

## **Certification of Statistical Method for Evaluating Groundwater Monitoring Data**

**Facility: Talen Montana, LLC Colstrip Steam Electric Station**

### **CCR Units:**

Colstrip 1&2 B Flyash Pond	Colstrip 3&4 EHP A Cell
Colstrip 1&2 Bottom Ash Pond	Colstrip 3&4 EHP B Cell
Colstrip 3&4 Bottom Ash Pond	Colstrip 3&4 EHP C Cell
Colstrip 1&2 STEP D Cell	Colstrip 3&4 EHP D/E Cell
Colstrip 1&2 STEP E Cell	Colstrip 3&4 EHP G Cell
Colstrip 1&2 Old Clearwell	Colstrip 3&4 EHP J Cell
	Colstrip 3&4 EHP J-1 Cell

### **1. Introduction**

On April 17, 2015, the US EPA published a final rule to regulate the disposal of coal combustion residuals (CCR) from electric utilities as solid waste under subtitle D of the Resource Conservation and Recovery Act. The CCR Rule was published in the federal register on October 19, 2015 (Title 40 Code of Federal Regulations, Part 257, Subpart D).

Pursuant to Initial timeframes listed in §257.90(b), no later than October 17, 2017, the owner or operator of existing CCR landfills or surface impoundments must install a groundwater monitoring system(s), as required by §257.91; develop the groundwater sampling and analysis program to include selection of statistical procedures to be used for evaluating groundwater monitoring data as required by §257.93; initiate the detection monitoring program to include obtaining a minimum of eight independent samples for each background and downgradient well as required by §257.94(b); and begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in appendix III of part 257 as required by §257.94.

In accordance with §257.93(f)(6), the owner or operator of each CCR Unit must obtain a certification from a qualified professional engineer stating that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area. The certification must include a narrative description of the chosen statistical method. Specific statistical methods must be chosen from the list provided in §257.93(f)(1) through (5), which include parametric analysis of variance, analysis of variance based on ranks (non-parametric), a tolerance or prediction interval approach, a control chart approach, or another statistical test that meets the performance standards of §257.93(g).

Hydrometrics, Inc. was retained by Talen Montana, LLC, operator of the Colstrip SES, to develop a sampling and analysis plan, collect independent samples, select a statistical method or methods, and evaluate groundwater monitoring data for the above-referenced CCR Units. Further, Hydrometrics, Inc. was contracted to certify as to whether or not the selected statistical method meets the requirements outlined above. As of the date of this certification, groundwater monitoring systems have been installed for each CCR Unit and detection monitoring has been initiated to include collection of a minimum of eight samples for each background and downgradient well.

## 2. Narrative Description of Chosen Statistical Methods

Consistent with §257.93(f)(3), prediction interval procedures are the selected statistical method for evaluating groundwater monitoring data for the above-listed CCR Units at the Colstrip SES.

In compliance with the appropriate performance standards, as listed in §257.93(g)(1) through (6), and specified in Section 5 of the *Coal Combustion Residuals Rule Comprehensive Groundwater Monitoring Plan* ([GWMP], Hydrometrics, Inc. 2017) for the Colstrip SES, parametric or non-parametric prediction intervals, as appropriate to either a normal or non-normal data distribution, will be used on an interwell or intrawell basis at each of the Colstrip SES CCR Units. Confidence levels of prediction intervals will be determined based on data distribution, sample size, and other statistically relevant factors; and spatial variability and temporal correlation will be evaluated and accounted for, as necessary.

## 3. Limitations

The certification provided herein was made based on site specific hydrogeological and other technical information found in the GWMP (Hydrometrics, Inc. 2017) for the Colstrip SES and on preliminary evaluation of groundwater monitoring data collected in accordance with §257.94(b) and the GWMP. The GWMP includes documentation of the groundwater monitoring systems and groundwater sampling and analysis plan; and is kept in the Colstrip SES operating record per §257.105(h). The complete set of groundwater monitoring data will be found in the annual groundwater monitoring and corrective action report per §257.90(e) and placed in the operating record and on the publicly accessible internet site, per §257.105(h)(1) and §257.107(h)(1), respectively.

Conclusions and opinions regarding the selected statistical methods are made on the basis of the engineer's experience, qualifications, and professional judgement and do not constitute a warranty. Statistical testing conducted on complex groundwater flow systems, such as those found at the Colstrip SES, are subject to and limited by variability in hydrogeological and groundwater quality conditions. If subsequent review of groundwater monitoring data collected at the Colstrip SES CCR Units suggest that prediction limit procedures will not comply with performance standards of §257.93(g), an alternate statistical method will be chosen from §257.93(f)(1) through (5) and this certification will be amended.

## 4. Certification

I, Richard Labbe, a registered Professional Engineer in the State of Montana, certify that the selected statistical method is appropriate for evaluating the groundwater monitoring data for each of the CCR Units at the Colstrip Steam Electric Station, as listed on page 1 of this certification. This certification is made in compliance with the specific requirements of §257.93(f)(6).

Richard Labbe, P.E.  
License No. 48761PE  
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