

ENGINEER CERTIFICATION

Statistical Method Certification [40 CFR §257.93(f)(6)] Chesapeake Energy Center Industrial Landfill/Bottom Ash Pond Solid Waste Permit No. 440

EPA’s “Disposal of Coal Combustion Residuals from Electric Utilities” Final Rule, 40 CFR §257.93(f)(6), requires the owner or operator of a Coal Combustion Residuals (CCR) unit to 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 statistical method selected to evaluate the groundwater monitoring data.

The following provides a description of the statistical methods selected to evaluate the groundwater monitoring data used for the *2025 Updated Facility Background Determination Report* (FBDR) at Virginia Electric and Power Company’s Chesapeake Energy Center Industrial Landfill and Bottom Ash Pond, Solid Waste Permit No. 440.

Statistical Methods

The selected statistical methods for evaluating the groundwater monitoring data for the Industrial Landfill, Bottom Ash Pond, and Historic Landfill were selected in accordance with 40 CFR §257.93(f) using methodologies presented in *Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance*, March 2009, EPA 530/R-09-007 (Unified Guidance). The statistical methods selected for each constituent/parameter in Appendix III and IV of the CCR Rule are presented in the table below.

Statistical Methods Selected for Chesapeake Energy Center	
Parameter/Constituent	Statistical Method
Antimony	Non-Parametric Tolerance Limit
Arsenic	Non-Parametric Tolerance Limit
Barium	Non-Parametric Tolerance Limit
Beryllium	Non-Parametric Tolerance Limit (DQR)
Boron	Upper Tolerance Limit
Cadmium	Non-Parametric Tolerance Limit (DQR)
Calcium	Non-Parametric Tolerance Limit
Chloride	Non-Parametric Tolerance Limit
Chromium	Non-Parametric Tolerance Limit (DQR)
Cobalt	Non-Parametric Tolerance Limit
Fluoride	Upper Tolerance Limit
Lead	Non-Parametric Tolerance Limit (DQR)
Lithium	Non-Parametric Tolerance Limit

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Statistical Methods Selected for Chesapeake Energy Center	
Mercury	Non-Parametric Tolerance Limit
Molybdenum	Non-Parametric Tolerance Limit
pH	Parametric Upper and Lower Tolerance Limits
Radium 226 and 228 (Combined)	Upper Tolerance Limit
Selenium	Non-Parametric Tolerance Limit
Sulfate	Upper Tolerance Limit
Thallium	Non-Parametric Tolerance Limit
Total Dissolved Solids	Upper Tolerance Limit

DQR – Double Quantification Rule

As presented, the statistical test methods used for the 2025 evaluation of groundwater monitoring data for the Industrial Landfill, Bottom Ash Pond, and Historical Landfill at the Chesapeake Energy Center are based on tolerance limit methods. Inter-well statistical methods are proposed – meaning data from downgradient wells is compared to upgradient background groundwater quality. Using this approach, background data from the network of upgradient wells are used to calculate an upper Tolerance Limit (TL) for each parameter/constituent (and lower TL for pH). The background dataset for each constituent/parameter was first tested for the presence of outliers. Extreme values identified during outlier testing were evaluated and removed from the dataset if warranted. The background datasets for each constituent/parameter were then tested for normality. The selected statistical method for each constituent/parameter is based on the results of normality testing. For constituent/parameter datasets that exhibited a normal or log-normal distribution, parametric statistical procedures have been selected. For constituent/parameter datasets that exhibited a non-normal distribution, non-parametric statistical procedures have been selected. Constituent/parameter datasets with 100 percent non-detects will use the Double Quantification Rule (DQR) in accordance with the Unified Guidance. A confirmed compliance well exceedance is determined if any compliance well with 100 percent non-detect data exhibits quantified measurements (*i.e.*, at or above the reporting limit) in two (2) consecutive sampling events.

Further details regarding the statistical methods used to evaluate the groundwater monitoring data are presented in the Unified Guidance, the 2025 Updated FBDR, and the groundwater monitoring plan prepared for the Units.

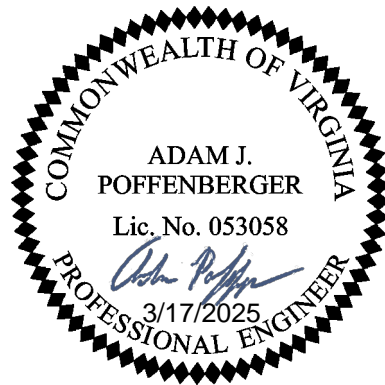
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CERTIFICATION

I hereby certify that the selected statistical methods are appropriate for evaluating the groundwater monitoring data for the CCR management area in accordance with the requirements of 40 CFR §257.93.

As used herein, the word “certify” shall mean an expression of the Engineer’s professional opinion to the best of his or her information, knowledge, and belief, and does not constitute a warranty or guarantee by the Engineer.

WSP USA INC.



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