

Memorandum

Date: October 18, 2021

To: Jill Parker-Witt, American Electric Power (AEP)

From: Beth Gross, Ph.D., P.E. (OK) and Allison Kreinberg, Geosyntec

Subject: Alternative Source Demonstration
Northeastern Power Station Bottom Ash Pond
Oologah, Rogers County, Oklahoma

The Bottom Ash Pond (BAP) is a regulated coal combustion residual (CCR) management unit at the Northeastern Power Station in Oologah, Oklahoma. A semi-annual assessment monitoring event was completed at the BAP on March 3, 2021 and April 12, 2021 in accordance with the assessment monitoring requirements of Oklahoma Administrative Code OAC 252:517-9-6. Analysis of the March and April 2021 data identified statistically significant levels (SSLs) above the groundwater protection standards (GWPSs) for lithium and fluoride at SP-10 (Attachment B). The lower confidence level (LCL) for lithium at SP-10 of 0.242 milligrams per liter (mg/L) exceeded the GWPS of 0.14 mg/L. The LCL for fluoride at SP-10 of 5.01 mg/L exceeded the GWPS of 4.40 mg/L.

As described in previous ASDs (Geosyntec, 2019; Geosyntec, 2021a,b), lower concentrations of lithium and fluoride in the BAP and BAP sediments, including pore water, than those observed at SP-10 suggest that the BAP is not the source of these exceedances. Instead, the release of lithium from the clay minerals in the shale lens located at 46 ft below ground surface in the screened interval of SP-10 is the likely source of lithium in groundwater at that location. Analytical results suggest that naturally occurring fluoride is also associated with the shale lenses and is contributing to aqueous fluoride at SP-10.

Data from the March and April 2021 monitoring events indicate lithium concentrations of 0.218 mg/L and 0.221 mg/L, respectively, and fluoride concentrations of 7.12 mg/L and 6.84 mg/L, respectively, at SP-10. These lithium and fluoride concentrations are consistent with previous results collected during the assessment monitoring period (**Figure 1** and **Figure 2**, respectively) and continue to show no statistically significant positive trends. This is an indication that conditions have not changed substantially since the previous ASD was submitted (Geosyntec,

Jill Parker-Witt
October 18, 2021
Page 2

2021b) and the arguments presented in the previous ASDs (Geosyntec, 2019; Geosyntec, 2021a,b) are still valid. Thus, lithium and fluoride concentrations at SP-10 identified during the March and April 2021 assessment monitoring events are not attributed to a release from the BAP.

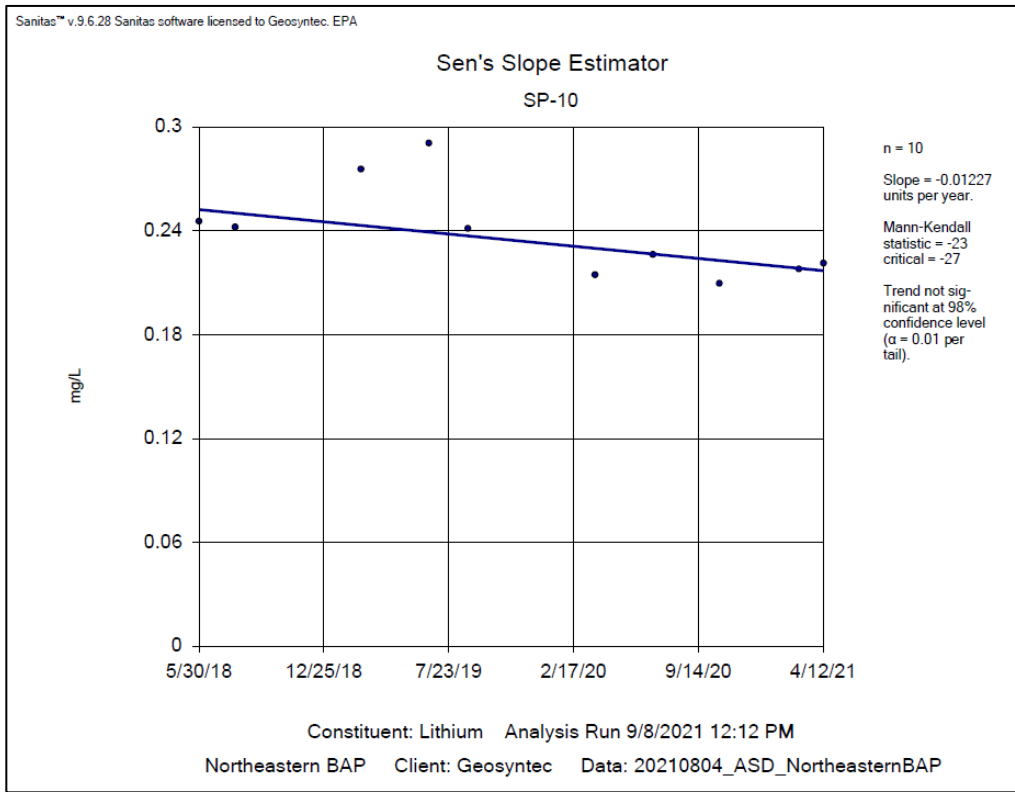
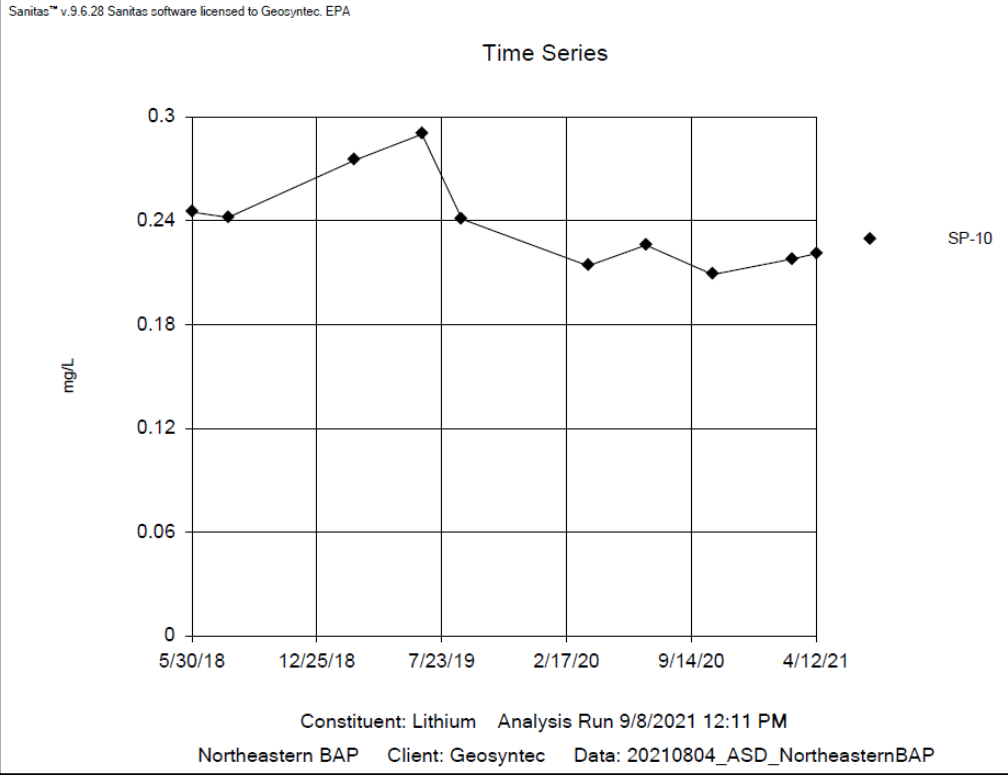
The information above, as well as the information presented in previous ASDs (Geosyntec, 2019; Geosyntec, 2021a,b), continue to support the position that lithium and fluoride concentrations are a result of natural variation in the underlying lithology, including the presence of shale lenses containing lithium and fluoride within the screened interval at SP-10. Therefore, no further action is warranted, and the BAP will remain in the assessment monitoring program. Certification of this ASD memorandum by a qualified professional engineer is in Attachment A.

Geosyntec Consultants, 2019. Alternative Source Demonstration. Bottom Ash Pond – Northeastern Power Station, Oologah, Oklahoma. April.

Geosyntec Consultants, 2021a. Alternative Source Demonstration. Bottom Ash Pond – Northeastern Power Station, Oologah, Oklahoma. January.

Geosyntec Consultants, 2021b. Alternative Source Demonstration. Bottom Ash Pond – Northeastern Power Station, Oologah, Oklahoma. May.

FIGURES



Lithium Time Series and Trend Test – SP-10

Northeastern Bottom Ash Pond

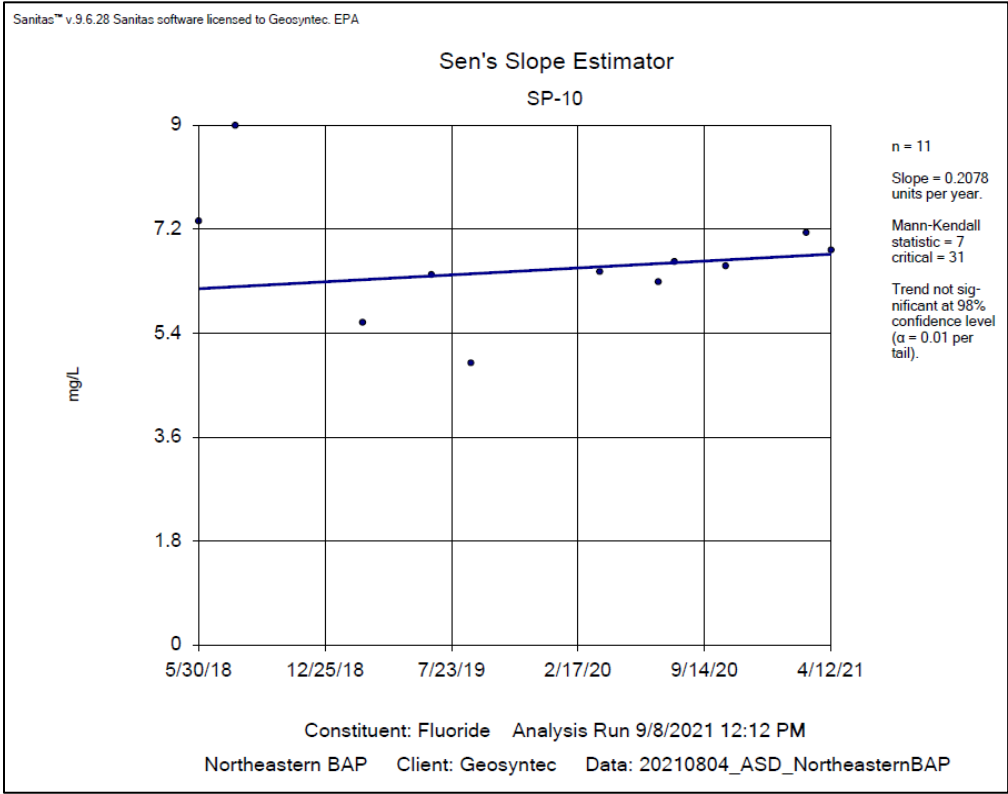
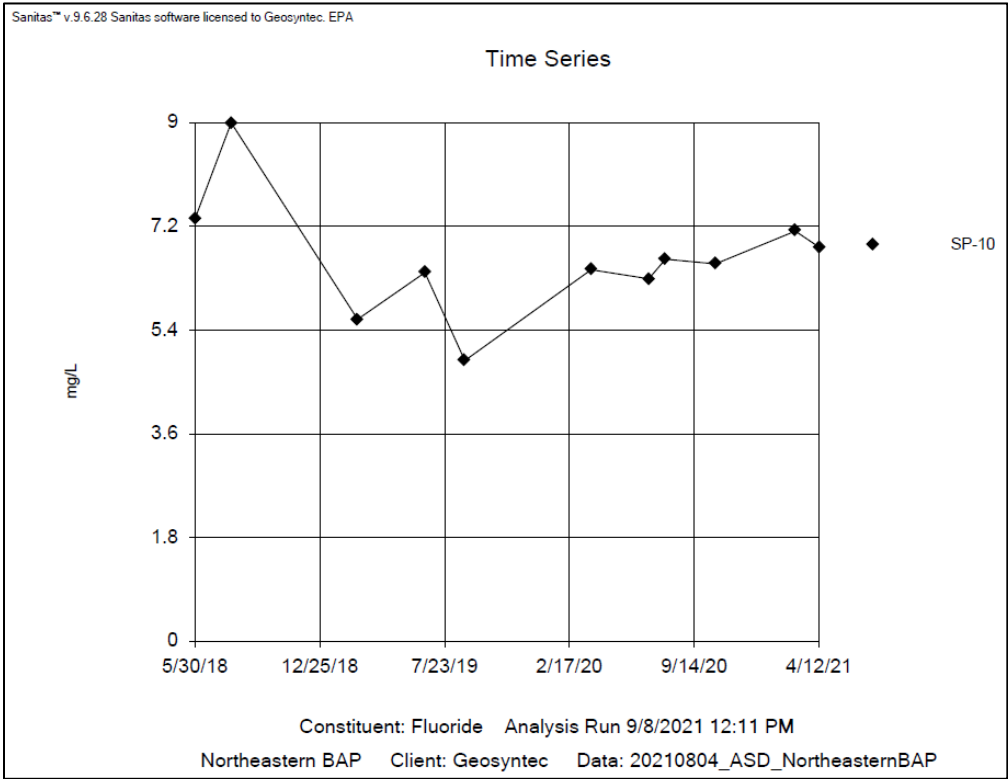
Geosyntec
consultants



Figure
1

Columbus, Ohio

September 8, 2021



Fluoride Time Series and Trend Test – SP-10

Northeastern Bottom Ash Pond

Geosyntec
consultants



Figure
2

Columbus, Ohio

September 8, 2021

ATTACHMENT A

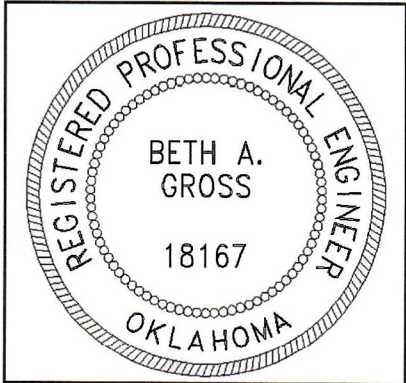
Certification by Qualified Professional Engineer

CERTIFICATION BY A QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected and above described alternative source demonstration is appropriate for evaluating the groundwater monitoring data for the Bottom Ash Pond CCR management area at the Northeastern Power Station and that the requirements of OAC 252:517-9-6(g)(3)(B) have been met.

