

ENGINEER CERTIFICATION

Statistical Method Certification [40 CFR §257.93(f)(6)] Chesapeake Energy Center, Bottom Ash Pond Chesapeake, Virginia

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 at Virginia Electric and Power Company’s Chesapeake Energy Center.

Statistical Methods

The selected statistical methods for evaluating the groundwater monitoring data for the Bottom Ash Pond at Chesapeake Energy Center were developed 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 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	Upper Tolerance Limit
Beryllium	Non-Parametric Tolerance Limit (DQR)
Boron	Non-Parametric Simultaneous Limit
Cadmium	Non-Parametric Tolerance Limit (DQR)
Calcium	Non-Parametric Simultaneous Limit
Chloride	Non-Parametric Simultaneous Limit
Chromium	Non-Parametric Tolerance Limit

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Statistical Methods Selected for Chesapeake Energy Center	
Cobalt	Non-Parametric Tolerance Limit
Fluoride	Upper Tolerance Limit
Lead	Non-Parametric Tolerance Limit
Lithium	Non-Parametric Simultaneous Limit
Mercury	Non-Parametric Tolerance Limit (DQR)
Molybdenum	Upper Tolerance Limit
pH	Non-Parametric Upper and Lower Simultaneous Limit
Radium 226 and 228 (Combined)	Non-Parametric Tolerance Limit
Selenium	Non-Parametric Tolerance Limit (DQR)
Sulfate	Non-Parametric Simultaneous 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 initial evaluation of groundwater monitoring data for the Bottom Ash Pond at the Chesapeake Energy Center are based on simultaneous and tolerance limit methods. Inter-well statistical methods are proposed – meaning that data from downgradient wells will be compared to upgradient background groundwater quality. Using this approach, background data from the network of upgradient wells is used to calculate an upper Tolerance Limit (TL)/Simultaneous Limit (SL) for each parameter/constituent (and lower SL for pH). The background data set 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

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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 and analysis events.

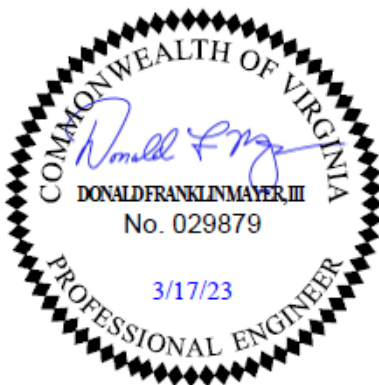
Further details regarding the statistical methods used to evaluate the groundwater monitoring data are presented in the Unified Guidance and the groundwater monitoring plan prepared for the Units.

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.



Donald Mayer, P.E.

Vice President