Low Volume Waste Settling Ponds
Statistical Methods Certification
per 40 CFR 257.93(f)(6)

Mount Storm Power Station
Mount Storm, West Virginia

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Prepared For
Virginia Electric and Power Company

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Regulatory Requirement

EPA's "Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule" (40 CFR Part 257 and Part 261), 40 CFR 257.93(f), requires the owner or operator of an existing CCR unit to select one of the statistical methods specified in 40 CFR 257.93(f)(1) through 40 CFR 257.93(f)(5) to be used in evaluating groundwater monitoring data for each specified constituent.
40 CFR 257.93(f)(6) requires the owner or operator to obtain a certification from a qualified professional engineer stating the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area.

Statistical Method Narrative

The selected method for evaluation of groundwater monitoring data at the Mount Storm Low Volume Waste Settling Ponds is the upper tolerance limit (UTL). The UTL will be based on 95 percent coverage and 99 percent confidence. Verification resampling will be employed to confirm statistically significant increases, as warranted.

During detection monitoring, interwell comparisons to background (monitoring wells OW-07A and OW-08 pooled) will be made using the UTL. Background will be regularly updated in a manner consistent with *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities*, Unified Guidance March 2009 (EPA 530/R-09-007) or similar statistical reference documents.

Analytical results less than the detection limit will be accounted as follows:

- For laboratory data that are reported as estimated values less than the practical quantitation limit, the estimated value will be used.
- When fewer than 50 percent of the data in a data set are less than detection limits, the Kaplan-Meier (KM) method will be employed to provide estimates of mean and standard deviation for calculation of the UTL.
- When 50 percent or more of the data in a data set are less than detection limits, nonparametric methods will be used.
- For analytes that are not detected in the upgradient monitoring well, the double quantification rule will be used to determine downgradient exceedances.

The upgradient baseline data sets will be observed for the presence of potential outlier values. If observed, testing for outliers for that constituent will be conducted using statistical software such as USEPA's ProUCL. Outlier values will not be included in the upgradient baseline data sets.

Parametric methods will be used for data sets with discernable distributions. The priority order of distribution will be normal, gamma, then lognormal. Statistical software, such as USEPA's ProUCL, will be used to make the statistical calculations.

The following table presents the UTL values determined following the baseline period for the upgradient well and the basis for the calculation. These results were determined using ProUCL.

Statistical Method Selected for Initial Upgradient (OW-7A and OW-8)
Mount Storm Power Station – Low Volume Waste Settling Ponds

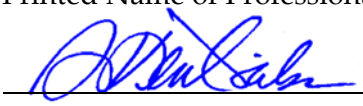
PARAMETER	PERCENT NONDETECT	DISTRIBUTION	STATISTICAL METHOD
APPENDIX III			
Boron	63 %	Normal	Parametric Upper Tolerance Limit
Calcium	0 %	Nonnormal	Nonparametric Upper Tolerance Limit
Chloride	0 %	Normal	Parametric Upper Tolerance Limit
Fluoride [2]	31 %	Gamma	Parametric Upper Tolerance Limit
Field pH	0 %	Normal	Parametric Upper and Lower Tolerance Limit
Sulfate	0 %	Nonnormal	Nonparametric Upper Tolerance Limit
Total dissolved solids	0 %	Normal	Parametric Upper Tolerance Limit
APPENDIX IV			
Antimony	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Arsenic	88 %	Insufficient detections	Nonparametric Upper Tolerance Limit [1]
Barium	0 %	Nonnormal	Nonparametric Upper Tolerance Limit
Beryllium	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Cadmium	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Chromium (total)	56 % [2]	NA [2]	Nonparametric Upper Tolerance Limit [1]
Cobalt	13 %	Normal	Parametric Upper Tolerance Limit
Fluoride	31 %	Gamma	Parametric Upper Tolerance Limit
Lead	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Lithium	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Mercury	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Molybdenum	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Radium 226+228	38 %	Gamma	Parametric Upper Tolerance Limit
Selenium	100 %	NA	Nonparametric Upper Tolerance Limit [1]
Thallium	100 %	NA	Nonparametric Upper Tolerance Limit [1]

NA Not applicable – all results below the limit of quantitation
[1] Double Quantification
[2] All detected values below the limit of quantitation

Certification

I, the undersigned West Virginia Professional Engineer, hereby certify that I am familiar with the technical requirements of 40 CFR 257.93. I also certify that it is my professional opinion that, to the best of my knowledge, information, and belief, the statistical methods described herein are appropriate for evaluating the ground water monitoring data and are in accordance with current good and accepted engineering practice(s) and standard(s) appropriate to the nature of the project and the technical requirements of 40 CFR 257.93.

For the purpose of this document, "certify" and "certification" shall be interpreted and construed to be a "statement of professional opinion". The certification is understood and intended to be an expression of my professional opinion as a West Virginia Licensed Professional Engineer, based upon knowledge, information, and belief. The statement(s) of professional opinion are not and shall not be interpreted or construed to be a guarantee or a warranty of the monitoring system.

R. Kent Nilsson	21543
Printed Name of Professional Engineer	State of West Virginia License Number
	October 16, 2017
Signature of Professional Engineer	Date