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File No. 129231-004

SUBJECT: Statistical Method Certification per 40 CFR §257.93(f)(6)
Chesapeake Energy Center – Bottom Ash Pond (including Historic Pond area)
Chesapeake, Virginia

The Environmental Protection Agency's (EPA's) "Disposal of Coal Combustion Residuals from Electric Utilities" Final Rule, 40 CFR §257.93(f)(6), requires the owner or operator of an existing 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 the Chesapeake Energy Center.

Statistical Methods

The selected statistical methods for evaluating the groundwater monitoring data for the 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 Bottom Ash Pond (including Historic Pond area)	
Parameter/Constituent	**Statistical Method**
Boron	Non-Parametric Prediction Limit
Calcium	Non-Parametric Prediction Limit
Chloride	Parametric Prediction Limit
pH	Non-Parametric Prediction Limit
Sulfate	Non-Parametric Prediction Limit
Total Dissolved Solids	Parametric Prediction Limit
Fluoride (App-III)	Non-Parametric Prediction Limit
Fluoride (App-IV)	Non-Parametric Tolerance Limit
Antimony	Non-Parametric Tolerance Limit
Arsenic	Non-Parametric Tolerance Limit
Barium	Parametric Tolerance Limit
Beryllium	Non-Parametric Tolerance Limit (Double Quantification Rule)
Cadmium	Non-Parametric Tolerance Limit (Double Quantification Rule)
Chromium	Non-Parametric Tolerance Limit
Cobalt	Non-Parametric Tolerance Limit
Lead	Non-Parametric Tolerance Limit

Statistical Methods Selected for Chesapeake Energy Center Bottom Ash Pond (including Historic Pond area)	
Parameter/Constituent	**Statistical Method**
Lithium	Non-Parametric Tolerance Limit
Mercury	Non-Parametric Tolerance Limit (Double Quantification Rule)
Molybdenum	Parametric Tolerance Limit
Radium 226 and 228 combined	Non-Parametric Tolerance Limit
Selenium	Non-Parametric Tolerance Limit
Thallium	Non-Parametric Tolerance Limit (Double Quantification Rule)

As presented, the statistical test methods used for the initial evaluation of appendix-III groundwater monitoring data at the Chesapeake Energy Center are based on the prediction interval approach as specified under §257.93 (f)(3). The prediction interval approach has been constructed to formally include a retesting strategy as part of the overall statistical test. Retesting during detection monitoring is an integral part of statistical methodology for control of the Site-wide False Positive Rate (SWFPR) when multiple monitoring locations and constituents are being evaluated. The statistical method selected for Appendix-IV constituents is a tolerance Interval approach. For constituents with 100 percent non-detects, the *Double Quantification Rule* (EPA, 2009) is used. According to this rule "A confirmed exceedance is determined if any compliance well with 100 % non-detect data exhibits quantified measurements i.e., at or above the reporting limit in two consecutive sample events."

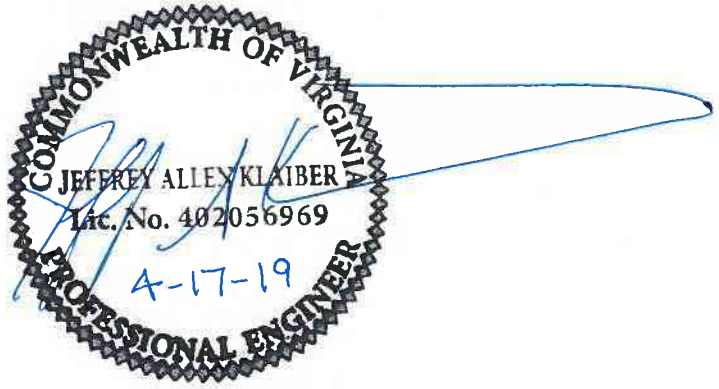
Interwell statistical methods are proposed - meaning that data from downgradient wells will be compared to upgradient background groundwater quality. Using this approach, background data from the network of upgradient wells is pooled to calculate an upper Prediction Limit (PL) or an upper Tolerance Limit (TL) for each parameter/constituent. Lower Prediction Limits (LPLs) were also calculated for pH. The pooled background data set for each constituent was first tested for the presence of outliers. Extreme values identified during outlier testing were removed from the dataset. The background datasets for each constituent were then tested for normality. The selected statistical method for each constituent is based on the results of normality testing. For constituent datasets that exhibited a normal or log-normal distribution, parametric statistical procedures have been selected. For constituent datasets that exhibited a non-normal distribution, non-parametric statistical procedures have been selected.

Further details regarding the statistical methods used to evaluate the groundwater monitoring data are presented in the Unified Guidance.

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.



Signed:_____
Certifying Engineer

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