Beth Ann Gross
Printed Name of Licensed Professional Engineer

Beth Ann Gross
Signature



Geosyntec Consultants
2039 Centre Pointe Boulevard, Suite 103
Tallahassee, Florida 32308

Oklahoma Firm Certificate of
Authorization No. 1996
Exp. 6/30/2022

18167
License Number

Oklahoma
Licensing State

October 18, 2021
Date

* * * * *

ATTACHMENT B
Assessment Statistics Report
2021 First Semiannual Event

STATISTICAL ANALYSIS SUMMARY
BOTTOM ASH POND
Northeastern Power Station
Oologah, Oklahoma

Submitted to



1 Riverside Plaza
Columbus, Ohio 43215-2372

Submitted by



engineers | scientists | innovators

941 Chatham Lane
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August 4, 2021

CHA8500

TABLE OF CONTENTS

SECTION 1 Executive Summary	1
SECTION 2 Bottom Ash Pond Evaluation.....	2-1
2.1 Data Validation & QA/QC	2-1
2.2 Statistical Analysis.....	2-1
2.2.1 Evaluation of Potential Appendix B SSLs	2-1
2.2.2 Evaluation of Potential Appendix A SSIs	2-2
2.3 Conclusions.....	2-3
SECTION 3 References	3-1

LIST OF TABLES

Table 1	Groundwater Data Summary
Table 2	Groundwater Protection Standards
Table 3	Appendix A Data Summary

LIST OF ATTACHMENTS

Attachment A	Certification by Qualified Professional Engineer
Attachment B	Statistical Analysis Output

LIST OF ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ASD	Alternative Source Demonstration
BAP	Bottom Ash Pond
CCR	Coal Combustion Residuals
CCV	Continuing Calibration Verification
GWPS	Groundwater Protection Standard
LCL	Lower Confidence Limit
LFB	Laboratory Fortified Blanks
LRB	Laboratory Reagent Blanks
MCL	Maximum Contaminant Level
NELAP	National Environmental Laboratory Accreditation Program
NPS	Northeastern Power Station
ODEQ	Oklahoma Department of Environmental Quality
OAC	Oklahoma Administrative Code
QA	Quality Assurance
QC	Quality Control
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
TDS	Total Dissolved Solids
UPL	Upper Prediction Limit

SECTION 1

EXECUTIVE SUMMARY

In accordance with the Oklahoma Department of Environmental Quality (ODEQ) and Oklahoma administrative code (OAC) regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (OAC 252:517), groundwater monitoring has been conducted at the Bottom Ash Pond (BAP), an existing CCR unit at the Northeastern Power Station (NPS) located in Oologah, Oklahoma.

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron, chloride, fluoride, total dissolved solids (TDS), and sulfate at the BAP. Also, pH values below the lower prediction limit (LPL) resulted in SSIs below background as well. Groundwater protection standards (GWPS) were set in accordance with OAC 252:517-9-6(h). While a lithium exceedance at SP-10 was observed above the GWPS, an alternate source demonstration (ASD) submitted to ODEQ on May 1, 2019 attributed the elevated lithium concentrations at SP-10 to natural variation (Geosyntec, 2019). On October 29, 2019, ODEQ provided a letter to AEP documenting acceptance of the ASD (ODEQ, 2019). Thus, the BAP remained in assessment monitoring. Similarly, a fluoride exceedance at SP-10 was observed above the GWPS and an ASD was submitted to ODEQ on January 26, 2021 which attributed the elevated fluoride concentrations at SP-10 to natural variation (Geosyntec, 2021a). On June 4, 2021, ODEQ provided a letter to AEP documenting acceptance of the ASD (ODEQ, 2021). Thus, the BAP remained in assessment monitoring.

Two assessment monitoring events were conducted at the BAP in March and April 2021, in accordance with OAC 252:517-9-6(b) and OAC 252:517-9-6(d), respectively. Results of these events are documented in this report.

Groundwater data underwent several validation tests, including those for completeness, sample tracking accuracy, transcription errors, and consistent use of measurement units. No data quality issues were identified which would impact the usability of the data.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Confidence intervals were calculated for Appendix B parameters at the compliance wells to assess whether Appendix B parameters were present at a statistically significant level (SSL) above the GWPS. SSLs were identified for fluoride and lithium. Thus, an ASD will be submitted to ODEQ demonstrating that conditions at the unit remain consistent with previous submittals and the unit will remain in assessment monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

SECTION 2

BOTTOM ASH POND EVALUATION

2.1 Data Validation & QA/QC

During the assessment monitoring program, two sets of samples were collected for analysis from each upgradient and downgradient well to meet the requirements of OAC 252:517-9-6(b) (March 2021) and 252:517-9-6(d)(1) (April 2021). Samples from both sampling events were analyzed for the Appendix A and Appendix B parameters. A summary of data collected during these assessment monitoring events may be found in Table 1.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the Sanitas™ v.9.6.28 statistics software. The export file was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

2.2 Statistical Analysis

Statistical analyses for the BAP were conducted in accordance with the June 2018 *Statistical Analysis Plan* (Geosyntec, 2018) for the samples collected in April 2021 except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained in March and April 2021 were screened for potential outliers. No outliers were identified for these events.

2.2.1 Evaluation of Potential Appendix B SSLs

A confidence interval was constructed for each Appendix B parameter at each compliance well. Confidence limits were generally calculated parametrically ($\alpha = 0.01$); however, non-parametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the non-detect frequency was too high). An SSL was concluded if the lower confidence limit (LCL) exceeded the GWPS (i.e., if the entire confidence interval exceeded the GWPS). Calculated confidence limits are shown in Attachment B. The calculated confidence limits were compared to the GWPSs provided in Table 2. The GWPSs were established during a

previous statistical analysis as either the greater value of the background concentration or the maximum contaminant level (MCL) and risk-based level specified in OAC 252:517-9-6(h) for each Appendix B parameter (Geosyntec, 2021b).

The following SSLs were identified at the Northeastern BAP:

- The LCL for fluoride exceeded the GWPS of 4.40 mg/L at SP-10 (5.01 mg/L).
- The LCL for lithium exceeded the GWPS of 0.140 mg/L at SP-10 (0.242 mg/L).

ODEQ previously noted in a letter provided to the NPS that “If lithium and fluoride continue to exceed their relative GWPS in the future and conditions have not changed, NPS may refer to the October 29, 2019 ASD approval for lithium and June 4, 2021 approval for fluoride and continue assessment monitoring for the BAP in accordance with OAC 252:517-6(g)(3)(B)” (ODEQ, 2021). Thus, an alternative source demonstration will be submitted to ODEQ demonstrating that conditions at the BAP remain unchanged so that the unit will continue assessment monitoring.

2.2.2 Evaluation of Potential Appendix A SSIs

While SSLs were identified, a review of the Appendix A results was also completed to assess whether concentrations of Appendix A parameters at the compliance wells exceeded background concentrations.

Data collected during the April 2021 assessment monitoring event from each compliance well were compared to the prediction limits to evaluate results above background values. The results from this event and the prediction limits are summarized in Table 3. The following exceedances of the upper prediction limits (UPLs) were noted:

- Boron concentrations exceeded the interwell UPL of 0.506 mg/L at SP-10 (1.03 mg/L) and SP-11 (0.562 mg/L).
- Chloride concentrations exceeded the interwell UPL of 806 mg/L at SP-2 (1,130 mg/L) and SP-10 (2,000 mg/L).
- Fluoride concentrations exceeded the interwell UPL of 4.22 mg/L at SP-10 (6.84 mg/L).
- Sulfate concentrations exceeded the interwell UPL of 90.0 mg/L at SP-11 (232 mg/L).
- TDS concentrations exceeded the interwell UPL of 1,580 mg/L at SP-2 (2,000 mg/L) and SP-10 (3,540 mg/L).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the April 2021 sample was above the UPL or below the LPL. Based on these results, boron, chloride, fluoride, sulfate, and TDS concentrations exceeded background levels at compliance wells at the Northeastern BAP during assessment monitoring.

2.3 Conclusions

A semi-annual assessment monitoring event was conducted in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. A review of outliers identified no potential outliers in the March and April 2021 data. A confidence interval was constructed at each compliance well for each Appendix B parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. SSLs were identified for fluoride and lithium. Appendix A parameters were compared to prediction limits, with exceedances identified for boron, chloride, fluoride, sulfate, and TDS.

Based on this evaluation, the Northeastern BAP CCR unit will remain in assessment monitoring following submittal of an ASD to ODEQ demonstrating that conditions at the unit remain consistent with previous submittals.

SECTION 3

REFERENCES

Geosyntec Consultants (Geosyntec). 2018. Statistical Analysis Plan – Northeastern Power Station. Oologah, Oklahoma. June.

Geosyntec. 2021a. Alternative Source Demonstration Report – State CCR Rule. Northeastern Power Station – Bottom Ash Pond. Oologah, Oklahoma. January.

Geosyntec. 2021b. Statistical Analysis Summary – Bottom Ash Pond. Northeastern Power Station. Oologah, Oklahoma, February.

Geosyntec. 2019. Alternative Source Demonstration Report – State CCR Rule. Northeastern Power Station Bottom Ash Pond. April.

Oklahoma Department of Environmental Quality (ODEQ). 2019. Letter Transmittal – Alternate Source Demonstration for Lithium – Bottom Ash Pond. October.

ODEQ. 2021. Letter Transmittal – Alternate Source Demonstration for Fluoride and Lithium Exceedance – Bottom Ash Pond. June.

TABLES

**Table 1 - Groundwater Data Summary
Northeastern Plant - Bottom Ash Pond**

Well ID		SP-1		SP-10		SP-11		SP-2		SP-4		SP-5R	
Well Classification		Compliance		Compliance		Compliance		Compliance		Background		Background	
Parameter	Unit	3/3/2021	4/12/2021	3/3/2021	4/12/2021	3/3/2021	4/12/2021	3/3/2021	4/12/2021	3/3/2021	4/12/2021	3/3/2021	4/12/2021
Antimony	µg/L	0.51	0.46	0.08 J	0.12	0.06 J	0.19	1.09	0.84	0.27	0.22	0.16	0.09 J
Arsenic	µg/L	0.53	0.54	0.36	1.14	1.33	2.14	1.07	1.53	0.99	1.41	6.56	7.12
Barium	µg/L	144	158	5,530	6,360	330	212	1,050	1,790	367	435	1,840	2,180
Beryllium	µg/L	0.05 J	0.04 J	0.02 J	0.03 J	0.1 U	0.02 J	0.09 J	0.112	0.04 J	0.09 J	0.05 J	0.05 J
Boron	mg/L	0.169	0.186	0.853	1.03	0.371	0.562	0.140	0.255	0.347	0.393	0.188	0.215
Cadmium	µg/L	0.08	0.05	0.03 J	0.01 J	0.01 J	0.02 J	0.06	0.04 J	0.06	0.04 J	0.27	0.01 J
Calcium	mg/L	105	104	40.4	43.8	39.0	79.6	72.0	91.5	58.7	70.8	52.4	54.6
Chloride	mg/L	-	37.2	-	2,000	-	130	-	1,130	-	495	-	725
Chromium	µg/L	0.426	0.359	0.409	0.277	0.243	0.944	0.700	0.559	0.449	1.03	0.496	0.415
Cobalt	µg/L	0.307	0.202	0.199	0.218	0.939	1.52	0.323	1.10	0.207	0.921	0.391	0.378
Combined Radium	pCi/L	4.27	3.47	18.84	20.36	0.901	1.354	11.81	7.87	5.49	4.09	13.31	14.1
Fluoride	mg/L	0.85	0.88	7.12	6.84	2.88	1.66	3.00	3.19	3.50	3.49	3.18	3.20
Lead	µg/L	0.259	0.2 J	0.230	0.1 J	0.1 J	0.224	0.253	0.211	1.17	0.392	0.793	0.325
Lithium	mg/L	0.00443	0.00549	0.218	0.221	0.0396	0.0248	0.0523	0.0862	0.0594	0.0613	0.0856	0.0894
Mercury	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Molybdenum	µg/L	14.3	13.7	1 J	5.01	2 J	2 J	17.1	14.6	3.60	2.94	0.7 J	1 J
Selenium	µg/L	4.5	3.9	0.08 J	0.5 U	0.2 J	0.2 J	3.5	1.1	0.6	0.4 J	0.1 J	0.1 J
Sulfate	mg/L	-	50.0	-	15.4	-	232	-	12.4	-	68.1	-	7.0
Thallium	µg/L	0.5 U	0.05 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.05 J	0.5 U	0.5 U	0.5 U	0.5 U
Total Dissolved Solids	mg/L	-	438	-	3,540	-	918	-	2,000	-	1,160	-	1,420
pH	SU	7.4	7.6	7.7	8.1	7.7	7.8	7.5	7.6	7.8	7.7	7.6	7.9

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

SU: standard unit

U: Non-detect value. For statistical analysis, parameters which were not detected were replaced with the reporting limit.

