



SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

January 24, 2020

Ms. Jill Parker-Witt, P.E.
American Electric Power
502 North Allen Avenue
Shreveport, LA 71101

Re: Alternate Source Demonstration for Lithium –Bottom Ash Pond
Public Service Company of Oklahoma
Northeastern Power Station
Rogers County
Solid Waste Permit No. none

Dear Ms. Parker-Witt:

On October 29, 2019, The Oklahoma Department of Environmental Quality (DEQ) approved the revised alternate source demonstration (ASD) for lithium detected in monitoring well SP-10 for the Bottom Ash Pond (BAP). The ASD proposed that naturally occurring concentrations of lithium in groundwater were the source of the statistically significant level (SSL) of lithium in SP-10 during the 2018 sampling events. DEQ required AEP/Public Service Company of Oklahoma Northeastern Power Station (NPS) to include the revised ASD in the annual groundwater monitoring and corrective action report required by Oklahoma Administrative Code (OAC) 252:517-9-1(e).

On December 12, 2019, by email, DEQ received from NPS the “Alternate Source Demonstration (“ASD”) for Lithium –Bottom Ash Pond” (Report) which contains the groundwater sample results with statistical analyses for the February 2019 sampling event. Lithium, in SP-10 (0.275 mg/L), again exceeded the groundwater protection standard (GWPS) of 0.150 mg/L. Since the revised ASD has been approved for lithium in SP-10, and is still valid, NPS may continue assessment monitoring in accordance with the requirements of OAC 252:517-9-6(g)(3)(B). **If lithium continues to exceed the GWPS in the future and conditions have not changed, NPS may refer to the October 29, 2019 ASD approval and continue assessment monitoring for the BAP in accordance with OAC 252:517-9-6(g)(3)(B).** Please include in future reports if NPS determines, based on an evaluation of the groundwater data, the ASD is still valid for lithium in SP-10.

If you have any questions, please contact Ms. Cindy Hailes at (405) 702-5114.

Sincerely,

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/ckh





American Electric Power
502 North Allen Avenue
Shreveport, LA 71101
AEP.com

December 11, 2019

Via electronic mail

Ms. Hillary Young
Oklahoma Department of Environmental Quality (“ODEQ”)
707 North Robinson, P.O. Box 1677
Oklahoma City, OK 73101-1677

Re: Alternate Source Demonstration (“ASD”) for lithium- Bottom Ash Pond(BAP)
Public Service Company of Oklahoma
Northeastern Power Station (NPS)

Dear Ms. Young,

PSO received ODEQ’s correspondence dated October 29, 2019 in which ODEQ accepted the revised ASD for the lithium detected in SP-10 for sampling events that occurred in 2018. On July 12, 2019 the statistical analysis of the first semi-annual 2019 groundwater sampling event for the Bottom Ash Pond determined that the lithium concentration detected in SP-10 (0.275 mg/L) again exceeded the current groundwater protection standard of 0.15 mg/L. An ASD was not submitted within 90 days of this evaluation because PSO was initiating an Assessment of Corrective Action program for the Bottom Ash Pond, pending an approved ASD. Now that this CCR unit has returned to Assessment monitoring, this notification serves as the ASD.

Therefore, PSO is requesting that ODEQ consider the previously submitted and approved lithium ASD for the BAP as providing an adequate ASD for this occurrence.

Attached, please find ODEQ’s October 29, 2019 correspondence and the Statistical Analysis Summary Report dated July 12, 2019 documenting the statistically significant level for lithium.

Please do not hesitate to contact me if you have any questions or would like to discuss. I can be reached by email at: jcparker-witt@aep.com or by phone at: (318) 673-3816.

Sincerely,

A handwritten signature in blue ink that reads "Jill Parker-Witt". The signature is fluid and cursive, with a long horizontal stroke extending to the right from the end of the name.

Jill Parker-Witt, P.E.

AEP, Engineer Principal

Attachments



SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

October 29, 2019

Ms. Jill Parker-Witt, P.E.
American Electric Power
502 North Allen Avenue
Shreveport, LA 71101

Re: Alternate Source Demonstration for Lithium –Bottom Ash Pond
Public Service Company of Oklahoma
Northeastern Power Station
Rogers County
Solid Waste Permit No. none

Dear Ms. Parker-Witt:

On July 8, 2019, DEQ denied the alternate source demonstration (ASD) for lithium in the Bottom Ash Pond (BAP) that was submitted by AEP/Public Service Company of Oklahoma Northeastern Power Station (NPS) to demonstrate that a source other than the coal combustion residuals (CCR) unit caused the lithium statistically significant level (SSL) detected in monitoring well SP-10. DEQ stated in the letter that if additional information was attained to support a revised ASD, DEQ would re-evaluate the revised ASD.

On September 13, 2019, NPS submitted a revised ASD that addressed concerns DEQ had with the ASD which proposed naturally occurring concentrations of lithium in groundwater are the source of the SSL in SP-10.

In the revised ASD, NPS questioned DEQ's statement in the July 8, 2019 letter that the lithium concentration in monitoring well SP-5R was "not elevated". To clarify, DEQ's meaning of elevated level in the July 8, 2019 letter meant the concentration of lithium detected in SP-5R was not elevated when compared to lithium levels in the lower zone as measured in SP-6, SP-7 and SP-10. Similarly lithium in SP-8, which is screened in the lower zone, was not elevated leading DEQ to question the conceptual model which proposes the clay mineral in lower zone shales is the source of elevated lithium.

NPS sampled and analyzed the sediment, leachate and pore water in the BAP to compare to the data collected from SP-10. The results showed lithium in the sediment leachate and pore water measured 1 µg/L and 3 µg/L, respectively, compared to 286 µg/L measured in SP-10 on March 14, 2019. The lithium concentration of the sluice water (5.87 µg/L) entering the BAP was also much lower than that in SP-10. DEQ agrees that the low concentration of lithium in the BAP as well as the different water chemistry as depicted in the Piper diagram furthers the proposal that the BAP is not a direct source of the lithium SSL in SP-10.



Ms. Jill Parker-Witt, P.E.
American Electric Power
October 29, 2019
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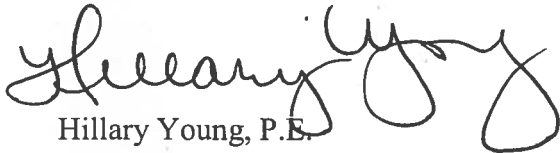
DEQ reviewed the additional information concerning SP-5R and SP-8 provided in the revised ASD. DEQ accepts that the elevated lithium concentration detected in SP-10 may be produced from the shale lenses within the screened interval of SP-10.

The new data presented in both ASDs depicts a new conceptual model that still does not completely fit with all of the groundwater sampling data. Please contact DEQ to arrange a time to discuss modifying the groundwater monitoring network.

DEQ accepts the revised ASD as submitted. The BAP may return to assessment monitoring in accordance with OAC 252:517-9-6(g)(3)(B). NPS must include the revised ASD in the annual groundwater monitoring and corrective action report required by OAC 252:517-9-1(e).

If you have any questions, please contact Ms. Cindy Hailes at (405) 702-5114.

Sincerely,

A handwritten signature in black ink, appearing to read "Hillary Young", written in a cursive style.

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/ckh

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
Suite 103
Columbus, Ohio 43221

July 12, 2019

CHA8473

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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
LPL	Lower Prediction Limit
MCL	Maximum Contaminant Level
NELAP	National Environmental Laboratory Accreditation Program
OAC	Oklahoma Administrative Code
ODEQ	Oklahoma Department of Environmental Quality
QA	Quality Assurance
QC	Quality Control
RSL	Regional Screening Level
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
TDS	Total Dissolved Solids
UTL	Upper Tolerance 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 Plant located in Northeastern Power Station 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. pH values below the lower prediction limit (LPL) resulted in SSIs below background as well. An alternative source was not identified at the time, so two assessment monitoring events were conducted at the BAP in 2018, in accordance with OAC 252:517-9-6. A semi-annual assessment monitoring event was also completed in February 2019, with the results of the February 2019 event 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. Groundwater protection standards (GWPSs) were re-established for the Appendix IV parameters. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether Appendix IV parameters were present at a statistically significant level (SSL) above the GWPS. An SSL was identified for lithium. Thus, either the unit will move to an assessment of corrective measures or an alternative source demonstration (ASD) will be conducted to evaluate if the unit can 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, one set of samples was collected for analysis from each upgradient and downgradient well to meet the requirements of OAC 252.:517-9-6(b) and 252:517-9-6(d)(1). Samples from the February 2019 semi-annual sampling event were analyzed for the Appendix III and Appendix IV parameters. A summary of data collected during this assessment monitoring event 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.9.6.14 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 January 2017 *Statistical Analysis Plan* (AEP, 2017), except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained to meet the requirements of OAC 252:517-9-6(b) and 252:517-9-6(d)(1) were screened for potential outliers. No outliers were identified.

2.2.1 Establishment of GWPSs

A GWPS was established for each Appendix IV parameter in accordance with OAC 252:517-9-6(h) and the *Statistical Analysis Plan* (AEP, 2017). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) or regional screening level (RSL) for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit (UTL) was calculated using pooled data from the background wells collected during the background monitoring and assessment monitoring events. Generally, tolerance limits were calculated parametrically with 95% coverage and 95% confidence. Non-parametric tolerance limits were calculated for antimony, barium, cadmium,

cobalt, lead, mercury, molybdenum, and selenium due to apparent non-normal distributions, for thallium due to a high non-detect frequency, and for beryllium and cobalt due to both apparent non-normal distributions and high non-detect frequencies. Tolerance limits and the final GWPSs are summarized in Table 2.

2.2.2 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV 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 following SSL was identified at the Northeastern BAP:

- An LCL for lithium exceeded the GWPS of 0.15 mg/L at SP-10 (0.275 mg/L).

As a result, the Northeastern BAP will either move to an assessment of corrective measures or an alternative source demonstration will be conducted to evaluate if the unit can remain in assessment monitoring

2.2.3 Evaluation of Potential Appendix III SSIs

While SSLs were identified, a review of the Appendix III results were also completed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations. Prediction limits were calculated for the Appendix III parameters to represent background values. As described in the January 2018 *Statistical Analysis Summary* report (Geosyntec, 2018), intrawell tests were used to evaluate potential SSIs for calcium, whereas interwell tests were used to evaluate potential SSIs for boron, chloride, fluoride, pH, sulfate, and TDS.

Prediction limits for the interwell tests were recalculated using data collected during the February 2019 assessment monitoring event. Four data points (i.e., one sample from four background wells) were added to the background dataset for each interwell test. New data were tested for outliers prior to being added to the background dataset. The updated prediction limits were calculated for a one-of-two retesting procedure, as during detection monitoring. The values of the updated prediction limits were similar to the values of the prediction limits calculated during detection monitoring. The revised interwell prediction limits were used to evaluate potential SSIs for boron, calcium, chloride, fluoride, sulfate, and pH.

For the intrawell tests, limited data made it possible to add only one data point (i.e., one sample from each compliance well) to each background dataset. Because one sample result is insufficient to compare against the existing background dataset, the prediction limits were not updated for the

intrawell tests at this time. The intrawell prediction limits calculated during detection monitoring were used to evaluate potential SSIs for calcium.

Data collected during March 2019 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 0.493 mg/L at SP-10 (1.16 mg/L).
- Chloride concentrations exceeded the interwell UPL of 775 mg/L at SP-10 (1740 mg/L).
- Fluoride concentrations exceeded the interwell UPL of 4.39 mg/L at SP-10 (5.59 mg/L).
- Sulfate concentrations exceeded the interwell UPL of 90 mg/L at SP-11 (95.1 mg/L).
- TDS concentrations exceeded the interwell UPL of 1577 mg/L at SP-10 (3504 mg/L).

While the prediction limits were calculated assuming a 1-of-2 testing procedure, it was conservatively assumed that an SSI was identified if the initial sample exceeded either the UPL based on previous results. Based on these results, concentrations of Appendix III parameters 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 OAC 252:517-9. 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 February 2019 data. GWPSs were re-established for the Appendix IV parameters. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. An SSLs was identified for lithium. Appendix III parameters were also evaluated, with exceedances identified for boron, chloride, fluoride, sulfate, and TDS.

Based on this evaluation, the Northeastern BAP CCR unit will either move to an assessment of corrective measures or an ASD will be conducted to evaluate if the unit can remain in assessment monitoring.

SECTION 3

REFERENCES

American Electric Power (AEP). 2017. Statistical Analysis Plan – Northeastern Plant. January 2017.

Geosyntec Consultants (Geosyntec). 2018. Statistical Analysis Summary – Stations 3 and 4 Bottom Ash Pond, Northeastern Power Station, Oologah, Oklahoma. January 15, 2018.

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

TABLES

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

Parameter	Unit	SP-1	SP-2	SP-4	SP-5	SP-10	SP-11
		2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019
Antimony	µg/L	0.600 J	1.39	0.300 J	1.00 U	2.00 J	1.00 U
Arsenic	µg/L	0.700 J	1.29	1.00 J	25.7	3.48	8.83
Barium	µg/L	168	841	276	2130	5810	529
Beryllium	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U	1.00 U
Boron	mg/L	0.200	0.116	0.370	0.233	1.16	0.375
Cadmium	µg/L	0.500 U	0.500 U	0.500 U	0.500 U	1.00 U	0.500 U
Calcium	mg/L	122	94.0	85.6	72.8	92.6	49.6
Chloride	mg/L	42.7	351	470	739	1740	241
Chromium	µg/L	2.72	4.30	5.71	2.00 J	1.00 J	0.700 J
Cobalt	µg/L	0.500 U	0.500 U	0.500 U	0.300 J	1.00 U	0.720
Combined Radium	pCi/L	3.06	5.76	3.14	6.70	15.4	1.81
Fluoride	mg/L	0.800	2.68	3.26	3.08	5.59	3.44
Lead	µg/L	0.200 J	0.300 J	1.00 U	0.700 J	2.00 U	0.200 J
Lithium	mg/L	0.00641	0.0329	0.0602	0.102	0.275	0.0580
Mercury	mg/L	0.0000250 U	0.0000250 U	0.0000250 U	0.0000250 U	0.0000250 U	0.0000250 U
Molybdenum	µg/L	10.0 J	25.8	20.0 U	20.0 U	40.0 U	6.00 J
Selenium	µg/L	2.80	3.70	0.600 J	2.00 U	4.00 U	2.00 U
Total Dissolved Solids	mg/L	532	932	1120	1530	3500	1170
Sulfate	mg/L	87.1	26.1	61.5	1.60	6.90	95.1
Thallium	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	10.0 U	5.00 U
pH	SU	7.34	7.62	7.37	7.70	7.79	7.74

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 sampled

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

Constituent Name	MCL	RSL	Background Limit
Antimony, Total (mg/L)	0.006		0.0051
Arsenic, Total (mg/L)	0.01		0.049
Barium, Total (mg/L)	2		4.59
Beryllium, Total (mg/L)	0.004		0.005
Cadmium, Total (mg/L)	0.005		0.0025
Chromium, Total (mg/L)	0.1		0.084
Cobalt, Total (mg/L)	n/a	0.006	0.041
Combined Radium, Total (pCi/L)	5		16.53
Fluoride, Total (mg/L)	4		4.56
Lead, Total (mg/L)	n/a	0.015	0.037
Lithium, Total (mg/L)	n/a	0.04	0.15
Mercury, Total (mg/L)	0.002		0.000058
Molybdenum, Total (mg/L)	n/a	0.1	0.020
Selenium, Total (mg/L)	0.05		0.005
Thallium, Total (mg/L)	0.002		0.005

Notes:

Grey cell indicates calculated UTL is higher than MCL.

MCL = Maximum Contaminant Level

RSL = Regional Screening Level

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

The higher of the calculated UTL or MCL/RSL is used as the GWPS.

