct the situation. Basin Electric will amend this Fugitive Dust Control plan whenever there is a change in conditions that would substantially affect the written plan currently in effect, such as the construction and operation of a new CCR unit.

## Annual Fugitive Dust Report

Basin Electric will prepare an annual CCR fugitive dust control report (to be completed and posted by December 1<sup>st</sup> of each year) that includes a description of the actions taken by the owner or operator to control CCR fugitive dust, a record of all citizen complaints, and a summary of any corrective measures taken.

## Certification Statement

I certify that this Fugitive Dust Control Plan meets the requirements of 40 CFR §257.80 specifying Air Criteria in the *Standards of Coal Combustion Residuals in Landfills and Impoundments*.



Kevin L. Solie, Wyoming PE-15120  
October 16, 2015