J: Estimated value. Parameter was detected in concentrations below the reporting limit.

-: Not analyzed

**Table 2 - Groundwater Protection Standards
Northeastern Plant - Bottom Ash Pond**

Constituent Name	MCL	CCR Rule-Specified	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.006		0.0051	0.006
Arsenic, Total (mg/L)	0.01		0.054	0.054
Barium, Total (mg/L)	2		2.60	2.60
Beryllium, Total (mg/L)	0.004		0.002	0.004
Cadmium, Total (mg/L)	0.005		0.0025	0.005
Chromium, Total (mg/L)	0.1		0.042	0.1
Cobalt, Total (mg/L)	n/a	0.006	0.018	0.018
Combined Radium, Total (pCi/L)	5		16.37	16.37
Fluoride, Total (mg/L)	4		4.4	4.4
Lead, Total (mg/L)	n/a	0.015	0.011	0.015
Lithium, Total (mg/L)	n/a	0.04	0.14	0.14
Mercury, Total (mg/L)	0.002		0.000030	0.002
Molybdenum, Total (mg/L)	n/a	0.1	0.010	0.1
Selenium, Total (mg/L)	0.05		0.005	0.05
Thallium, Total (mg/L)	0.002		0.0016	0.002

Notes:

MCL = Maximum Contaminant Level

CCR = Coal Combustion Residual

UTL = Upper Tolerance Limit

GWPS = Groundwater Protection Standard

Calculated UTL represents site-specific background values.

Grey cells indicate the GWPS is based on the calculated UTL, which is higher than the MCL or CCR Rule-specified value.

**Table 3 - Appendix A Data Summary
Northeastern Plant - Bottom Ash Pond**

Analyte	Unit	Description	SP-1	SP-2	SP-10	SP-11
			4/12/2021	4/12/2021	4/12/2021	4/12/2021
Boron	mg/L	Interwell Background Value (UPL)	0.506			
		Analytical Result	0.186	0.255	1.03	0.562
Calcium	mg/L	Intrawell Background Value (UPL)	144	176	227	1,460
		Analytical Result	104	91.5	43.8	79.6
Chloride	mg/L	Interwell Background Value (UPL)	806			
		Analytical Result	37.2	1,130	2,000	130
Fluoride	mg/L	Interwell Background Value (UPL)	4.22			
		Analytical Result	0.88	3.19	6.84	1.66
pH	SU	Interwell Background Value (UPL)	9.0			
		Interwell Background Value (LPL)	6.9			
		Analytical Result	7.6	7.6	8.1	7.8
Sulfate	mg/L	Interwell Background Value (UPL)	90.0			
		Analytical Result	50.0	12.4	15.4	232
Total Dissolved Solids	mg/L	Interwell Background Value (UPL)	1,580			
		Analytical Result	438	2,000	3,540	918

Notes:

UPL: Upper prediction limit

LPL: Lower prediction limit

Bold values exceed the background value.

Background values are shaded gray.

ATTACHMENT A

Certification by Qualified Professional Engineer

Certification by Qualified Professional Engineer

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Northeastern Bottom Ash Pond CCR management area and that the requirements of OAC 252:517-9-4(g) have been met.

DAVID ANTHONY MILLER
Printed Name of Licensed Professional Engineer

David Anthony Miller
Signature



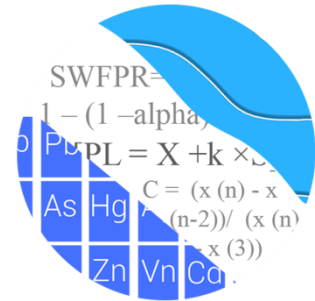
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OKLAHOMA
Licensing State

08.04.21
Date

ATTACHMENT B
Statistical Analysis Output

GROUNDWATER STATS CONSULTING



August 2, 2021

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
941 Chatham Lane, #103
Columbus, OH 43221

Re: Northeastern BAP (Bottom Ash Pond)
Assessment Monitoring Statistics – April 2021

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the April 2021 assessment monitoring analysis of groundwater data for American Electric Power Inc.'s Northeastern BAP. The analysis complies with the Oklahoma Administrative Code (OAC) as well as with the United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began at the site for the OAC program in 2017. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** SP-4 and SP-5R
- **Downgradient wells:** SP-1, SP2, SP-10, and SP-11

Data were sent electronically, and the statistical analysis was conducted according to the Statistical Analysis Plan and screening evaluation prepared by GSC and approved by Dr. Kirk Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC. The analysis was reviewed by Kristina Rayner, Groundwater Statistician and Founder of Groundwater Stats Consulting.

The OAC program consists of the following constituents listed below. The terms “constituent” and “parameter” are interchangeable.

- **Appendix B** (Assessment Monitoring) – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

For all constituents, a substitution of the most recent reporting limit is used for non-detect data. Time series and box plots are provided for all wells for the parameters listed above (Figures A & B). The time series plots display concentrations over time for each well while the box plots provide visual representation of variation within a given well and across all wells.

Evaluation of Appendix B Parameters – April 2021

For Appendix B parameters, confidence intervals for each downgradient well/constituent were compared against corresponding Groundwater Protection Standards (GWPS). GWPS were developed as described below. Downgradient well/constituent pairs that have 100% non-detects do not require analysis; however, no downgradient wells had 100% non-detects, and all well/constituent pairs were eligible for confidence intervals. A summary of previously flagged outliers follows this report (Figure C).

Tolerance Limits

Parametric tolerance limits were used to calculate background limits from pooled upgradient well data through October 2020 for Appendix B parameters with a target of 95% confidence and 95% coverage to determine background limits. These limits will be updated on an annual basis at the end of each year. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. These limits were compared to the Maximum Contaminant Levels (MCLs) and background limits in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the Confidence Interval comparisons (Figure D).

Confidence Intervals

Confidence intervals were then constructed on downgradient wells with data through April 2021 for each of the Appendix B parameters using the highest limit of the MCL or background limit as discussed above for the GWPS (Figure E). Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its

respective standard. A summary of the confidence interval results follows this letter. Exceedances were found for the following well/constituent pairs:

- Fluoride: SP-10
- Lithium: SP-10

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Northeastern BAP. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,



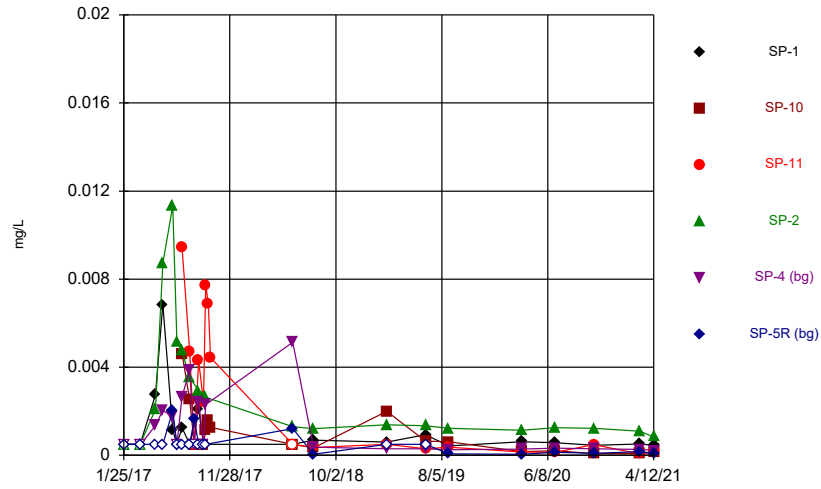
Andrew T. Collins
Project Manager



Kristina L. Rayner
Groundwater Statistician

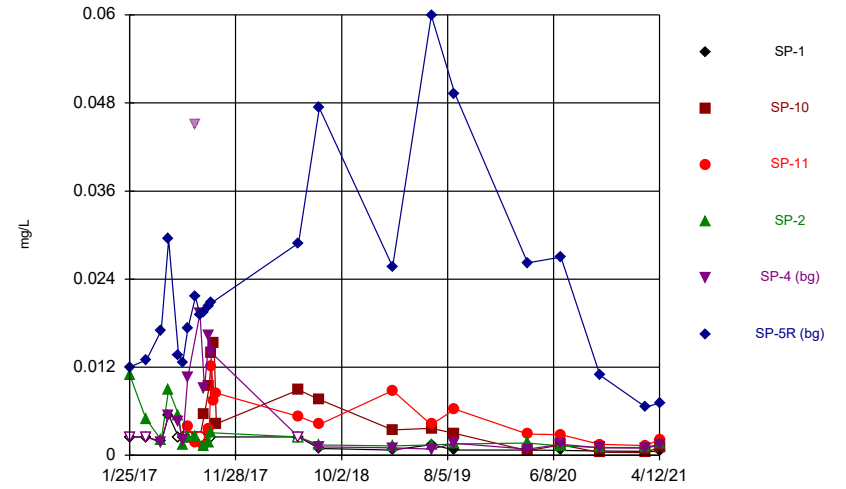
FIGURE A.

Time Series



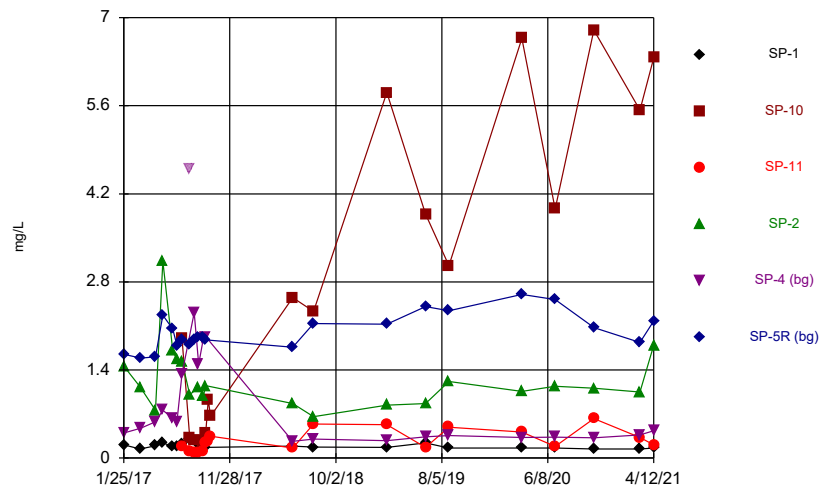
Constituent: Antimony Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



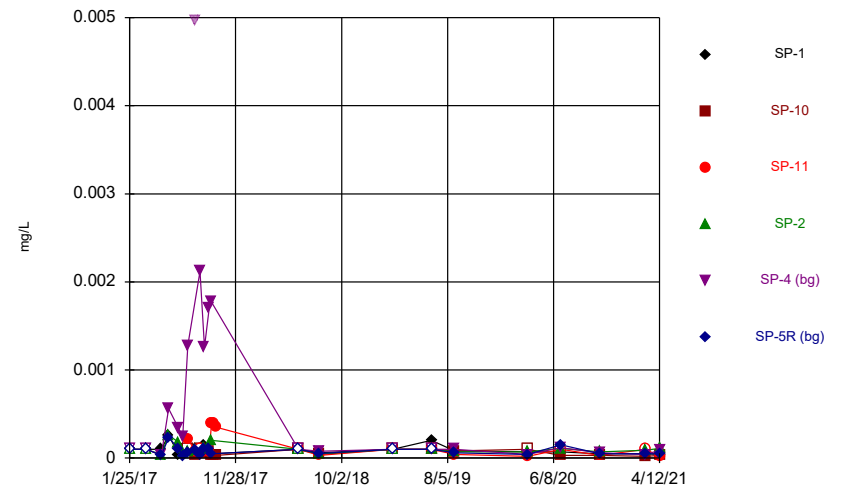
Constituent: Arsenic Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



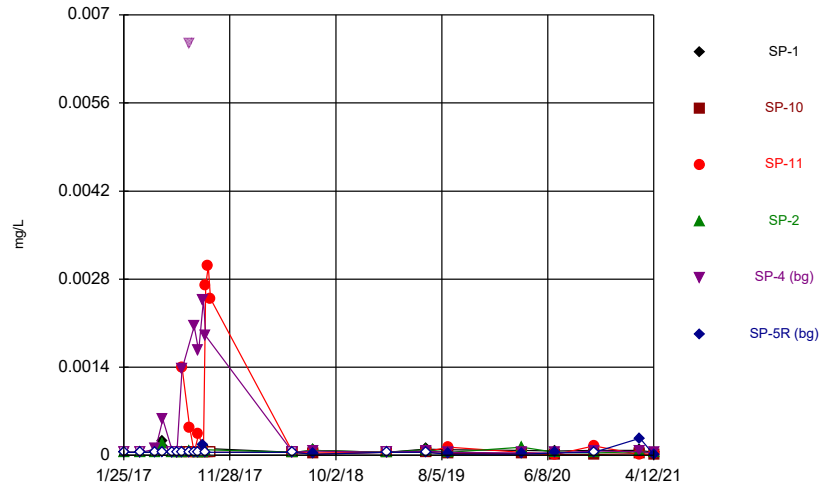
Constituent: Barium Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