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

Parameter	Units	Description	SP-1	SP-10	SP-11	SP-2
			2/27/2019	2/27/2019	2/27/2019	2/27/2019
Boron	mg/L	Interwell Background Value (UPL)	0.493			
		Detection Monitoring Result	0.2	1.16	0.375	0.116
Calcium	mg/L	Intrawell Background Value (UPL)	136	109	1894	157
		Detection Monitoring Result	122	92.6	49.6	94
Chloride	mg/L	Interwell Background Value (UPL)	775			
		Detection Monitoring Result	42.7	1740	241	351
Fluoride	mg/L	Interwell Background Value (UPL)	4.39			
		Detection Monitoring Result	0.8	5.59	3.44	2.68
pH	SU	Interwell Background Value (UPL)	8.5			
		Interwell Background Value (LPL)	7.1			
		Detection Monitoring Result	7.3	7.8	7.7	7.6
Sulfate	mg/L	Interwell Background Value (UPL)	90			
		Detection Monitoring Result	87.1	6.9	95.1	26.1
Total Dissolved Solids	mg/L	Interwell Background Value (UPL)	1577			
		Detection Monitoring Result	532	3504	1168	932

Notes:

UPL: Upper prediction limit

LPL: Lower prediction limit

*: Designates results for a duplicate sample

-: Not Sampled

Background 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

26057

License Number

OKLAHOMA

Licensing State

07.12.19

Date

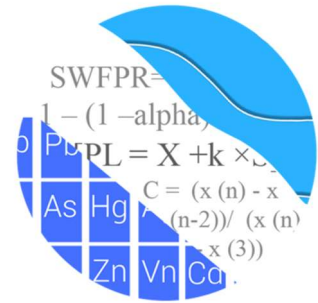


ATTACHMENT B
Statistical Analysis Output

GROUNDWATER STATS CONSULTING

July 10, 2019

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



Re: Northeastern BAP
Assessment Monitoring Event – February 2019

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis of the February 2019 data for American Electric Power Inc.'s Northeastern BAP. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

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

- **Upgradient wells:** SP-4 and SP-5; and
- **Downgradient wells:** SP-1, SP-2, 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 CCR program consists of the following constituents:

- **Appendix III** (Detection Monitoring) - boron, calcium, chloride, fluoride, pH, sulfate, and TDS;
- **Appendix IV** (Assessment Monitoring) – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium.

Time series plots for Appendix III and IV parameters are provided for all wells and constituents; and are used to evaluate concentrations over the entire record (Figure A). Values previously flagged during the screening as outliers may be seen in a lighter font and disconnected symbol on the time series graphs, and a summary of those values follows this letter (Figure B).

Evaluation of Appendix III Parameters

Interwell prediction limits combined with a 1-of-2 verification strategy were constructed for boron, chloride, fluoride, pH, sulfate and TDS; and intrawell prediction limits combined with a 1-of-2 verification strategy were constructed for calcium (Figures C and D, respectively). The statistical method selected for each parameter was determined based on the results of the evaluation performed in December 2017; and all proposed background data were screened for outliers and trends at that time. The findings of those reports were submitted with that analysis.

Interwell prediction limits utilize all upgradient well data for construction of statistical limits. During each sample event, upgradient well data are screened for any newly suspected outliers or obvious trending patterns using time series plots. All values flagged as outliers may be seen on the Outlier Summary report following this letter. No obvious trending patterns were observed in the upgradient wells.

Intrawell prediction limits utilize the background data set that was originally screened in 2017. As recommended in the EPA Unified Guidance (2009), the background data set will be tested for the purpose of updating statistical limits using the Mann-Whitney two-sample test when an additional four to eight measurements are available.

In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of one additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified and further research would be required to identify the cause of the exceedance (i.e. impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered a false positive result and, therefore, no further action is necessary.

Calcium was found to have no exceedances of its intrawell prediction limits. Downgradient water quality will continue to be monitored for similar patterns which may occur at downgradient wells as future samples are collected.

Boron, chloride, fluoride and TDS were found to exceed their respective interwell prediction limits for well SP-10; however, concentration levels are stable over time for these constituents at this well. Sulfate also was found to exceed its interwell prediction limit for well SP-11. As mentioned above, further research would be required to determine whether the concentrations at this well relative to those reported upgradient are due to natural variation. That study is beyond the scope of this analysis. The Prediction Limit Summary tables following this letter.

When a statistically significant increase is identified, the data are further evaluated using the Sen's Slope/Mann Kendall trend test to determine whether concentrations are statistically increasing, decreasing or stable. Upgradient wells are included in the trend analyses to identify whether similar patterns exist upgradient of the site which is an indication of natural variability in groundwater unrelated to practices at the site.

No statistically significant increasing trends were noted in the downgradient wells. Statistically significant decreasing trends were identified for sulfate in upgradient well SP-5 and in downgradient well SP-11. A statistically significant increasing trend was noted for chloride in upgradient well SP-5. When trends are noted in upgradient wells, it is generally an indication of naturally changing groundwater concentrations unrelated to the facility. A Trend Test summary table follows this letter (Figure E).

Evaluation of Appendix IV Parameters

Interwell Tolerance limits were used to calculate background limits from all available pooled upgradient well data for Appendix IV parameters to determine the Alternate Contaminant Level (ACL) for each constituent (Figure F). Background data are screened for outliers and extreme trending patterns that would lead to artificially elevated statistical limits. Any flagged values may be seen on the Outlier Summary following this letter.

Parametric limits use a target of 95% confidence and 95% coverage. 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 CCR-Rule specified levels 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 G).

Confidence intervals were then constructed on downgradient wells for each of the Appendix IV parameters using the highest limit of either the MCL, CCR-rule specified level, or ACL as discussed above. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. No confidence

intervals exceedances were found except for lithium in well SP-10. A summary of the confidence interval results follows this letter (Figure H).

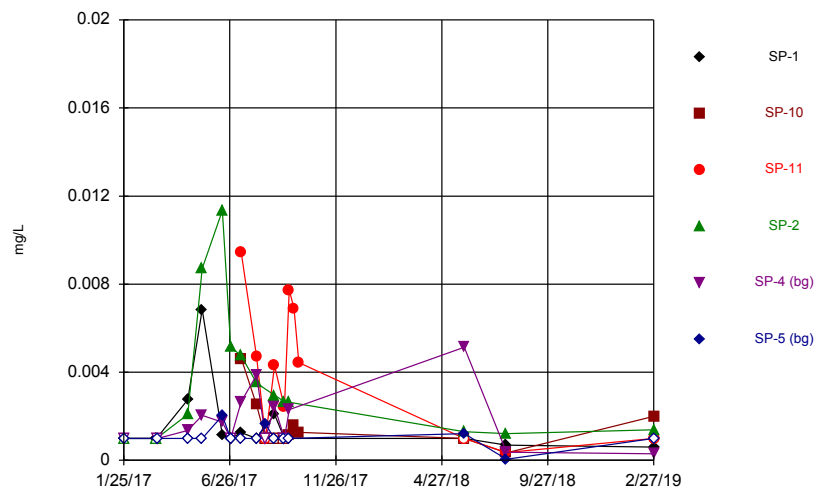
Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Northeastern BAP. If you have any questions or comments, please feel free to contact me.

For Groundwater Stats Consulting,

A handwritten signature in black ink that reads "Kristina Rayner". The signature is written in a cursive, flowing style.

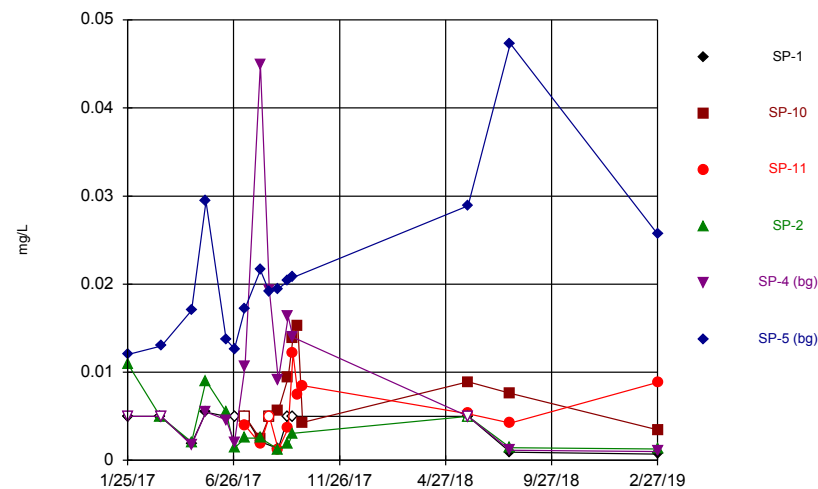
Kristina L. Rayner
Groundwater Statistician

Time Series



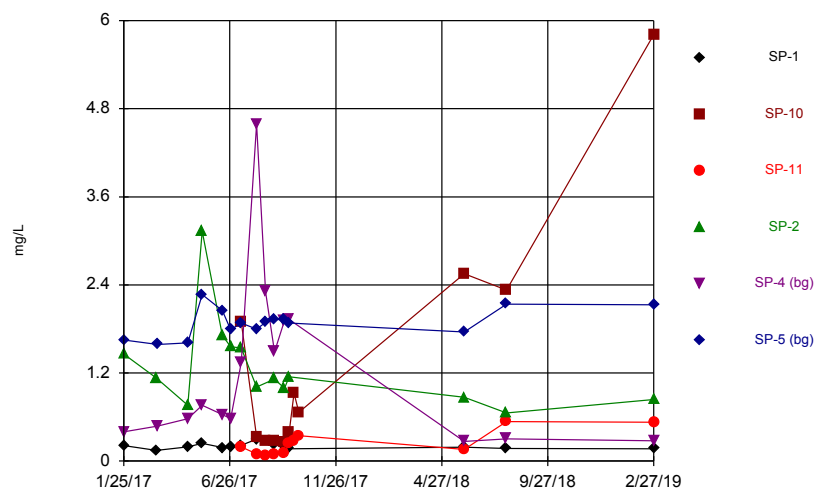
Constituent: Antimony Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



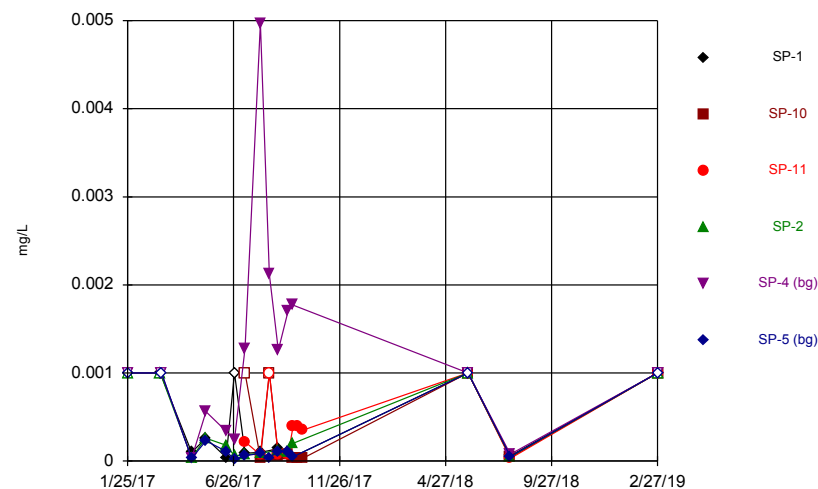
Constituent: Arsenic Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



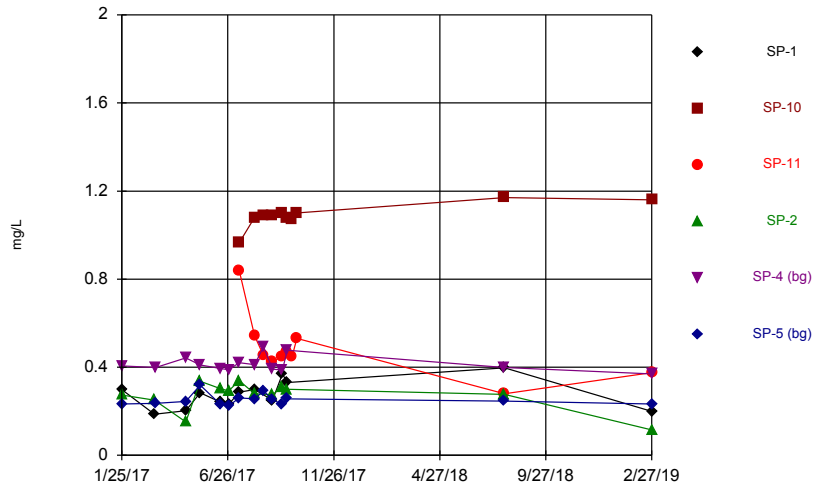
Constituent: Barium Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



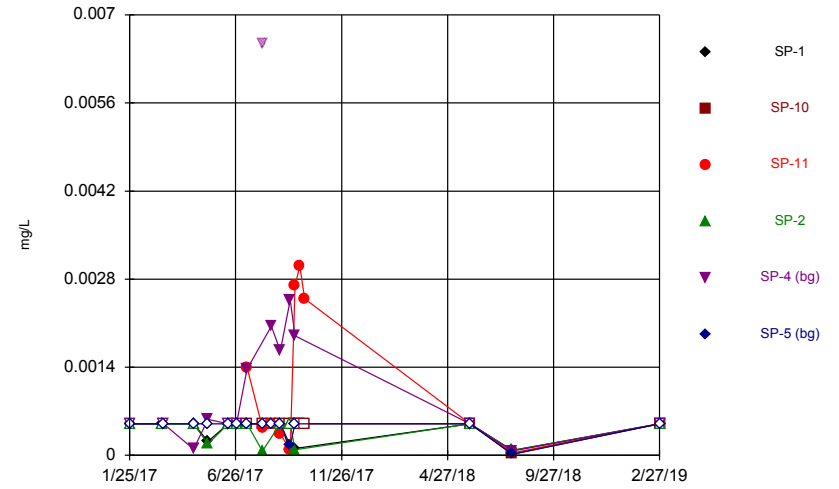
Constituent: Beryllium Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



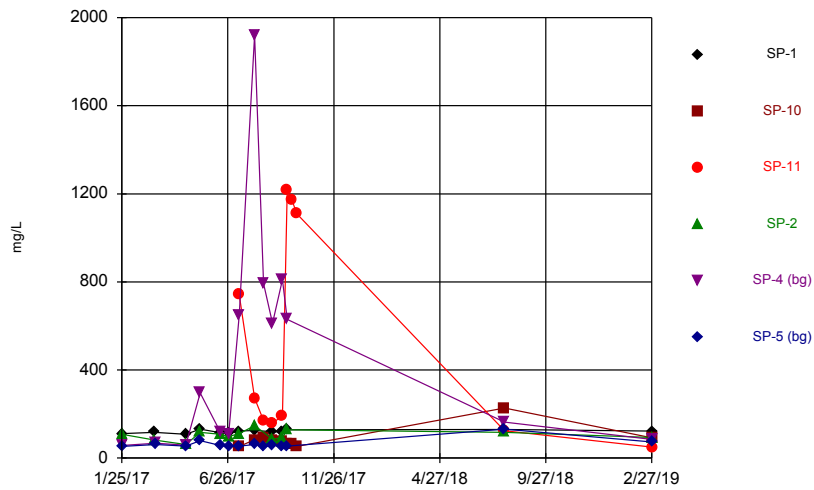
Constituent: Boron Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



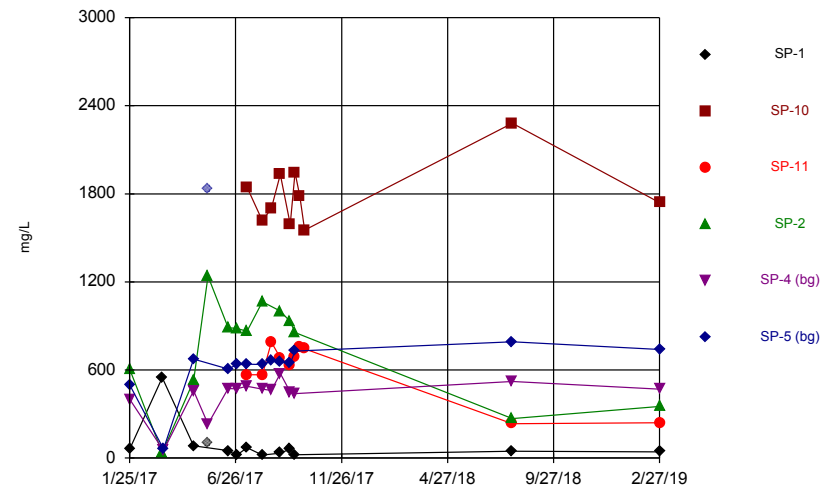
Constituent: Cadmium Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