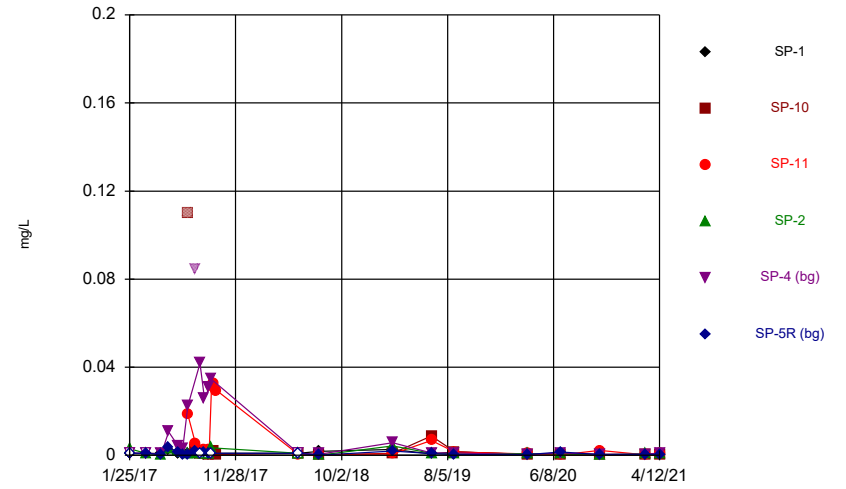
Constituent: Beryllium Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



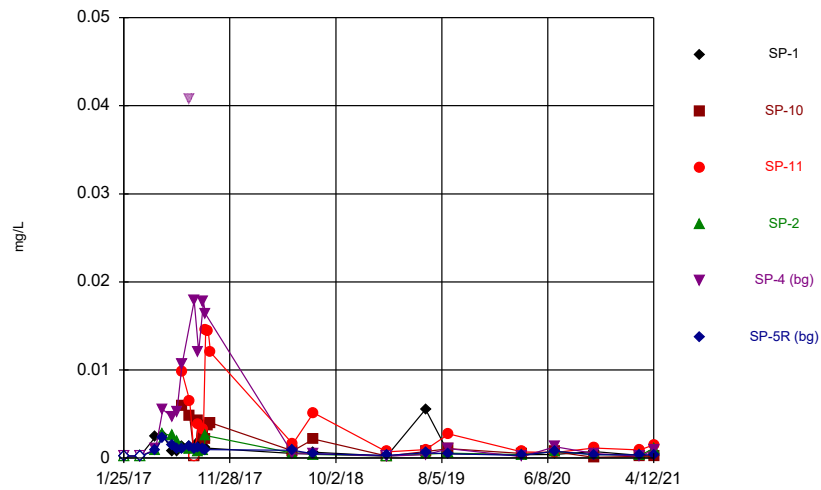
Constituent: Cadmium Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



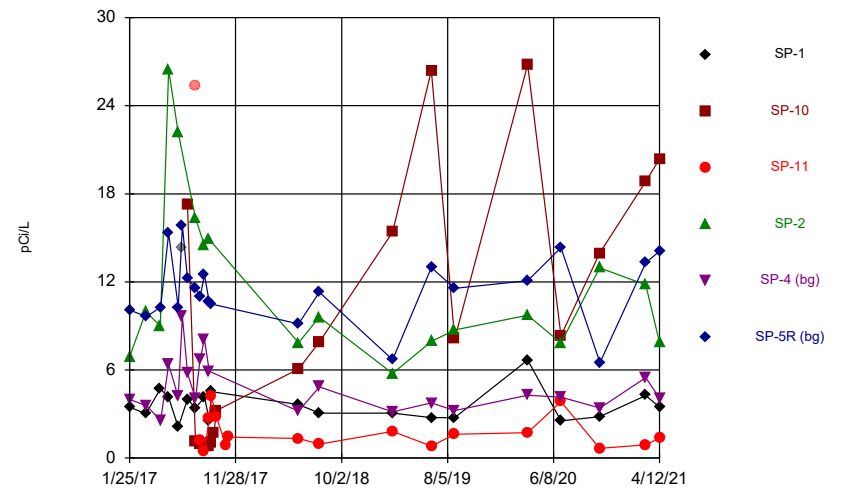
Constituent: Chromium Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



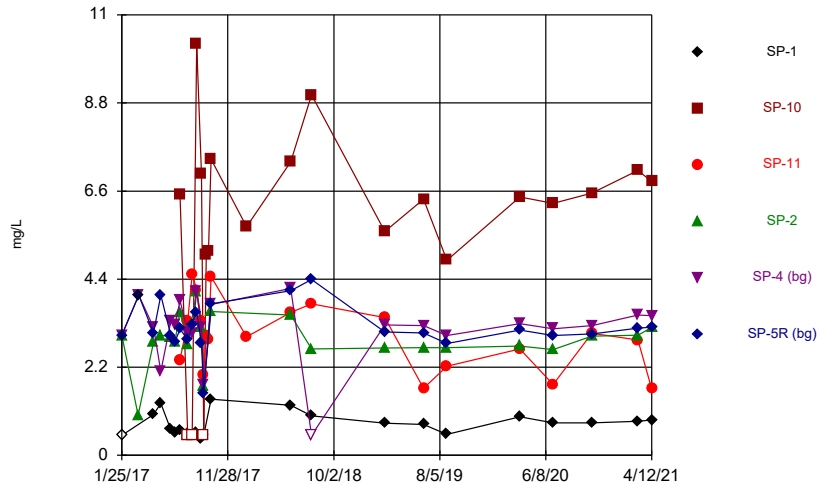
Constituent: Cobalt Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



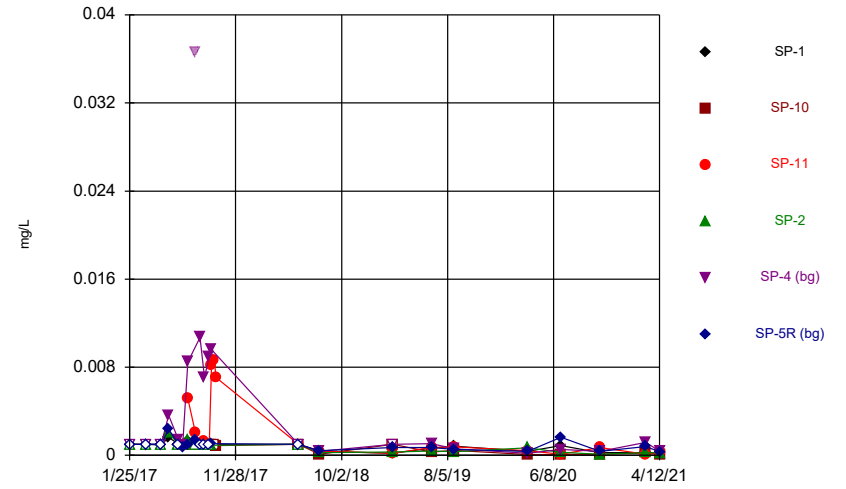
Constituent: Combined Radium 226 + 228 Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



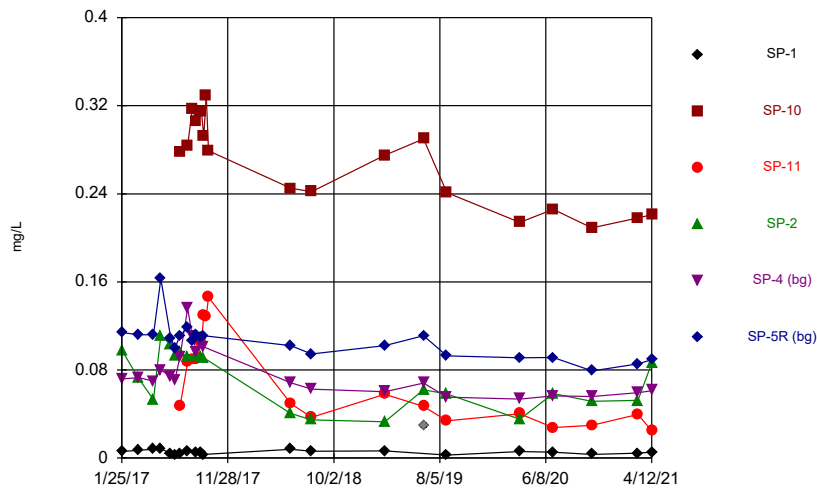
Constituent: Fluoride Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



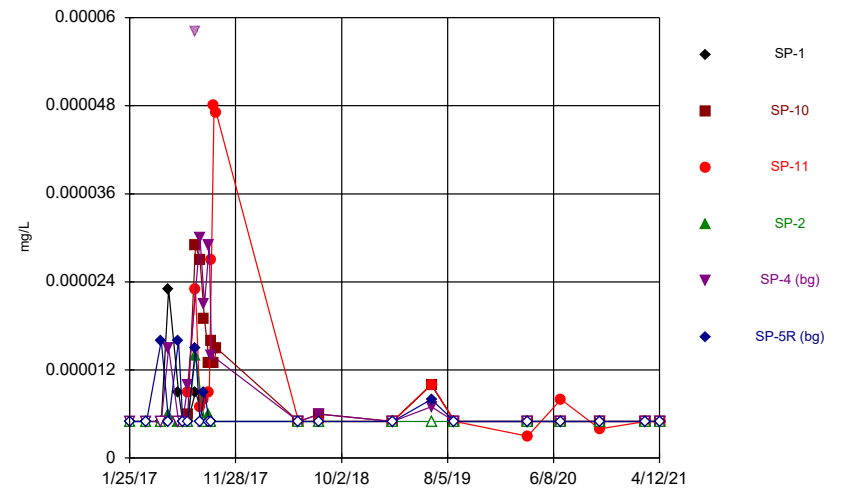
Constituent: Lead Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



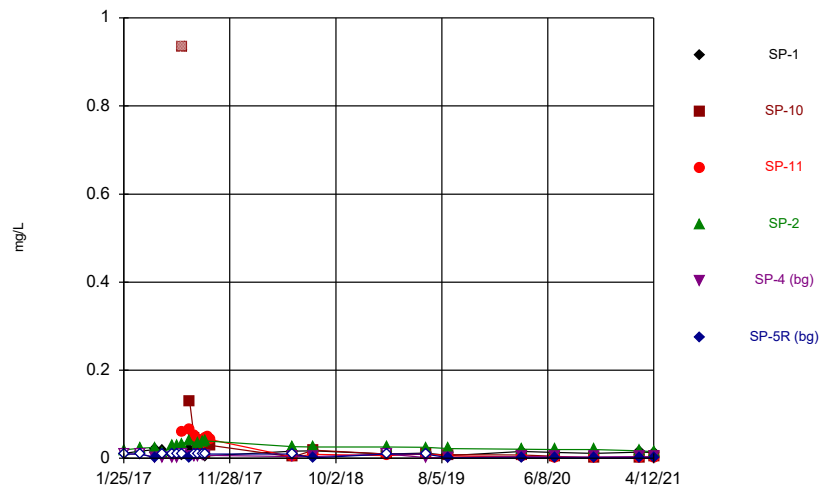
Constituent: Lithium Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



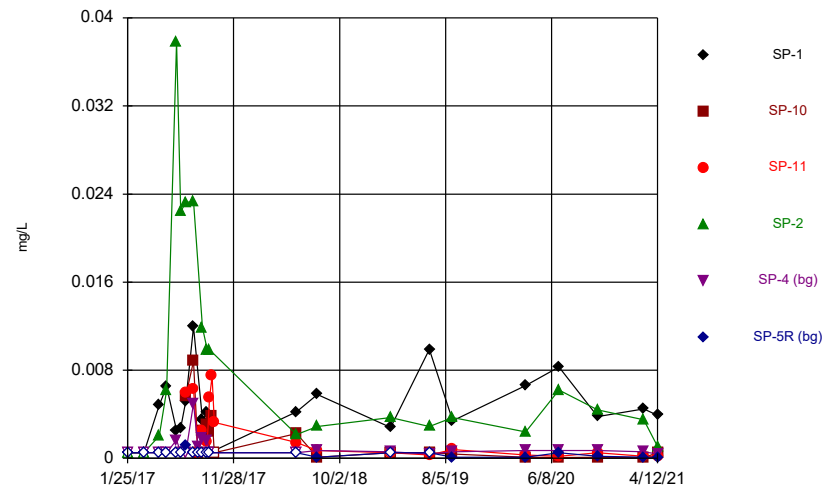
Constituent: Mercury Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



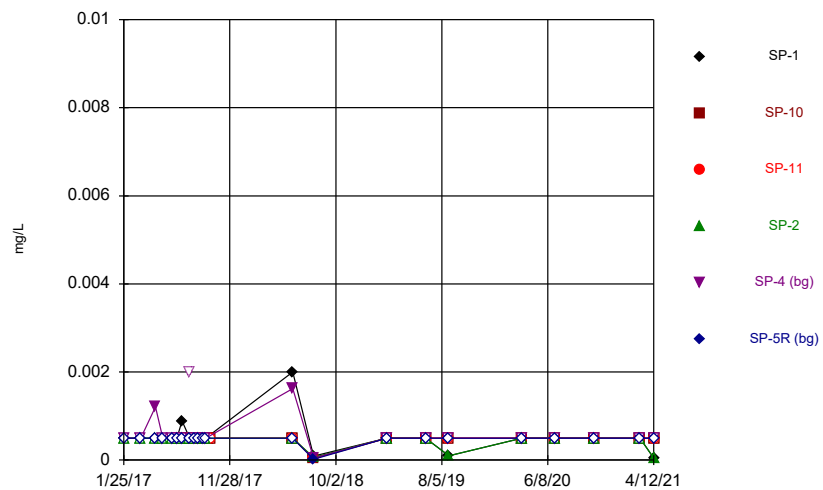
Constituent: Molybdenum Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