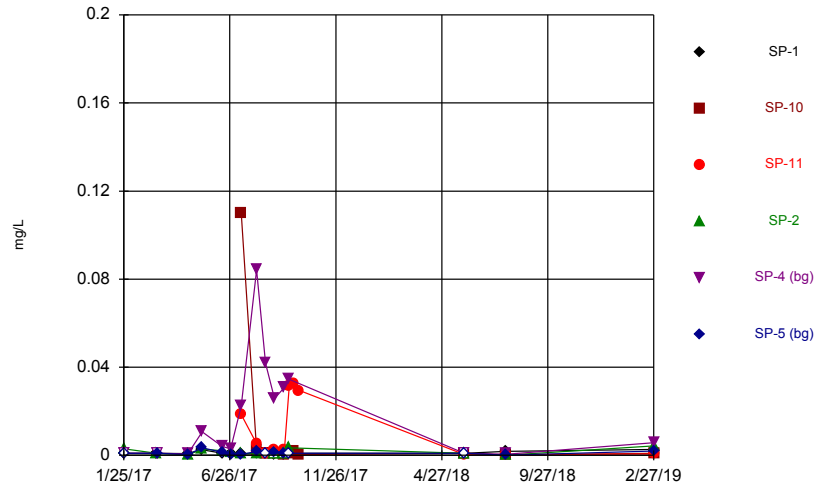
Constituent: Calcium Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



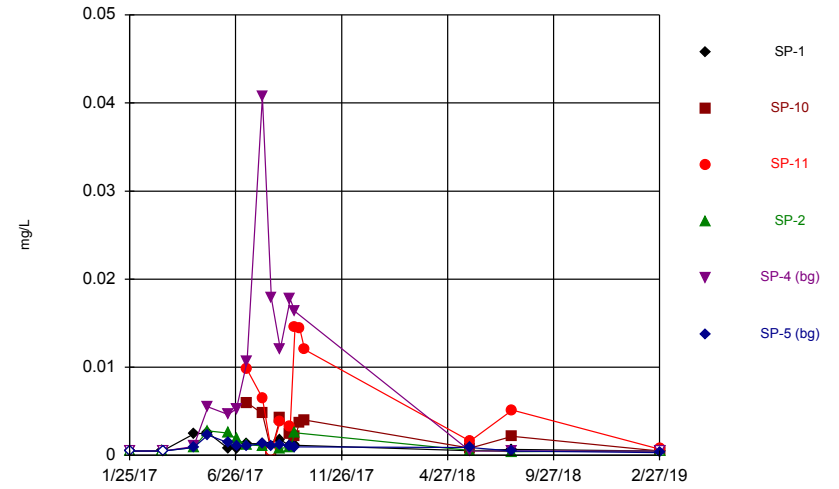
Constituent: Chloride Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



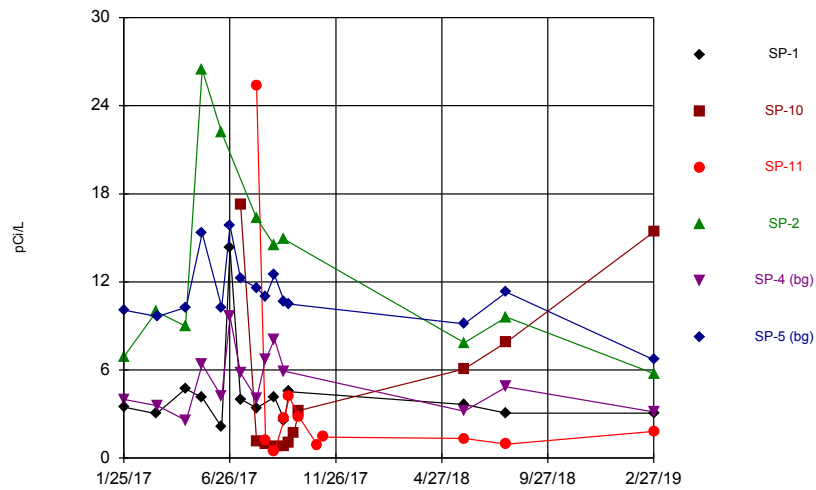
Constituent: Chromium Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



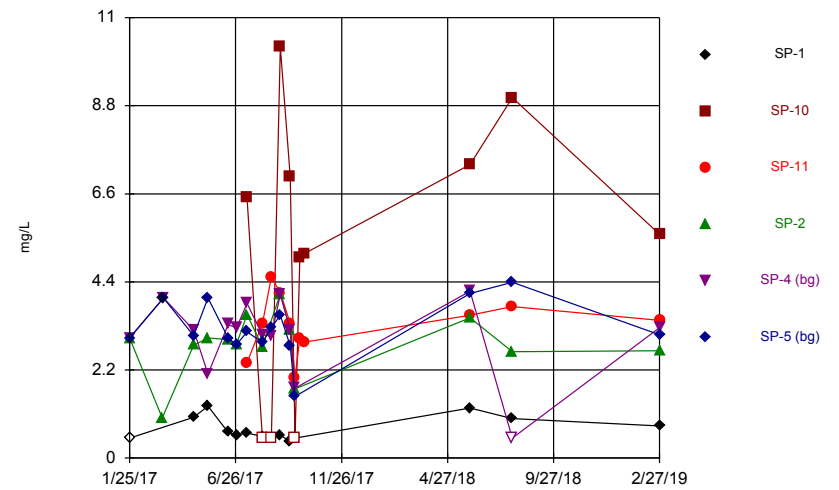
Constituent: Cobalt Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



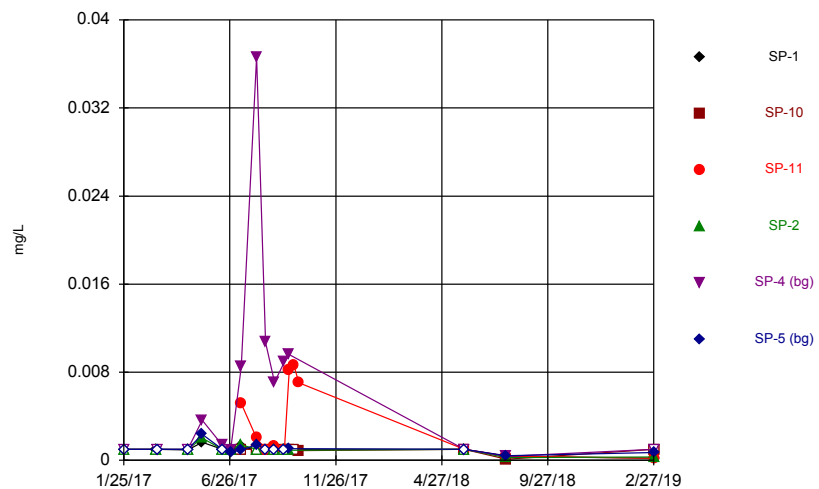
Constituent: Combined Radium 226 + 228 Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



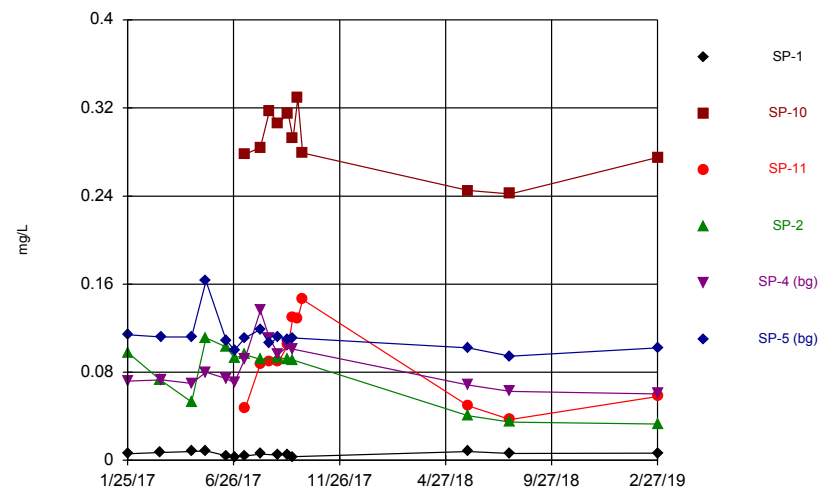
Constituent: Fluoride Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



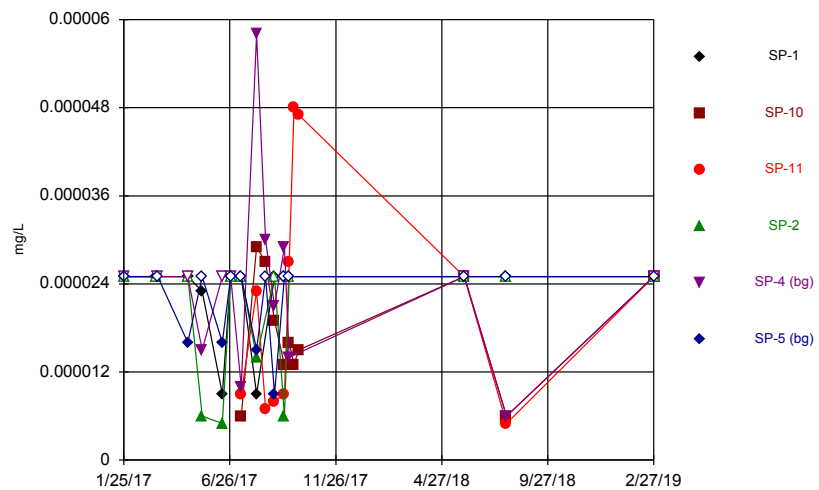
Constituent: Lead Analysis Run 6/26/2019 4:10 PM View: App III & IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



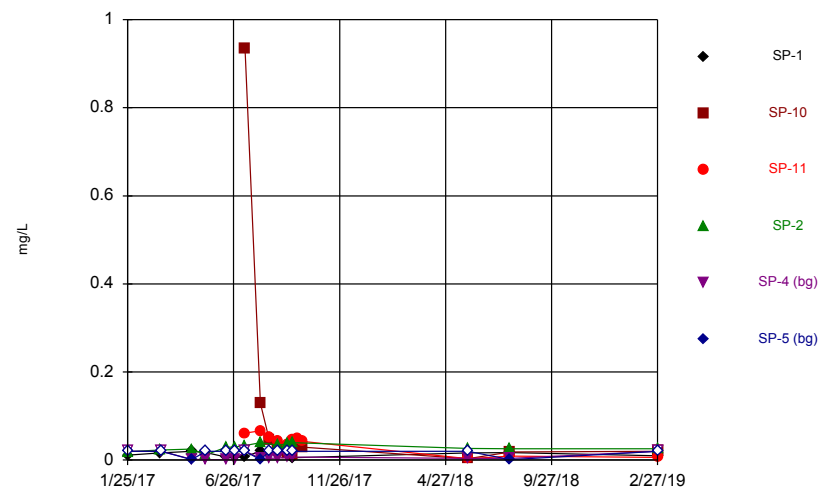
Constituent: Lithium Analysis Run 6/26/2019 4:10 PM View: App III & IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



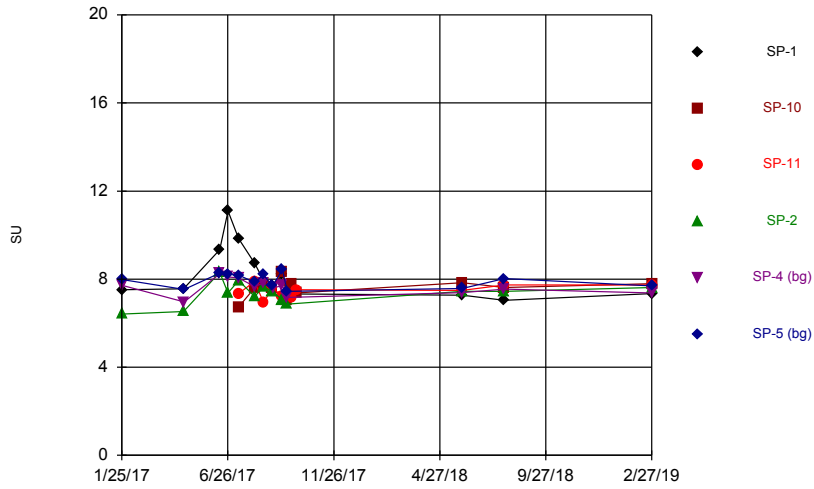
Constituent: Mercury Analysis Run 6/26/2019 4:10 PM View: App III & IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



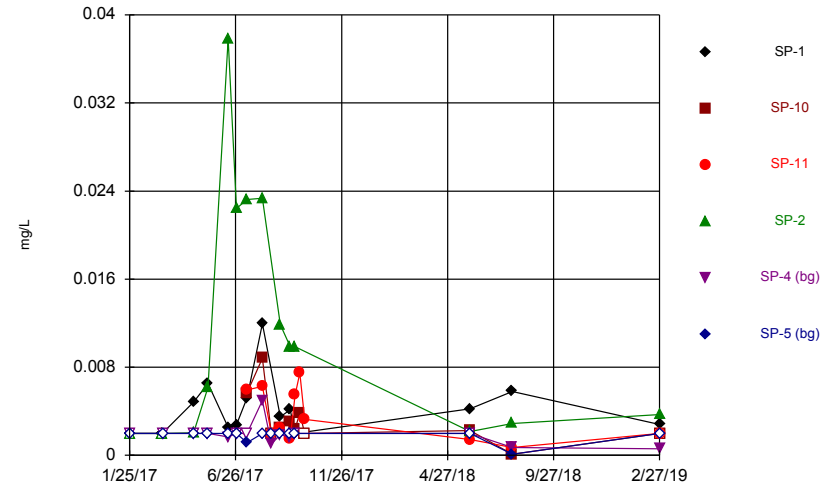
Constituent: Molybdenum Analysis Run 6/26/2019 4:10 PM View: App III & IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



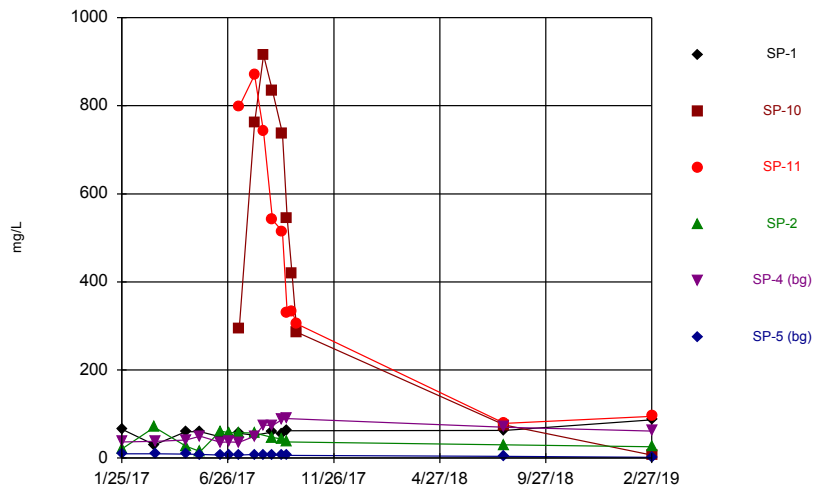
Constituent: pH, field Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