Constituent: Selenium Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

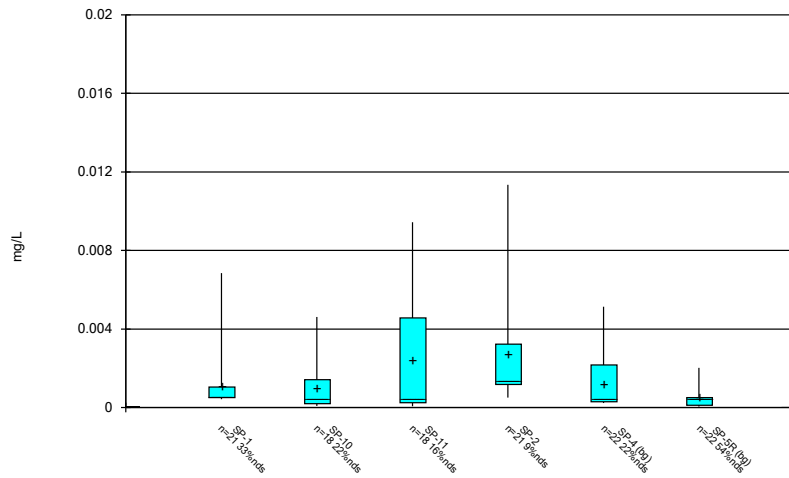
Time Series



Constituent: Thallium Analysis Run 6/14/2021 2:59 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

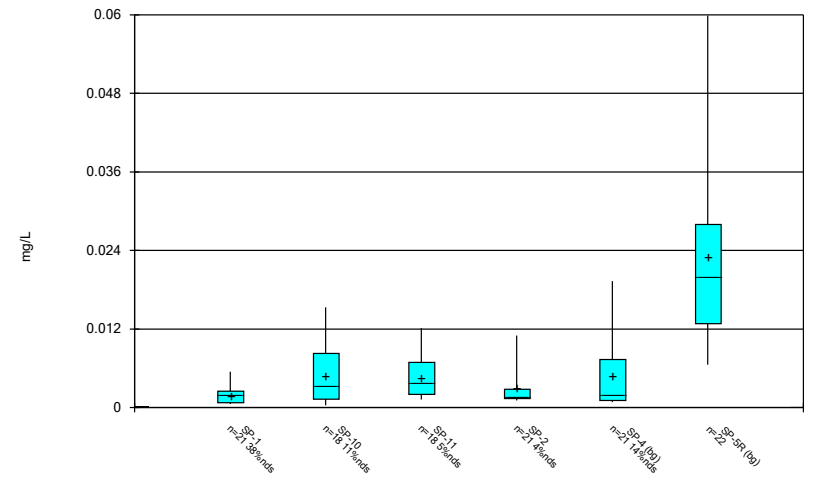
FIGURE B.

Box & Whiskers Plot



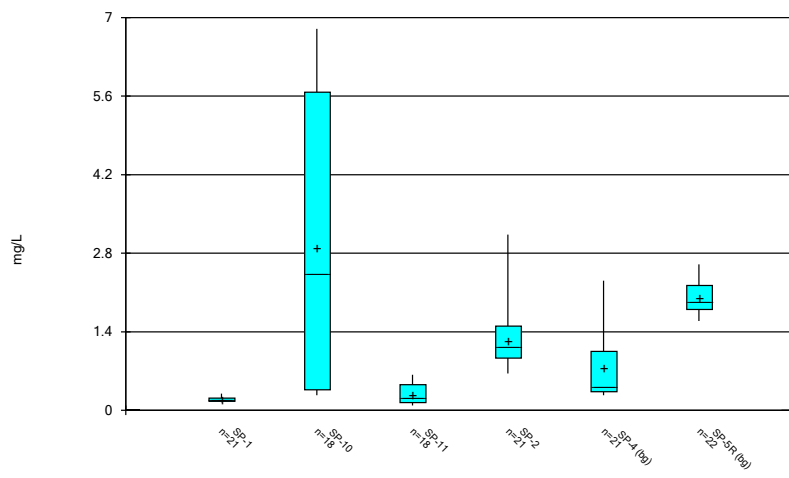
Constituent: Antimony Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



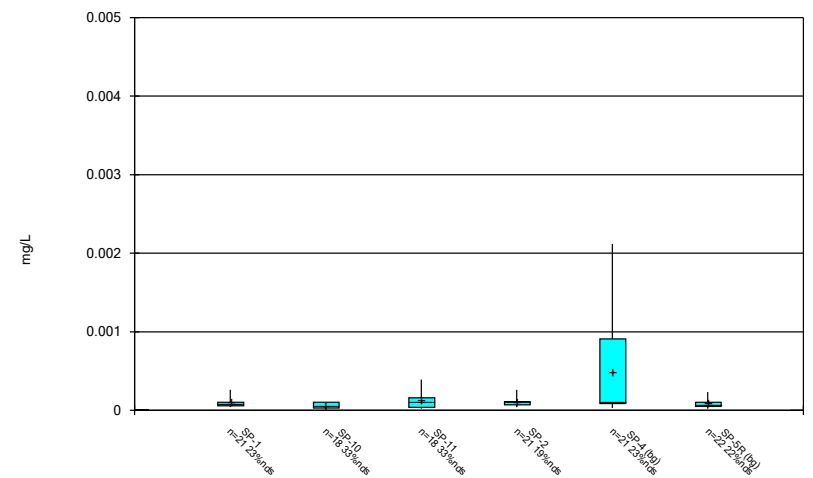
Constituent: Arsenic Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



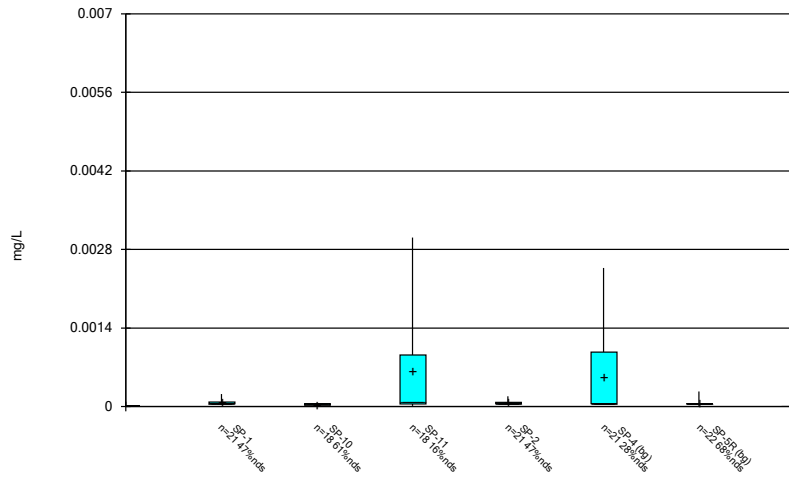
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 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



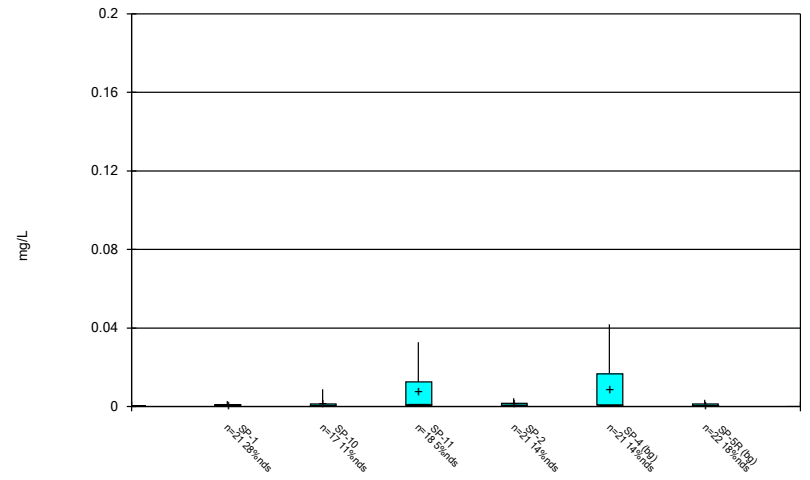
Constituent: Beryllium Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



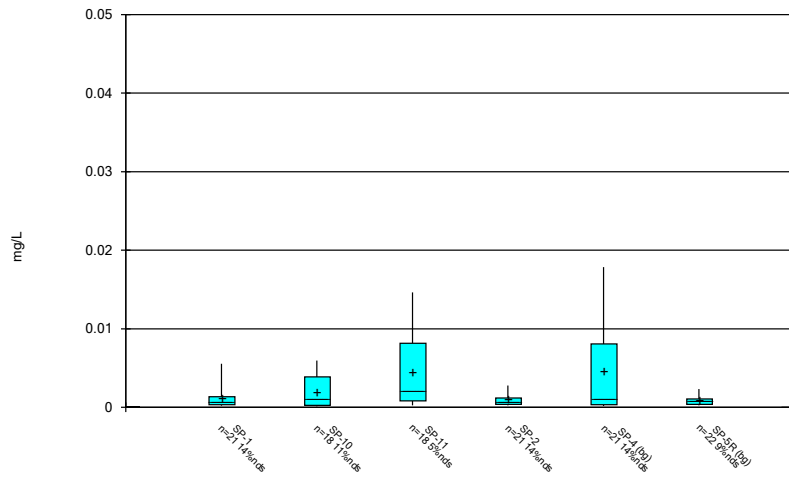
Constituent: Cadmium Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



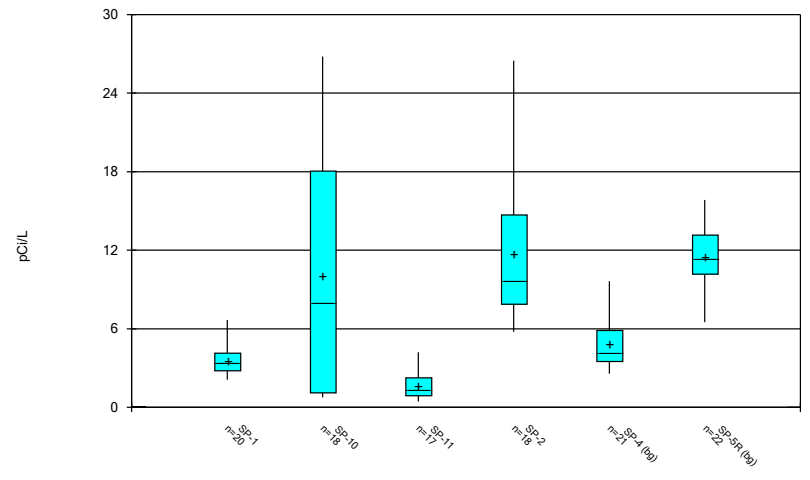
Constituent: Chromium Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



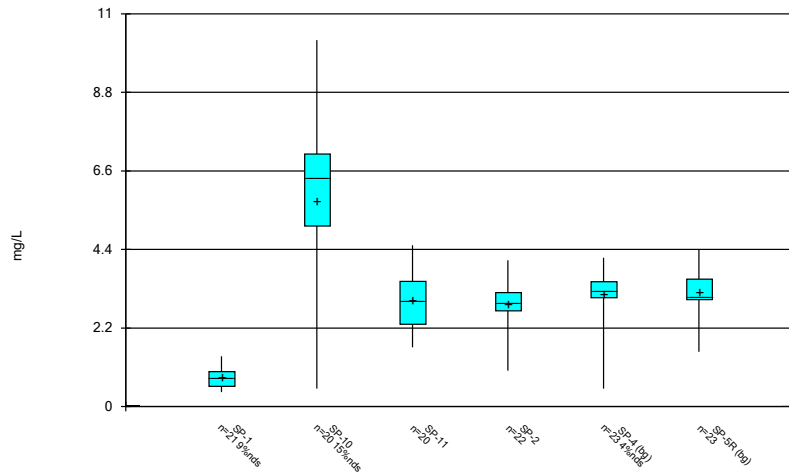
Constituent: Cobalt Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



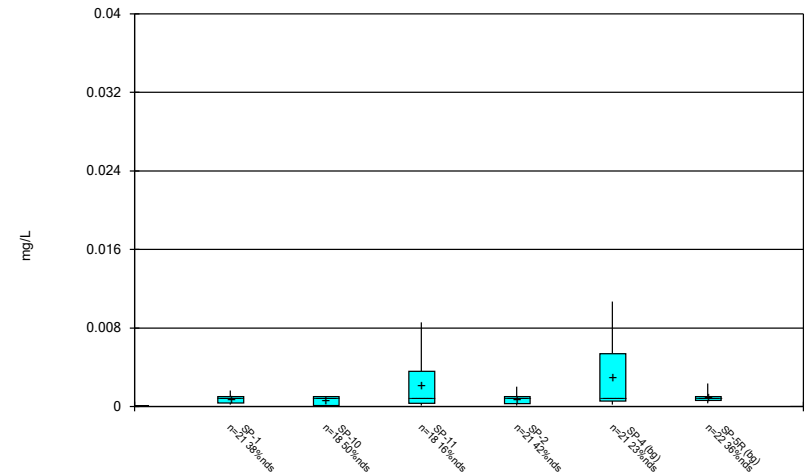
Constituent: Combined Radium 226 + 228 Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



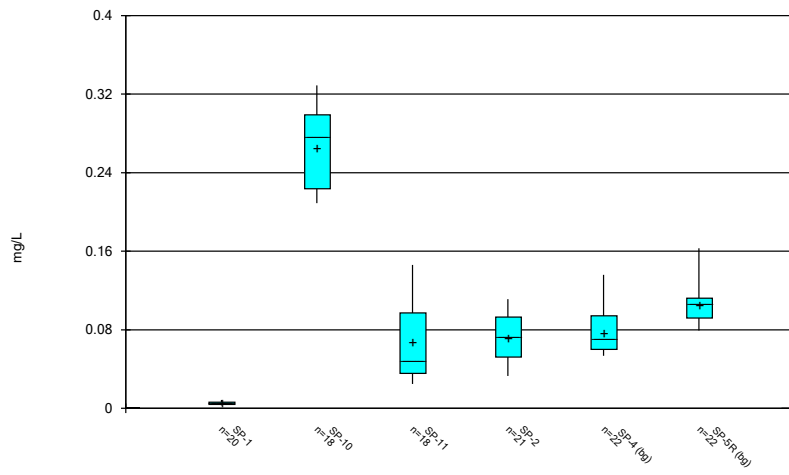
Constituent: Fluoride Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



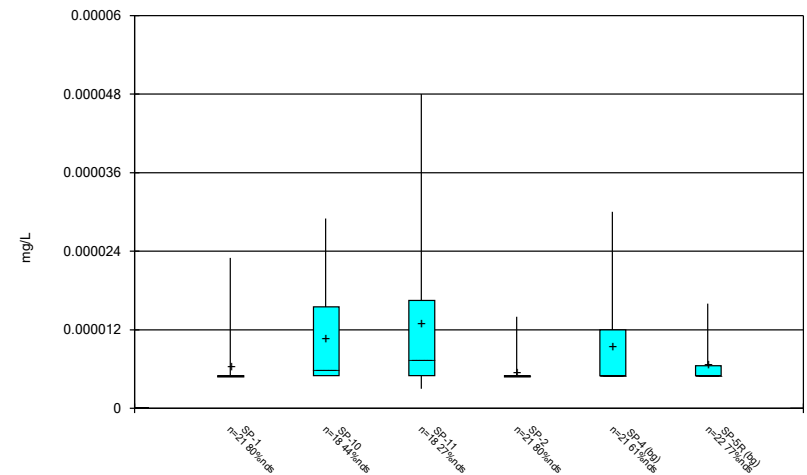
Constituent: Lead Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



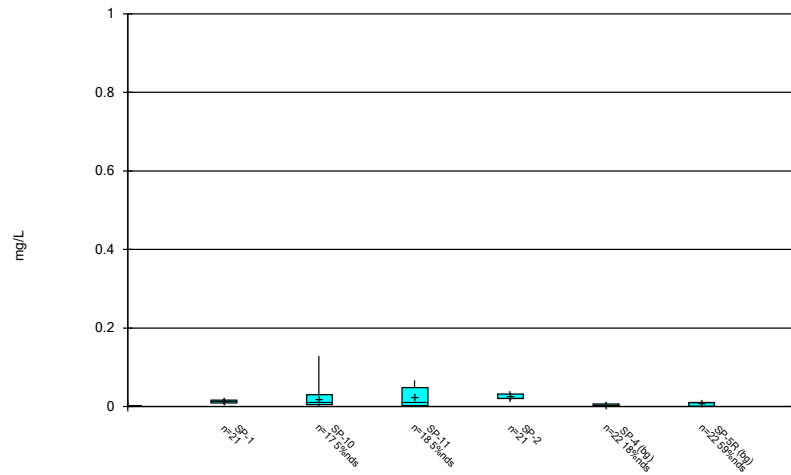
Constituent: Lithium Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



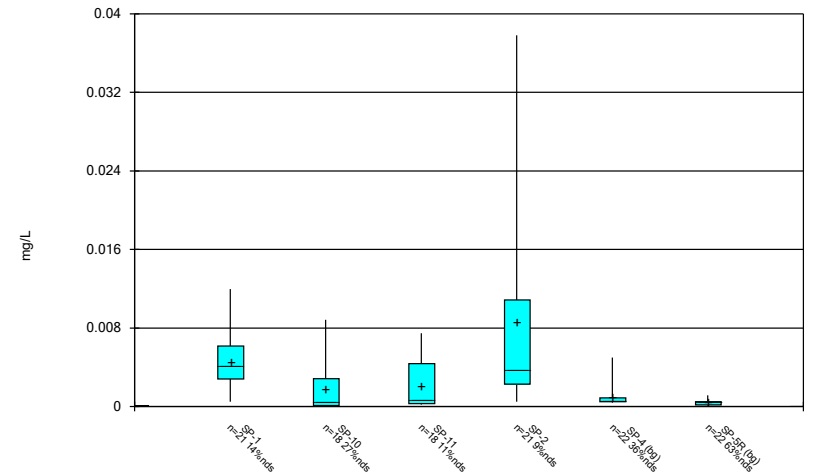
Constituent: Mercury Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



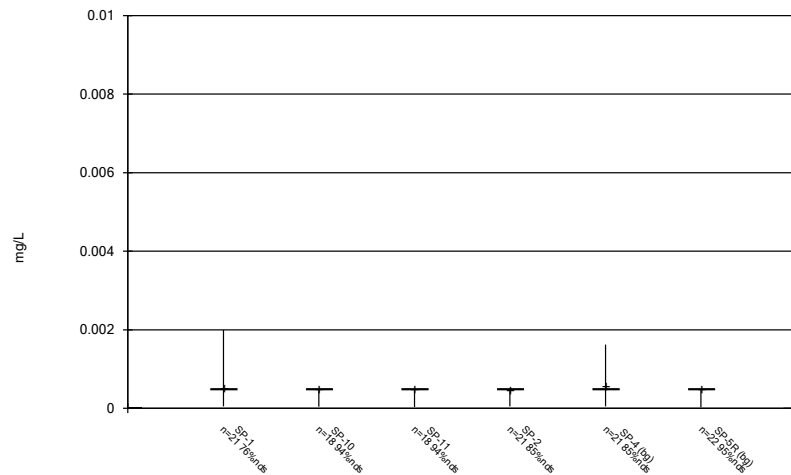
Constituent: Molybdenum Analysis Run 6/14/2021 3:01 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



Constituent: Selenium Analysis Run 6/14/2021 3:02 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Box & Whiskers Plot



Constituent: Thallium Analysis Run 6/14/2021 3:02 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

FIGURE C.

Outlier Summary

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/14/2021, 3:03 PM

	SP-4 Arsenic (mg/L)	SP-4 Barium (mg/L)	SP-4 Beryllium (mg/L)	SP-4 Cadmium (mg/L)	SP-10 Chromium (mg/L)	SP-4 Chromium (mg/L)	SP-4 Cobalt (mg/L)	SP-1 Combined Radium 226 + 228 (pCi/L)	SP-11 Combined Radium 226 + 228 (pCi/L)	SP-1 Fluoride (mg/L)
3/13/2017										4 (o)
6/27/2017							14.29 (o)			
7/13/2017					0.11 (o)					
8/4/2017	0.04498 (o)	4.59 (o)	0.00497 (o)	0.00655 (o)		0.08415 (o)	0.04069 (o)		25.367 (o)	
6/20/2019										

	SP-4 Lead (mg/L)	SP-1 Lithium (mg/L)	SP-4 Mercury (mg/L)	SP-10 Molybdenum (mg/L)	SP-4 Thallium (mg/L)
3/13/2017					
6/27/2017					
7/13/2017				0.934 (o)	
8/4/2017	0.03663 (o)		5.8E-05 (o)		<0.0005 (o)
6/20/2019		0.03 (J,o)			

FIGURE D.

**Table 2: Groundwater Protection Standards
Northeastern Plant - Bottom Ash Pond**

Geosyntec Consultants, Inc.

Constituent Name	MCL	CCR Rule-Specified	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.006		0.0051	0.006
Arsenic, Total (mg/L)	0.01		0.054	0.054
Barium, Total (mg/L)	2		2.60	2.60
Beryllium, Total (mg/L)	0.004		0.002	0.004
Cadmium, Total (mg/L)	0.005		0.0025	0.005
Chromium, Total (mg/L)	0.1		0.042	0.1
Cobalt, Total (mg/L)	n/a	0.006	0.018	0.018
Combined Radium, Total (pCi/L)	5		16.37	16.37
Fluoride, Total (mg/L)	4		4.4	4.4
Lead, Total (mg/L)	n/a	0.015	0.011	0.015
Lithium, Total (mg/L)	n/a	0.04	0.14	0.14
Mercury, Total (mg/L)	0.002		0.000030	0.002
Molybdenum, Total (mg/L)	n/a	0.1	0.010	0.1
Selenium, Total (mg/L)	0.05		0.005	0.05
Thallium, Total (mg/L)	0.002		0.0016	0.002

Notes:

MCL = Maximum Contaminant Level

CCR = Coal Combustion Residual

Calculated UTL (Upper Tolerance Limit) represents site-specific background values.

Grey cells indicate the GWPS is based on the calculated UTL, which is higher than the MCL or CCR Rule-specified value.

FIGURE E.

Confidence Intervals - Significant Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/15/2021, 2:14 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig. N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Fluoride (mg/L)	SP-10	7.335	5.005	4.4	Yes 20	5.748	2.593	15	None	x^2	0.01	Param.
Lithium (mg/L)	SP-10	0.2893	0.2419	0.14	Yes 18	0.2656	0.03915	0	None	No	0.01	Param.