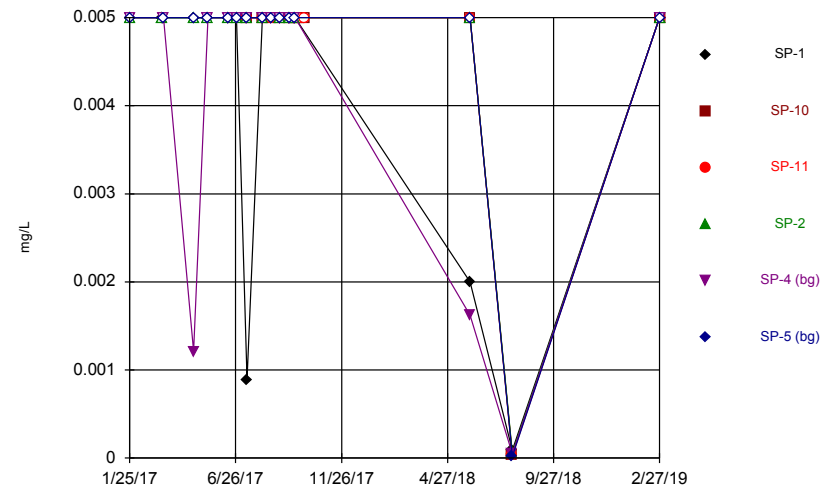
Constituent: Selenium Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



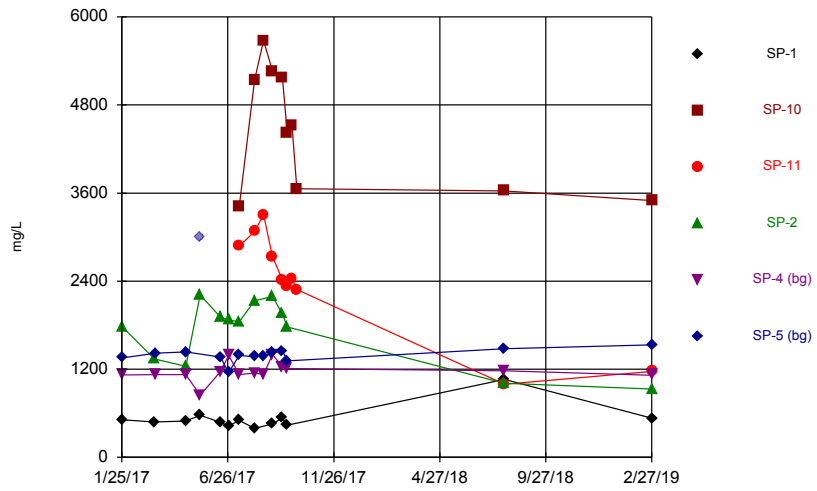
Constituent: Sulfate Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



Constituent: Thallium Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Time Series



Constituent: Total Dissolved Solids [TDS] Analysis Run 6/26/2019 4:10 PM View: App III & IV
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Outlier Summary

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 7/1/2019, 6:48 AM

	SP-4 Cadmium (mg/L)	SP-5 Chloride (mg/L)	SP-1 Chloride (mg/L)	SP-1 Fluoride (mg/L)	SP-5 Total Dissolved Solids [TDS] (mg/L)
3/13/2017				4 (o)	
5/18/2017		1834 (o)	104 (o)		3008 (o)
8/4/2017	0.00655 (o)				

Interwell Prediction Limit Summary Table - Significant Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:16 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	SP-10	0.493	n/a	2/27/2019	1.16	Yes	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Chloride (mg/L)	SP-10	774.8	n/a	2/27/2019	1740	Yes	27	0	None	x^2	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	SP-10	4.387	n/a	2/27/2019	5.59	Yes	30	3.333	None	x^2	0.00188	Param Inter 1 of 2
Sulfate (mg/L)	SP-11	90	n/a	2/27/2019	95.1	Yes	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	SP-10	1577	n/a	2/27/2019	3500	Yes	27	0	None	No	0.00188	Param Inter 1 of 2

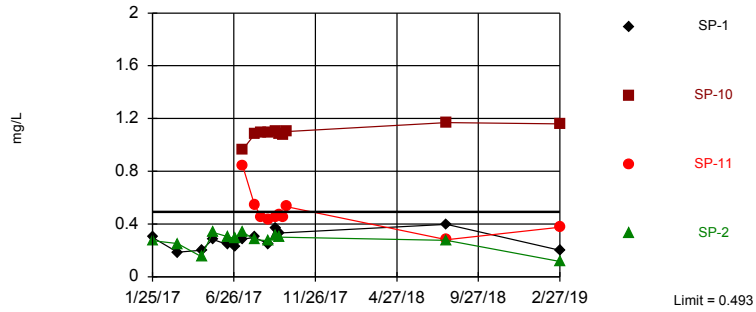
Interwell Prediction Limit Summary Table - All Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:16 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	SP-1	0.493	n/a	2/27/2019	0.2	No	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Boron (mg/L)	SP-10	0.493	n/a	2/27/2019	1.16	Yes	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Boron (mg/L)	SP-11	0.493	n/a	2/27/2019	0.375	No	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Boron (mg/L)	SP-2	0.493	n/a	2/27/2019	0.116	No	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Chloride (mg/L)	SP-1	774.8	n/a	2/27/2019	42.7	No	27	0	None	x^2	0.00188	Param Inter 1 of 2
Chloride (mg/L)	SP-10	774.8	n/a	2/27/2019	1740	Yes	27	0	None	x^2	0.00188	Param Inter 1 of 2
Chloride (mg/L)	SP-11	774.8	n/a	2/27/2019	241	No	27	0	None	x^2	0.00188	Param Inter 1 of 2
Chloride (mg/L)	SP-2	774.8	n/a	2/27/2019	351	No	27	0	None	x^2	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	SP-1	4.387	n/a	2/27/2019	0.8	No	30	3.333	None	x^2	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	SP-10	4.387	n/a	2/27/2019	5.59	Yes	30	3.333	None	x^2	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	SP-11	4.387	n/a	2/27/2019	3.44	No	30	3.333	None	x^2	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	SP-2	4.387	n/a	2/27/2019	2.68	No	30	3.333	None	x^2	0.00188	Param Inter 1 of 2
pH, field (SU)	SP-1	8.491	7.085	2/27/2019	7.34	No	26	0	None	No	0.0009398	Param Inter 1 of 2
pH, field (SU)	SP-10	8.491	7.085	2/27/2019	7.79	No	26	0	None	No	0.0009398	Param Inter 1 of 2
pH, field (SU)	SP-11	8.491	7.085	2/27/2019	7.74	No	26	0	None	No	0.0009398	Param Inter 1 of 2
pH, field (SU)	SP-2	8.491	7.085	2/27/2019	7.62	No	26	0	None	No	0.0009398	Param Inter 1 of 2
Sulfate (mg/L)	SP-1	90	n/a	2/27/2019	87.1	No	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SP-10	90	n/a	2/27/2019	6.9	No	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SP-11	90	n/a	2/27/2019	95.1	Yes	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SP-2	90	n/a	2/27/2019	26.1	No	28	0	n/a	n/a	0.002268	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	SP-1	1577	n/a	2/27/2019	532	No	27	0	None	No	0.00188	Param Inter 1 of 2
Total Dissolved Solids [TDS] (mg/L)	SP-10	1577	n/a	2/27/2019	3500	Yes	27	0	None	No	0.00188	Param Inter 1 of 2
Total Dissolved Solids [TDS] (mg/L)	SP-11	1577	n/a	2/27/2019	1170	No	27	0	None	No	0.00188	Param Inter 1 of 2
Total Dissolved Solids [TDS] (mg/L)	SP-2	1577	n/a	2/27/2019	932	No	27	0	None	No	0.00188	Param Inter 1 of 2

Exceeds Limit: SP-10

Prediction Limit
Interwell Non-parametric

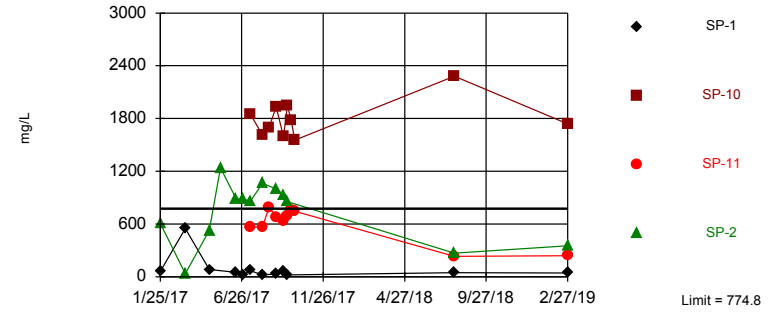


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 28 background values. Annual per-constituent alpha = 0.018. Individual comparison alpha = 0.002268 (1 of 2). Comparing 4 points to limit.

Constituent: Boron Analysis Run 6/26/2019 4:13 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Exceeds Limit: SP-10

Prediction Limit
Interwell Parametric

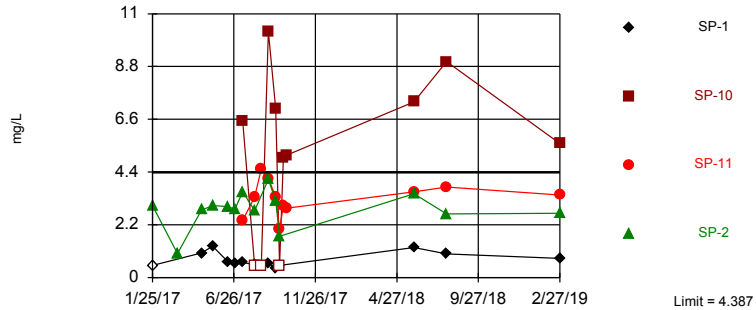


Background Data Summary (based on square transformation): Mean=298047, Std. Dev.=159041, n=27. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9577, critical = 0.894. Kappa = 1.9 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Chloride Analysis Run 6/26/2019 4:13 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Exceeds Limit: SP-10

Prediction Limit
Interwell Parametric

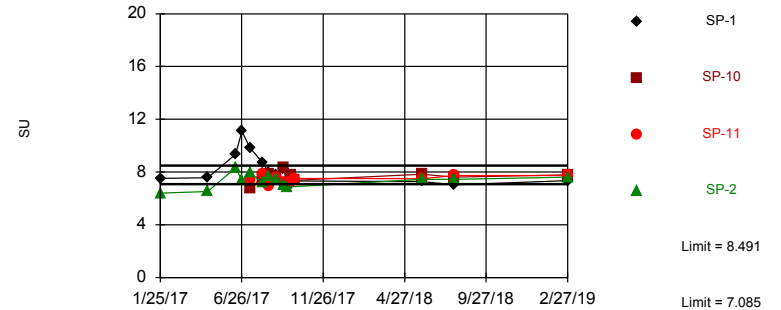


Background Data Summary (based on square transformation): Mean=10.61, Std. Dev.=4.597, n=30, 3.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9417, critical = 0.9. Kappa = 1.88 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Fluoride Analysis Run 6/26/2019 4:13 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Within Limits

Prediction Limit
Interwell Parametric

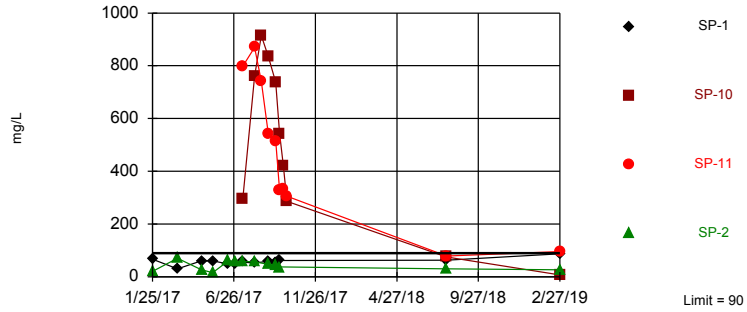


Background Data Summary: Mean=7.788, Std. Dev.=0.3685, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9734, critical = 0.891. Kappa = 1.907 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0009398. Comparing 4 points to limit.

Constituent: pH, field Analysis Run 6/26/2019 4:13 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Exceeds Limit: SP-11

Prediction Limit
Interwell Non-parametric

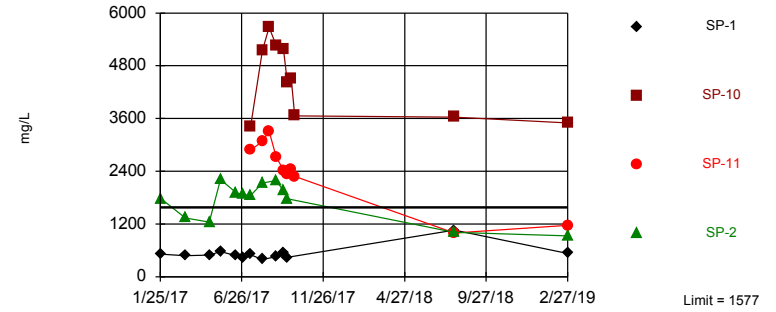


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 28 background values. Annual per-constituent alpha = 0.018. Individual comparison alpha = 0.002268 (1 of 2). Comparing 4 points to limit.

Constituent: Sulfate Analysis Run 6/26/2019 4:13 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Exceeds Limit: SP-10

Prediction Limit
Interwell Parametric



Background Data Summary: Mean=1274, Std. Dev.=159.2, n=27. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9137, critical = 0.894. Kappa = 1.9 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Total Dissolved Solids [TDS] Analysis Run 6/26/2019 4:13 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

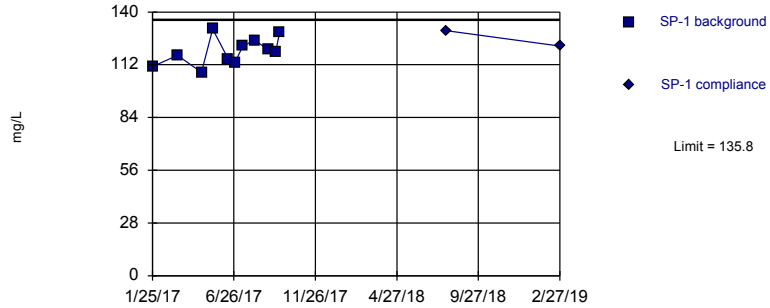
Intrawell Prediction Limit Summary Table - All Results (No Significant)

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:32 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Calcium (mg/L)	SP-1	135.8	n/a	2/27/2019	122	No	11	119.1	7.286	0	None	No	0.00188	Param Intra 1 of 2
Calcium (mg/L)	SP-10	108.8	n/a	2/27/2019	92.6	No	8	71.1	14.43	0	None	No	0.00188	Param Intra 1 of 2
Calcium (mg/L)	SP-11	1894	n/a	2/27/2019	49.6	No	8	629.5	483.3	0	None	No	0.00188	Param Intra 1 of 2
Calcium (mg/L)	SP-2	157.3	n/a	2/27/2019	94	No	11	103.8	23.28	0	None	No	0.00188	Param Intra 1 of 2
Calcium (mg/L)	SP-4	2033	n/a	2/27/2019	85.6	No	12	19.81	11.32	0	None	sqrt(x)	0.00188	Param Intra 1 of 2
Calcium (mg/L)	SP-5	79.1	n/a	2/27/2019	72.8	No	12	n/a	n/a	0	n/a	n/a	0.01077	NP Intra (normality) 1 of 2

Within Limit

Prediction Limit
Intrawell Parametric

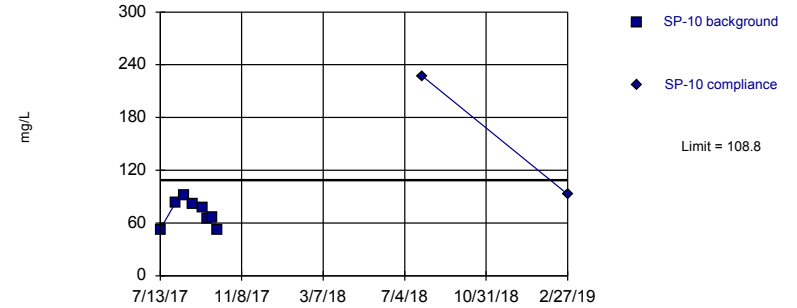


Background Data Summary: Mean=119.1, Std. Dev.=7.286, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9766, critical = 0.792. Kappa = 2.3 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 6/26/2019 4:27 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Within Limit

Prediction Limit
Intrawell Parametric

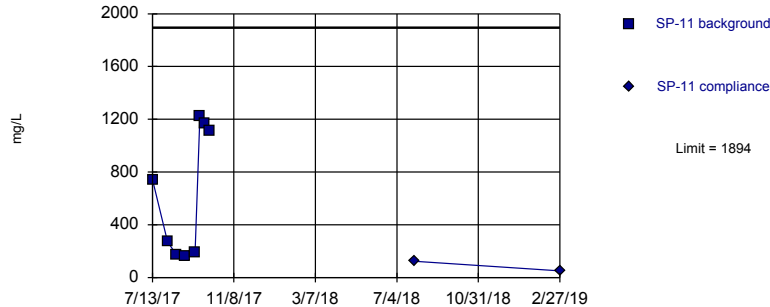


Background Data Summary: Mean=71.1, Std. Dev.=14.43, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9303, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 6/26/2019 4:27 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Within Limit

Prediction Limit
Intrawell Parametric

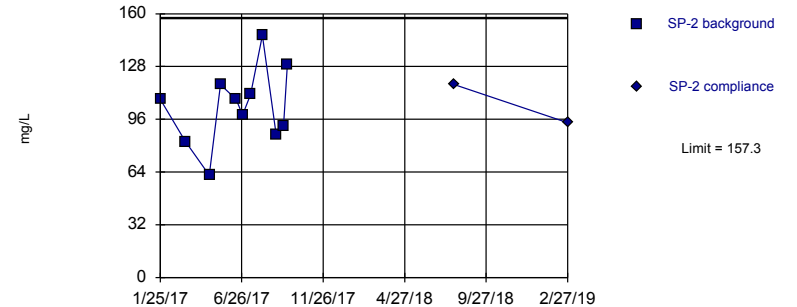


Background Data Summary: Mean=629.5, Std. Dev.=483.3, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 6/26/2019 4:27 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Within Limit

Prediction Limit
Intrawell Parametric

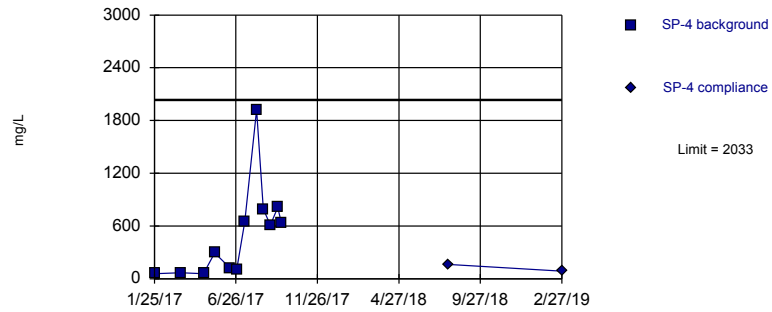


Background Data Summary: Mean=103.8, Std. Dev.=23.28, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9891, critical = 0.792. Kappa = 2.3 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 6/26/2019 4:27 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Within Limit

Prediction Limit
Intrawell Parametric

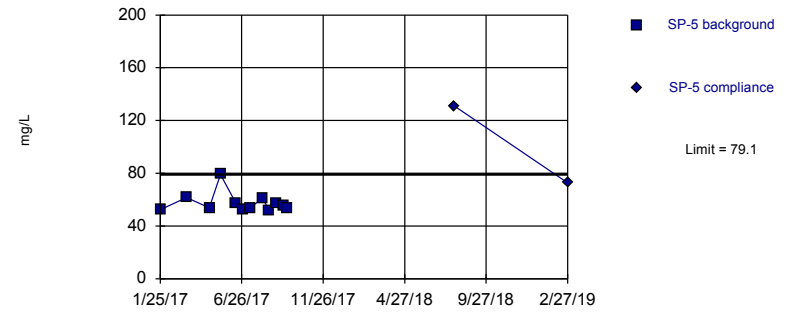


Background Data Summary (based on square root transformation): Mean=19.81, Std. Dev.=11.32, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8858, critical = 0.805. Kappa = 2.232 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 6/26/2019 4:27 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Within Limit

Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 12 background values. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Calcium Analysis Run 6/26/2019 4:27 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Trend Tests Summary Table - Significant Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:58 PM

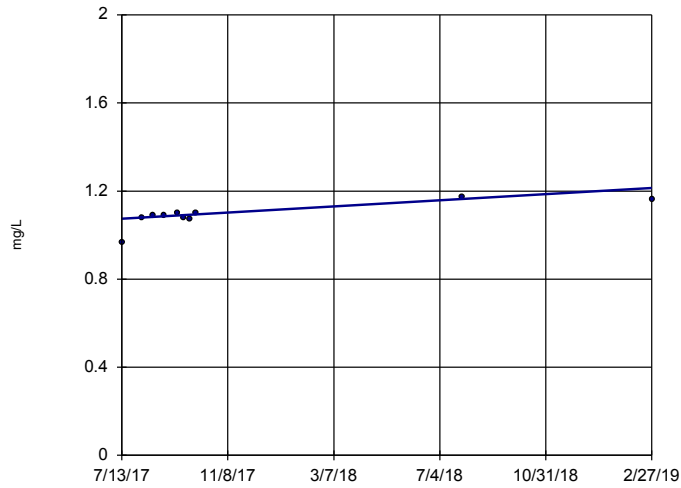
<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Chloride (mg/L)	SP-5 (bg)	161.6	52	43	Yes	13	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SP-11	-1408	-39	-30	Yes	10	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SP-5 (bg)	-4.74	-73	-48	Yes	14	0	n/a	n/a	0.01	NP

Trend Tests Summary Table - All Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:58 PM

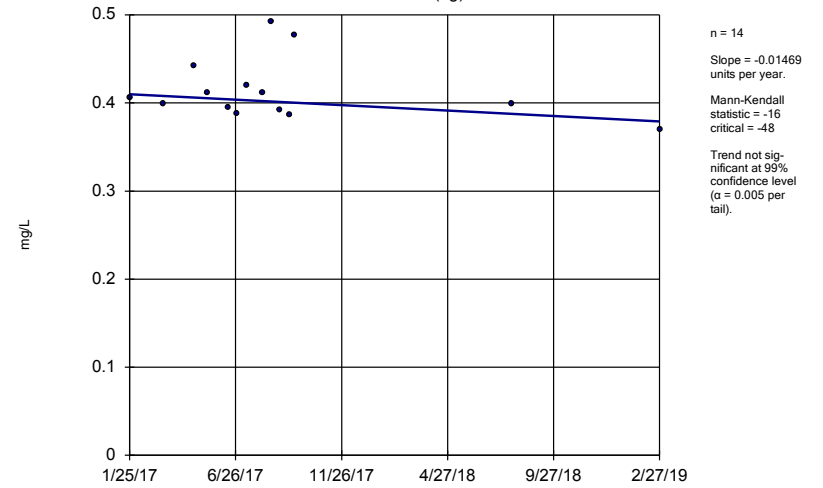
<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	SP-10	0.08545	24	30	No	10	0	n/a	n/a	0.01	NP
Boron (mg/L)	SP-4 (bg)	-0.01469	-16	-48	No	14	0	n/a	n/a	0.01	NP
Boron (mg/L)	SP-5 (bg)	0.0007952	4	48	No	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	SP-10	79.13	3	30	No	10	0	n/a	n/a	0.01	NP
Chloride (mg/L)	SP-4 (bg)	59.81	27	48	No	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	SP-5 (bg)	161.6	52	43	Yes	13	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	SP-10	2.387	14	34	No	11	27.27	n/a	n/a	0.01	NP
Fluoride (mg/L)	SP-4 (bg)	-0.04702	-3	-53	No	15	6.667	n/a	n/a	0.01	NP
Fluoride (mg/L)	SP-5 (bg)	0.03827	5	53	No	15	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SP-11	-1408	-39	-30	Yes	10	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SP-4 (bg)	30.85	44	48	No	14	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SP-5 (bg)	-4.74	-73	-48	Yes	14	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	SP-10	-1179	-19	-30	No	10	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	SP-4 (bg)	44.69	26	48	No	14	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	SP-5 (bg)	67.52	30	43	No	13	0	n/a	n/a	0.01	NP

Sen's Slope Estimator SP-10



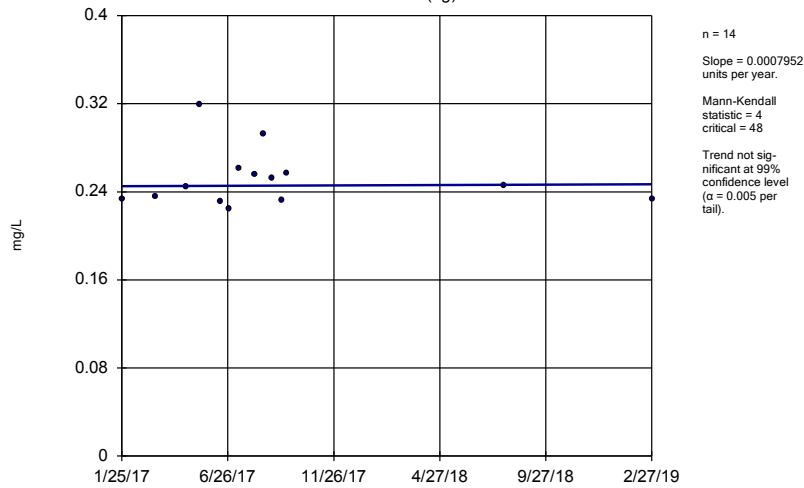
Constituent: Boron Analysis Run 6/26/2019 4:55 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator SP-4 (bg)



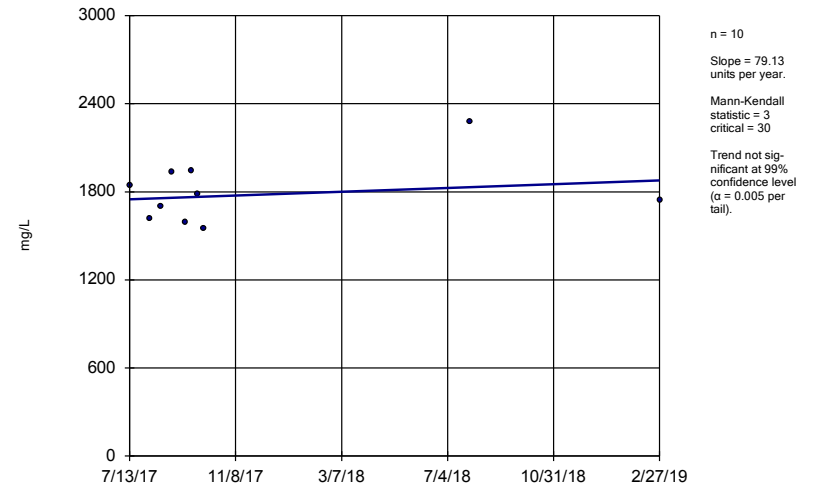
Constituent: Boron Analysis Run 6/26/2019 4:55 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator SP-5 (bg)



Constituent: Boron Analysis Run 6/26/2019 4:55 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

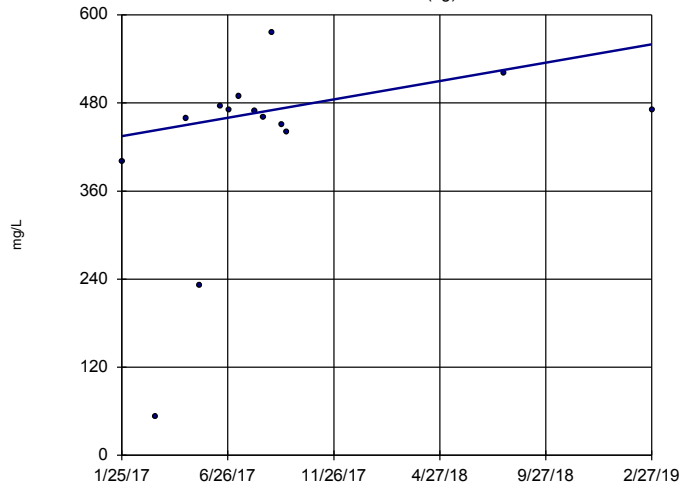
Sen's Slope Estimator SP-10



Constituent: Chloride Analysis Run 6/26/2019 4:55 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator

SP-4 (bg)

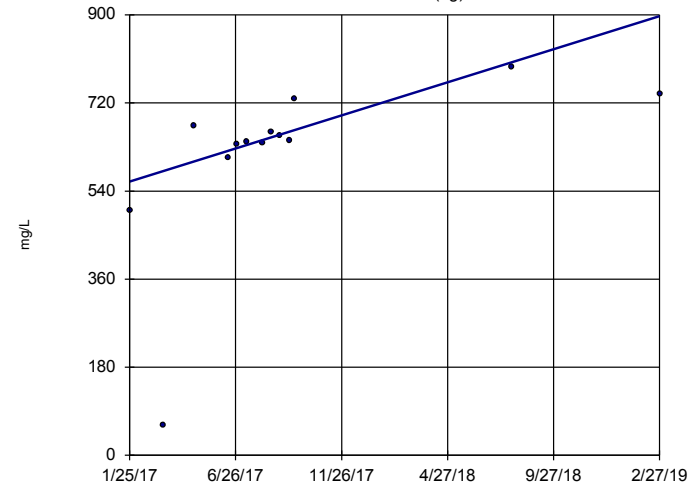


n = 14
 Slope = 59.81 units per year.
 Mann-Kendall statistic = 27
 critical = 48
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 6/26/2019 4:55 PM View: App III
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator

SP-5 (bg)

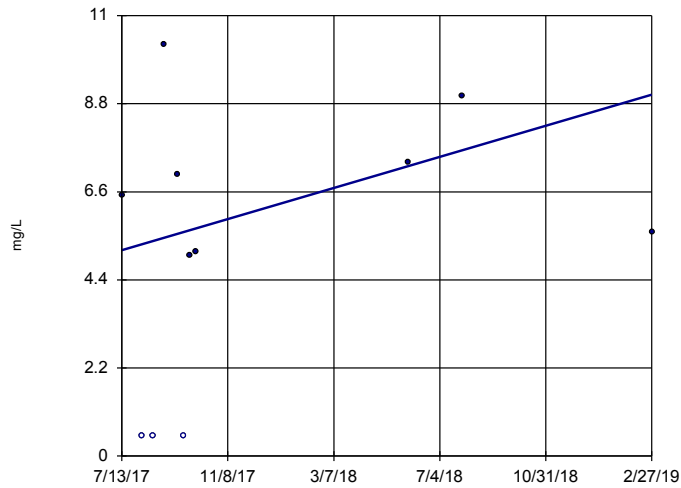


n = 13
 Slope = 161.6 units per year.
 Mann-Kendall statistic = 52
 critical = 43
 Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 6/26/2019 4:55 PM View: App III
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator

SP-10

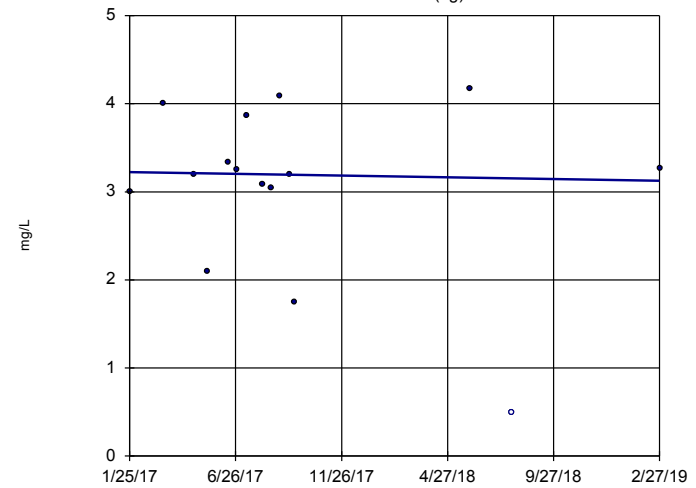


n = 11
 Slope = 2.387 units per year.
 Mann-Kendall statistic = 14
 critical = 34
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 6/26/2019 4:55 PM View: App III
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator

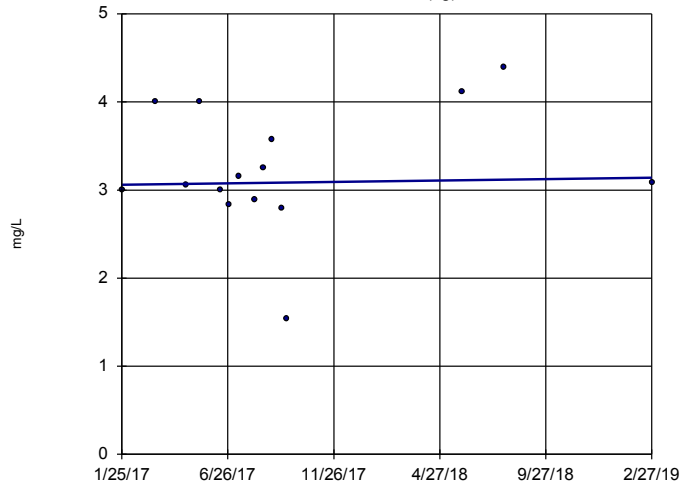
SP-4 (bg)



n = 15
 Slope = -0.04702 units per year.
 Mann-Kendall statistic = -3
 critical = -53
 Trend not significant at 99% confidence level (α = 0.005 per tail).