Confidence Intervals - All Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/15/2021, 2:14 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	SP-1	0.00114	0.0005	0.006	No	21	0.001089	0.001447	33.33	None	No	0.01	NP (normality)
Antimony (mg/L)	SP-10	0.001502	0.0003233	0.006	No	18	0.0009661	0.001145	22.22	Kaplan-Meier	sqrt(x)	0.01	Param.
Antimony (mg/L)	SP-11	0.002241	0.0002999	0.006	No	18	0.002412	0.003056	16.67	Kaplan-Meier	ln(x)	0.01	Param.
Antimony (mg/L)	SP-2	0.003336	0.00122	0.006	No	21	0.002705	0.002778	9.524	None	x^(1/3)	0.01	Param.
Antimony (mg/L)	SP-4 (bg)	0.00204	0.00029	0.006	No	22	0.001212	0.001354	22.73	None	No	0.01	NP (normality)
Antimony (mg/L)	SP-5R (bg)	0.00121	0.00013	0.006	No	22	0.0005227	0.0005004	54.55	None	No	0.01	NP (NDs)
Arsenic (mg/L)	SP-1	0.001492	0.0007063	0.054	No	21	0.001795	0.001186	38.1	Kaplan-Meier	x^(1/3)	0.01	Param.
Arsenic (mg/L)	SP-10	0.006612	0.001861	0.054	No	18	0.004812	0.004502	11.11	None	sqrt(x)	0.01	Param.
Arsenic (mg/L)	SP-11	0.005889	0.00253	0.054	No	18	0.004486	0.00306	5.556	None	sqrt(x)	0.01	Param.
Arsenic (mg/L)	SP-2	0.00305	0.00129	0.054	No	21	0.002857	0.002673	4.762	None	No	0.01	NP (normality)
Arsenic (mg/L)	SP-4 (bg)	0.004881	0.001546	0.054	No	21	0.004814	0.005632	14.29	None	ln(x)	0.01	Param.
Arsenic (mg/L)	SP-5R (bg)	0.02838	0.01518	0.054	No	22	0.02297	0.01371	0	None	sqrt(x)	0.01	Param.
Barium (mg/L)	SP-1	0.2109	0.1674	2.6	No	21	0.1891	0.03937	0	None	No	0.01	Param.
Barium (mg/L)	SP-10	5.81	0.33	2.6	No	18	2.889	2.458	0	None	No	0.01	NP (normality)
Barium (mg/L)	SP-11	0.3876	0.1787	2.6	No	18	0.2831	0.1726	0	None	No	0.01	Param.
Barium (mg/L)	SP-2	1.45	0.9672	2.6	No	21	1.246	0.5285	0	None	x^(1/3)	0.01	Param.
Barium (mg/L)	SP-4 (bg)	1.34	0.327	2.6	No	21	0.7491	0.6364	0	None	No	0.01	NP (normality)
Barium (mg/L)	SP-5R (bg)	2.165	1.858	2.6	No	22	2.012	0.2863	0	None	No	0.01	Param.
Beryllium (mg/L)	SP-1	0.0001073	0.00005131	0.004	No	21	0.00009476	0.00005259	23.81	Kaplan-Meier	sqrt(x)	0.01	Param.
Beryllium (mg/L)	SP-10	0.0001	0.00003	0.004	No	18	0.00006072	0.00003234	33.33	None	No	0.01	NP (normality)
Beryllium (mg/L)	SP-11	0.0001056	0.00003064	0.004	No	18	0.0001283	0.0001235	33.33	Kaplan-Meier	ln(x)	0.01	Param.
Beryllium (mg/L)	SP-2	0.0001243	0.00006541	0.004	No	21	0.0001048	0.00005184	19.05	Kaplan-Meier	sqrt(x)	0.01	Param.
Beryllium (mg/L)	SP-4 (bg)	0.00126	0.000078	0.004	No	21	0.0004922	0.0006809	23.81	None	No	0.01	NP (normality)
Beryllium (mg/L)	SP-5R (bg)	0.00008381	0.00003605	0.004	No	22	0.0000815	0.00004694	22.73	Kaplan-Meier	sqrt(x)	0.01	Param.
Cadmium (mg/L)	SP-1	0.00009	0.00005	0.005	No	21	0.00007333	0.00003877	47.62	None	No	0.01	NP (normality)
Cadmium (mg/L)	SP-10	0.00005	0.00002	0.005	No	18	0.00003833	0.00001618	61.11	None	No	0.01	NP (NDs)
Cadmium (mg/L)	SP-11	0.0004295	0.00004588	0.005	No	18	0.0006161	0.00103	16.67	Kaplan-Meier	ln(x)	0.01	Param.
Cadmium (mg/L)	SP-2	0.00008	0.00005	0.005	No	21	0.00006571	0.00003385	47.62	None	No	0.01	NP (normality)
Cadmium (mg/L)	SP-4 (bg)	0.00137	0.00005	0.005	No	21	0.0005171	0.0008156	28.57	None	No	0.01	NP (normality)
Cadmium (mg/L)	SP-5R (bg)	0.00016	0.00004	0.005	No	22	0.00005864	0.00005488	68.18	None	No	0.01	NP (NDs)
Chromium (mg/L)	SP-1	0.00111	0.0004862	0.1	No	21	0.0009932	0.0006665	28.57	Kaplan-Meier	sqrt(x)	0.01	Param.
Chromium (mg/L)	SP-10	0.001378	0.0003213	0.1	No	17	0.001297	0.002039	11.76	None	ln(x)	0.01	Param.
Chromium (mg/L)	SP-11	0.00611	0.0007839	0.1	No	18	0.007638	0.01165	5.556	None	ln(x)	0.01	Param.
Chromium (mg/L)	SP-2	0.001711	0.0006307	0.1	No	21	0.001311	0.001145	14.29	None	sqrt(x)	0.01	Param.
Chromium (mg/L)	SP-4 (bg)	0.02248	0.00064	0.1	No	21	0.008983	0.01333	14.29	None	No	0.01	NP (normality)
Chromium (mg/L)	SP-5R (bg)	0.00108	0.0004203	0.1	No	22	0.0009425	0.0007502	18.18	Kaplan-Meier	sqrt(x)	0.01	Param.
Cobalt (mg/L)	SP-1	0.001356	0.0004687	0.018	No	21	0.001103	0.001223	14.29	None	x^(1/3)	0.01	Param.
Cobalt (mg/L)	SP-10	0.002642	0.000622	0.018	No	18	0.001909	0.001866	11.11	None	sqrt(x)	0.01	Param.
Cobalt (mg/L)	SP-11	0.00578	0.001285	0.018	No	18	0.00448	0.004904	5.556	None	x^(1/3)	0.01	Param.
Cobalt (mg/L)	SP-2	0.001243	0.0004989	0.018	No	21	0.0009596	0.0007941	14.29	None	sqrt(x)	0.01	Param.
Cobalt (mg/L)	SP-4 (bg)	0.003652	0.0005856	0.018	No	21	0.004633	0.006294	14.29	None	ln(x)	0.01	Param.
Cobalt (mg/L)	SP-5R (bg)	0.001074	0.0005355	0.018	No	22	0.0008046	0.0005014	9.091	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-1	4.141	2.971	16.37	No	20	3.556	1.03	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-10	13.75	3.39	16.37	No	18	9.948	9.022	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-11	2.211	0.9901	16.37	No	17	1.685	1.091	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-2	14.12	8.404	16.37	No	18	11.68	5.495	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-4 (bg)	5.765	3.805	16.37	No	21	4.785	1.777	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-5R (bg)	12.73	10.17	16.37	No	22	11.45	2.384	0	None	No	0.01	Param.
Fluoride (mg/L)	SP-1	0.9518	0.6432	4.4	No	21	0.7975	0.2798	9.524	None	No	0.01	Param.
Fluoride (mg/L)	SP-10	7.335	5.005	4.4	Yes	20	5.748	2.593	15	None	x^2	0.01	Param.
Fluoride (mg/L)	SP-11	3.482	2.498	4.4	No	20	2.99	0.8672	0	None	No	0.01	Param.
Fluoride (mg/L)	SP-2	3.229	2.629	4.4	No	22	2.88	0.6265	0	None	x^2	0.01	Param.
Fluoride (mg/L)	SP-4 (bg)	3.56	2.904	4.4	No	23	3.153	0.7985	4.348	None	x^2	0.01	Param.
Fluoride (mg/L)	SP-5R (bg)	3.517	2.904	4.4	No	23	3.211	0.5858	0	None	No	0.01	Param.

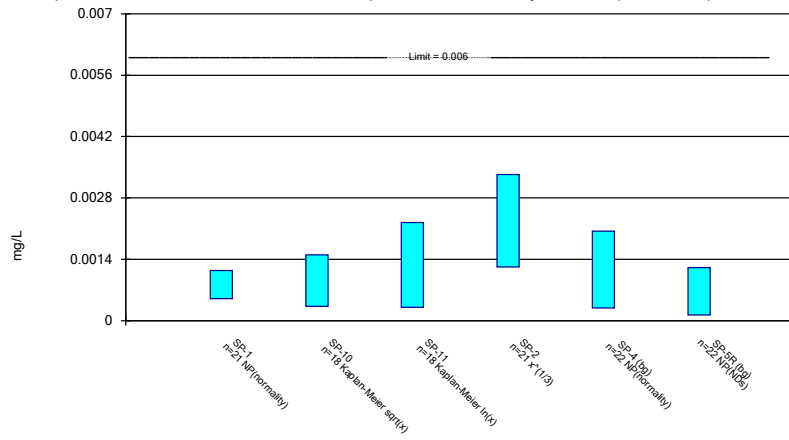
Confidence Intervals - All Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/15/2021, 2:14 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Lead (mg/L)	SP-1	0.001	0.000351	0.015	No	21	0.0007971	0.0003863	38.1	None	No	0.01	NP (normality)
Lead (mg/L)	SP-10	0.001	0.0001	0.015	No	18	0.0006278	0.0004234	50	None	No	0.01	NP (normality)
Lead (mg/L)	SP-11	0.001773	0.0002931	0.015	No	18	0.002157	0.002904	16.67	Kaplan-Meier	ln(x)	0.01	Param.
Lead (mg/L)	SP-2	0.000771	0.0002795	0.015	No	21	0.0007686	0.0004787	42.86	Kaplan-Meier	sqrt(x)	0.01	Param.
Lead (mg/L)	SP-4 (bg)	0.002528	0.0006096	0.015	No	21	0.00288	0.0036	23.81	Kaplan-Meier	ln(x)	0.01	Param.
Lead (mg/L)	SP-5R (bg)	0.001096	0.000569	0.015	No	22	0.000927	0.0004596	36.36	Kaplan-Meier	sqrt(x)	0.01	Param.
Lithium (mg/L)	SP-1	0.00633	0.004447	0.14	No	20	0.005389	0.001657	0	None	No	0.01	Param.
Lithium (mg/L)	SP-10	0.2893	0.2419	0.14	Yes	18	0.2656	0.03915	0	None	No	0.01	Param.
Lithium (mg/L)	SP-11	0.08628	0.04205	0.14	No	18	0.06727	0.03932	0	None	sqrt(x)	0.01	Param.
Lithium (mg/L)	SP-2	0.08575	0.05775	0.14	No	21	0.07175	0.02538	0	None	No	0.01	Param.
Lithium (mg/L)	SP-4 (bg)	0.08638	0.06465	0.14	No	22	0.07642	0.02158	0	None	sqrt(x)	0.01	Param.
Lithium (mg/L)	SP-5R (bg)	0.1133	0.09635	0.14	No	22	0.1054	0.01676	0	None	x^(1/3)	0.01	Param.
Mercury (mg/L)	SP-1	0.000009	0.000005	0.002	No	21	0.000006476	0.000004094	80.95	None	No	0.01	NP (NDs)
Mercury (mg/L)	SP-10	0.000016	0.000005	0.002	No	18	0.00001078	0.000007788	44.44	None	No	0.01	NP (normality)
Mercury (mg/L)	SP-11	0.000023	0.000005	0.002	No	18	0.00001294	0.00001408	27.78	None	No	0.01	NP (normality)
Mercury (mg/L)	SP-2	0.000005	0.000005	0.002	No	21	0.000005524	0.000001965	80.95	None	No	0.01	NP (NDs)
Mercury (mg/L)	SP-4 (bg)	0.000014	0.000005	0.002	No	21	0.000009381	0.000007953	61.9	None	No	0.01	NP (NDs)
Mercury (mg/L)	SP-5R (bg)	0.000008	0.000005	0.002	No	22	0.000006773	0.000003766	77.27	None	No	0.01	NP (NDs)
Molybdenum (mg/L)	SP-1	0.01518	0.01031	0.1	No	21	0.01274	0.004411	0	None	No	0.01	Param.
Molybdenum (mg/L)	SP-10	0.02791	0.005255	0.1	No	17	0.0216	0.03061	5.882	None	x^(1/3)	0.01	Param.
Molybdenum (mg/L)	SP-11	0.04861	0.00215	0.1	No	18	0.02457	0.02406	5.556	None	No	0.01	NP (normality)
Molybdenum (mg/L)	SP-2	0.02997	0.02132	0.1	No	21	0.02565	0.007841	0	None	No	0.01	Param.
Molybdenum (mg/L)	SP-4 (bg)	0.004119	0.002206	0.1	No	22	0.004522	0.003107	18.18	Kaplan-Meier	No	0.01	Param.
Molybdenum (mg/L)	SP-5R (bg)	0.01	0.001	0.1	No	22	0.006323	0.004525	59.09	Kaplan-Meier	No	0.01	NP (NDs)
Selenium (mg/L)	SP-1	0.006194	0.002969	0.05	No	21	0.004581	0.002923	14.29	None	No	0.01	Param.
Selenium (mg/L)	SP-10	0.001567	0.0001783	0.05	No	18	0.001777	0.00238	27.78	Kaplan-Meier	ln(x)	0.01	Param.
Selenium (mg/L)	SP-11	0.002223	0.0004664	0.05	No	18	0.002116	0.002463	11.11	None	ln(x)	0.01	Param.
Selenium (mg/L)	SP-2	0.01135	0.002938	0.05	No	21	0.0086	0.009924	9.524	None	sqrt(x)	0.01	Param.
Selenium (mg/L)	SP-4 (bg)	0.00104	0.0005	0.05	No	22	0.0009368	0.001	36.36	None	No	0.01	NP (normality)
Selenium (mg/L)	SP-5R (bg)	0.0005	0.0002	0.05	No	22	0.0004245	0.0002365	63.64	None	No	0.01	NP (NDs)
Thallium (mg/L)	SP-1	0.00089	0.0001	0.002	No	21	0.00053	0.0003817	76.19	None	No	0.01	NP (NDs)
Thallium (mg/L)	SP-10	0.0005	0.00004	0.002	No	18	0.0004744	0.0001084	94.44	None	No	0.01	NP (NDs)
Thallium (mg/L)	SP-11	0.0005	0.00003	0.002	No	18	0.0004739	0.0001108	94.44	None	No	0.01	NP (NDs)
Thallium (mg/L)	SP-2	0.0005	0.0001	0.002	No	21	0.0004386	0.0001544	85.71	None	No	0.01	NP (NDs)
Thallium (mg/L)	SP-4 (bg)	0.00121	0.00005	0.002	No	21	0.0005657	0.0003058	85.71	None	No	0.01	NP (NDs)
Thallium (mg/L)	SP-5R (bg)	0.0005	0.00002	0.002	No	22	0.0004782	0.0001023	95.45	None	No	0.01	NP (NDs)

Parametric and Non-Parametric (NP) Confidence Interval

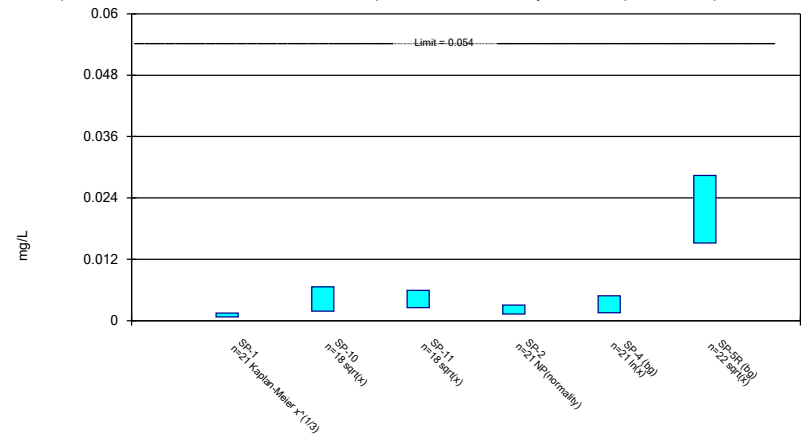
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

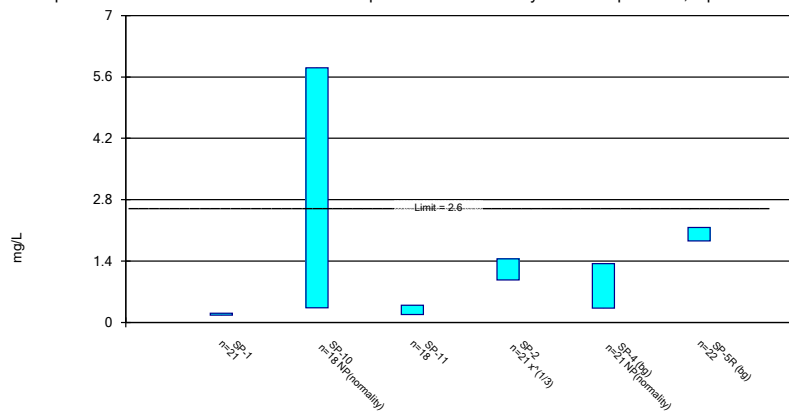
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