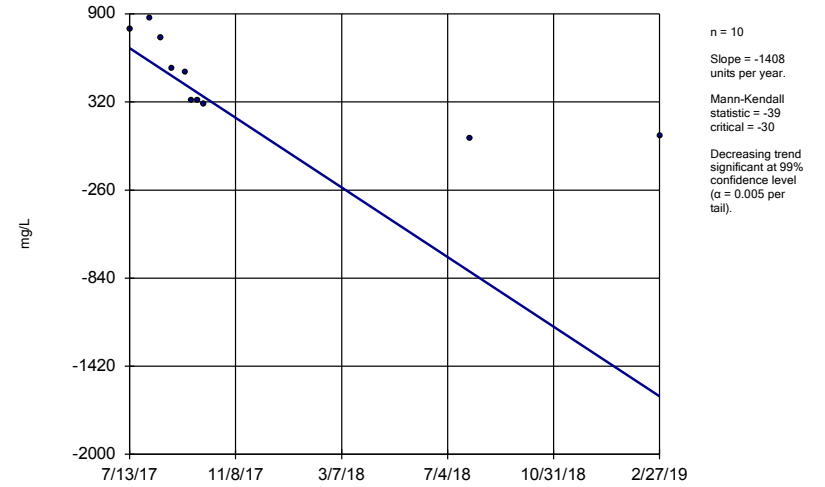
Constituent: Fluoride Analysis Run 6/26/2019 4:55 PM View: App III
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator SP-5 (bg)



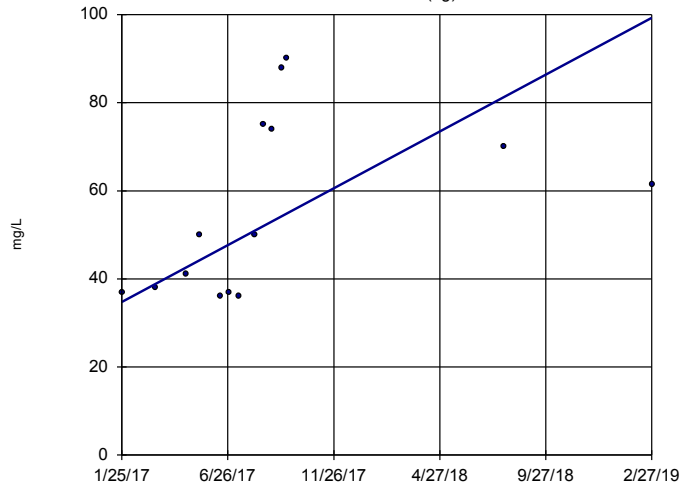
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Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator SP-11



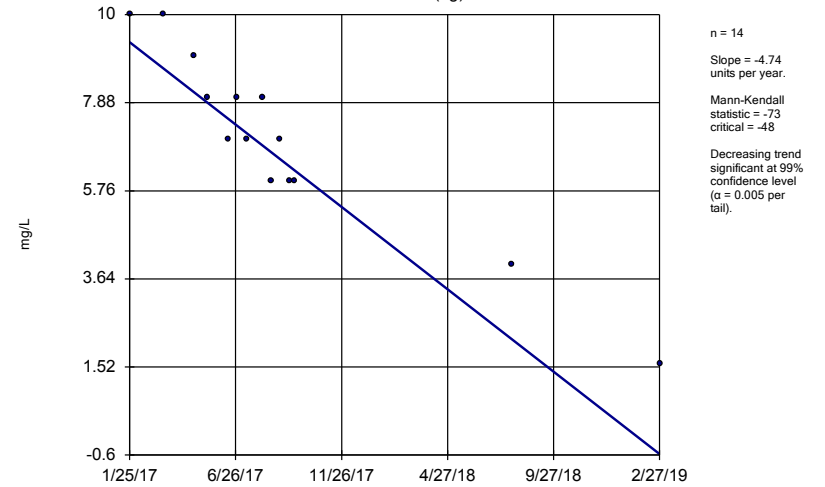
Constituent: Sulfate Analysis Run 6/26/2019 4:55 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator SP-4 (bg)



Constituent: Sulfate Analysis Run 6/26/2019 4:55 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

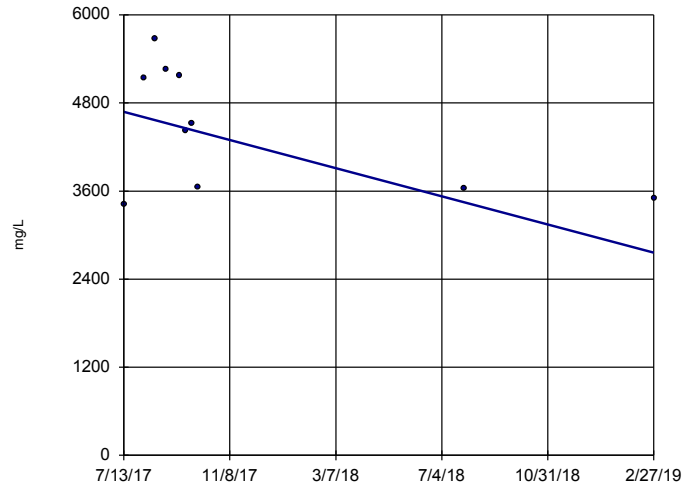
Sen's Slope Estimator SP-5 (bg)



Constituent: Sulfate Analysis Run 6/26/2019 4:55 PM View: App III
Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator

SP-10

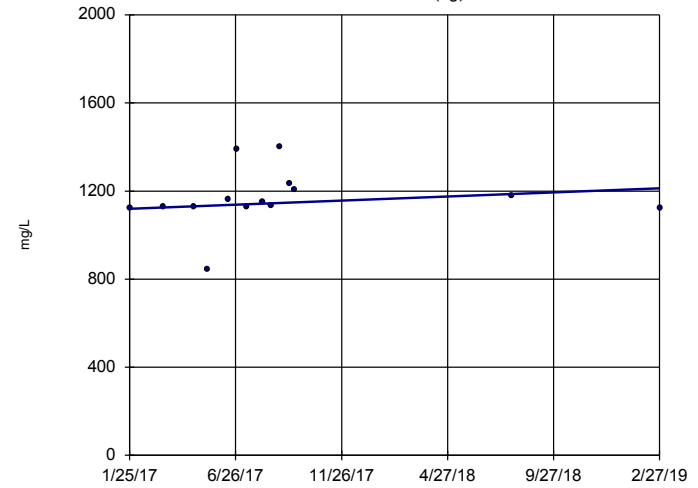


n = 10
 Slope = -1179
 units per year.
 Mann-Kendall
 statistic = -19
 critical = -30
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Total Dissolved Solids [TDS] Analysis Run 6/26/2019 4:55 PM View: App III
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator

SP-4 (bg)

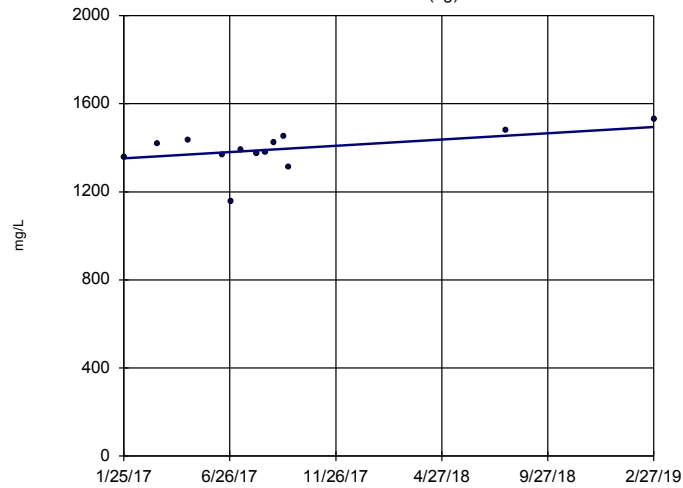


n = 14
 Slope = 44.69
 units per year.
 Mann-Kendall
 statistic = 26
 critical = 48
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Total Dissolved Solids [TDS] Analysis Run 6/26/2019 4:55 PM View: App III
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Sen's Slope Estimator

SP-5 (bg)



n = 13
 Slope = 67.52
 units per year.
 Mann-Kendall
 statistic = 30
 critical = 43
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Total Dissolved Solids [TDS] Analysis Run 6/26/2019 4:55 PM View: App III
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Upper Tolerance Limits - Appendix IV

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:37 PM

Constituent	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	0.00514	30	n/a	n/a	53.33	n/a	n/a	0.2146	NP Inter(normality)
Arsenic (mg/L)	0.04927	30	0.1149	0.04823	10	None	sqrt(x)	0.05	Inter
Barium (mg/L)	4.59	30	n/a	n/a	0	n/a	n/a	0.2146	NP Inter(normality)
Beryllium (mg/L)	0.00497	30	n/a	n/a	26.67	n/a	n/a	0.2146	NP Inter(Cohens/x...
Cadmium (mg/L)	0.00247	29	n/a	n/a	65.52	n/a	n/a	0.2259	NP Inter(normality)
Chromium (mg/L)	0.08415	30	n/a	n/a	23.33	n/a	n/a	0.2146	NP Inter(Cohens/x...
Cobalt (mg/L)	0.04069	30	n/a	n/a	16.67	n/a	n/a	0.2146	NP Inter(normality)
Combined Radium 226 + 228 (pCi/L)	16.53	29	8.241	3.709	0	None	No	0.05	Inter
Fluoride (mg/L)	4.562	30	10.61	4.597	3.333	None	x^2	0.05	Inter
Lead (mg/L)	0.03663	30	n/a	n/a	43.33	n/a	n/a	0.2146	NP Inter(normality)
Lithium (mg/L)	0.1491	30	0.0983	0.0229	0	None	No	0.05	Inter
Mercury (mg/L)	0.000058	30	n/a	n/a	60	n/a	n/a	0.2146	NP Inter(normality)
Molybdenum (mg/L)	0.02	30	n/a	n/a	53.33	n/a	n/a	0.2146	NP Inter(normality)
Selenium (mg/L)	0.00499	30	n/a	n/a	70	n/a	n/a	0.2146	NP Inter(normality)
Thallium (mg/L)	0.005	30	n/a	n/a	86.67	n/a	n/a	0.2146	NP Inter(NDs)

Confidence Intervals - Significant Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:47 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (mg/L)	SP-10	0.3109	0.264	0.15	Yes	11	0	No	0.01	Param.

Confidence Intervals - All Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:47 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	SP-1	0.00209	0.00069	0.006	No	14	50	No	0.01	NP (normality)
Antimony (mg/L)	SP-10	0.00251	0.001	0.006	No	11	36.36	No	0.006	NP (Cohens/xfrm)
Antimony (mg/L)	SP-11	0.006557	-0.00005032	0.006	No	11	27.27	No	0.01	Param.
Antimony (mg/L)	SP-2	0.005128	0.00152	0.006	No	14	14.29	sqrt(x)	0.01	Param.
Arsenic (mg/L)	SP-1	0.00548	0.00134	0.049	No	14	57.14	No	0.01	NP (normality)
Arsenic (mg/L)	SP-10	0.01081	0.002726	0.049	No	11	18.18	No	0.01	Param.
Arsenic (mg/L)	SP-11	0.008379	0.002917	0.049	No	11	9.091	No	0.01	Param.
Arsenic (mg/L)	SP-2	0.005212	0.00175	0.049	No	14	7.143	x^(1/3)	0.01	Param.
Barium (mg/L)	SP-1	0.2273	0.1738	4.59	No	14	0	No	0.01	Param.
Barium (mg/L)	SP-10	2.283	0.3079	4.59	No	11	0	x^(1/3)	0.01	Param.
Barium (mg/L)	SP-11	0.3625	0.1101	4.59	No	11	0	sqrt(x)	0.01	Param.
Barium (mg/L)	SP-2	1.611	0.8808	4.59	No	14	0	x^(1/3)	0.01	Param.
Beryllium (mg/L)	SP-1	0.001	0.00006	0.005	No	14	35.71	No	0.01	NP (normality)
Beryllium (mg/L)	SP-10	0.001	0.00003	0.005	No	11	36.36	No	0.006	NP (normality)
Beryllium (mg/L)	SP-11	0.001	0.00007	0.005	No	11	27.27	No	0.006	NP (Cohens/xfrm)
Beryllium (mg/L)	SP-2	0.001	0.00006	0.005	No	14	28.57	No	0.01	NP (normality)
Cadmium (mg/L)	SP-1	0.0005	0.00011	0.005	No	14	71.43	No	0.01	NP (normality)
Cadmium (mg/L)	SP-10	0.0005	0.0005	0.005	No	11	90.91	No	0.006	NP (NDs)
Cadmium (mg/L)	SP-11	0.0027	0.00009	0.005	No	11	27.27	No	0.006	NP (Cohens/xfrm)
Cadmium (mg/L)	SP-2	0.0005	0.00009	0.005	No	14	71.43	No	0.01	NP (normality)
Chromium (mg/L)	SP-1	0.00183	0.00062	0.1	No	14	42.86	No	0.01	NP (Cohens/xfrm)
Chromium (mg/L)	SP-10	0.00244	0.00036	0.1	No	11	18.18	No	0.006	NP (normality)
Chromium (mg/L)	SP-11	0.01648	0.0008389	0.1	No	11	9.091	ln(x)	0.01	Param.
Chromium (mg/L)	SP-2	0.002485	0.0003201	0.1	No	14	21.43	No	0.01	Param.
Cobalt (mg/L)	SP-1	0.00175	0.0005	0.041	No	14	21.43	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	SP-10	0.004426	0.0008491	0.041	No	11	18.18	No	0.01	Param.
Cobalt (mg/L)	SP-11	0.01099	0.002148	0.041	No	11	9.091	No	0.01	Param.
Cobalt (mg/L)	SP-2	0.00251	0.0005	0.041	No	14	21.43	No	0.01	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	SP-1	4.53	3.014	16.53	No	14	0	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SP-10	7.241	0.9902	16.53	No	11	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-11	4.618	0.785	16.53	No	11	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SP-2	18.54	7.536	16.53	No	11	0	No	0.01	Param.
Fluoride (mg/L)	SP-1	1.098	0.6188	4.56	No	13	15.38	No	0.01	Param.
Fluoride (mg/L)	SP-10	8.162	1.303	4.56	No	11	27.27	No	0.01	Param.
Fluoride (mg/L)	SP-11	3.918	2.711	4.56	No	11	0	No	0.01	Param.
Fluoride (mg/L)	SP-2	3.383	2.31	4.56	No	14	0	No	0.01	Param.
Lead (mg/L)	SP-1	0.002	0.000354	0.037	No	14	57.14	No	0.01	NP (normality)
Lead (mg/L)	SP-10	0.002	0.00087	0.037	No	11	81.82	No	0.006	NP (NDs)
Lead (mg/L)	SP-11	0.00816	0.000404	0.037	No	11	27.27	No	0.006	NP (Cohens/xfrm)
Lead (mg/L)	SP-2	0.00202	0.00091	0.037	No	14	64.29	No	0.01	NP (normality)
Lithium (mg/L)	SP-1	0.006957	0.004515	0.15	No	14	0	No	0.01	Param.
Lithium (mg/L)	SP-10	0.3109	0.264	0.15	Yes	11	0	No	0.01	Param.
Lithium (mg/L)	SP-11	0.1189	0.05708	0.15	No	11	0	No	0.01	Param.
Lithium (mg/L)	SP-2	0.09779	0.06935	0.15	No	14	0	x^3	0.01	Param.
Mercury (mg/L)	SP-1	0.000025	0.000023	0.002	No	14	78.57	No	0.01	NP (NDs)
Mercury (mg/L)	SP-10	0.00002651	0.00001082	0.002	No	11	18.18	No	0.01	Param.
Mercury (mg/L)	SP-11	0.00003405	0.000008311	0.002	No	11	18.18	No	0.01	Param.
Mercury (mg/L)	SP-2	0.000025	0.000006	0.002	No	14	71.43	No	0.01	NP (normality)
Molybdenum (mg/L)	SP-1	0.01646	0.009366	0.1	No	14	0	No	0.01	Param.
Molybdenum (mg/L)	SP-10	0.1082	0.00973	0.1	No	11	9.091	ln(x)	0.01	Param.
Molybdenum (mg/L)	SP-11	0.05614	0.01939	0.1	No	11	0	No	0.01	Param.
Molybdenum (mg/L)	SP-2	0.03413	0.02294	0.1	No	14	0	No	0.01	Param.
Selenium (mg/L)	SP-1	0.0058	0.002	0.05	No	14	21.43	No	0.01	NP (Cohens/xfrm)
Selenium (mg/L)	SP-10	0.00567	0.002	0.05	No	11	27.27	No	0.006	NP (Cohens/xfrm)
Selenium (mg/L)	SP-11	0.005442	0.0009195	0.05	No	11	18.18	No	0.01	Param.

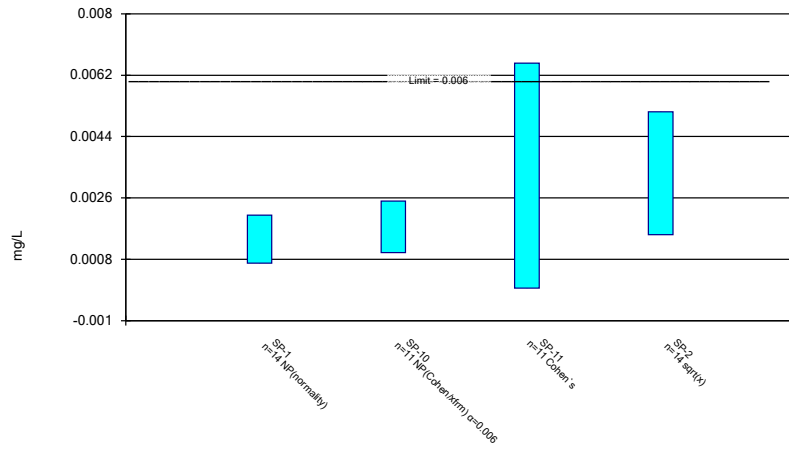
Confidence Intervals - All Results

Northeastern BAP Client: Geosyntec Data: Northeastern BAP Printed 6/26/2019, 4:47 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Selenium (mg/L)	SP-2	0.01707	0.003542	0.05	No	14	14.29	sqrt(x)	0.01	Param.
Thallium (mg/L)	SP-1	0.005	0.002	0.005	No	14	78.57	No	0.01	NP (NDs)
Thallium (mg/L)	SP-10	0.005	0.005	0.005	No	11	90.91	No	0.006	NP (NDs)
Thallium (mg/L)	SP-11	0.005	0.005	0.005	No	11	90.91	No	0.006	NP (NDs)
Thallium (mg/L)	SP-2	0.005	0.00006	0.005	No	14	92.86	No	0.01	NP (NDs)

Parametric and Non-Parametric (NP) Confidence Interval

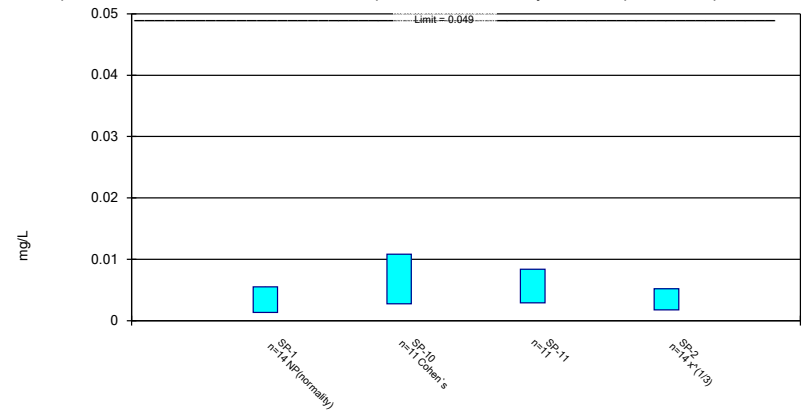
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

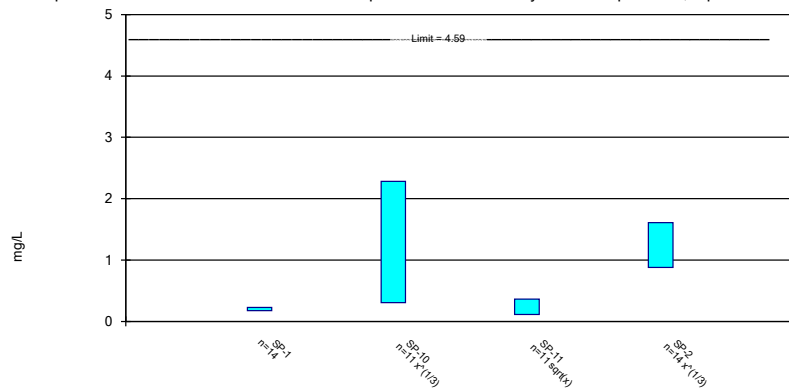
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

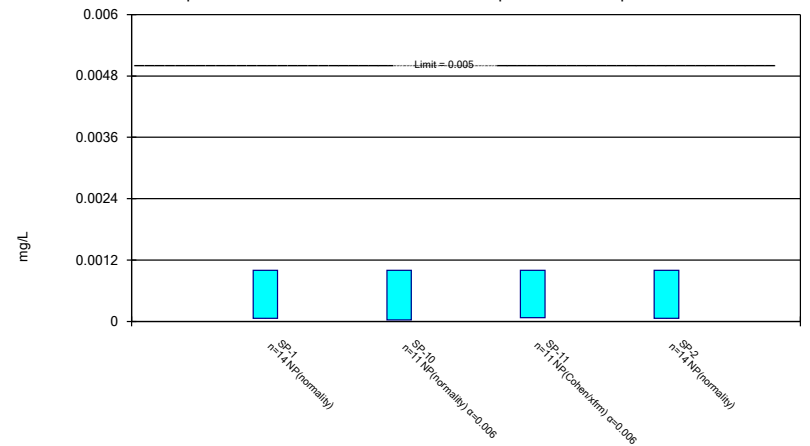
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Non-Parametric Confidence Interval

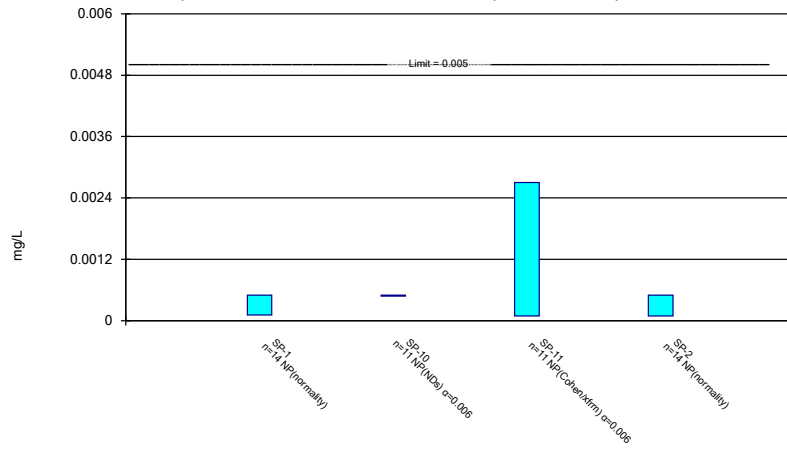
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Beryllium Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Non-Parametric Confidence Interval

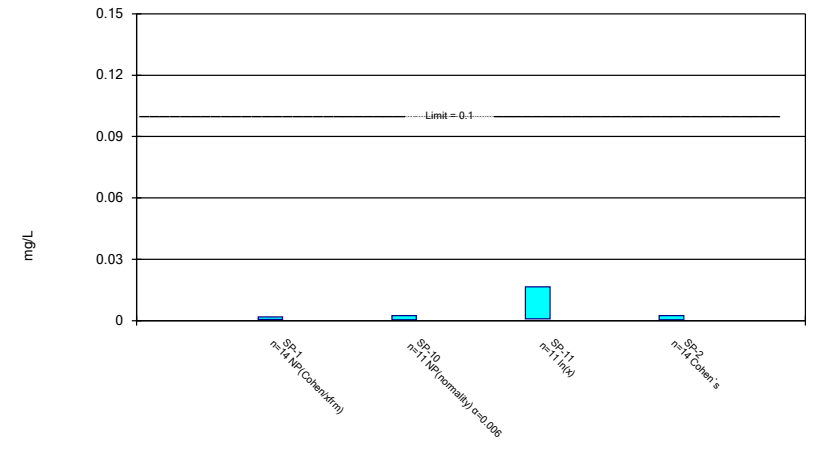
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Cadmium Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

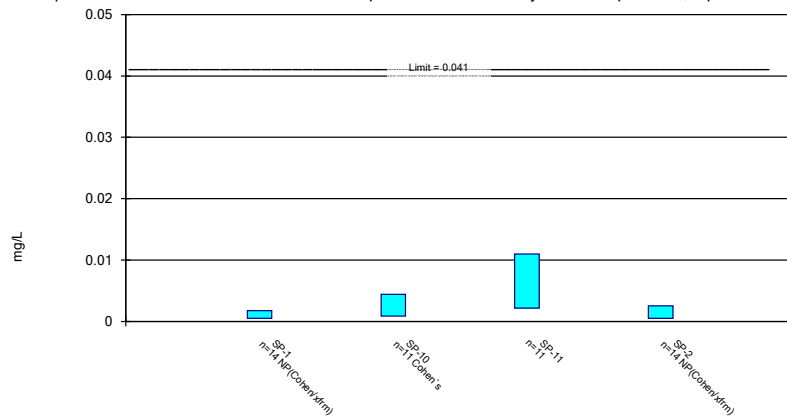
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

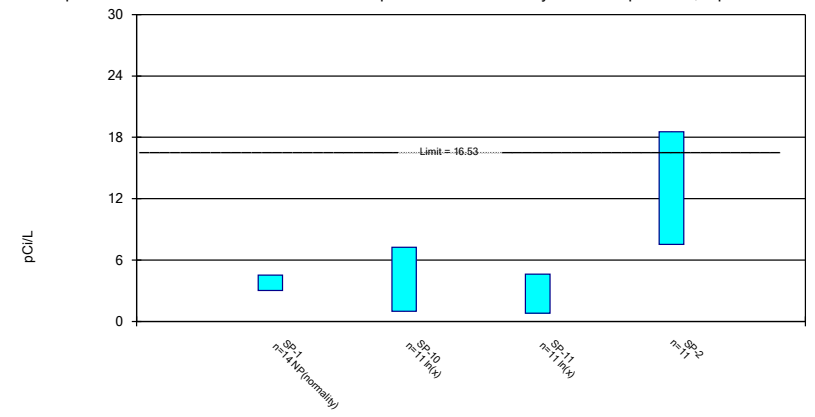
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

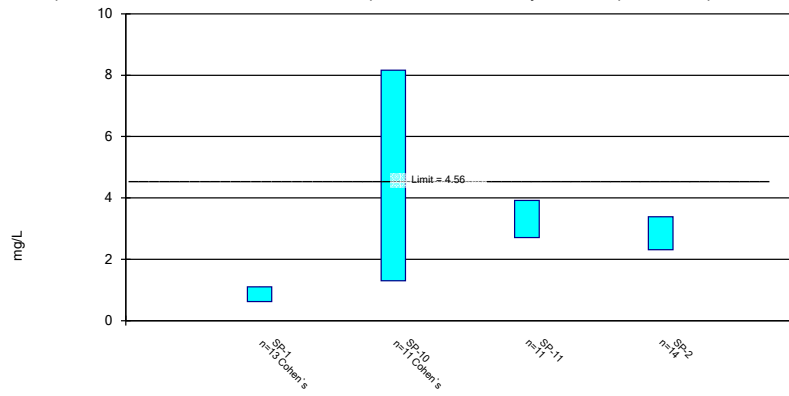
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

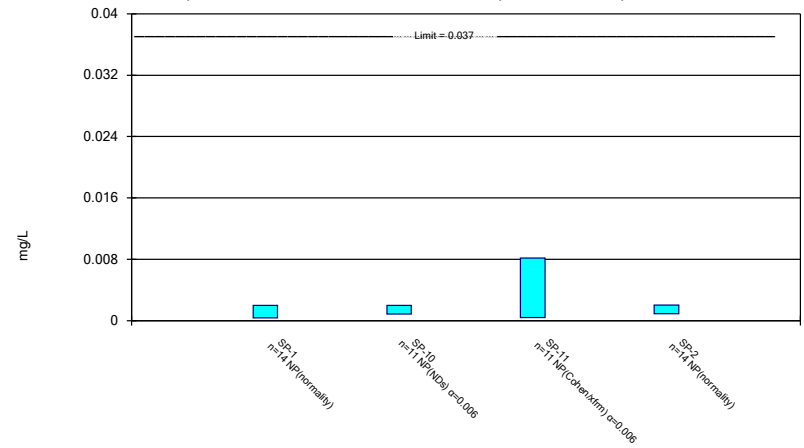
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 6/26/2019 4:44 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Non-Parametric Confidence Interval

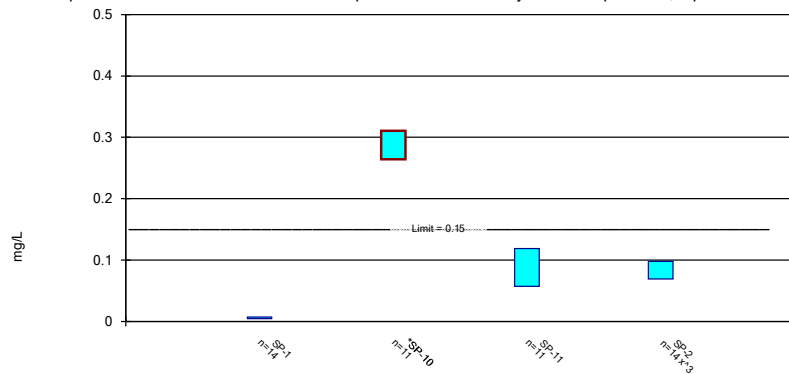
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted.



Constituent: Lead Analysis Run 6/26/2019 4:45 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

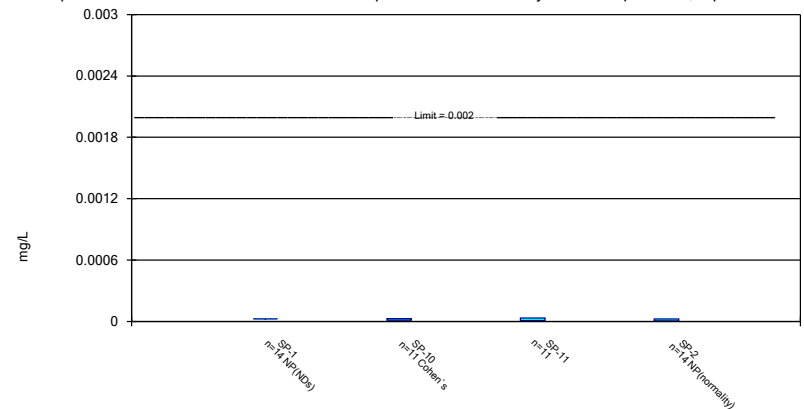
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 6/26/2019 4:45 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

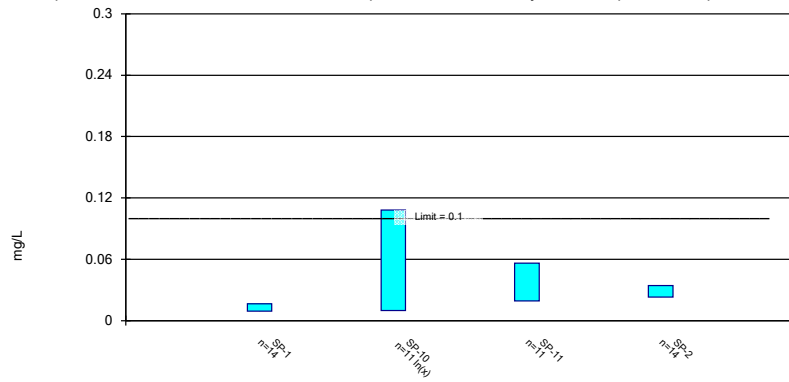
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury Analysis Run 6/26/2019 4:45 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric Confidence Interval

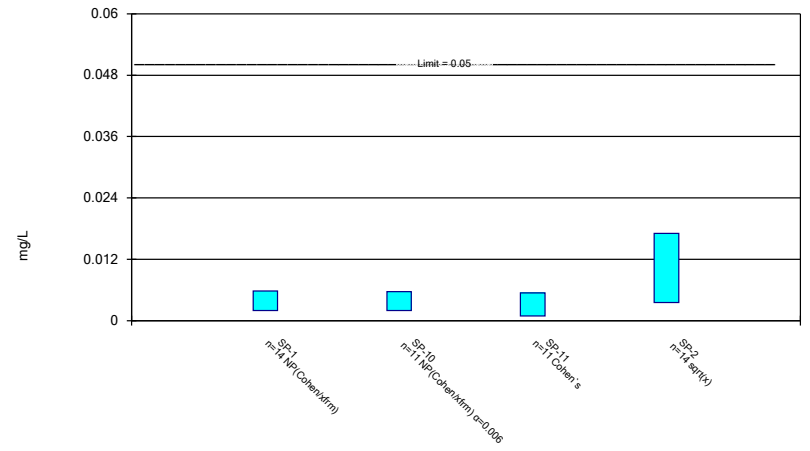
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum Analysis Run 6/26/2019 4:45 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Parametric and Non-Parametric (NP) Confidence Interval

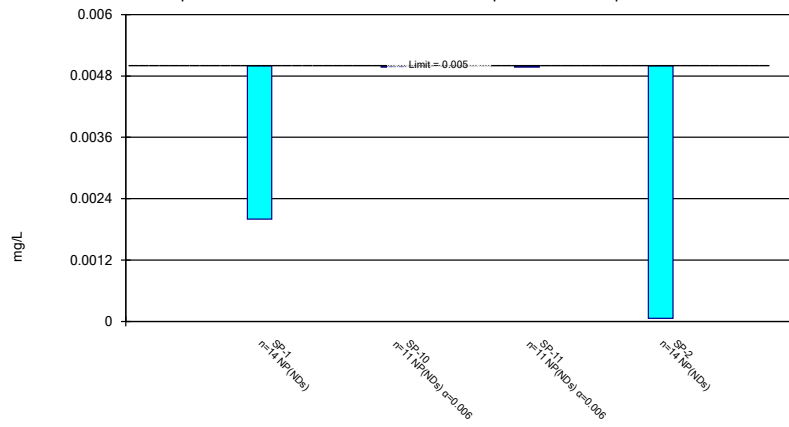
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium Analysis Run 6/26/2019 4:45 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP

Non-Parametric Confidence Interval

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



Constituent: Thallium Analysis Run 6/26/2019 4:45 PM View: App IV
 Northeastern BAP Client: Geosyntec Data: Northeastern BAP



Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
<http://aepenv/labs>

Water Analysis

Location: Northeastern Station

Report Date: 4/15/2019

SP-1

Sample Number: 190826-001

Date Collected: 02/27/2019 15:50

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	0.6	ug/L	J	1	0.2	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Arsenic, As	0.7	ug/L	J	1	0.3	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Barium, Ba	168	ug/L		1	0.2	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.1	ug/L	U	0.5	0.1	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	2.72	ug/L		2	0.4	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	< 0.2	ug/L	U	0.5	0.2	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.2	ug/L	J	1	0.2	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	10	ug/L	J	20	4	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Selenium, Se	2.8	ug/L		2	0.3	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 1	ug/L	U	5	1	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Boron, B	0.200	mg/L		0.05	0.009	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	122	mg/L		0.2	0.03	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.00641	mg/L		0.002	0.0001	CTK	04/05/2019 18:19	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit

J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	2.39	pCi/L	0.18	0.49	jls	4/2/2019	SW-846 9320-2014, Rev. 1.0
The LRB result (0.99 pCi/L) exceeds the critical value of 0.95 pCi/L.							
Radium-226	0.666	pCi/L	0.12	0.17	jls	3/26/2019	SW-846 9315-1986, Rev. 0

**The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.*

SP-2

Sample Number: 190826-002

Date Collected: 02/27/2019 15:15

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	1.39	ug/L		1	0.2	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Arsenic, As	1.29	ug/L		1	0.3	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Barium, Ba	841	ug/L		1	0.2	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.1	ug/L	U	0.5	0.1	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	4.30	ug/L		2	0.4	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	< 0.2	ug/L	U	0.5	0.2	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.3	ug/L	J	1	0.2	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	25.8	ug/L		20	4	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Selenium, Se	3.7	ug/L		2	0.3	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 1	ug/L	U	5	1	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Boron, B	0.116	mg/L		0.05	0.009	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	94.0	mg/L		0.2	0.03	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.0329	mg/L		0.002	0.0001	CTK	04/05/2019 18:24	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit

J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	3.65	pCi/L	0.19	0.49	jls	4/2/2019	SW-846 9320-2014,Rev. 1.0
The LRB result (0.99 pCi/L) exceeds the critical value of 0.95 pCi/L.							
Radium-226	2.11	pCi/L	0.22	0.14	jls	3/26/2019	SW-846 9315-1986,Rev. 0

**The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.*

Sp-4

Sample Number: 190826-003

Date Collected: 02/27/2019 16:20

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	0.3	ug/L	J	1	0.2	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Arsenic, As	1	ug/L	J	1	0.3	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Barium, Ba	276	ug/L		1	0.2	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.1	ug/L	U	0.5	0.1	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	5.71	ug/L		2	0.4	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	< 0.2	ug/L	U	0.5	0.2	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Lead, Pb	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	< 4	ug/L	U	20	4	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Selenium, Se	0.6	ug/L	J	2	0.3	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 1	ug/L	U	5	1	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Boron, B	0.370	mg/L		0.05	0.009	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	85.6	mg/L		0.2	0.03	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.0602	mg/L		0.002	0.0001	CTK	04/05/2019 18:29	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit

J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	2.65	pCi/L	0.18	0.46	jls	4/2/2019	SW-846 9320-2014, Rev. 1.0
The LRB result (0.99 pCi/L) exceeds the critical value of 0.95 pCi/L.							
Radium-226	0.494	pCi/L	0.10	0.13	jls	3/26/2019	SW-846 9315-1986, Rev. 0

**The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.*

SP-5

Sample Number: 190826-004

Date Collected: 02/27/2019 16:45

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Arsenic, As	25.7	ug/L		1	0.3	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Barium, Ba	2130	ug/L		1	0.2	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.1	ug/L	U	0.5	0.1	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	2	ug/L	J	2	0.4	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	0.3	ug/L	J	0.5	0.2	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.7	ug/L	J	1	0.2	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	< 4	ug/L	U	20	4	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Selenium, Se	< 0.3	ug/L	U	2	0.3	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 1	ug/L	U	5	1	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Boron, B	0.233	mg/L		0.05	0.009	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	72.8	mg/L		0.2	0.03	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.102	mg/L		0.002	0.0001	CTK	04/05/2019 18:34	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit

J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	0.472	pCi/L	0.22	0.54	jls	4/2/2019	SW-846 9320-2014,Rev. 1.0
The LRB result (0.99 pCi/L) exceeds the critical value of 0.95 pCi/L.							
Radium-226	6.23	pCi/L	0.35	0.12	jls	3/26/2019	SW-846 9315-1986,Rev. 0

The carrier recovery is outside the established range of 30-110%.

***The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.**

SP-10

Sample Number: 190826-005

Date Collected: 02/27/2019 14:20

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	2	ug/L	J	2	0.4	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Arsenic, As	3.48	ug/L		2	0.6	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Barium, Ba	5810	ug/L		2	0.4	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.4	ug/L	U	2	0.4	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	1	ug/L	J	4	0.8	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	< 0.4	ug/L	U	1	0.4	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Lead, Pb	< 0.4	ug/L	U	2	0.4	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	< 8	ug/L	U	40	8	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Selenium, Se	< 0.6	ug/L	U	4	0.6	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 2	ug/L	U	10	2	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Boron, B	1.16	mg/L		0.1	0.02	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	92.6	mg/L		0.4	0.06	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.275	mg/L		0.004	0.0002	CTK	04/05/2019 18:39	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit

J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	1.25	pCi/L	0.14	0.43	jls	4/2/2019	SW-846 9320-2014,Rev. 1.0
The LRB result (0.99 pCi/L) exceeds the critical value of 0.95 pCi/L. The MSD recovery (58.84%) is outside the established range of 60-140%.							
Radium-226	14.1	pCi/L	0.55	0.12	jls	3/26/2019	SW-846 9315-1986,Rev. 0
The carrier recovery is outside the established range of 30-110%.							

***The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.**

SP-11

Sample Number: 190826-006

Date Collected: 02/27/2019 14:45

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Arsenic, As	8.83	ug/L		1	0.3	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Barium, Ba	529	ug/L		1	0.2	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.1	ug/L	U	0.5	0.1	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	0.7	ug/L	J	2	0.4	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	0.720	ug/L		0.5	0.2	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.2	ug/L	J	1	0.2	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	6	ug/L	J	20	4	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Selenium, Se	< 0.3	ug/L	U	2	0.3	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 1	ug/L	U	5	1	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Boron, B	0.375	mg/L		0.05	0.009	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	49.6	mg/L		0.2	0.03	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.0580	mg/L		0.002	0.0001	CTK	04/05/2019 18:44	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit

J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	1.35	pCi/L	0.19	0.58	jls	4/2/2019	SW-846 9320-2014, Rev. 1.0
The LRB result (0.99 pCi/L) exceeds the critical value of 0.95 pCi/L.							
Radium-226	0.46	pCi/L	0.10	0.15	jls	3/26/2019	SW-846 9315-1986, Rev. 0

**The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.*

Duplicate BAP

Sample Number: 190826-007

Date Collected: 02/27/2019 14:20

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	1	ug/L	J	2	0.4	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Arsenic, As	3.20	ug/L		2	0.6	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Barium, Ba	5770	ug/L		2	0.4	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.4	ug/L	U	2	0.4	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	1	ug/L	J	4	0.8	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	< 0.4	ug/L	U	1	0.4	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.7	ug/L	J	2	0.4	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	< 8	ug/L	U	40	8	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Selenium, Se	< 0.6	ug/L	U	4	0.6	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 2	ug/L	U	10	2	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Boron, B	1.17	mg/L		0.1	0.02	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	91.9	mg/L		0.4	0.06	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.272	mg/L		0.004	0.0002	CTK	04/05/2019 18:49	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit

J: Analyte was positively identified, though the quantitation was below Reporting Limit.

**The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.*

Equipment Blank BAP

Sample Number: 190826-008

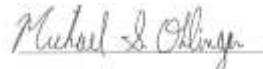
Date Collected: 02/27/2019 16:40

Date Received: 3/7/2019

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Arsenic, As	< 0.3	ug/L	U	1	0.3	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Barium, Ba	0.7	ug/L	J	1	0.2	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.1	ug/L	U	0.5	0.1	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	0.5	ug/L	J	2	0.4	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	< 0.2	ug/L	U	0.5	0.2	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Lead, Pb	< 0.2	ug/L	U	1	0.2	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	< 4	ug/L	U	20	4	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Selenium, Se	< 0.3	ug/L	U	2	0.3	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 1	ug/L	U	5	1	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Boron, B	< 0.009	mg/L	U	0.05	0.009	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	0.06	mg/L	J	0.2	0.03	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4
Lithium, Li	< 0.0001	mg/L	U	0.002	0.0001	CTK	04/05/2019 18:54	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
 J: Analyte was positively identified, though the quantitation was below Reporting Limit.

**The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.*



Michael Ohlinger, Chemist

Email msohlinger@aep.com Tel.

Fax 614-836-4168

Audinet 8-210-

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED.

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
Contacts: Michael Ohlinger (614-836-4184)
Dave Conover (614-836-4219)

Project Name: Northeastern PP BAP CCR
 Contact Name: Jill Parker-Witt
 Contact Phone: 318-673-3816

Sampler(s): Kenny McDonald

Analysis Turnaround Time (in Calendar Days)
 Routine (28 days for Monitoring Wells)

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Site Contact:				Date:	COC/Order #:	For Lab Use Only:
						250 mL bottle, pH<2, HNO3	Field-filter 250 mL bottle, then pH<2, HNO3	250 mL bottle, Cool, 0-6C	Three (six every 10th) L bottles, pH<2, HNO3			
SP-1	2/27/2019	1550	G	GW	4	B, Ca, Sb, As, Ba, Be, Se, TL	Dissolved B, Sb, As, Ba, Be, Ca, Cd, Cr, Co, Fe, K, Li, Mg, Mn, Mo, Na, Pb, Se, Sr, Ti	Fluoride, Sulfate	Ra-226, Ra-228			
SP-2	2/27/2019	1515	G	GW	4							
SP-4	2/27/2019	1620	G	GW	4							
SP-5	2/27/2019	1645	G	GW	4							
SP-10	2/27/2019	1420	G	GW	7							
SP-11	2/27/2019	1445	G	GW	4							
DUPLICATE BAP	2/27/2019	1420	G	GW	1							
EQUIPMENT BLANK BAP	2/27/2019	1640	G	GW	1							
						4	F4	1	4			

99826

Preservation Used: 1 = Ice, 2 = HCl; 3 = H2SO4; 4 = HNO3; 5 = NaOH; 6 = Other
 * Six 1L Bottles must be collected for Radium for every 10th sample.

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Company: <i>LAGI</i>	Date/Time: 03/07/19 14:00	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Date/Time: 03/07/19 11:40

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type			Delivery Type				
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	<input type="radio"/> PONY	<input type="radio"/> UPS	<input type="radio"/> FedEx	<input type="radio"/> USPS
				Other _____			
Plant/Customer <u>North Eastern PP BAP car</u>				Number of Plastic Containers: <u>29</u>			
Opened By <u>Sussan</u>				Number of Glass Containers: <u>0</u>			
Date/Time <u>03/07/19 11:40</u>				Number of Mercury Containers: <u>0</u>			
Were all temperatures within 0-6°C? Y / N or <u>(N/A)</u> Initial: <u>MC-1C</u> on ice / <u>(no ice)</u> (IR Gun Ser# <u>18135443</u> Expir. <u>6-12-20</u>) - If No, specify each deviation: _____							
Was container in good condition? <u>(Y)</u> / N Comments _____							
Was Chain of Custody received? <u>(Y)</u> / N Comments _____							
Requested turnaround: <u>Rollie</u> If RUSH, who was notified? _____							
pH (15 min)	Cr ⁺⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)			

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A Initial & Date: MC-1C 03/07/19

- Was Add'l Preservative needed? Y / (N) If Yes: By whom & when: _____ (See Prep Book)

Is sample filtration requested? Y / (N) Comments _____ (See Prep Book)

Was the customer contacted? If Yes: Person Contacted: _____

Lab ID# 190826 Initial & Date & Time : _____

Comments: _____

Logged by SM _____

Reviewed by MSO _____

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.