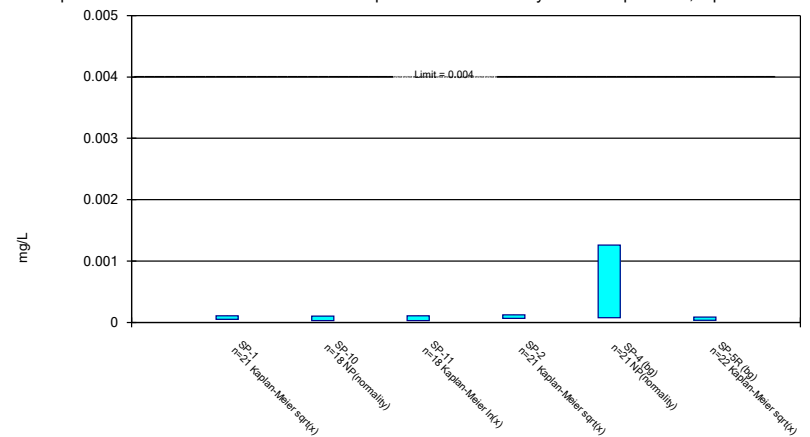
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

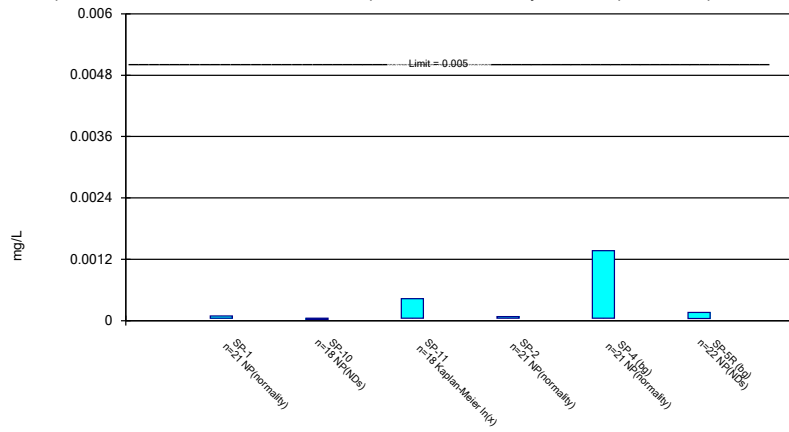
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Beryllium Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

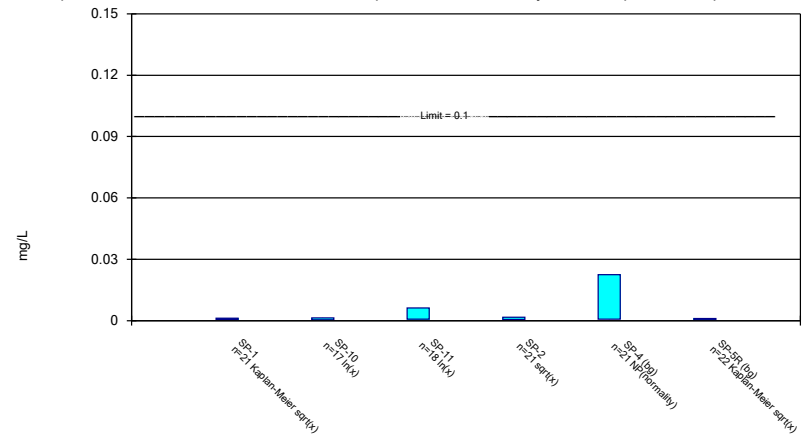
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

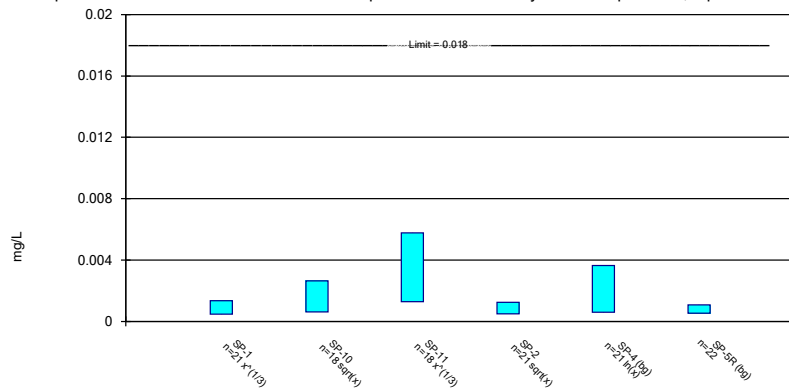
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

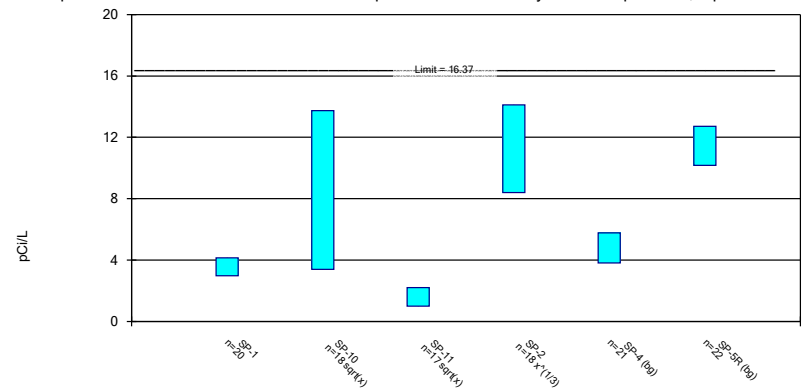
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

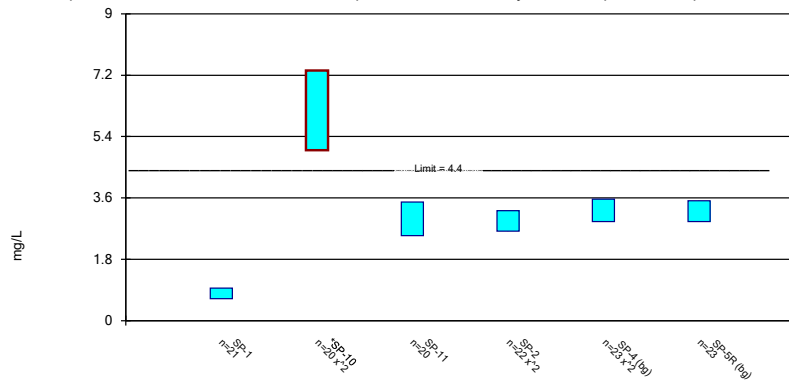
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 6/15/2021 2:13 PM View: Appendix IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

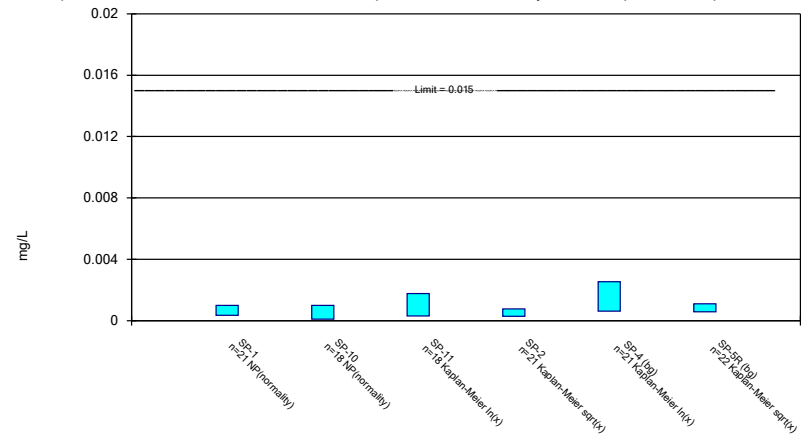
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 6/15/2021 2:13 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

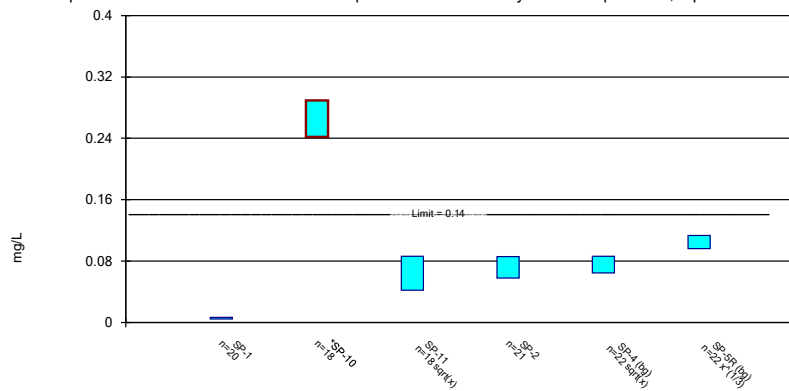
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 6/15/2021 2:13 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

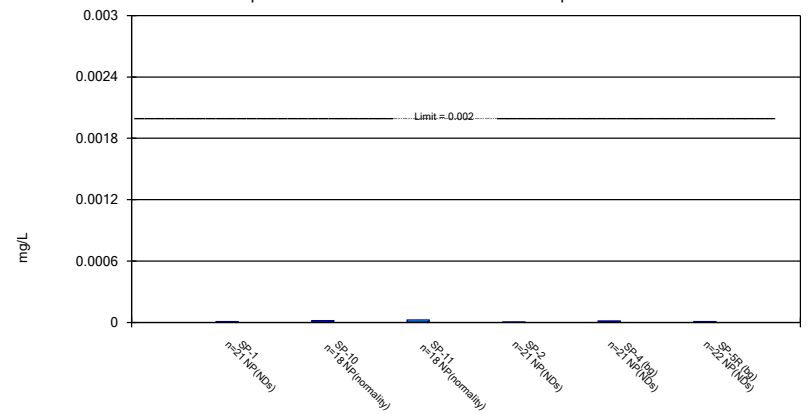
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 6/15/2021 2:13 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Non-Parametric Confidence Interval

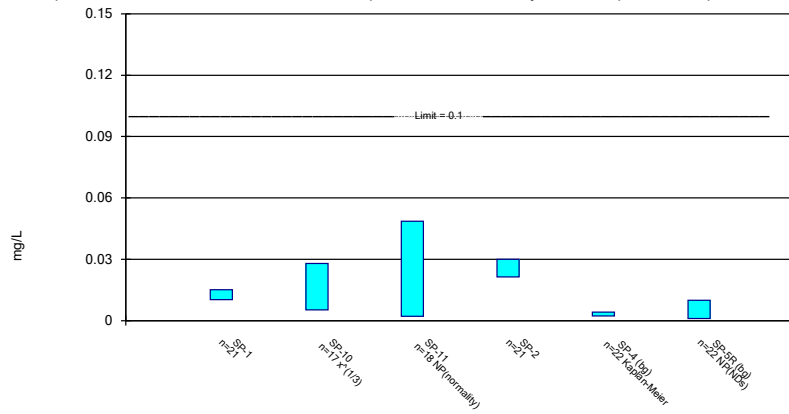
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury Analysis Run 6/15/2021 2:13 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

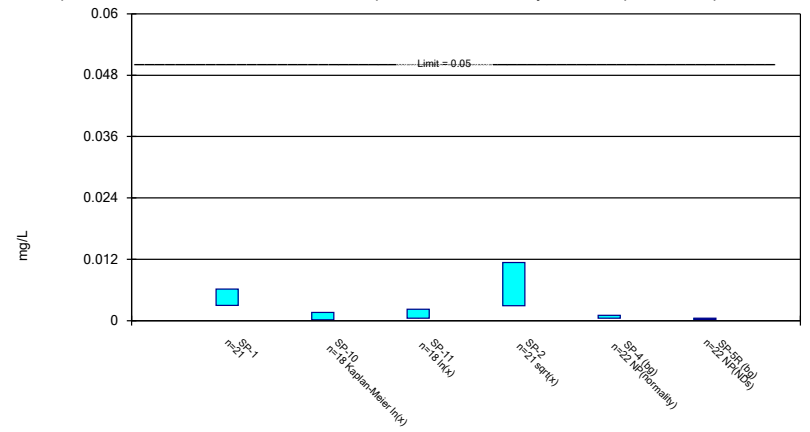
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum Analysis Run 6/15/2021 2:13 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

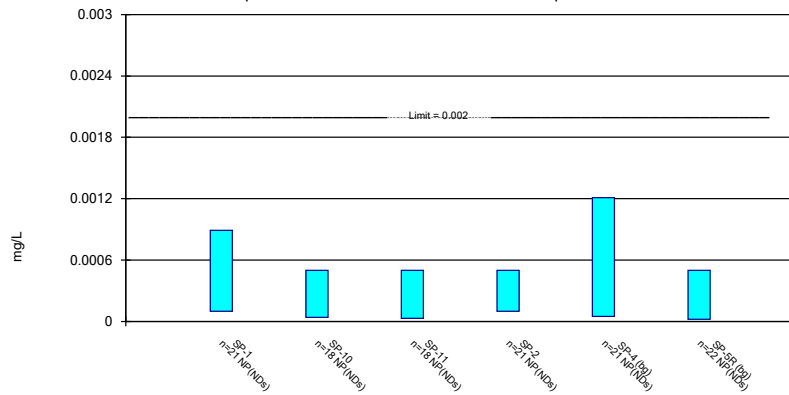
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium Analysis Run 6/15/2021 2:13 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Thallium Analysis Run 6/15/2021 2:13 PM View: Appendix IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP