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PLUM POINT ENERGY STATION

GROUNDWATER MONITORING AND CORRECTIVE ACTION 2017 ANNUAL REPORT

PREPARED IN COMPLIANCE WITH THE EPA FINAL RULE FOR THE DISPOSAL OF COAL COMBUSTION RESIDUALS TITLE 40 CODE OF FEDERAL REGULATIONS PART 257

JANUARY 9, 2018

PLUM POINT ENERGY STATION

GROUNDWATER MONITORING AND CORRECTIVE ACTION
2017 ANNUAL REPORT

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Prepared for

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EXECUTIVE SUMMARY

Plum Point Services Company, LLC (PPSC), operates a landfill for the disposal of coal combustion residuals (CCRs) at the Plum Point Energy Station located near Osceola, Arkansas. The landfill is regulated by the new Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated at Title 40 Code of Federal Regulations (40 CFR) Part 257 and published on April 17, 2015. Landfills regulated by this new rule are required to implement and maintain a groundwater monitoring program to determine if the CCR landfill is impacting groundwater quality at the facility's compliance boundary. For this purpose, semiannual groundwater detection monitoring is required. This report presents results from the first semiannual detection monitoring event performed in accordance with 40 CFR Part 257 during the second half of 2017.

The landfill's groundwater monitoring program uses a certified monitoring well network comprised of ten monitoring wells (FTN 2017a). Groundwater sample collection is performed in accordance with the landfill's groundwater sampling and analysis plan (FTN 2017b). Data collected from this program are evaluated in accordance with the landfill's certified statistical analysis plan (FTN 2017c).

FTN Associates, Ltd. (FTN), was contracted to sample groundwater and statistically evaluate the data from the second half of 2017 monitoring event. Major conclusions from this evaluation include the following:

1. Groundwater flow across the site was generally to the east.
2. The secondary drinking water standard (SWDS) for total dissolved solids (TDS) was exceeded at background well MW-108. SDWSs are non-enforceable guidelines established by EPA for aesthetic considerations. Published groundwater quality data for the region indicate that exceedances for TDS are generally typical for the underlying aquifer.
3. Of the parameters evaluated, only fluoride has an EPA maximum contaminant level (MCL). None of the measured values in groundwater exceeded the MCL for fluoride.
4. Time-series plots and box-and-whiskers diagrams show variability across the well network for calcium, chloride, fluoride, sulfate, and TDS. Values for boron and

pH are relatively similar across all wells, with measured levels of boron being below the laboratory RDL for all wells for the period of record.

5. Statistical evaluation of 40 CFR Part 257 appendix III parameters did not indicate any statistically significant exceedances.

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1.0 BACKGROUND

Plum Point Services Company, LLC (PPSC) operates a landfill for the disposal of coal combustion residuals (CCRs) at the Plum Point Energy Station in Mississippi County, Arkansas. The plant and landfill are located approximately 2 miles south of the city of Osceola, as shown on Figure 1.1. The landfill is regulated by the new Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated at Title 40 Code of Federal Regulations (40 CFR) Part 257 and published on April 17, 2015. The new regulation, referred to hereafter as the CCR rule, requires regulated landfills to implement and maintain a groundwater monitoring program to determine if the CCR landfill is impacting groundwater quality at the facility's compliance boundary. For this purpose, groundwater detection monitoring is required on a semiannual frequency. A groundwater sampling program that meets the requirements of the CCR rule was implemented by PPSC during 2015, and the first semiannual detection monitoring event was performed at the landfill during the second half of 2017.

FTN Associates, Ltd. (FTN), was contracted to sample groundwater and statistically evaluate the data from the second half of 2017 monitoring event. This report, which presents the results from that sampling event and the associated statistical evaluation, is intended to satisfy the reporting requirements of §257.90(e)(1) through (5). The following sections provide a brief description of the sampling area, operational history of the plant and landfill, regional and site-specific hydrogeological setting, and general regional and site groundwater quality.

1.1 Sampling Area

The landfill area encompasses approximately 245 acres located approximately 1 mile west of the Mississippi River and 2 miles south of Osceola, Arkansas. The landfill is bordered by Arkansas Highway 239 to the east, Arkansas Highway 198 to the south, and the BNSF rail line to the west. Beyond these features and immediately north of the landfill are agricultural fields, and topography is relatively flat. A vicinity map of the Plum Point Energy Station and landfill is provided as Figure 1.2.

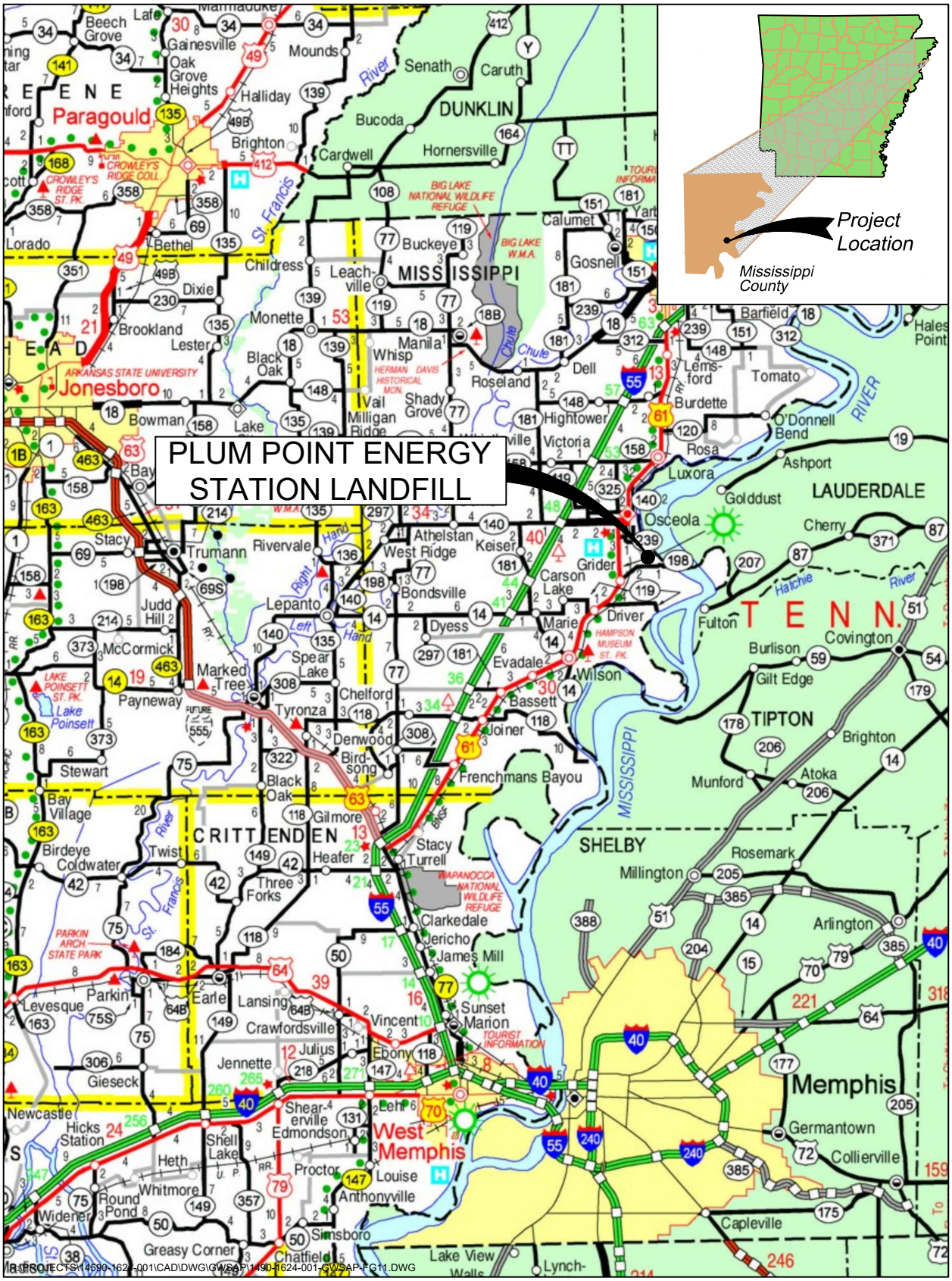

Figure 1.1. Location map.

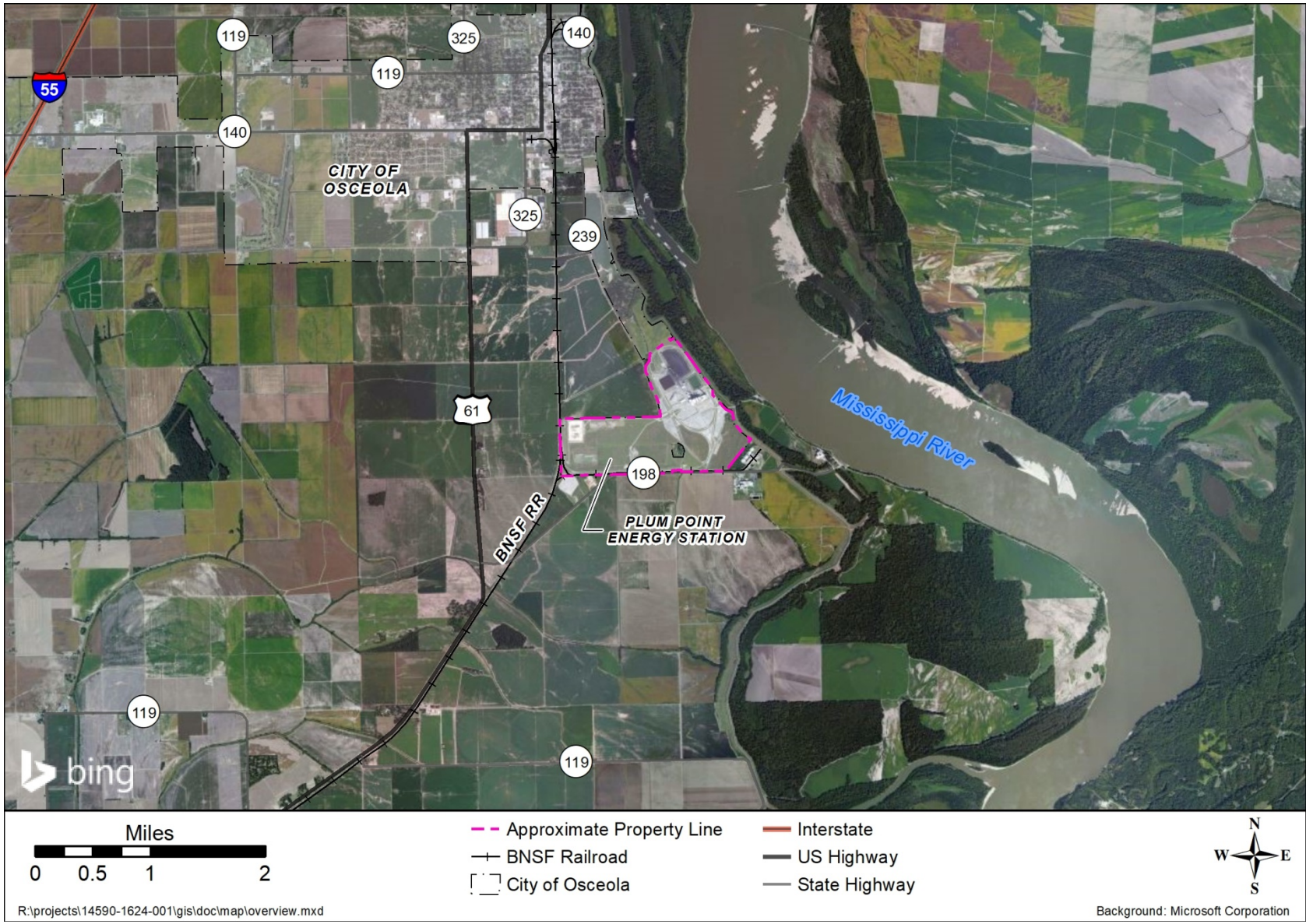

Figure 1.2. Vicinity map, Plum Point Energy Station.

1.2 Operational History

The plant has been in operation since 2010 and generates electricity through the combustion of coal. Approximately 500,000 tons of CCR material is produced and deposited in the landfill each year. The landfill is permitted by the Arkansas Department of Environmental Quality (ADEQ) under Permit No. 0303-S3N-R1 and became active during March 2010. The landfill currently has two active disposal cells, Cells 1 and 3, which are shown on Figure 1.3. The combined area of the two active CCR disposal cells is approximately 30 acres.

Groundwater detection monitoring was initiated at the landfill in November 2007, in accordance with Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 requirements. The landfill's groundwater monitoring system was recently expanded and designed to conform to the groundwater monitoring requirements of the CCR rule. The groundwater sampling requirements under this new regulation were implemented during October 2015. The groundwater monitoring network was certified by FTN in October 2017 (FTN 2017a). Details regarding the certified groundwater monitoring network are provided in Section 2.0 and in the landfill network certification report (FTN 2017a).

1.3 Regional Hydrogeology

The landfill is located in the Mississippi Alluvial Plain physiographic region, as shown on Figure 1.4. The region was formed by the deposits of the Mississippi River and its tributaries and is generally flat-lying (Cushing, Boswell, and Hosman 1964). The uppermost aquifer in the region is the Mississippi River Valley alluvial aquifer (hereafter referred to as the alluvial aquifer). The alluvial aquifer is comprised of unconsolidated Quaternary-age alluvial and terrace deposit sands and gravels that generally grade upward to clays and silts, which form a semi-confining to confining layer over much of the aquifer. Regionally, the alluvium reaches depths of 100 ft to 200 ft below ground surface (bgs) (Ryling 1960; Cushing, Boswell, and Hosman 1964). Beneath the alluvial aquifer is the Tertiary-aged Jackson-Claiborne clay, which acts as a lower confining unit. The Jackson group contains dense marine clays and shale with occasional lenses of fine-grained sand (Peterson, Broom, and Bush 1985).The regional direction of groundwater flow is toward the southwest (Schrader 2015).

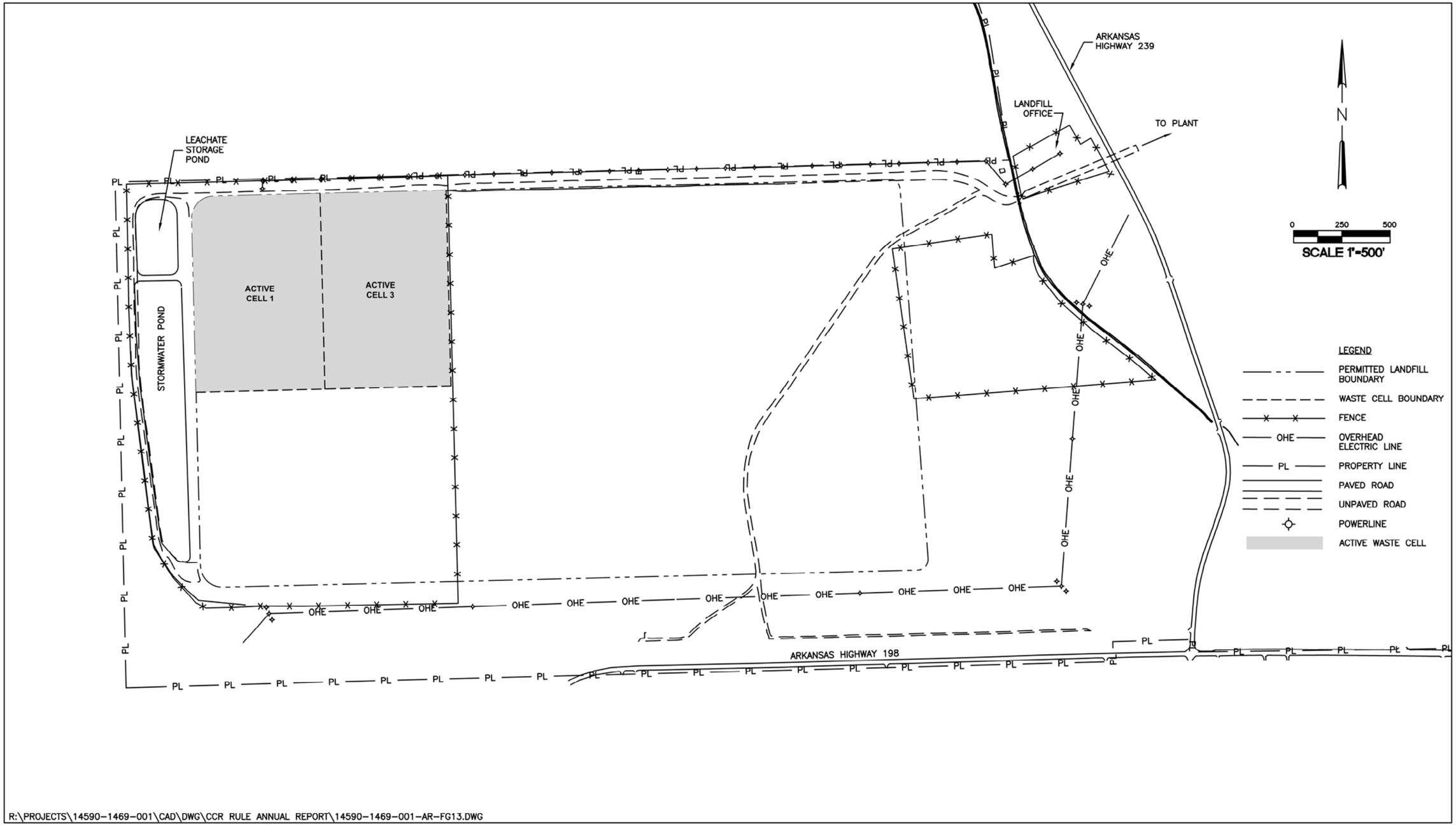

Figure 1.3. Landfill layout map, Plum Point Energy Station landfill.

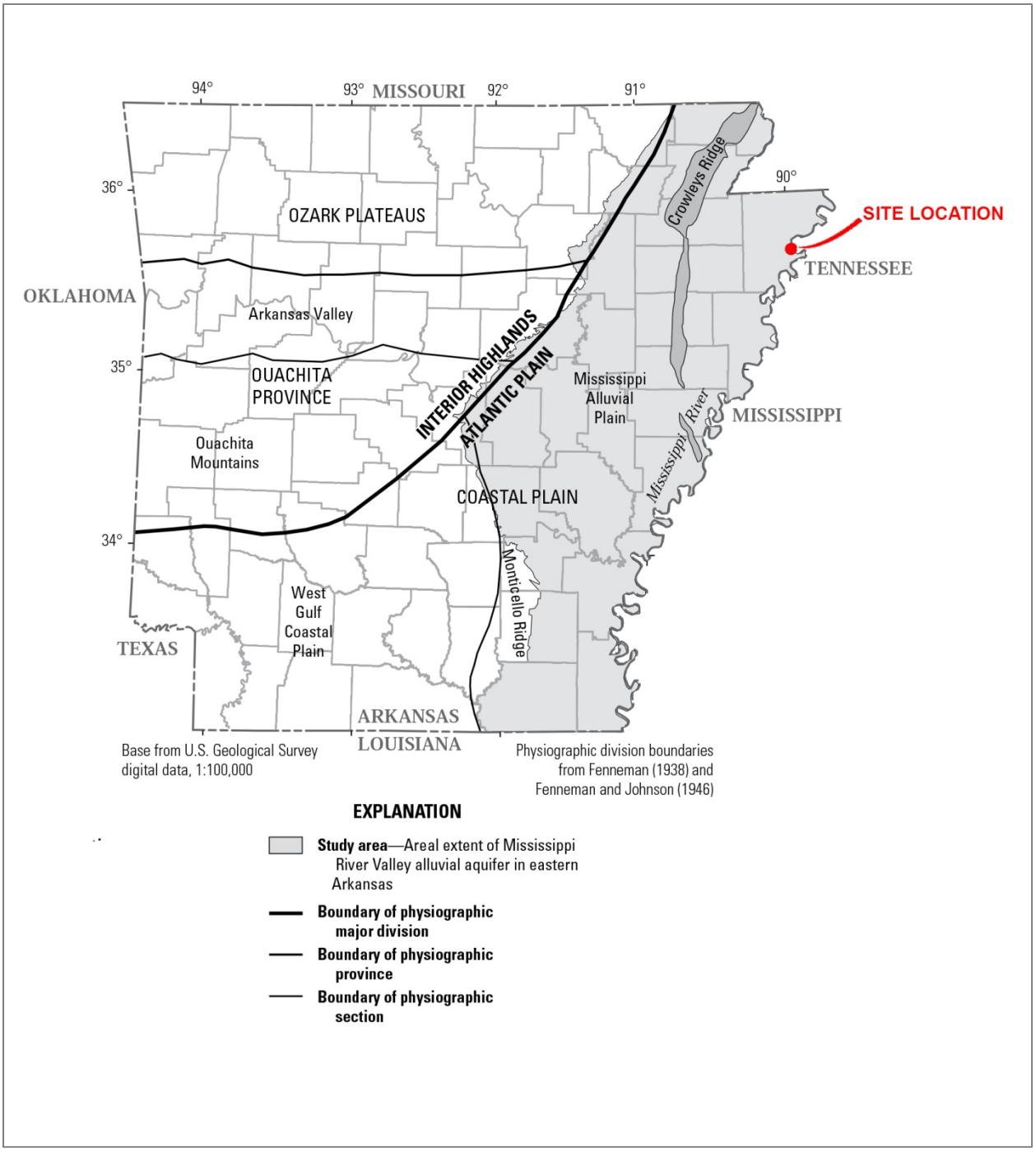

Figure 1.4. Physiographic location, Plum Point Energy Station (adapted from Schrader 2015).

1.4 Site Hydrogeology

A detailed site investigation was performed in 2001 as part of the ADEQ permit application for the landfill. The findings from the investigation were submitted to ADEQ by Genesis Environmental Consulting, Inc. (GEC), in a geotechnical and hydrogeological investigation (GHI) report (GEC 2001). Findings from the GHI indicate that locally, the local confining unit above the alluvial aquifer ranges from 0 ft to over 30 ft thick, with an average thickness of 15 ft. At the site, this confining unit is comprised of brown to grey clay, silty clay, and sandy clays. Underlying the confining unit are fine- to coarse-grained sands of the alluvial aquifer, with fine- to coarse-grained gravel encountered at depth. Based on one deep boring, completed to a depth of 200 ft below ground surface (bgs), the coarse-grained aquifer materials reach a depth of 190 ft bgs in the vicinity of the landfill.

Laboratory geotechnical testing of confining unit soils indicate a vertical permeability ranging from 6.7×10^{-4} centimeters per second (cm/s) to 3.7×10^{-8} cm/s. Field results from one aquifer pumping test and multiple aquifer slug tests indicate that the uppermost alluvial aquifer material has an average hydraulic conductivity of 1.09×10^{-2} cm/s (GEC 2001). The GHI reported an effective porosity for the aquifer of 27% (GEC 2001), which agrees with published values ranging from 10% to 30% for similar aquifer materials (EPA 1998, Yu et al. 2015).

The direction of groundwater flow at the landfill is variable and changes from eastward to westward on a seasonal basis (FTN 2017a). The direction of flow is most likely to be heavily influenced by the river stage the adjacent Mississippi River (Kresse et al. 2014).

1.5 General Groundwater Quality

Regionally, groundwater in the alluvial aquifer is a calcium-bicarbonate water type with sodium, magnesium, chloride, sulfate, silica, and iron comprising the majority of the remaining dissolved ions (Kresse et al. 2014). Elevated concentrations of trace metals including iron, manganese, and arsenic are ubiquitous in the alluvial aquifer and thought to be elevated due to the presence of carbonaceous material within the aquifer that drives redox-sensitive parameters to dissolve in groundwater (Kresse and Fazio 2003, Gonthier 2003, Kresse and Clark 2008, Welch et al. 2009, Kresse et al. 2014). Concentrations of most parameters vary widely both

laterally and vertically in the aquifer (Kresse et al. 2014). Groundwater at the top of the aquifer is generally influenced by the quality of natural recharge (e.g., precipitation and surface waterbodies) and anthropogenic activity. Conversely, groundwater quality at the base of the aquifer is influenced heavily by the underlying confining formation (Kresse et al. 2014).

2.0 MONITORING NETWORK AND SCHEDULE

The following sections describe the current certified monitoring well network, changes made to the network during 2017, sampling schedule, network maintenance, sampling methodology, and required laboratory analyses.

2.1 Monitoring Well Network

The certified groundwater monitoring network for the CCR rule includes the 10 monitoring wells shown on Figure 2.1. The wells are constructed of 2-inch, Schedule 40 polyvinyl chloride (PVC) pipe, with 10-ft slotted well screens. A summary of well construction details is included in Table 2.1.

Table 2.1. Summary of well construction details.

Well Number	Well Installation Date	Ground Surface Elevation (ft NAVD)[a]	Measuring Point Elevation[b] (ft NAVD)	Total Depth (ft below measuring point)	Screened Interval (ft NAVD)
MW-101	4/9/2001	239.4	242.75	33.6	219.2-209.2
MW-102	4/9/2001	240.5	243.99	30.2	223.8-213.8
MW-103	9/26/2007	240.5	243.25	32.8	220.5-210.5
MW-108	4/11/2001	241.8	245.11	32.4	222.7-212.7
MW-113	4/07/2009	241.5	244.63	35.9	223.7-208.7
MW-115	9/25/2007	240.4	243.55	33.0	220.6-210.7
MW-116	6/23/2015	239.3	243.97	31.9	222.5-212.5
MW-117	6/24/2015	239.4	242.53	34.2	218.5-208.5
MW-118	6/24/2015	238.0	241.23	31.4	220.2-210.2
MW-119	10/6/2016	243.6	246.53	35.4	221.5-211.5

Notes:
a. North American Vertical Datum of 1988.
b. Measuring point is the surveyed and marked point on the top of casing (TOC) of each monitoring well.

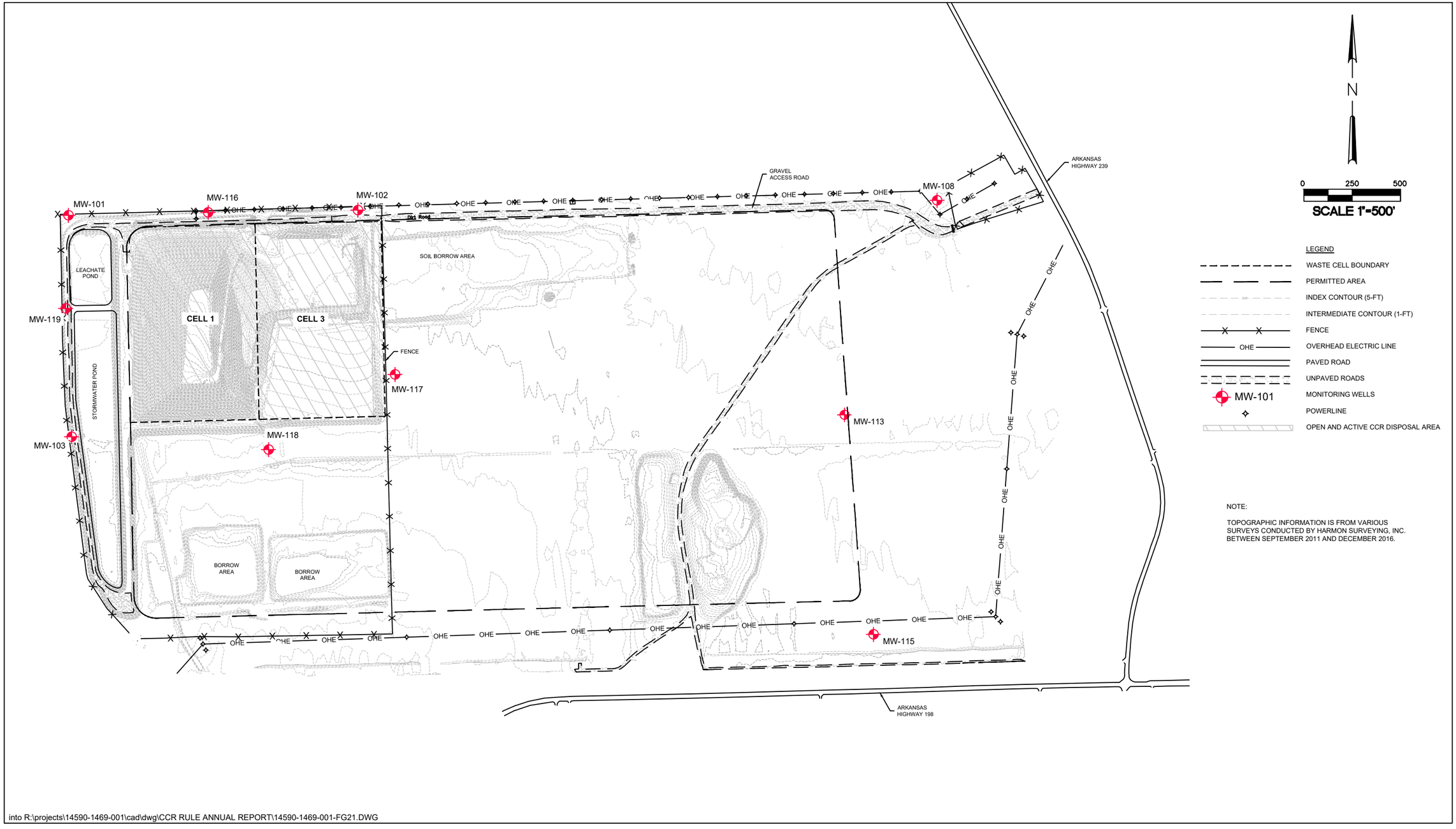

Figure 2.1. Monitoring well locations, Plum Point Energy Station.

Each monitoring well is screened in the alluvial aquifer, the uppermost aquifer in the vicinity of the landfill. The direction of groundwater flow beneath the site is seasonally variable. As a result, there is not a hydraulically upgradient location with respect to Cell 1 and Cell 3. As allowed by §257.91(a)(1), the groundwater program utilizes wells for background water quality that are not hydraulically upgradient of the CCR management area. Monitoring wells MW-108, MW-113, and MW-115 (Figure 2.1) are used for this purpose because they are positioned outside the potential zone of impact from Cell 1 and Cell 3. The rationale for this is based on the age of the landfill, the estimated maximum rate of groundwater flow, and the distance of MW-108, MW-113, and MW-115 from the CCR management area (FTN 2017a).

2.2 Network Improvements During 2017

All of the 10 monitoring wells in the certified network were installed prior to 2017. No new wells were installed and none of the existing wells were altered or abandoned during 2017.

2.3 Sampling Schedule

In accordance with the CCR rule and the landfill's groundwater sampling and analysis plan (GWSAP), detection monitoring is scheduled to occur semiannually. Monitoring wells in the network that are sampled on a semiannual frequency for detection monitoring are listed in Table 2.2. The first detection monitoring event for the groundwater program was conducted from September 19 through 20, 2017, for all wells with the following exceptions, which are discussed below:

- Detection monitoring was not conducted for wells MW-108, MW-113, and MW-119;
- Detection monitoring at MW-116 was not performed for sulfate; and

Based on statistical evaluation of the September 2017 detection monitoring data, a verification sampling event was performed on December 11, 2017, as discussed in Section 4.0. The next semiannual detection monitoring events are scheduled to occur during April and October of 2018.

Table 2.2. Monitoring well sampling frequency during 2018.

Monitoring Well	Sampling Program		Sampling Frequency		Scheduled Sampling Events, 2018			
	Detection	Background	Semiannual	Quarterly	January	April	July	October
MW-101	X					X		X
MW-102	X					X		X
MW-103	X					X		X
MW-108	X					X		X
MW-113	X					X		X
MW-115	X					X		X
MW-116	X	X*	X	X*	X	X		X
MW-117	X					X		X
MW-118	X					X		X
MW-119		X			X	X	X	X

*PPSC is collecting further background data for sulfate only. There are sufficient data for statistical evaluation of all other parameters at MW-116.

Background monitoring wells MW-108 and MW-113 were added to the network during January 2016. The initial eight rounds of quarterly sampling to establish the background for these wells was completed during the September 2017 event. Semiannual detection monitoring will begin at these two wells during 2018, in April and October, as shown in Table 2.2.

Monitoring well MW-119 was installed during October 2016 and is still being assessed for background, as shown in Table 2.2. Quarterly background sampling was initiated at this well during January 2017 and will continue through 2018. The first detection monitoring event at this well will occur during the first half of 2019, after eight background data points have been collected.

Monitoring well MW-116 is currently being sampled for additional background data for sulfate only. The first datum for sulfate at this well is an extreme statistical outlier, which, based on the data collected since then, may indicate that the well had not fully stabilized after installation during 2015. PPSC plans to sample this well for additional sulfate data during January and April of 2018 to acquire sufficient background data for statistical analysis during 2018.

2.4 Monitoring Well Operation and Maintenance

The integrity of each monitoring well was inspected prior to commencement of groundwater sampling activities. Well casing, concrete pads, and bollards were inspected for any indications of damage and dedicated sampling equipment was assessed for visible damage. Noted damages and recommended repairs were communicated to PPSC.

2.5 Sampling Methodology

To ensure that monitoring results are an accurate representation of groundwater quality, sample collection follows the guidelines for sample collection, preservation, shipment, chain-of-custody (COC) control, and quality control outlined in the landfill's GWSAP (FTN 2017a). Groundwater sample collection during the current monitoring period was performed in accordance with the landfill's GWSAP and EPA guidelines (Puls and Barcelona 1996). Groundwater was sampled with a Geopump Peristaltic Series II Pump and linear low-density polyethylene tubing. Field parameters were measured during purging and sampling using a Hach 2100P portable turbidity meter and a handheld YSI 556 (MPS) multiparameter instrument fitted with a flow-through cell. Field sampling forms for the current monitoring event are provided in Appendix A.

2.6 Laboratory Analyses

Samples collected for each detection monitoring event are required to be analyzed for the 40 CFR Part 257 appendix III list of parameters provided in Table 2.3. Environmental Science Corporation (ESC) Lab Sciences of Mt. Juliet, Tennessee, provided laboratory services during the detection monitoring period. Samples were analyzed in accordance with EPA's *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (SW-846) (EPA 1986b), or equivalent, and guidelines established by EPA. ESC laboratory reports are included in Appendix B.

Table 2.3. Appendix III parameters for groundwater detection monitoring.

Appendix III to Part 257 – Parameters for Detection Monitoring	
Boron	Sulfate
Calcium	Total dissolved solids (TDS)
Chloride	pH (field-measured)
Fluoride	

3.0 DATA PRESENTATION

This section presents the data collected during the current monitoring event. Water level data are presented in Section 3.1, field-measured groundwater quality data are presented in Section 3.2, laboratory analytical data are presented in Section 3.3, and a review of quality assurance and quality control (QA/QC) measures is presented in Section 3.4.

3.1 Water Level Data

This section presents groundwater level measurements and groundwater flow characteristics determined from these measurements.

3.1.1 Water Level Measurements and Hydrographs

Static water levels were measured in all 10 monitoring wells using a Geotech Keck water level meter on September 19, 2017, prior to conducting any sampling activities. Depth to water was measured to the nearest 0.01 ft from the measuring point (MP) located on the top of casing (TOC) of each well and recorded on the field water level data sheet included in Appendix A. Field water level measurements are tabulated in Table 3.1.

Table 3.1. Water level data, September 19, 2017.

Well ID	MP Elevation (ft NAVD88)	Depth to Water (ft below MP)	Water Elevation (ft NAVD88)
MW-101	242.75	18.54	224.21
MW-102	243.99	20.76	223.23
MW-103	243.25	19.43	223.82
MW-108	245.11	24.31	220.8
MW-113	244.63	22.60	222.03
MW-115	243.55	21.23	222.32
MW-116	243.97	20.55	223.42
MW-117	242.53	19.20	223.33
MW-118	241.23	17.56	223.67
MW-119	246.53	22.49	224.04

Hydrographs depicting water level elevations over time are included in Appendix C. As shown on the hydrographs, peak water levels were measured during April 2016 and July 2017, with low water levels measured during October 2015, October 2016, and January 2017. Within-well water levels fluctuated as much as ±12 ft over the period of record for the CCR rule program.

3.1.2 Direction of Groundwater Flow

Depth-to-water measurements recorded on September 19, 2017, were converted to feet NAVD88 and used to construct the potentiometric surface map shown on Figure 3.1. As shown on Figure 3.1, flow across the landfill was generally to the east for this event.

3.1.3 Rate of Groundwater Flow

The rate of groundwater flow beneath the landfill is estimated based on Darcy's law, modified to account for the open space available for groundwater flow within the aquifer. The resulting equation used to estimate the average linear groundwater velocity, or rate of flow, is shown below (Kuo 1999):

$$V_x = K/n_e(dh/dl)$$

Where: V_x = linear velocity,
K = hydraulic conductivity,
n_e = effective porosity, and
dh/dl = hydraulic gradient.

The hydraulic conductivity (K) and the effective porosity (n_e) of the alluvial aquifer are 1.09×10^{-2} cm/sec and 27%, respectively, based on previous reports (GEC 2001). The hydraulic gradient (dh/dl) is calculated using water level elevations that most closely represent the flow line from upgradient to downgradient across the site.

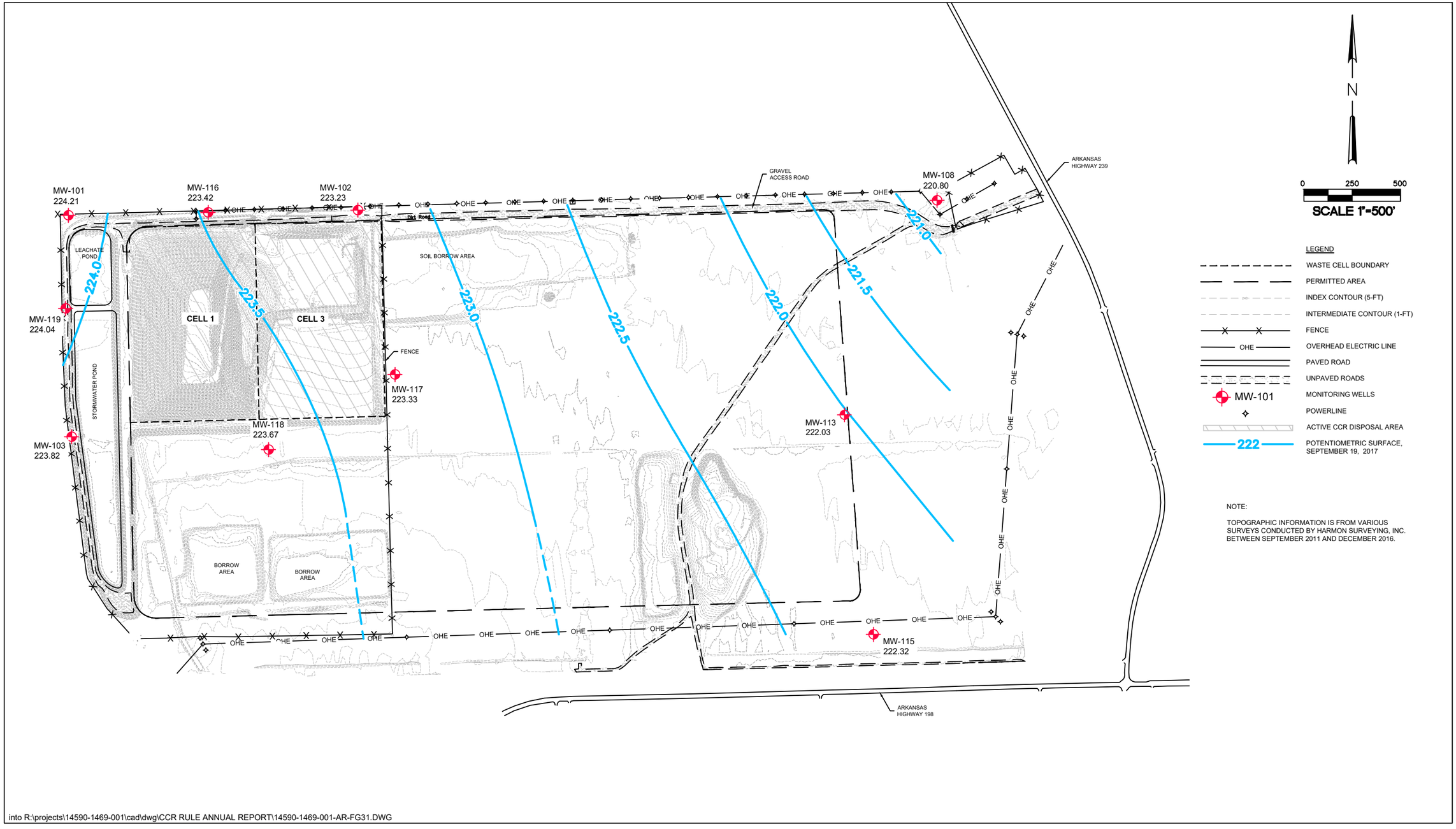

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Figure 3.1. Potentiometric surface map, September 19, 2017.

The hydraulic gradient across the site during this monitoring event was calculated to be 7.1 x 10^{-4} ft/ft using the flow path from MW-119 to MW-108. Based on this value, and the values for K and n_e identified above, V_x was estimated to be approximately 30 ft/year. This value is consistent with historically observed flow rates at the site (FTN 2017a).

3.2 Field-Measured Water Quality Data

Groundwater sampling records for the current monitoring event are included in Appendix A. Field-measured water quality parameters from the current monitoring event are summarized in Table 3.2. A review of the field quality control samples is provided in Section 3.4.

Table 3.2. Field-measured water quality data.

Well	Date	Conductivity (µmhos/cm)	pH (su)	Temperature (C)	Turbidity (NTU)
MW-101	9/20/2017	626	7.0	19.9	0.0
MW-102	9/20/2017	688	6.7	20.1	0.9
MW-103	9/20/2017	781	6.6	19.9	1.5
MW-108	9/19/2017	939	6.7	25.2	1.3
MW-113	9/19/2017	550	6.9	19.7	0.8
MW-115	9/19/2017	678	6.8	19.9	0.6
MW-116	9/20/2017	649	6.7	20.5	0.0
MW-117	9/20/2017	491	6.5	20.3	0.5
MW-118	9/20/2017	491	6.5	20.3	0.2
MW-119	9/20/2017	549	6.8	20.5	0.4

3.3 Laboratory Analytical Data

Laboratory reports for the current monitoring period are included in Appendix B. A review of the laboratory quality control information is provided in Section 3.4. Reported measured values are summarized in Table 3.3 along with field-measured pH. EPA-promulgated maximum contaminant levels (MCLs) and secondary drinking water standards (SWDSs) are shown for comparison purposes. Data from this monitoring event are compiled in the landfill's historical groundwater database for appendix III parameters, included as Appendix D.

Of the appendix III parameters listed in Table 3.3, fluoride is the only parameter with an established MCL. As shown in Table 3.3, none of the measured levels for fluoride exceed the fluoride MCL of 4 mg/L. Parameters with established SDWSs listed in Table 3.3 include chloride, fluoride, sulfate, TDS, and pH. Of these, the reported value for TDS at MW-108 exceeded the SDWS. However, all of the measured values for TDS and other parameters with SDWSs are consistent with historically reported values at the landfill. SDWSs were established for aesthetic properties such as taste, color, and odor and do not have enforceable limits established by the federal National Primary Drinking Water Regulations.

Table 3.3. Summary of appendix III results.

Well ID	Sampling Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH (su)
Water Quality Standard		---	---	**250[a]**	**4[b]/2[a]**	**250[a]**	**500[a]**	**6.5-8.5[a]**
MW-101	9/20/2017	0.0718 J	153	1.57	0.328	9.68	385	7.0
	12/11/2017	---	120	---	---	---	---	6.4
MW-102	9/20/2017	0.0536 J	25.9	4.29	0.194	88.7	454	6.7
MW-103	9/20/2017	0.134 J	141	1.79	0.240	48.2	496	6.6
MW-108	9/19/2017	0.158 J	170	2.06	0.199	43.8	578	6.7
MW-113	9/19/2017	0.0998 J	84.1	2.19	0.117	9.45	326	6.9
MW-115	9/19/2017	0.0609 J	116	0.835 J	0.243	5.37	403	6.8
MW-116	9/20/2017	0.132 J	115	4.16	0.207	94.2	451	6.7
MW-117	9/20/2017	0.106 J	84.2	0.747 J	0.144	6.43	280	6.5
MW-118	9/20/2017	0.104 J	85.1	1.17	0.187	18.5	305	6.5
MW-119	9/20/2017	0.0798 J	92.7	2.30	0.289	38.7	338	6.8
Quality Control Samples								
MW-201[c]	9/19/2017	0.153 J	164	2.34	0.193	44.4	**558**	---
MW-202[c]	9/20/2017	0.0472 J	0.0468 J	<1	<0.1	<5	8.00 J	---
MW-201[d]	12/11/2017	---	120	---	---	---	---	---
MW-202[d]	12/11/2017	---	<1	---	---	---	---	---

Notes: Bold values exceed EPA water quality standard. "J" flag indicates that the analyte was detected below the reporting detection limit; thus the reported value is an estimate.

a. EPA SDWS.
b. EPA MCL.
c. MW-201 was a duplicate of MW-108 for the September 2017 sampling event and MW-202 was an equipment rinsate blank.
d. MW-201 was a duplicate of MW-101 for the December 2017 verification sampling event and MW-202 was an equipment rinsate blank.

3.4 Quality Assurance and Quality Control

A review of laboratory and field QA/QC measures is presented below.

3.4.1 Review of Laboratory Quality Control Samples

Based on a review of the data quality documentation provided by ESC in Appendix B, samples were received by the laboratory in good condition, properly preserved, at the correct temperature, and were analyzed within holding times. The overall quality of the data relative to the contaminants of concern was acceptable and generally met method-specific requirements for precision and accuracy.

3.4.2 Review of Field Quality Control Samples

Field QA/QC samples include field duplicates and field equipment blanks. Field duplicates are two samples taken from the same well and collected as close to each other in time as practical. Data from the duplicate pair are compared to evaluate the level of precision associated with the sampling and analytical methods. Field equipment rinsate blanks are prepared by pouring deionized water over decontaminated sampling equipment. Equipment blank results are used to verify that proper protocols for equipment decontamination were followed in the field. In accordance with the landfill's GWSAP, a minimum of one duplicate sample and one equipment rinsate blank is to be collected per sampling event, or one per 20 groundwater samples collected.

In accordance with the GWSAP, field QA/QC samples were collected in conjunction with groundwater sampling activities for this monitoring period. All QA/QC samples were handled in the same manner as groundwater samples with respect to sample collection, packaging, shipping, preservation, and COC procedures. A review of the field QA/QC samples is provided in the following sections.

3.4.2.1 September 2017 Sampling Event

Field quality control during this monitoring event included the collection of one field duplicate and one equipment rinsate blank. The field duplicate, labeled as MW-201, was taken at monitoring well MW-108. To verify that the duplicate pair showed reasonable precision for analyzed parameters, the relative percent difference (RPD) was calculated for parameters where the detected level was at least five times the laboratory reported detection limit (RDL) and where

neither result was qualified or suspected of contamination. Calculated RPDs were below the quality control limit of 20% for all parameters evaluated, indicating that field methods produced samples with an acceptable level of reproducibility.

Results for the equipment rinsate blank, labeled as MW-202, were all below their respective laboratory RDLs, indicating field decontamination methods were effective. Should detections in a quality control blank occur, groundwater results associated with the blank are flagged with a "B" in the historical database if the groundwater sample result is 10 times or less than the level detected in the blank. EPA guidance (1986a) recommends that detections in quality control blanks not be used to correct groundwater data.

3.4.2.2 December 2017 Sampling Event

Field quality control during this monitoring event included the collection of one field duplicate and one equipment rinsate blank. The field duplicate, labeled as MW-201, was taken at monitoring well MW-101. Calculated RPDs for the duplicate pair were below the quality control limit of 20% for parameters evaluated. Analytical results for the equipment rinsate blank, labeled as MW-202, were all below their respective laboratory RDLs.

4.0 STATISTICAL EVALUATION

This section describes the statistical approach and evaluation of the current detection monitoring data collected during September and December of 2017. Groundwater quality data were evaluated using the statistical software *Sanitas version 9.5*. Statistical analyses of the data were performed in accordance with the landfill's SAP.

4.1 Statistical Program Design

4.1.1 Statistical Approach

The statistical approach for groundwater monitoring at the landfill is described in the facility's SAP and adheres to recommendations in EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*, released in March 2009 (Unified Guidance). Groundwater quality data collected for detection monitoring are evaluated with either an intrawell prediction limit combined with a "1 of 2" retesting strategy or with the Mann-Kendall/Sen's Slope test for trends. The technical basis for selecting these tests is discussed in the facility's SAP. Each test and its appropriate application is briefly discussed below.

A prediction limit tests for the likelihood that a new monitoring value (compliance value) comes from the same population as background data. Prediction limit analysis combined with retesting (verification sampling) is effective at reducing a monitoring program's site-wide false positive rate (SWFPR) and improving the statistical power of the monitoring program. The prediction limit test requires a minimum of 8 to 10 background values that are statistically independent and that exhibit stationarity. Retesting, or verification sampling, is performed if an initial sampling result exceeds a prediction limit. The "1 of 2" retesting strategy requires one verification sample be obtained within the same monitoring period as the initial exceedance. If the measured value in the verification sample also exceeds the prediction limit, then a statistically significant increase (SSI) (or statistically significant decrease [SSD] in the case of pH) is declared.

If data characteristics do not meet the requirements for a prediction limit test, the well-parameter pair is tested using the Mann-Kendall/Sen's Slope test for trends, as recommended by the Unified Guidance. If a statistically significant increasing trend (or statistically significant decreasing trend in the case of pH) is indicated, then this is evidence of possible deteriorating groundwater quality. While there is no explicit retesting strategy for the Mann-Kendall/Sen's Slope test (as there is for prediction limits), retesting can be applied (Cameron 2015).

Background data were evaluated in accordance with the landfill's SAP to determine the appropriate testing strategy for each well-parameter pair. Results of the evaluation are summarized in Appendix E. At this time, all statistically evaluated well-parameter pairs can be tested using an intrawell prediction limit.

4.1.2 Site-Wide False Positive Rate and Statistical Power

The Unified Guidance recommends that detection monitoring programs have adequate statistical power and an SWFPR (alpha) value of 10% over a one-year period of testing. As a result, the semiannual SWFPR is fixed at 5%. The magnitude of the per-test alpha will vary depending on how many statistical tests are required per semiannual evaluation. Input values used to determine the per-test alpha for intrawell prediction limit analyses, combined with a "1 of 2" retesting strategy are listed in Table 4.1.

Table 4.1. Values used to determine test alpha and power curve.

Certified Well Network	
Statistical Test	Intrawell Prediction Limit
Number of Compliance Wells (w)	6
Minimum Background Sample Size (n)	8
Number of Constituents (c)	6
Resample Strategy	1 of 2
Semiannual SWFPR	0.05

Statistical power is inversely related to the SWFPR and is an estimate of the rate at which false negative results will occur. To gauge statistical power, the Unified Guidance recommends

the use of the EPA Reference Power Curve (ERPC) to estimate the ability of any individual test to identify an exceedance above background. Any single statistical test should have the ability to detect an exceedance 55% to 60% of the time at three standard deviations (3σ) above background and 80% to 85% of the time at 4σ above background. Input values for the detection monitoring program's power curve are listed in Table 4.1 and discussed below.

Figure 4.1 depicts the power curve for the well network plotted against the ERPC. This curve shows that any single test is expected to detect exceedances approximately 57% of the time at levels 3σ above background and 92% of the time at levels 4σ above background. Given this comparison, the statistical power of the landfill's detection monitoring program exceeds EPA recommendations.

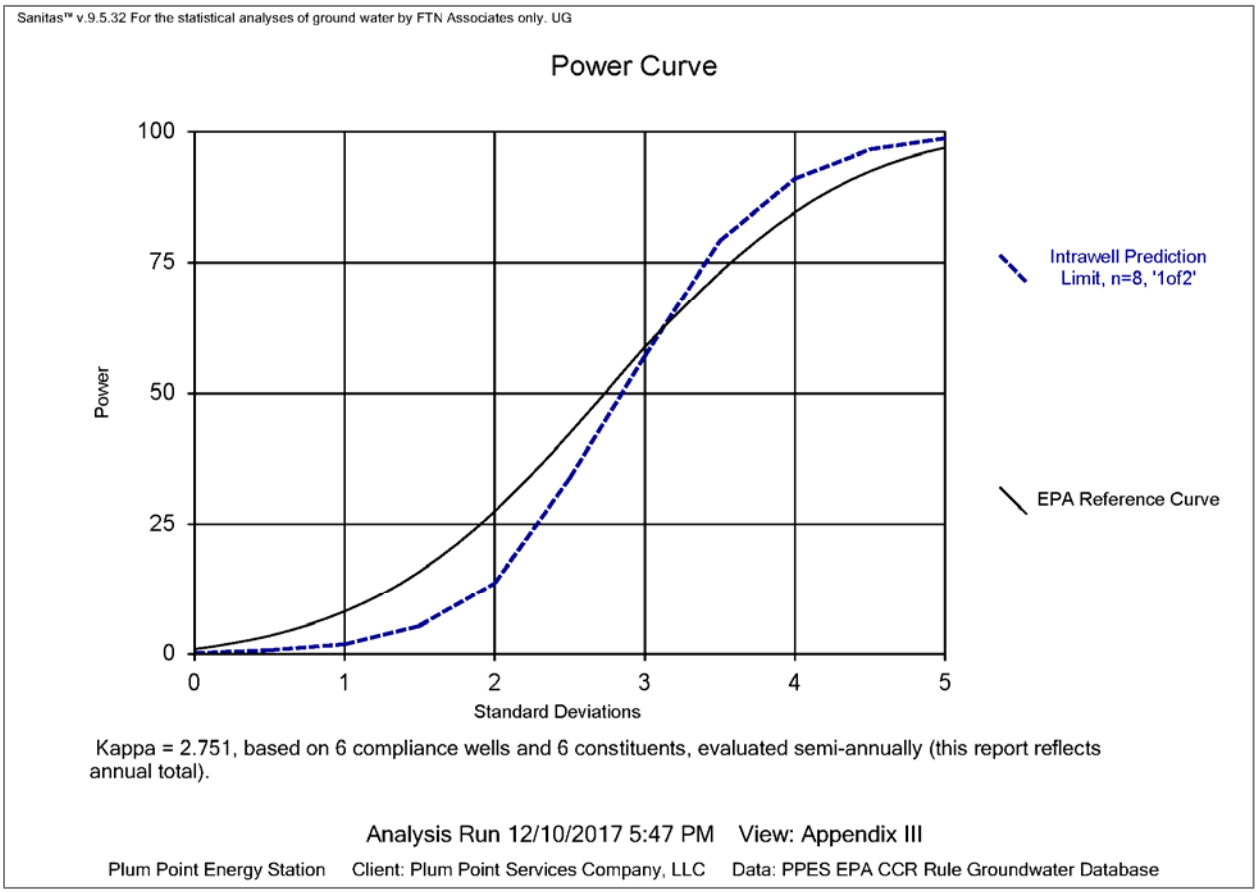

Figure 4.1. ERPC versus landfill power curve for detection monitoring.

4.2 Exploratory Data Analysis

Exploratory data analysis (EDA) includes viewing data graphically to identify apparent trends or excursions from normal ranges. To accomplish this, period-of-record data were screened using time-series plots, box-and-whiskers diagrams, and outlier tests. Time-series plots are used to visualize changes in data over time. Box-and-whiskers diagrams provide a graphic depiction of the mean, median, minimum, maximum, and interquartile range of a data set to assist with visualizing the variation in groundwater quality within and across wells. Outliers tests help identify values that are extremely different from other values in a given data set. Section 4.2.1 summarizes observations made from time-series and box-and-whiskers diagrams. Evaluation for the presence of outliers is discussed in Section 4.2.2. The graphical plots from the EDA evaluation are included in Appendix F.

4.2.1 Time-Series Plots and Box-and-Whiskers Diagrams

The following observations are based on a review of the time-series plots and box-and-whiskers diagrams (Appendix F):

- Boron values are below the laboratory RDL (represented as hollow values on the time-series plots) for all wells for the period of record.
- Calcium, chloride, fluoride, sulfate, and TDS values are variable across the network.
- Measured pH is generally similar across the well network. The July 2016 values look uncharacteristically elevated at MW-102, MW-108, MW-113, MW-115, MW-117, and MW-118 compared to other measurements.

A review of the field data sheets from the July 2016 monitoring event indicates that the pH probe used to measure pH at the wells noted above may have malfunctioned. Due to the limited number of data in background available for statistical analysis, these data were not excluded during this monitoring period. However, rejection of these values may be warranted as future measurements are collected and appended to background, where applicable.

4.2.2 Identification of Outliers

Period-of-record data for statistically evaluated wells were evaluated to identify possible outliers in the September and December 2017 data sets (Appendix F). Dixon's outlier test was applied to data sets with a normal distribution, or to populations that could be mathematically transformed so they have a normal distribution. For data sets that did not have a normal distribution, the non-parametric Tukey's outlier screening was applied. Statistically significant outlier results are included in Appendix F.

Three outliers were identified in the September 2017 data set; the reported value for calcium at MW-101 was statistically elevated compared to the period-of-record data for that well, and calcium at MW-102 and chloride at MW-117 were statistically low. The December 2017 verification data were screened for the presence of outliers excluding the September 2017 data point. No outliers were identified in the December 2017 data set.

4.3 Statistical Evaluation Results

Groundwater quality data from the current monitoring period were statistically evaluated if detected at or above the laboratory RDL. Results detected below the RDL but above a method detection limit ("trace" values) are estimated values and therefore are not statistically evaluated. Trace values are flagged with a "J" in the laboratory reports provided in Appendix B and in the historical database included in Appendix D. Statistical analyses are not performed on non-detect data, which are flagged with a "U" in the laboratory reports (Appendix B) and represented in the historical database as less than (<) the RDL value for the method used (Appendix D).

4.3.1 Intrawell Prediction Limit Analysis

Intrawell prediction limit analyses were performed on all statistically evaluated well-parameter pairs, as identified in Appendix E. Results are summarized in Table 4.2 and graphical plots of the evaluation are included in Appendix G.

One statistically significant result (SSI) was identified in the September 2017 data set; calcium at MW-101. Measurements for all other well-parameter combinations were below calculated intrawell prediction limits. In accordance with the facility's SAP and "1 of 2"

retesting strategy, verification sampling was performed during December 2017 for the SSI. As shown in Table 4.2, the measured value in the verification sample did not exceed the prediction limit, disconfirming the SSI.

Table 4.2. Summary of statistically significant results, intrawell prediction limit analysis.

Well	Parameter	Prediction Limit (mg/L)	September 2017 Observation (mg/L)	December 2017 Verification (mg/L)	SSI Confirmed?
MW-101	Calcium	137.6	153	120	No

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following recommendations and conclusions are based on a review of data for the landfill from the current monitoring period:

1. Groundwater flow across the site was generally to the east based on water level measurements taken for this monitoring event.
2. The SDWS for TDS was exceeded at background well MW-108. Published groundwater quality data indicate that elevated TDS is generally typical for the alluvial aquifer.
3. Of the parameters evaluated, only fluoride has an EPA MCL. None of the measured values in groundwater exceeded the MCL for fluoride.
4. Time-series plots and box-and-whiskers diagrams show variability across the well network for calcium, chloride, fluoride, sulfate, and TDS. Values for boron and pH are relatively similar across all wells, with measured levels of boron being below the laboratory RDL for all wells during the period of record.
5. Three outliers were identified in the September 2017 data set; the reported value for calcium at MW-101 was statistically elevated compared to the period-of-record data for that well, and calcium at MW-102 and chloride at MW-117 were statistically low.
6. No outliers were identified in the December 2017 verification sample data set.
7. A comparison of the statistical power curve for the detection monitoring program to the EPA Reference Power Curve indicates that the detection rates for statistical exceedances meet EPA recommendations.
8. Intrawell prediction limit analysis of the current data set did not indicate any statistically significant exceedances.

Based on the results from the second half of 2017 detection monitoring period, it is recommended that the landfill continue detection monitoring during 2018.

6.0 REFERENCES

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APPENDIX A

Field Sampling Forms

Second Half of 2017 Sampling – September 2017

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-101	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/20/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: Sunny, Scattered Clouds	Air Temp (ºF): 84	Wind: SW 4 mph

Site type	Well casing material				
☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☑ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	2	Well locked? ☑ Yes ☐ No
		Total depth from TOC	feet		
		TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1038	1407	1420	1423	1441	
Depth to Water	feet	18.54	18.56	14.61	18.61	18.61	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters		Pump description	Bailer description
☑ YSI Pro Plus ☐ LaMotte 2020 Turbidimeter		☑ Peristaltic ☐ Submersible	☐ Disposable polyethylene
☐ YSI 556 ☑ Hach 2100P Turbidimeter		☐ Bladder: dedicated	☐ Disposable Teflon
☐ Other: ☐ Other:		☐ Bladder: portable	☐ Disposable PVC

Purge depth	feet	28.6	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1411	1414	1417	1420	1423						Remarks
Purge vol.	gallons					~.75						
Purge rate	mL/min	260	260	260	260	290						
pH	su	7.12	6.99	6.97	6.95	6.95						
Temp.	ºC	21.5	20.6	20.2	19.9	9.9						
Spec. cond.	µS/cm	622	626	628	627	626						
D.O.	mg/L	0.77	0.29	0.23	0.20	0.16						
ORP	mV	40.6	30.2	28.0	27.0	24.1						
Turbidity	NTU	2.08	0.58	0.32	0.17	0.00						
Color/tint		Clear										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-101	9/20/2017	1424	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-102	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/20/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: Scattered clouds	Air Temp (ºF): 95	Wind: SW 5 mph

Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:

Well casing material: ☑ PVC ☐ Steel ☐ Iron ☐ Other:

Well diameter	inches	2	Well locked? ☑ Yes ☐ No
Total depth from TOC	feet		
TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1050	1530		1541	1606	
Depth to Water	feet	20.76	20.83		23.40	23.40	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☑ YSI Pro Plus ☐ YSI 556 ☐ Other: ☐ LaMotte 2020 Turbidimeter ☑ Hach 2100P Turbidimeter ☐ Other:

Pump description: ☑ Peristaltic ☐ Submersible ☐ Bladder: dedicated ☐ Bladder: portable

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	25.2	Well goes dry during purging: ☐ Yes ☑ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	1532	1535	1538	1541							Remarks
Purge vol.	gallons											
Purge rate	mL/min	270	270	270	200							
pH	su	6.79	6.72	6.69	6.69							
Temp.	ºC	22.2	20.1	20.0	20.1							
Spec. cond.	µS/cm	700	692	687	688							
D.O.	mg/L	0.95	0.49	0.45	0.44							
ORP	mV	58.0	38.5	38.9	41.6							
Turbidity	NTU	0.57	0.94	0.71	0.89							
Color/tint		Clear										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-102	9/20/2017	1542	4	0	2 x 1L , 2 x 250 ml plastic
MW-202	9/20/2017	1640	4	0	2 x 1L , 2 x 250 ml plastic (EB)

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-103	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/20/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: Scattered Clouds	Air Temp (ºF): 95	Wind: SW 5 mph

Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:

Well casing material: ☑ PVC ☐ Steel ☐ Iron ☐ Other:

Well diameter	inches	2	Well locked? ☑ Yes ☐ No
Total depth from TOC	feet		
TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1050	1530		1541	1606	
Depth to Water	feet	20.76	20.83		23.40	23.40	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☑ YSI Pro Plus ☐ YSI 556 ☐ Other: ☐ LaMotte 2020 Turbidimeter ☑ Hach 2100P Turbidimeter ☐ Other:

Pump description: ☑ Peristaltic ☐ Submersible ☐ Bladder: dedicated ☐ Bladder: portable

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	27.8	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1235	1238	1241	1244	1247						Remarks
Purge vol.	gallons											
Purge rate	mL/min	300	300	300	250	25						
pH	su	6.63	6.58	6.60	6.61	6.61						
Temp.	ºC	19.9	19.6	19.8	19.8	19.9						
Spec. cond.	µS/cm	745	750	776	778	781						
D.O.	mg/L	0.85	0.36	0.21	0.19	0.17						
ORP	mV	74.1	72.5	70.1	69.6	65.5						
Turbidity	NTU	1.47	4.25	3.42	1.32	1.48						
Color/tint		Clear										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-103	9/20/2017	1250	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-108	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/19/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: Sunny, Scattered Clouds	Air Temp (ºF): 92	Wind: S 7 mph

Site type	Well casing material				
☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☑ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	2	Well locked? ☑ Yes ☐ No
		Total depth from TOC	feet		
		TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	0851	1209	1239	1248	1336	
Depth to Water	feet	24.31	24.30	24.47	24.50	24.50	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☑ YSI Pro Plus ☐ YSI 556 ☐ Other: ☐ LaMotte 2020 Turbidimeter ☑ Hach 2100P Turbidimeter ☐ Other:

Pump description: ☑ Peristaltic ☐ Submersible ☐ Bladder: dedicated ☐ Bladder: portable

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	27.4	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1223	1228	1233	1238	1241	1244	1247				Remarks
Purge vol.	gallons							~.75				
Purge rate	mL/min	100	100	100	150	125	135	135				
pH	su	6.74	6.74	6.74	6.71	6.71	6.72	6.71				
Temp.	ºC	26.4	26.2	26.2	25.3	24.2	24.2	25.2				
Spec. cond.	µS/cm	1053	977	958	958	948	943	939				
D.O.	mg/L	1.00	0.63	0.43	0.35	0.32	0.31	0.31				
ORP	mV	-51.4	-12.7	28.9	46.0	48.7	53.7	56.4				
Turbidity	NTU	525.4	50.75	16.72	4.15	2.86	2.25	1.25				
Color/tint		Tan	Clear									
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-108	9/19/2017	1239	4	0	2 x 1L , 2 x 250 ml plastic
MW-201(Dup)	9/19/2017	1315	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-113	Sampler: EWS
Project Number: 14590-1469-001	Date:	Sampler Organization:
Program (ADEQ or EPA): EPA	9/19/2017	FTN Associates, Ltd.

Site Description

Weather: Sunny, Scattered Clouds	Air Temp (ºF): 95	Wind: S 6 mph

Site type	Well casing material				
☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☑ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	2	Well locked? ☑ Yes ☐ No
		Total depth from TOC	feet		
		TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	0900	1459	1516	1521	1538	
Depth to Water	feet	22.60	22.61	22.62	22.62	22.62	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☑ YSI Pro Plus ☐ YSI 556 ☐ Other: ☐ LaMotte 2020 Turbidimeter ☑ Hach 2100P Turbidimeter ☐ Other:

Pump description: ☑ Peristaltic ☐ Submersible ☐ Bladder: dedicated ☐ Bladder: portable

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	30.9	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1505	1510	1513	1516	1519	1521					Remarks
Purge vol.	gallons						~1					
Purge rate	mL/min	N/R	155	210	215	215	215					
pH	su	6.99	6.86	6.84	6.85	6.84	6.85					
Temp.	ºC	22.1	20.4	20.0	19.5	19.5	19.7					
Spec. cond.	µS/cm	559	546	549	548	549	550					
D.O.	mg/L	4.93	4.15	4.11	3.97	3.74	3.72					
ORP	mV	71.6	87.4	93.2	96.1	97.7	98.8					
Turbidity	NTU	2.30	1.77	1.63	0.85	187	0.84					
Color/tint		Clear	Clear									
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-113	9/19/2017	1522	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-115	Sampler: EWS
Project Number: 14590-1469-001	Date:	Sampler Organization:
Program (ADEQ or EPA): EPA	9/19/2017	FTN Associates, Ltd.

Site Description

Weather: P/C	Air Temp (ºF): 95	Wind: SW 3 mph

Site type	Well casing material				
☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☑ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	2	Well locked? ☑ Yes ☐ No
		Total depth from TOC	feet		
		TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	0911	1355	1418	1426	1443	
Depth to Water	feet	21.23	21.23	21.25	21.25	21.25	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☑ YSI Pro Plus ☐ YSI 556 ☐ Other: ☐ LaMotte 2020 Turbidimeter ☑ Hach 2100P Turbidimeter ☐ Other:

Pump description: ☑ Peristaltic ☐ Submersible ☐ Bladder: dedicated ☐ Bladder: portable

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	28	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1400	1405	1408	1411	1414	1417	1420	1423	1426		Remarks
Purge vol.	gallons									~1.5		
Purge rate	mL/min	200	200	225	225	225	225	230	250	250		
pH	su	7.00	6.80	6.86	6.91	6.84	6.88	6.84	6.83	6.83		
Temp.	ºC	23.5	20.9	20.9	20.6	20.4	20.1	20.0	20.4	19.9		
Spec. cond.	µS/cm	700	669	682	679	679	682	682	677	678		
D.O.	mg/L	5.57	6.80	4.80	4.45	4.44	4.68	4.64	4.87	4.71		
ORP	mV	59.7	80.0	87.0	93.2	96.8	100.2	1.2.5	103.2	104.8		
Turbidity	NTU	3.73	1.82	0.93	0.63	3.69	0.82	0.54	0.82	0.56		
Color/tint		clear										
Odor		none										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-115	9/19/2017	1427	4	0	2 x 1L, 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-116	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/20/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: P/C	Air Temp (ºF): 94	Wind: S 4 mph

Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	Well casing material: ☑ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	2	Well locked? ☑ Yes ☐ No
		Total depth from TOC	feet		
		TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description:
☑ Mark/notch on TOC
☐ North rim of TOC
☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1044	1450		1506	1520	
Depth to Water	feet	20.55	20.60		20.60	20.60	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☑ YSI Pro Plus ☐ LaMotte 2020 Turbidimeter	☑ Peristaltic ☐ Submersible	☐ Disposable polyethylene
☐ YSI 556 ☑ Hach 2100P Turbidimeter	☐ Bladder: dedicated	☐ Disposable Teflon
☐ Other: ☐ Other:	☐ Bladder: portable	☐ Disposable PVC

Purge depth	feet	26.9	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1455	1500	1503	1506							Remarks
Purge vol.	gallons											
Purge rate	mL/min	260	260	300	300							
pH	su	6.82	6.71	6.69	6.69							
Temp.	ºC	21.4	20.2	20.0	20.5							
Spec. cond.	µS/cm	670	656	652	649							
D.O.	mg/L	1.58	1.06	1.18	1.08							
ORP	mV	56.5	58.2	67.6	69.2							
Turbidity	NTU	0.68	0.06	0.14	0.01							
Color/tint		Clear										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-116	9/20/2017	1507	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-117	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/20/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: Sunny, Humid	Air Temp (ºF): 91	Wind: SW 9 mph

Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	Well casing material: ☑ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	2	Well locked? ☑ Yes ☐ No
		Total depth from TOC	feet		
		TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description:
☑ Mark/notch on TOC
☐ North rim of TOC
☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1014	1101	1115	1121	1136	
Depth to Water	feet	19.20	19.29	19.30	19.30	19.30	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☑ YSI Pro Plus ☐ LaMotte 2020 Turbidimeter	☑ Peristaltic ☐ Submersible	☐ Disposable polyethylene
☐ YSI 556 ☑ Hach 2100P Turbidimeter	☐ Bladder: dedicated	☐ Disposable Teflon
☐ Other: ☐ Other:	☐ Bladder: portable	☐ Disposable PVC

Purge depth	feet	29.1	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1106	1109	1112	1115	1118	1121					Remarks
Purge vol.	gallons						~.75					
Purge rate	mL/min	200	200	200	200	250	250					
pH	su	6.80	6.56	6.53	6.51	6.50	6.51					
Temp.	ºC	23.1	20.6	20.7	20.7	20.7	20.3					
Spec. cond.	µS/cm	499	495	493	492	493	491					
D.O.	mg/L	4.29	3.61	3.54	3.50	3.51	3.50					
ORP	mV	108.2	122.1	126.7	132.6	133.3	133.7					
Turbidity	NTU	1.67	0.82	0.78	0.45	0.30	0.54					
Color/tint		Clear										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-117	9/20/2017	1122	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-118	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/20/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: Scattered clouds	Air Temp (ºF): 91	Wind: SW 9 mph

Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:

Well casing material: ☑ PVC ☐ Steel ☐ Iron ☐ Other:

Well diameter	inches	2	Well locked? ☑ Yes ☐ No
Total depth from TOC	feet		
TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1008	1142	1155	1157	1214	
Depth to Water	feet	17.56	17.64	17.65	17.65	17.65	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☑ YSI Pro Plus ☐ YSI 556 ☐ Other: ☐ LaMotte 2020 Turbidimeter ☑ Hach 2100P Turbidimeter ☐ Other:

Pump description: ☑ Peristaltic ☐ Submersible ☐ Bladder: dedicated ☐ Bladder: portable

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	26.4	Well goes dry during purging: ☐ Yes ☑ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	1145	1148	1151	1154	1157						Remarks
Purge vol.	gallons					~.75						
Purge rate	mL/min	195	230	230	230	250						
pH	su	6.76	6.51	6.48	6.47	6.48						
Temp.	ºC	22.5	20.9	20.3	20.3	20.3						
Spec. cond.	µS/cm	506	495	494	494	491						
D.O.	mg/L	3.41	2.76	2.69	2.58	2.48						
ORP	mV	99.9	113.8	115.5	116.4	115.8						
Turbidity	NTU	0.51	1.10	1.05	0.08	0.17						
Color/tint		Clear										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-118	9/20/2017	1158	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print):	Elizabeth Studebaker	Sampler Signature:	Transcribed by AJP

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-119	Sampler: EWS
Project Number: 14590-1469-001	Date: 9/20/2017	Sampler Organization: FTN Associates, Ltd.
Program (ADEQ or EPA): EPA		

Site Description

Weather: Scattered clouds	Air Temp (ºF): 94	Wind: Strong Wind

Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:

Well casing material: ☑ PVC ☐ Steel ☐ Iron ☐ Other:

Well diameter	inches	2	Well locked? ☑ Yes ☐ No
Total depth from TOC	feet		
TOC below/above ground	feet		

Damages/repairs needed: none

Water Level Data

Measuring point description: ☑ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☑ Other: Keck 100 ft

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1008	1323	1338	1342	1359	
Depth to Water	feet	22.49	22.52	22.53	22.53	22.53	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☑ YSI Pro Plus ☐ YSI 556 ☐ Other: ☐ LaMotte 2020 Turbidimeter ☑ Hach 2100P Turbidimeter ☐ Other:

Pump description: ☑ Peristaltic ☐ Submersible ☐ Bladder: dedicated ☐ Bladder: portable

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	30	Well goes dry during purging: ☐ Yes ☑ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1330	1333	1336	1339	1342						Remarks
Purge vol.	gallons					~1						
Purge rate	mL/min	250	250	225	225	255						
pH	su	3.88	6.84	6.81	6.78	6.78						
Temp.	ºC	21.7	21.2	20.8	20.2	20.5						
Spec. cond.	µS/cm	522	538	545	547	549						
D.O.	mg/L	0.62	0.26	0.21	0.19	0.18						
ORP	mV	43.9	37.6	36.6	37.7	36.6						
Turbidity	NTU	1.76	1.07	0.40	0.44	0.44						
Color/tint		Clear										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-119	9/20/2017	1343	4	0	2 x 1L , 2 x 250 ml plastic

Sampler's Name (print): Elizabeth Studebaker	Sampler Signature: Transcribed by AJP

Verification Sampling – December 2017

Groundwater Sampling Record
PPES – EPA Sampling Program

Facility: Plum Point Energy Station	Site ID: MW101	Sampler: MCC
Project Number: 14590-1469-001	Date: 12/11/17	Sampler Organization: FTN

Site Description

Weather: PC	Air Temp (°F): 67	Wind: SW @ 22

Site type:
- ☒ Monitoring Well
- ☐ Production Well
- ☐ Irrigation Well
- ☐ Other:
- ☐ Extraction Well
- ☐ Borehole
- ☐ Spring

Well casing material:
- ☒ PVC
- ☐ Steel
- ☐ Iron
- ☐ Other:

Well diameter	inches	2	Well locked? (Yes) No
Total depth from TOC	feet		
TOC below/above ground	feet		

Damages/repairs needed:

Water Level Data

Measuring point description:
- ☒ Mark/notch on TOC
- ☐ North rim of TOC
- ☐ Other:

Water level meter: Heron Dipper-T Slope Water Level Indicator Other: Solinst #2

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1345	1401	1422	1439	
Depth to Water	feet		21.44	21.44	21.44	21.44	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:
- ☐ Hydrolab MiniSonde
- ☐ Hydrolab DataSonde
- ☒ Other: YSI PRO
- ☐ LaMotte 2020 Turbidimeter
- ☒ Hach 2100P Turbidimeter
- ☐ Other:

Pump description:
- ☒ Peristaltic
- ☐ Bladder (dedicated / portable)
- ☐ Submersible

Bailer description:
- ☐ Disposable polyethylene
- ☐ Disposable Teflon
- ☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: Yes (No)									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408									
Time	24-hour	1350	1355	1400	1405	1410	1415	1420				Remarks
Purge vol.	gallons											
Purge rate	mL/min	180	180	180	180	180	180	180				
pH	su	6.74	6.61	6.84	6.87	6.91	6.89	6.90				
Temp.	°C	18.9	18.9	18.4	19.0	19.0	19.0	19.0				
Spec. cond.	µS/cm	624	627	627	624	621	618	617				
D.O.	mg/L	1.15	0.46	0.40	0.33	0.29	0.29	0.28				
ORP	mV	31.1	35.2	35.9	36.4	36.1	36.3	36.2				
Turbidity	NTU	6.39	2.06	1.45	1.34	1.11	0.98	0.87				
Color/tint		Clear	→	→	→	→	→	→				
Odor		None	→	→	→	→	→	→				

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW101	12/11/17	1430	1	0	
MW201	12/11/17	1435	1	0	Duplicate
MW202	12/11/17	1445	1	0	Blank

Sampler's Name (print): Michael Clayton	Sampler Signature: Michael Clayton

APPENDIX B

Laboratory Reports

Second Half of 2017 Sampling – September 2017

ANALYTICAL REPORT

December 11, 2017

Plum Point Services Co., LLC

Sample Delivery Group:	L938197
Samples Received:	09/21/2017
Project Number:	14590-1469-001
Description:	Plum Point Energy Station

Report To: Joe Hossley
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Olivia Studebaker
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

MW-101 L938197-01 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 14:24 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024983	1	09/28/17 14:57	09/28/17 14:57	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 01:53	09/29/17 01:53	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:15	ST

MW-102 L938197-02 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 15:42 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024983	1	09/28/17 15:06	09/28/17 15:06	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 02:03	09/29/17 02:03	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:18	ST

MW-103 L938197-03 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 12:50 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024983	1	09/28/17 15:16	09/28/17 15:16	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 02:14	09/29/17 02:14	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:21	ST

MW-108 L938197-04 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/19/17 12:39 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023242	1	09/23/17 13:13	09/23/17 13:38	EG
Wet Chemistry by Method 9056A	WG1024983	1	09/28/17 15:26	09/28/17 15:26	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 02:24	09/29/17 02:24	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:23	ST

MW-113 L938197-05 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/19/17 15:22 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023242	1	09/23/17 13:13	09/23/17 13:38	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 03:30	09/28/17 03:30	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 02:34	09/29/17 02:34	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:26	ST

MW-115 L938197-06 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/19/17 14:27 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023242	1	09/23/17 13:13	09/23/17 13:38	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 04:10	09/28/17 04:10	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 03:14	09/29/17 03:14	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:29	ST

MW-116 L938197-07 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 15:07 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 04:20	09/28/17 04:20	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 03:25	09/29/17 03:25	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:31	ST

MW-117 L938197-08 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 11:22 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 04:30	09/28/17 04:30	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 03:55	09/29/17 03:55	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:34	ST

MW-118 L938197-09 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 11:58 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 05:00	09/28/17 05:00	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 04:05	09/29/17 04:05	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:42	ST

MW-119 L938197-10 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 13:43 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 05:10	09/28/17 05:10	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 04:15	09/29/17 04:15	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:45	ST

MW-201 L938197-11 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/19/17 13:15 | Received date/time: 09/21/17 08:45

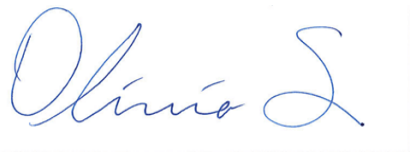
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023242	1	09/23/17 13:13	09/23/17 13:38	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 05:40	09/28/17 05:40	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 04:26	09/29/17 04:26	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:47	ST

MW-202 L938197-12 GW

Collected by: Elizabeth Studebaker | Collected date/time: 09/20/17 16:40 | Received date/time: 09/21/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1023244	1	09/23/17 14:24	09/23/17 14:44	EG
Wet Chemistry by Method 9056A	WG1024984	1	09/28/17 05:50	09/28/17 05:50	DR
Wet Chemistry by Method 9056A	WG1025827	1	09/29/17 04:36	09/29/17 04:36	MAJ
Metals (ICP) by Method 6010B	WG1024204	1	09/27/17 15:43	09/27/17 19:50	ST

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Olivia Studebaker
Technical Service Representative

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	385000		2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1570		51.9	1000	1	09/28/2017 14:57	WG1024983
Fluoride	328		9.90	100	1	09/28/2017 14:57	WG1024983
Sulfate	9680		77.4	5000	1	09/29/2017 01:53	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	71.8	J	12.6	200	1	09/27/2017 19:15	WG1024204
Calcium	153000		46.3	1000	1	09/27/2017 19:15	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	454000		2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	4290		51.9	1000	1	09/28/2017 15:06	WG1024983
Fluoride	194		9.90	100	1	09/28/2017 15:06	WG1024983
Sulfate	88700		77.4	5000	1	09/29/2017 02:03	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	53.6	J	12.6	200	1	09/27/2017 19:18	WG1024204
Calcium	25900		46.3	1000	1	09/27/2017 19:18	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	496000		2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1790		51.9	1000	1	09/28/2017 15:16	WG1024983
Fluoride	240		9.90	100	1	09/28/2017 15:16	WG1024983
Sulfate	48200		77.4	5000	1	09/29/2017 02:14	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	134	J	12.6	200	1	09/27/2017 19:21	WG1024204
Calcium	141000		46.3	1000	1	09/27/2017 19:21	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	578000		2820	10000	1	09/23/2017 13:38	WG1023242

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2060		51.9	1000	1	09/28/2017 15:26	WG1024983
Fluoride	199		9.90	100	1	09/28/2017 15:26	WG1024983
Sulfate	43800		77.4	5000	1	09/29/2017 02:24	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	158	J	12.6	200	1	09/27/2017 19:23	WG1024204
Calcium	170000		46.3	1000	1	09/27/2017 19:23	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	326000		2820	10000	1	09/23/2017 13:38	WG1023242

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2190		51.9	1000	1	09/28/2017 03:30	WG1024984
Fluoride	117		9.90	100	1	09/28/2017 03:30	WG1024984
Sulfate	9450		77.4	5000	1	09/29/2017 02:34	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	99.8	J	12.6	200	1	09/27/2017 19:26	WG1024204
Calcium	84100		46.3	1000	1	09/27/2017 19:26	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	403000		2820	10000	1	09/23/2017 13:38	WG1023242

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	835	J	51.9	1000	1	09/28/2017 04:10	WG1024984
Fluoride	243		9.90	100	1	09/28/2017 04:10	WG1024984
Sulfate	5370		77.4	5000	1	09/29/2017 03:14	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	60.9	J	12.6	200	1	09/27/2017 19:29	WG1024204
Calcium	116000		46.3	1000	1	09/27/2017 19:29	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	451000		2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	4160		51.9	1000	1	09/28/2017 04:20	WG1024984
Fluoride	207		9.90	100	1	09/28/2017 04:20	WG1024984
Sulfate	94200		77.4	5000	1	09/29/2017 03:25	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	132	J	12.6	200	1	09/27/2017 19:31	WG1024204
Calcium	115000		46.3	1000	1	09/27/2017 19:31	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	280000		2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	747	J	51.9	1000	1	09/28/2017 04:30	WG1024984
Fluoride	144		9.90	100	1	09/28/2017 04:30	WG1024984
Sulfate	6430		77.4	5000	1	09/29/2017 03:55	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	106	J	12.6	200	1	09/27/2017 19:34	WG1024204
Calcium	84200		46.3	1000	1	09/27/2017 19:34	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	305000		2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1170		51.9	1000	1	09/28/2017 05:00	WG1024984
Fluoride	187		9.90	100	1	09/28/2017 05:00	WG1024984
Sulfate	18500		77.4	5000	1	09/29/2017 04:05	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	104	J	12.6	200	1	09/27/2017 19:42	WG1024204
Calcium	85100		46.3	1000	1	09/27/2017 19:42	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	338000		2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2300		51.9	1000	1	09/28/2017 05:10	WG1024984
Fluoride	289		9.90	100	1	09/28/2017 05:10	WG1024984
Sulfate	38700		77.4	5000	1	09/29/2017 04:15	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	79.8	J	12.6	200	1	09/27/2017 19:45	WG1024204
Calcium	92700		46.3	1000	1	09/27/2017 19:45	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	558000		2820	10000	1	09/23/2017 13:38	WG1023242

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2340		51.9	1000	1	09/28/2017 05:40	WG1024984
Fluoride	193		9.90	100	1	09/28/2017 05:40	WG1024984
Sulfate	44400		77.4	5000	1	09/29/2017 04:26	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	153	J	12.6	200	1	09/27/2017 19:47	WG1024204
Calcium	164000		46.3	1000	1	09/27/2017 19:47	WG1024204

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dissolved Solids	8000	J	2820	10000	1	09/23/2017 14:44	WG1023244

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	U		51.9	1000	1	09/28/2017 05:50	WG1024984
Fluoride	U		9.90	100	1	09/28/2017 05:50	WG1024984
Sulfate	U		77.4	5000	1	09/29/2017 04:36	WG1025827

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	47.2	J	12.6	200	1	09/27/2017 19:50	WG1024204
Calcium	46.8	J	46.3	1000	1	09/27/2017 19:50	WG1024204

Method Blank (MB)

(MB) R3252431-1 09/23/17 13:38

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000

L938131-06 Original Sample (OS) • Duplicate (DUP)

(OS) L938131-06 09/23/17 13:38 • (DUP) R3252431-4 09/23/17 13:38

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	576000	575000	1	0.174		5

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3252431-2 09/23/17 13:38 • (LCSD) R3252431-3 09/23/17 13:38

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8460000	8400000	96.1	95.5	85.0-115			0.712	5

Method Blank (MB)

(MB) R3252524-1 09/23/17 14:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000

L938131-15 Original Sample (OS) • Duplicate (DUP)

(OS) L938131-15 09/23/17 14:44 • (DUP) R3252524-4 09/23/17 14:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	1440000	1370000	1	5.00		5

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3252524-2 09/23/17 14:44 • (LCSD) R3252524-3 09/23/17 14:44

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Dissolved Solids	8800000	8450000	8390000	96.0	95.3	85.0-115			0.713	5

Method Blank (MB)

(MB) R3253214-1 09/28/17 09:48

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100

L938131-07 Original Sample (OS) • Duplicate (DUP)

(OS) L938131-07 09/28/17 11:38 • (DUP) R3253214-4 09/28/17 12:08

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	3860	3840	1	0		15
Fluoride	247	249	1	1		15

L938131-14 Original Sample (OS) • Duplicate (DUP)

(OS) L938131-14 09/28/17 13:37 • (DUP) R3253214-7 09/28/17 14:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	U	0.000	1	0		15
Fluoride	U	0.000	1	0		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3253214-2 09/28/17 09:58 • (LCSD) R3253214-3 09/28/17 10:08

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Chloride	40000	39300	39400	98	98	80-120			0	15
Fluoride	8000	8000	8020	100	100	80-120			0	15

L938131-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L938131-07 09/28/17 11:38 • (MS) R3253214-5 09/28/17 12:17 • (MSD) R3253214-6 09/28/17 12:27

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	3860	46400	46500	85	85	1	80-120			0	15
Fluoride	5000	247	4560	4560	86	86	1	80-120			0	15

L938131-14 Original Sample (OS) • Matrix Spike (MS)

(OS) L938131-14 09/28/17 13:37 • (MS) R3253214-8 09/28/17 14:17

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	U	43000	86	1	80-120	
Fluoride	5000	U	4390	88	1	80-120	

Method Blank (MB)

(MB) R3253195-1 09/28/17 02:41

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100

L938197-05 Original Sample (OS) • Duplicate (DUP)

(OS) L938197-05 09/28/17 03:30 • (DUP) R3253195-4 09/28/17 03:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	2190	2150	1	2		15
Fluoride	117	113	1	4		15

L938197-10 Original Sample (OS) • Duplicate (DUP)

(OS) L938197-10 09/28/17 05:10 • (DUP) R3253195-7 09/28/17 05:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	2300	2280	1	1		15
Fluoride	289	294	1	2		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3253195-2 09/28/17 02:50 • (LCSD) R3253195-3 09/28/17 03:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Chloride	40000	39100	39200	98	98	80-120			0	15
Fluoride	8000	7980	8010	100	100	80-120			0	15

L938197-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L938197-05 09/28/17 03:30 • (MS) R3253195-5 09/28/17 03:50 • (MSD) R3253195-6 09/28/17 04:00

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	2190	47200	47200	90	90	1	80-120			0	15
Fluoride	5000	117	4660	4660	91	91	1	80-120			0	15

L938197-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L938197-10 09/28/17 05:10 • (MS) R3253195-8 09/28/17 05:30

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	2300	44500	84	1	80-120	
Fluoride	5000	289	4560	85	1	80-120	

Method Blank (MB)

(MB) R3253292-1 09/28/17 23:31

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Sulfate	U		77.4	5000

L938131-14 Original Sample (OS) • Duplicate (DUP)

(OS) L938131-14 09/29/17 00:52 • (DUP) R3253292-4 09/29/17 01:02

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Sulfate	U	0.000	1	0		15

L938197-05 Original Sample (OS) • Duplicate (DUP)

(OS) L938197-05 09/29/17 02:34 • (DUP) R3253292-6 09/29/17 02:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Sulfate	9450	9410	1	0		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3253292-2 09/28/17 23:41 • (LCSD) R3253292-3 09/28/17 23:51

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Sulfate	40000	39600	39700	99	99	80-120			0	15

L938131-14 Original Sample (OS) • Matrix Spike (MS)

(OS) L938131-14 09/29/17 00:52 • (MS) R3253292-5 09/29/17 01:12

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	ug/l	ug/l	ug/l	%		%	
Sulfate	50000	U	43000	86	1	80-120	

L938197-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L938197-05 09/29/17 02:34 • (MS) R3253292-7 09/29/17 02:54 • (MSD) R3253292-8 09/29/17 03:04

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Sulfate	50000	9450	55000	55000	91	91	1	80-120			0	15

Method Blank (MB)

(MB) R3252921-1 09/27/17 18:39

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3252921-2 09/27/17 18:42 • (LCSD) R3252921-3 09/27/17 18:44

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	942	940	94	94	80-120			0	20
Calcium	10000	9550	9680	95	97	80-120			1	20

L938186-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L938186-01 09/27/17 18:47 • (MS) R3252921-5 09/27/17 18:52 • (MSD) R3252921-6 09/27/17 18:54

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	64.1	983	992	92	93	1	75-125			1	20
Calcium	10000	99000	105000	105000	55	55	1	75-125	V	V	0	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

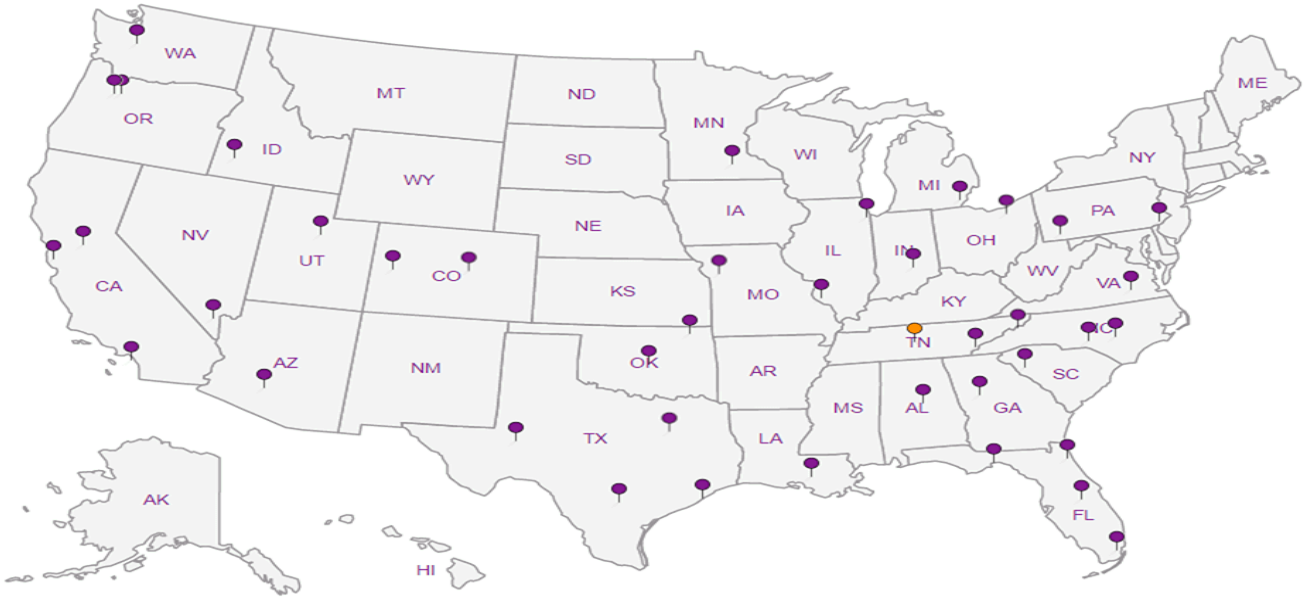
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Plum Point Services Co., LLC

2739 SCR 623
Osceola, AR 72370

Billing Information:
Accounts Payable
P.O. Box 567
Osceola, AR 72370

Pres Chk

Report to: **Joe Hossley**

Email To: **joe.hossley@nrg.com, dld@ftn-assoc.com, hlf@ftn-assoc.com**

Project Description: **Plum Point Energy Station**

City/State Collected:

Phone: **870-815-1248**
Fax:

Client Project # **14590-1469-001**

Lab Project # **NAESOAR-PLUMPOINT**

Collected by (print): Elizabeth Studebaker

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Metals 250mlHDPE-HNO3	<2 V								Remarks	Sample # (lab only)
MW-101	G	GW		9/20/17	1424	2	X	X										-01
MW-102		GW		9/20/17	1542	2	X	X										-02
MW-103		GW		9/20/17	1250	2	X	X										-03
MW-108		GW		9/19/17	1239	2	X	X										-04
MW-113		GW		9/19/17	1522	2	X	X										-05
MW-115		GW		9/19/17	1427	2	X	X										-06
MW-116		GW		9/20/17	1507	2	X	X										-07
MW-117		GW		9/20/17	1122	2	X	X										-08
MW-118		GW		9/20/17	1158	2	X	X										-09
MW-119		GW		9/20/17	1343	2	X	X										-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS / __ FedEx __ Courier __ _____

Tracking # 7474 0928 0730

Chain of Custody Page 1 of 2

ESC LABORATORY SCIENCES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L938197

Table B234

Acctnum: NAESOAR
Template: T106048
Prelogin: P617571
TSR: 134 - Mark W. Beasley
PB: MW 9-6-17
Shipped Via: FedEx Ground

Sample Receipt Checklist
COC Seal Present/Intact: __NP / Y __N
COC Signed/Accurate: Y __N
Bottles arrive intact: Y __N
Correct bottles used: Y __N
Sufficient volume sent: Y __N
If Applicable
VOA Zero Headspace: Y __N
Preservation Correct/Checked: Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/20/17	1830	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 0.9 °C Bottles Received: 24

Date: 9/21/17 Time: 0845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Plum Point Services Co., LLC
2739 SCR 623
Osceola, AR 72370

Billing Information:
Accounts Payable
P.O. Box 567
Osceola, AR 72370

Pres Chk

Report to: Joe Hossley

Email To: joe.hossley@nrg.com, dld@ftn-assoc.com, hlf@ftn-assoc.com

Project Description: Plum Point Energy Station

City/State Collected:

Phone: 870-815-1248
Fax:

Client Project # 14590-1469-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Elizabeth Studebaker

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Metals 250mlHDPE-HNO3									
								< 2									
MW-201	G	GW		9/19/17	1315	2	X	X									-11
MW-202	G	GW		~~9/19/17~~ 9/20/17	1640	2	X	X									-12
~~———~~		~~GW~~				~~2~~	~~X~~	~~X~~	ES								
~~———~~		GW				2	X	X	ES								

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

ESC LABORATORIES
a subsidiary of Accelerated
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L938197

Table #

Acctnum: NAESOAR
Template: T106048
Prelogin: P617571
TSR: 134 - Mark W. Beasley
PB: CMG-6-17
Shipped Via: FedEX Ground

Remarks | Sample # (lab only)

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS / FedEx __ Courier __ _____

Tracking # 7474 0928 0730

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes (No) HCL / MeoH TBR	
	9/20/17	1830			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.9 °C Bottles Received: 24	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 9/21/17 Time: 0845	Hold: / Condition: NCF / OK

Verification Sampling – December 2017

ANALYTICAL REPORT

December 13, 2017

Plum Point Services Co., LLC

Sample Delivery Group:	L956718
Samples Received:	12/12/2017
Project Number:	14590-1469-001
Description:	Plum Point Energy Station

Report To: Joe Hossley
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

MW-101 L956718-01 GW

Collected by: Michael Clayton
Collected date/time: 12/11/17 14:30
Received date/time: 12/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1051830	1	12/12/17 17:31	12/13/17 01:12	TRB

MW-201 L956718-02 GW

Collected by: Michael Clayton
Collected date/time: 12/11/17 14:35
Received date/time: 12/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1051830	1	12/12/17 17:31	12/13/17 01:14	TRB

MW-202 L956718-03 GW

Collected by: Michael Clayton
Collected date/time: 12/11/17 14:45
Received date/time: 12/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1051830	1	12/12/17 17:31	12/13/17 01:17	TRB

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Technical Service Representative

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	120000		46.3	1000	1	12/13/2017 01:12	WG1051830

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	120000		46.3	1000	1	12/13/2017 01:14	WG1051830

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	U		46.3	1000	1	12/13/2017 01:17	WG1051830

Method Blank (MB)

(MB) R3272457-1 12/13/17 00:00

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Calcium	U		46.3	1000

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3272457-2 12/13/17 00:02 • (LCSD) R3272457-3 12/13/17 00:05

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Calcium	10000	10300	10200	103	102	80-120			0.587	20

L956138-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L956138-01 12/13/17 00:08 • (MS) R3272457-5 12/13/17 00:13 • (MSD) R3272457-6 12/13/17 00:15

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	135000	143000	143000	80.1	80	1	75-125			0.0124	20

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Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

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Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

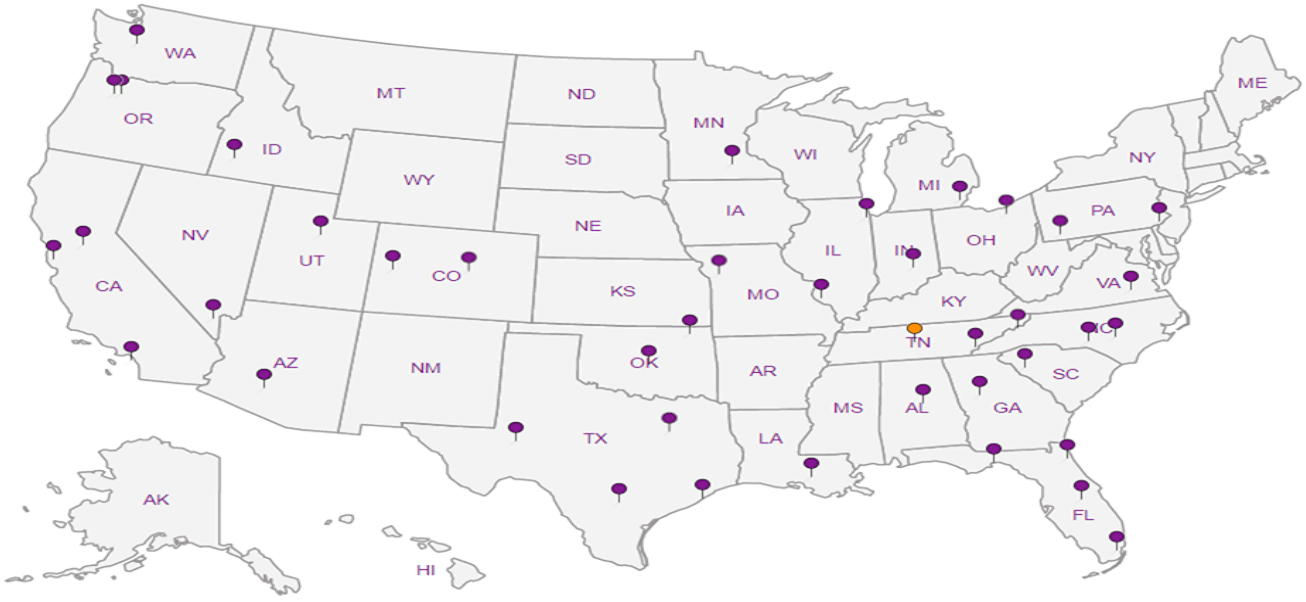
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Page 1 of 1

Plum Point Services Co., LLC

2739 SCR 623
Osceola, AR 72370

Billing Information:
Accounts Payable
P.O. Box 567
Osceola, AR 72370

Report to: Joe Hossley

Email To: joe.hossley@nrg.com, dld@ftn-assoc.com, hlf@ftn-assoc.com

Project Description: Plum Point Energy Station

City/State Collected: Osceola AR

Phone: 870-815-1248
Fax:

Client Project # 14590-1469-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Michael Clayton

Site/Facility ID #

P.O. #

Collected by (signature): Michael Clayton

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
✓ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CAICP 250mlHDPE-HNO3									Remarks	Sample # (lab only)
						Pres Chk	✓										
MW-101	Grab	GW		12/11/17	1430	1	X										-01
MW-201	↓	GW		12/11/17	1435	1	X										-02
MW-202		GW		12/11/17	1445	1	X										-03
		GW				1	X										
		GW				1	X										

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 4142 5224 2790

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Michael Clayton	12/11/17	1600	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			HLF 867

Trip Blank Received: Yes / (No) HCL / MeoH TBR

Temp: 3.2 °C Bottles Received: 3

Date: 12/12/17 Time: 845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Chain of Custody

ESC LABORATORIES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 956718

Tab A017

Acctnum: NAESOAR
Template: T130326
Prelogin: P627990
TSR: 134 - Mark W. Beasley
PB: 11-27-17G
Shipped Via: FedEx Ground

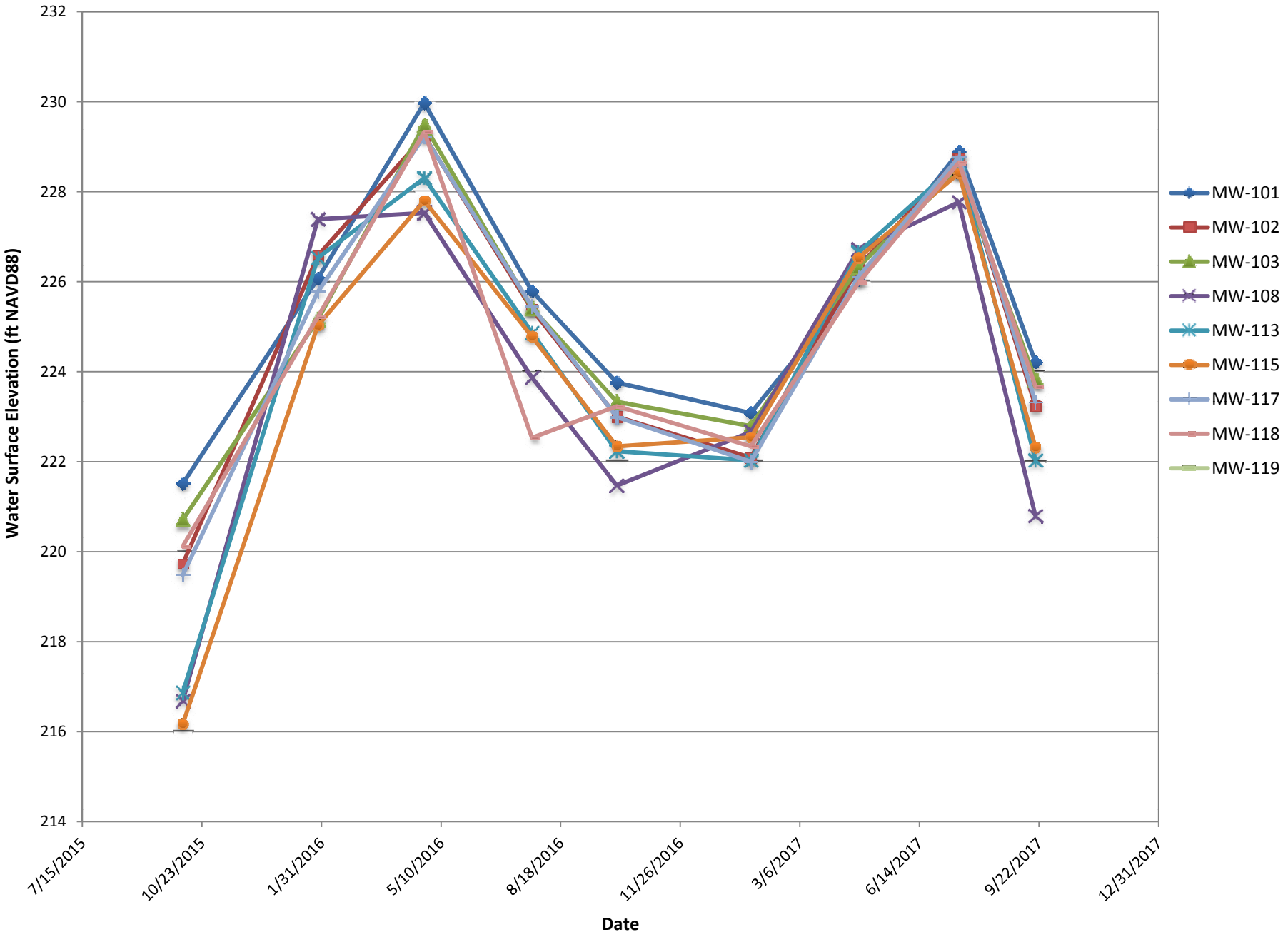
APPENDIX C

Water Elevation Data and Hydrographs

Historical water levels.

Well ID	Water Level Elevation (ft NAVD88)								
	10/7/2015	1/28/2016	4/26/2016	7/25/2016	10/4/2016	1/24/2017	4/24/2017	7/17/2017	9/19/2017
MW-101	221.51	226.07	229.97	225.79	223.76	223.08	226.04	228.89	224.21
MW-102	219.73	226.58	229.24	225.38	223.00	222.09	226.33	228.74	223.23
MW-103	220.71	225.16	229.48	225.41	223.33	222.79	226.33	228.48	223.82
MW-108	216.68	227.39	227.53	223.87	221.47	222.66	226.71	227.77	220.80
MW-113	216.87	226.53	228.30	224.87	222.23	222.03	226.65	228.65	222.03
MW-115	216.17	225.03	227.80	224.78	222.34	222.54	226.53	228.41	222.32
MW-116	220.40	226.14	229.43	225.33	223.10	222.12	226.07	228.53	223.42
MW-117	219.48	225.78	229.23	225.45	222.99	222.00	226.11	228.77	223.33
MW-118	220.12	225.22	229.33	222.53	223.23	222.34	225.98	228.65	223.67
MW-119	*	*	*	*	*	223.14	226.22	228.86	224.04

*Monitoring well not installed yet.


232
230
228
226
224
222
220
218
216
214
Water Surface Elevation (ft NAVD88)
7/15/2015
10/23/2015
1/31/2016
5/10/2016
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
Date
MW-101
MW-102
MW-103
MW-108
MW-113
MW-115
MW-117
MW-118
MW-119

APPENDIX D

Appendix III Groundwater Quality Historical Database

Well ID	Date	Boron (mg/l)	Calcium (mg/l)	Chloride (mg/l)	Fluoride (mg/l)	Sulfate (mg/l)	TDS (mg/l)	pH (su)
MW-101	downgradient							
	10/7/2015	0.0858(J)	116	3.02	0.281	12.4	401	6.4
	1/28/2016	0.114(J)	117	2.74	0.274	11.4	421(B)	6.6
	4/27/2016	0.105(J)	120	6.61	0.283	19.9	437	6.3
	7/26/2016	0.0877(J)	115	3.41	0.241	12.8	448(B)	6.6
	10/6/2016	0.089(J)	110	1.93	0.267	8.44	387	6.2
	1/25/2017	0.0681(J)	109	1.67	0.3	11.5	381	6.7
	4/26/2017	<1.8	80.5	2.14	0.273	9.57	407	6.9
	7/20/2017	0.0903(BJ)	110	1.98	0.331	13.5	414	6.7
	9/20/2017	0.0718(J)	153	1.57	0.328	9.68	385	7
	12/11/2017	n/a	120	n/a	n/a	n/a	n/a	6.4
MW-102	downgradient							
	11/10/2015	0.0818(J)	121	5.53	0.16	82.3	434	6.8
	1/28/2016	0.125(J)	123	5.33	0.157	85.9	470	6.8
	4/27/2016	0.135(J)	131	6.32	0.154	103	478	6.7
	7/26/2016	0.122(J)	122	5.42	0.15	88.1	474(B)	7.7
	10/6/2016	0.0999(J)	120	5.18	0.158	83.2	458	6
	1/25/2017	0.0938(J)	118	4.5	0.182	88.8	435	5.8
	4/27/2017	0.12(J)	121	4.85	0.175	91	504	6.7
	7/19/2017	0.108(BJ)	126	4.28	0.207	85.4	461	6.6
	9/20/2017	0.0536(J)	25.9	4.29	0.194	88.7	454	6.7
MW-103	downgradient							
	10/7/2015	0.119(J)	168	3.92	0.198	95	591	6.5
	1/28/2016	0.149(J)	153	2.66	0.188	60.1	539(B)	6.3
	4/27/2016	0.166(J)	147	4.06	0.17	62	517	6.5
	7/26/2016	0.142(J)	148	3.63	0.163	60.9	539(B)	6.3
	10/6/2016	0.137(J)	152	2.69	0.201	54.5	518	6.3
	1/26/2017	0.138(J)	135	2.82	0.223	52	477	6.8
	4/27/2017	0.137(J)	136	2.89	0.2	49.8	513	6.5
	7/20/2017	0.124(BJ)	136	2.28	0.24	52.2	506	6.6
	9/20/2017	0.134(J)	141	1.79	0.24	48.2	496	6.6
MW-108	upgradient							
	1/28/2016	0.164(J)	166	5.34	0.158	44.4	555	6.7
	4/28/2016	0.194(J)	178	2.81	0.134	45.2	638(B)	6.6
	7/26/2016	0.158(J)	144	2.43	0.144	39.3	475(B)	9.8
	10/6/2016	0.174(J)	158	2.48	0.169	41.4	539	6.2
	1/26/2017	0.164(J)	154	2.64	0.202	51.6	513	7
	4/25/2017	0.147(J)	151	3.1	0.167	45.7	488	6.8
	7/18/2017	0.162(J)	167	3.03	0.191	39.4	576	6.7
	9/19/2017	0.158(J)	170	2.06	0.199	43.8	578	6.7
MW-113	upgradient							
	1/28/2016	0.102(J)	84.7	3.61	0.0808(J)	11	320(B)	6.6
	4/28/2016	0.127(J)	72.5	2.05	0.0604(J)	8.99	321(B)	6.9
	7/26/2016	0.144(J)	69.8	0.856(J)	0.057(J)	4.97(J)	281(B)	8.1
	10/5/2016	0.0963(J)	84.7	2.63	0.0827(J)	9.51	323	6
	1/26/2017	0.0891(J)	88.9	5.81	0.0901(J)	13.3	332	7.1

J: Detected below the laboratory RDL; value is an estimate.

Well ID	Date	Boron (mg/l)	Calcium (mg/l)	Chloride (mg/l)	Fluoride (mg/l)	Sulfate (mg/l)	TDS (mg/l)	pH (su)
MW-113	4/25/2017	0.089(J)	87.9	5.49	0.0944(J)	11.8	339	6.9
(cont.)	7/18/2017	0.0982(BJ)	82.5	3.96	0.119	10.9	321	6.8
	9/19/2017	0.0998(J)	84.1	2.19	0.117	9.45	326	6.9
MW-115	upgradient							
	11/10/2015	0.0473(J)	109	2.14	0.23	8.23	363	7
	1/28/2016	0.0617(J)	103	7.55	0.201	14.8	376	7.1
	4/28/2016	0.0863(J)	115	1.83	0.179	5.63	443(B)	6.8
	7/26/2016	0.0604(J)	114	1.22	0.2	4.79(J)	399(B)	9
	10/5/2016	0.0737(J)	114	1.31	0.218	4.59(J)	446	6.1
	1/27/2017	0.0602(J)	110	1.77	0.244	6.52	406	7
	4/25/2017	0.0641(J)	106	2.71	0.203	6.75	385	6.8
	7/18/2017	0.0608(BJ)	105	2.32	0.238	7.1	369	6.6
	9/19/2017	0.0609(J)	116	0.835(J)	0.243	5.37	403	6.8
MW-116	downgradient							
	10/8/2015	0.108(J)	103	5.84	0.173	45.1	367	6.7
	1/28/2016	0.139(J)	111	5.67	0.165	78	426	6.8
	4/28/2016	0.142(J)	106	4.8	0.148	83.5	461(B)	6.6
	7/26/2016	0.115(J)	109	5.2	0.148	81.8	395(B)	6.2
	10/6/2016	0.126(J)	110	4.7	0.172	86.5	443	5.9
	1/25/2017	0.141(J)	118	4.85	0.201	89.2	467	5.9
	4/27/2017	0.137(J)	107	4.25	0.172	95.2	443	6.7
	7/19/2017	0.135(BJ)	111	4.45	0.208	98.4	435	6.5
	9/20/2017	0.132(J)	115	4.16	0.207	94.2	451	6.7
MW-117	downgradient							
	10/8/2015	0.0733(J)	80.4	1.17	0.077(J)	5.21	281	6.6
	1/28/2016	0.096(J)	75.2	1.61	0.126	6.32	271(B)	6.5
	4/27/2016	0.13(J)	76.9	1.3	0.101	6.19	272	6.6
	7/26/2016	0.105(J)	78.2	1.25	0.0971(J)	5.48	271(B)	7.9
	10/5/2016	0.115(J)	85.5	1.53	0.11	5.68	287	5.1
	1/26/2017	0.097(J)	75.7	1.34	0.12	7.46	268	6.1
	4/25/2017	0.0835(J)	76.7	1.48	0.131	6.55	277	6.6
	7/18/2017	0.102(BJ)	77.6	1.36	0.151	6.56	292	6.4
	9/20/2017	0.106(J)	84.2	0.747(J)	0.144	6.43	280	6.5
MW-118	downgradient							
	10/9/2015	0.0916(J)	75.1	1.08	0.175	12	271	6.4
	1/28/2016	0.121(J)	73.4	1.59	0.175	11.5	269(B)	6.2
	4/28/2016	0.123(J)	94.1	1.8	0.119	26.7	378(B)	6.2
	7/26/2016	0.101(J)	85.4	2.13	0.133	26.6	322(B)	8
	10/5/2016	0.103(J)	78.1	1.48	0.157	15.1	294	6.3
	1/26/2017	0.106(J)	74.7	1.13(B)	0.188	13.4	275	6.1
	4/26/2017	0.0994(J)	71.1	1.47	0.163	12.2	276	6.3
	7/20/2017	0.104(BJ)	74.9	1.62	0.172	20.4	313	6.5
	9/20/2017	0.104(J)	85.1	1.17	0.187	18.5	305	6.5
MW-119	downgradient							
	1/25/2017	0.0922(J)	104	2.62	0.255	47.6	409	6.6
	4/27/2017	0.108(J)	106	2.8	0.198	39.1	403	6.8
	7/20/2017	0.0936(BJ)	103	6.84	0.256	48.7	432	6.6
	9/20/2017	0.0798(J)	92.7	2.3	0.289	38.7	338	6.8

J: Detected below the laboratory RDL; value is an estimate.

APPENDIX E

Background Used for Statistics

BACKGROUND DATA

This document describes recommended methods and procedures to evaluate the initial eight background values collected in accordance with §257.94(b), the landfill's SAP, and the Unified Guidance. As identified in the Unified Guidance, the term "background" refers to the natural or baseline groundwater quality at a site. Background conditions can range from an uncontaminated aquifer to a historically contaminated site with baseline conditions that are unaffected by recent releases that are actionable under the Resource Conservation and Recovery Act. The terms "background" and "baseline" are used interchangeably herein.

Establishing Background Data Sets

The initial background data were screened using exploratory data analysis to identify potential trends, outliers, and spatial variability. Time-series plots, box-and-whiskers plots, and probability plots are included at the end of this document.

Outliers and Rejected Data in Background Data Sets

The Unified Guidance recommends that background data be screened for potential outliers. However, it also advises that outliers not be removed unless a source of error or reason for the discrepancy can be identified. As advised in the Unified Guidance, select removal of extreme outliers without knowledge of error may be warranted to improve environmental protection, but removal of all outliers can mask real and legitimate changes in background data.

Outlier screening included the application of Dixon's or Tukey's outlier tests to the initial eight values to identify potential outliers for exclusion from the background data set. Statistically significant results from the evaluation are included at the end of this document. At this time, only one outlier is flagged with an "O" and excluded from statistical analysis (Table 1). No other outliers are excluded from the background data sets, primarily due to the limited number of data available and the requirement to have a minimum of 8 to 10 data points for prediction limit analysis. No values have been removed due to independent evidence of error. If warranted in the future, data that are excluded from the historical database based on independent evidence of error

or that are suspected of being unrepresentative of groundwater quality due to excessively high sample turbidity will be flagged with an “R” (for rejected) and will also be excluded from statistical analyses.

Table 1. Outliers excluded from statistical analysis.

Parameter	Well	Date	Value (mg/L)	Reason
Sulfate	MW-116	4/18/2016	45	Statistically low outlier

Distribution Testing

A parametric prediction limit test requires background data sets to be normally distributed, or mathematically transformed to be normally distributed. Where data cannot be transformed-normal, a non-parametric prediction limit is applied. Background data sets were evaluated using the Shapiro-Wilk test to evaluate for normality to determine if parametric tests could be appropriately used. Results of the normality tests are shown on the prediction limit plots included in Appendix H. The Mann-Kendall test and Theil-Sen trend line test for trends, discussed below, is a non-parametric test and data evaluated with this test are not evaluated for normal distributions.

Seasonality and Autocorrelation

Background data sets were evaluated for the presence of seasonal effects on groundwater quality and autocorrelated data using an ANOVA test and the Rank von Neumann test, respectively. However, the results of the seasonality test were invalid due to violation of the test’s requirement of a minimum of three values per season. A requirement of the Rank Von Neumann test is that the data sets be corrected for seasonality prior to evaluating for autocorrelation; therefore the results of the Rank Von Neumann test were also invalid. Data will be re-evaluated for seasonality and autocorrelation following the next scheduled background update.

Screening for Trends in Background Data Sets

EPA guidance recommends screening background populations for statistically significant trends, because some tests (such as a prediction limit test) require a stationary statistical distribution for valid results. The presence of statistically significant tends in background data may violate key assumptions of some statistical tests and require an alternate approach to testing the data. If trends are indicated in background populations, testing strategies that either correct for, or are not sensitive to, temporal variation may be required.

Background data sets were screened for statistically significant trends using the Mann-Kendall test and Theil-Sen trend line. Results from the tests are included at the end of this document. At this time, none of the statistically evaluated well-parameter pairs contain statistically significant trends in their respective background data sets.

Prediction Limit Analysis

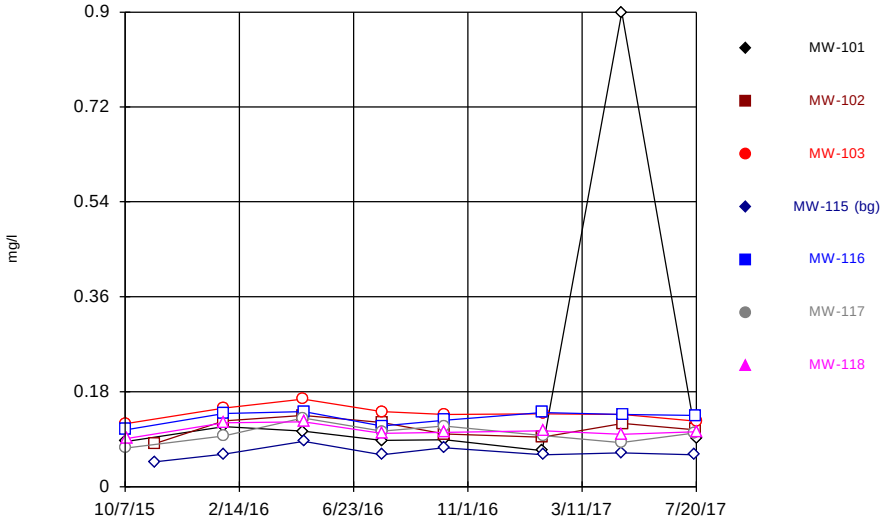
Each of the statistically evaluated well-parameter pairs are tested using a prediction limit. Background datasets for each well-parameter pair are identified as an attachment to this document.

Time-Series Plots of Background Data Sets

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Hollow symbols indicate censored values.

Time Series

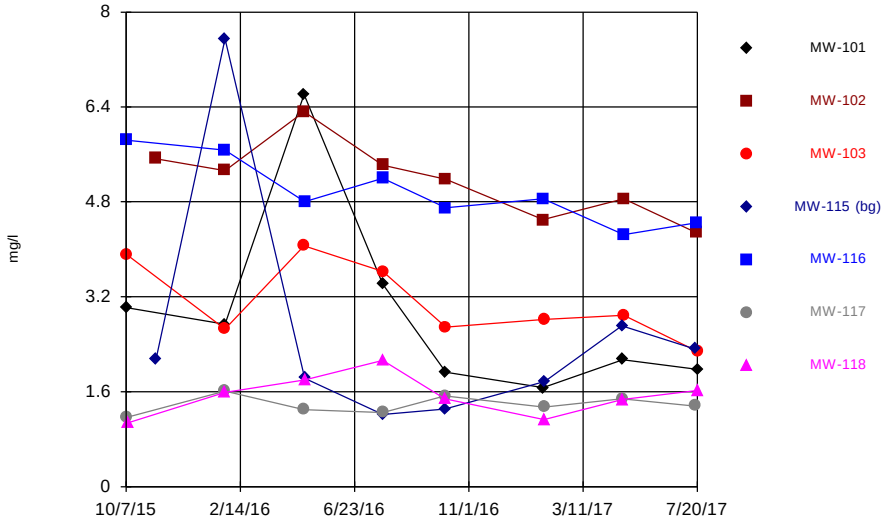


Constituent: Boron Analysis Run 12/15/2017 4:30 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Time Series

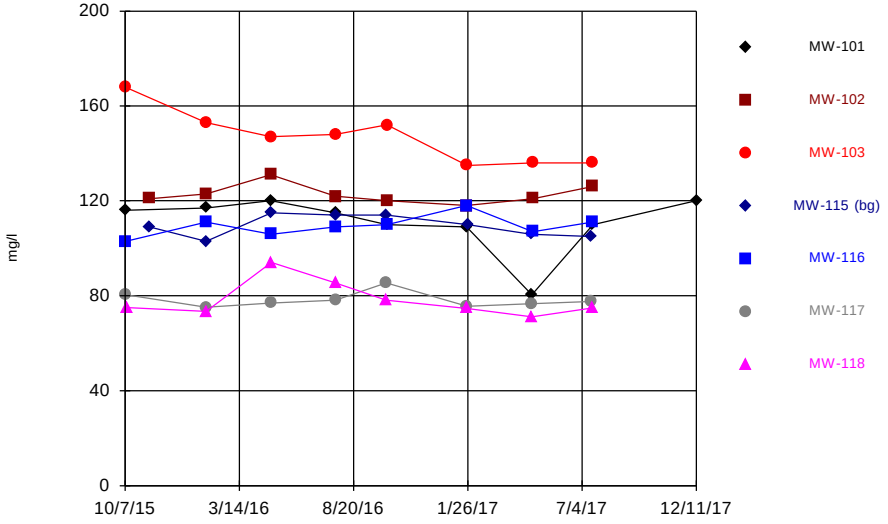


Constituent: Chloride Analysis Run 12/15/2017 4:30 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Time Series

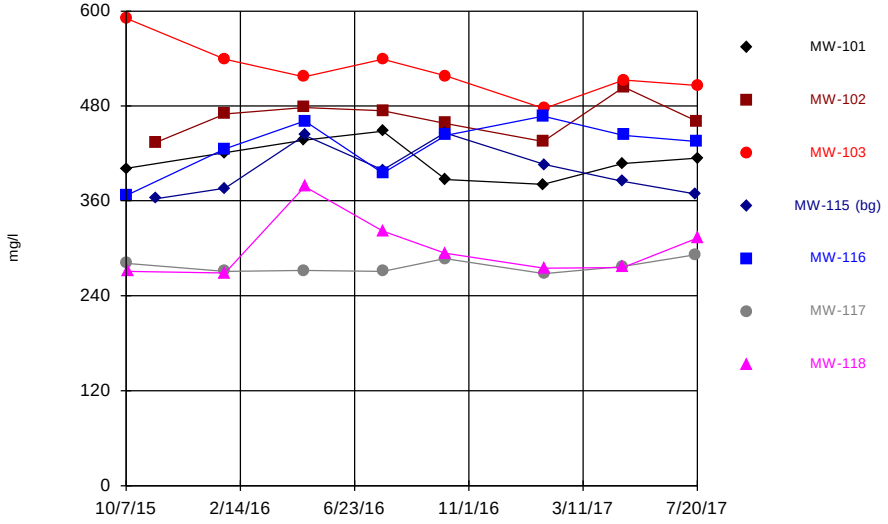


Constituent: Calcium Analysis Run 12/15/2017 4:30 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Time Series

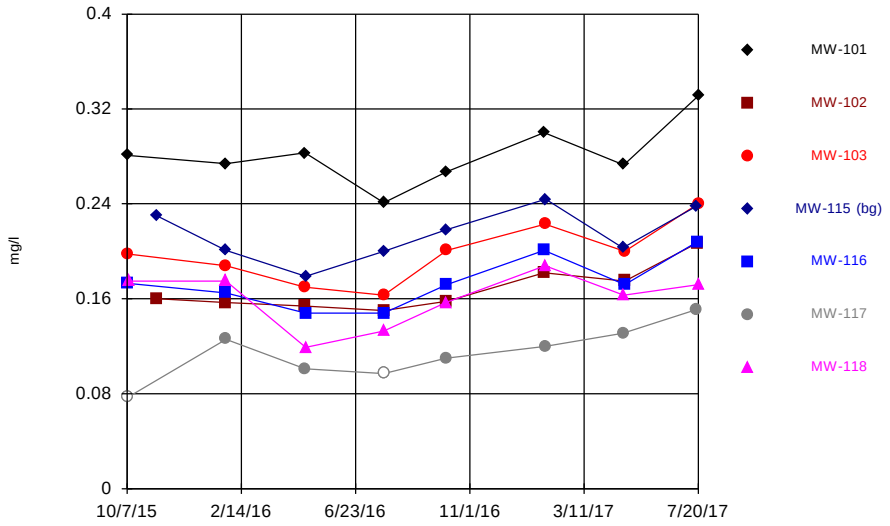


Constituent: Dissolved Solids Analysis Run 12/15/2017 4:30 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG
Hollow symbols indicate censored values.

Time Series

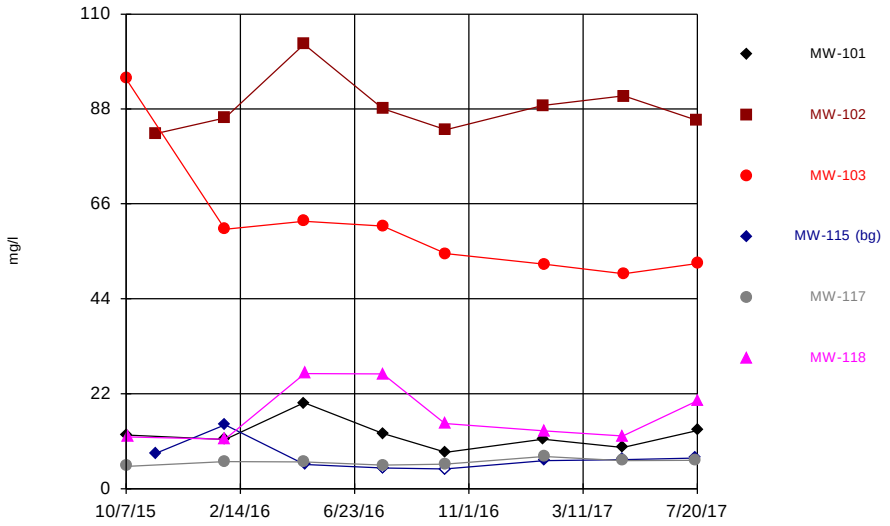


Constituent: Fluoride Analysis Run 12/15/2017 4:30 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG
Hollow symbols indicate censored values.

Time Series

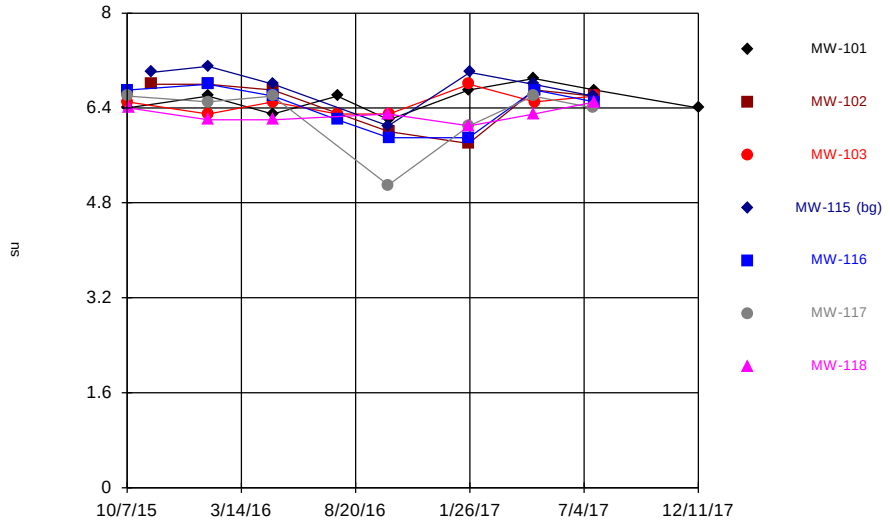


Constituent: Sulfate Analysis Run 12/15/2017 4:30 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Time Series

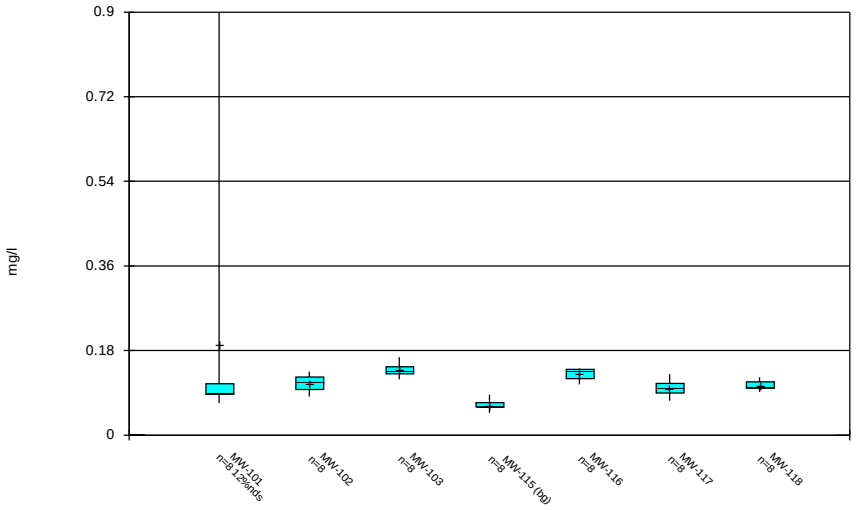


Constituent: pH Analysis Run 12/15/2017 4:30 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box-and-Whiskers Plots of Background Data Sets

Box & Whiskers Plot

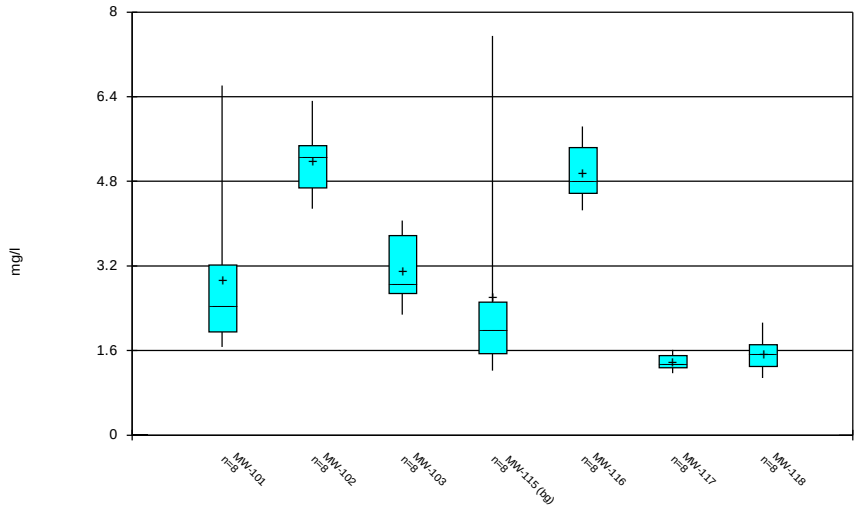


Constituent: Boron Analysis Run 12/15/2017 4:32 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Box & Whiskers Plot

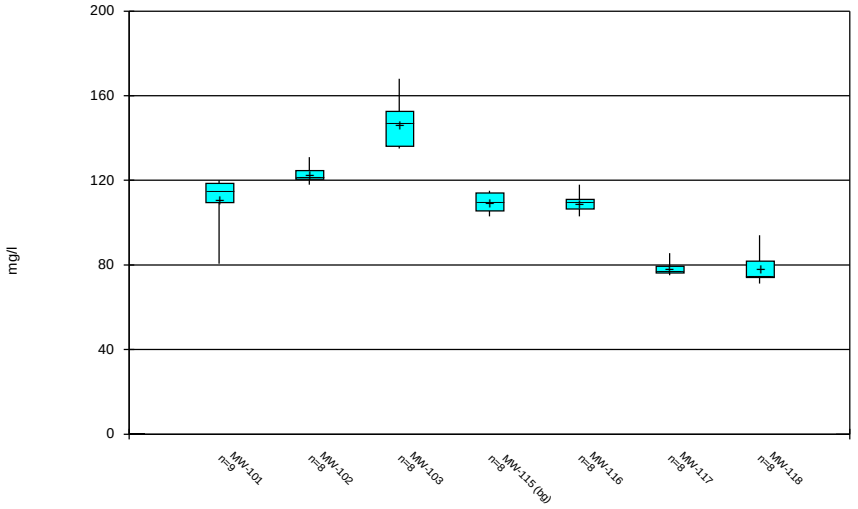


Constituent: Chloride Analysis Run 12/15/2017 4:32 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Box & Whiskers Plot

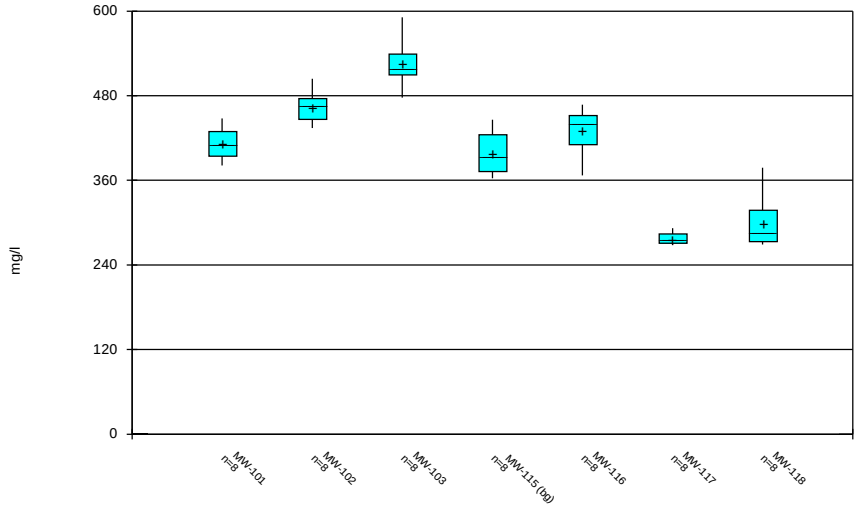


Constituent: Calcium Analysis Run 12/15/2017 4:32 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

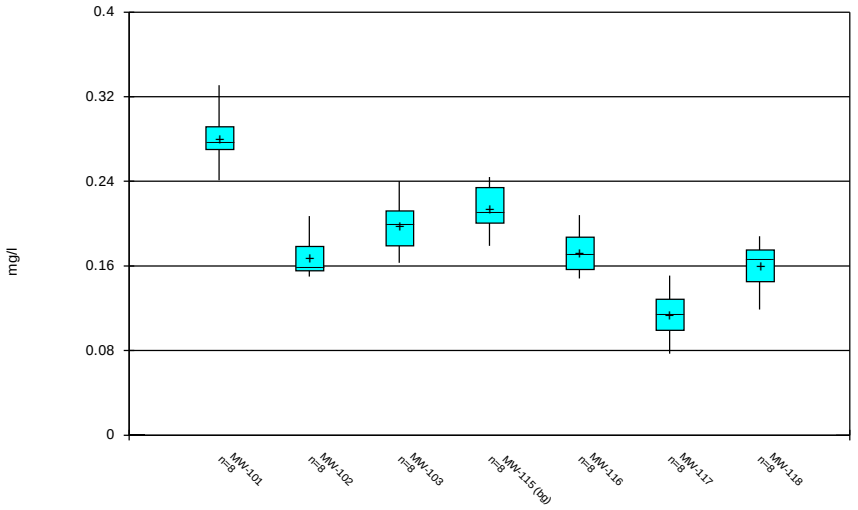
Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 12/15/2017 4:32 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot

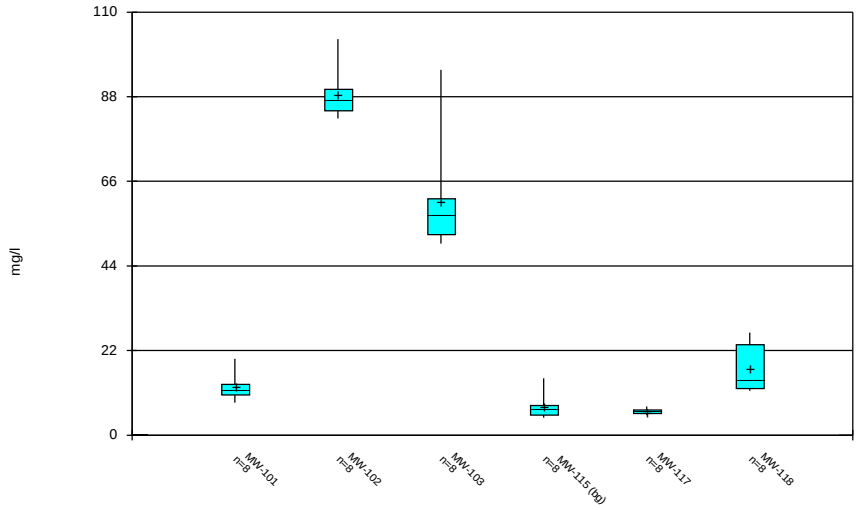


Constituent: Fluoride Analysis Run 12/15/2017 4:32 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Box & Whiskers Plot

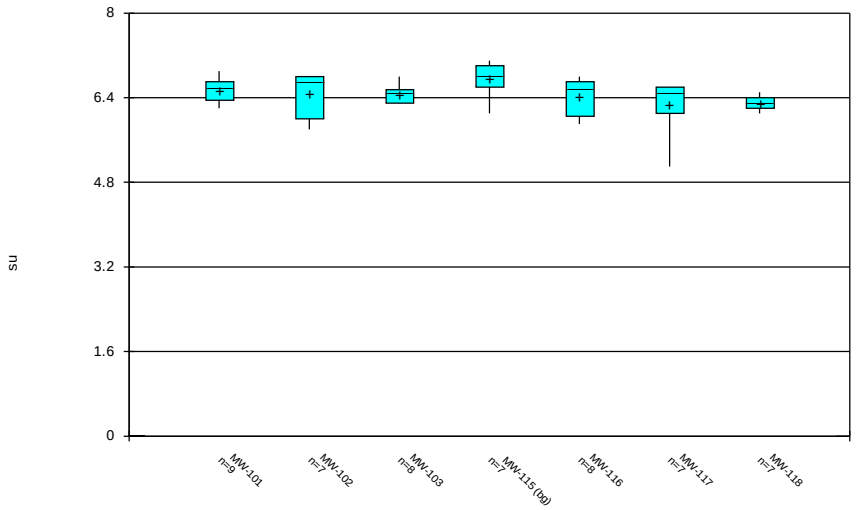


Constituent: Sulfate Analysis Run 12/15/2017 4:32 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Box & Whiskers Plot



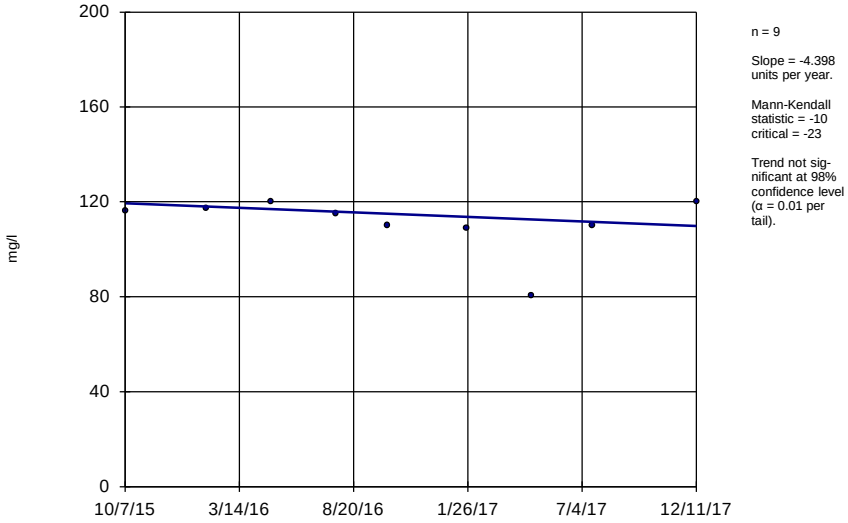
Constituent: pH Analysis Run 12/15/2017 4:32 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Trend Tests of Background Data Sets

Sen's Slope Estimator

MW-101



n = 9

Slope = -4.398 units per year.

Mann-Kendall statistic = -10 critical = -23

Trend not significant at 98% confidence level (α = 0.01 per tail).

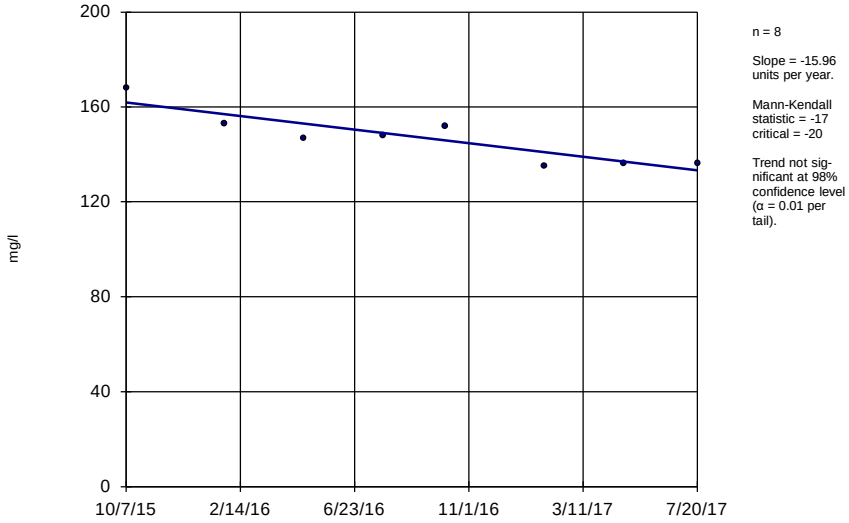
Constituent: Calcium Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-103



n = 8

Slope = -15.96 units per year.

Mann-Kendall statistic = -17 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

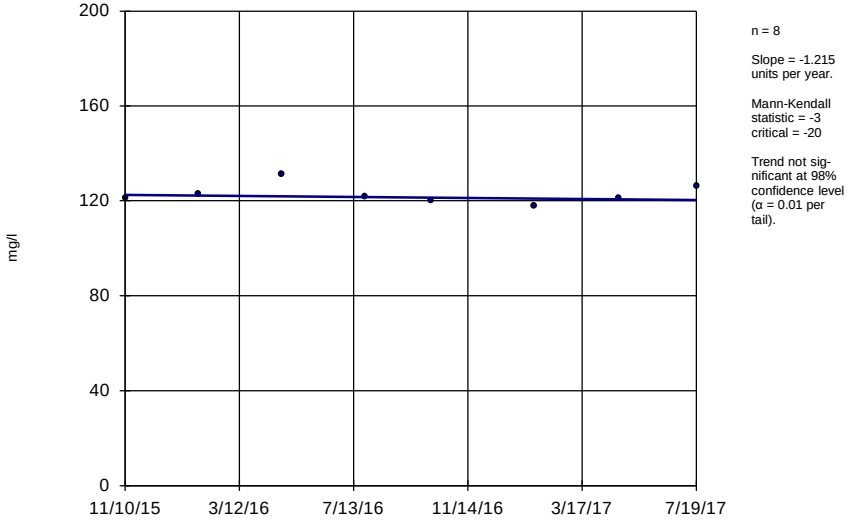
Constituent: Calcium Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-102



n = 8

Slope = -1.215 units per year.

Mann-Kendall statistic = -3 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

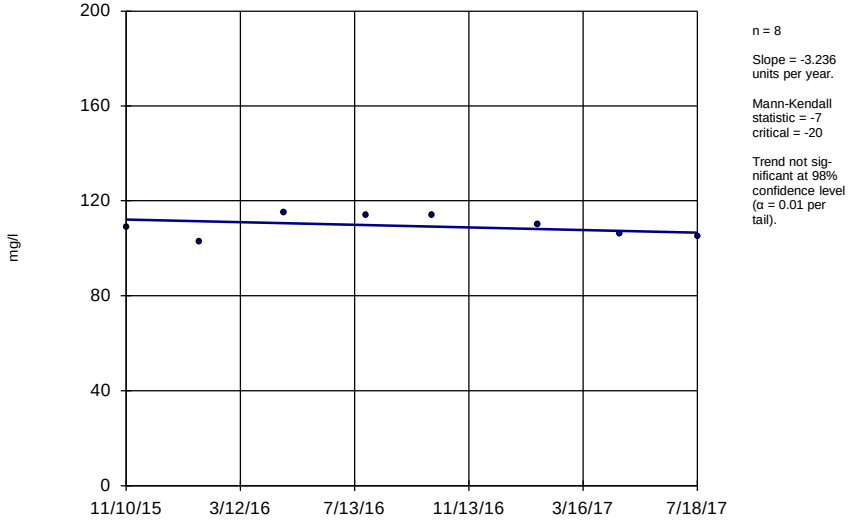
Constituent: Calcium Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-115 (bg)



n = 8

Slope = -3.236 units per year.

Mann-Kendall statistic = -7 critical = -20

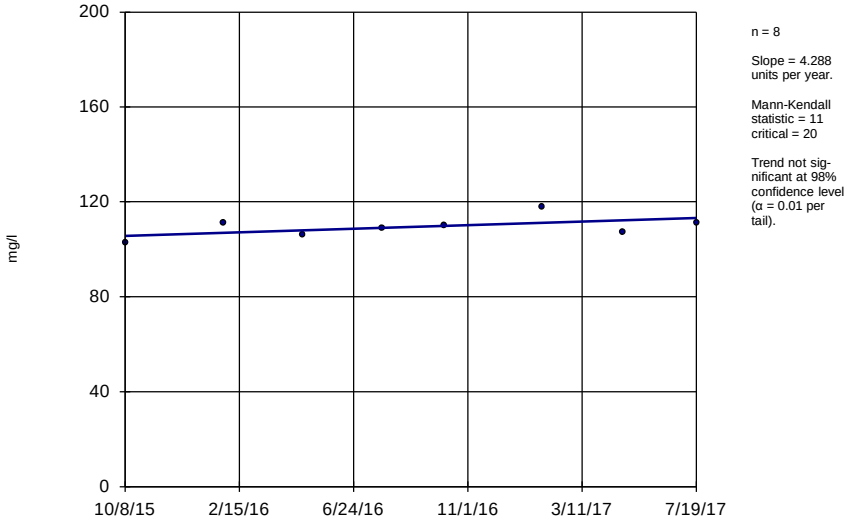
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-116



n = 8

Slope = 4.288 units per year.

Mann-Kendall statistic = 11 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

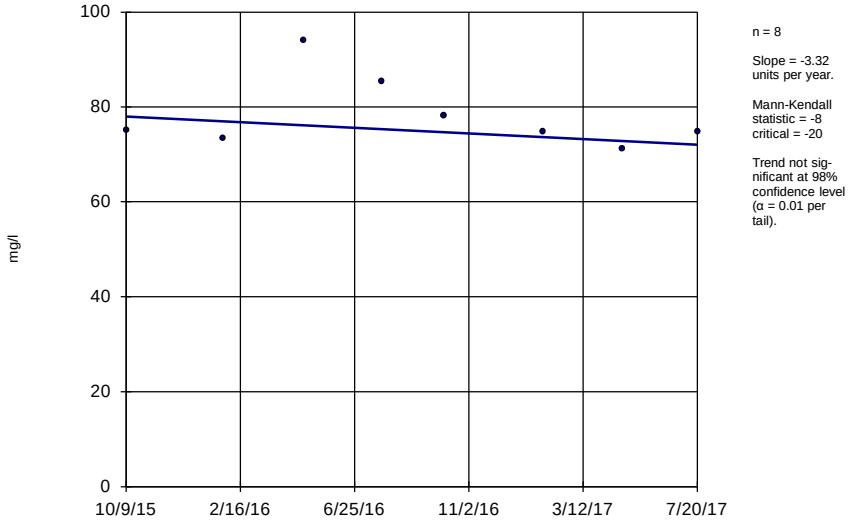
Constituent: Calcium Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-118



n = 8

Slope = -3.32 units per year.

Mann-Kendall statistic = -8 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

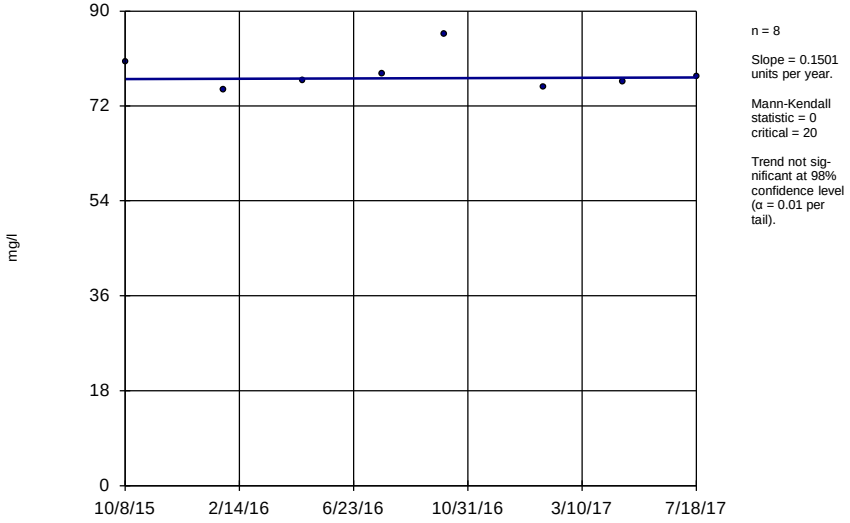
Constituent: Calcium Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-117



n = 8

Slope = 0.1501 units per year.

Mann-Kendall statistic = 0 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

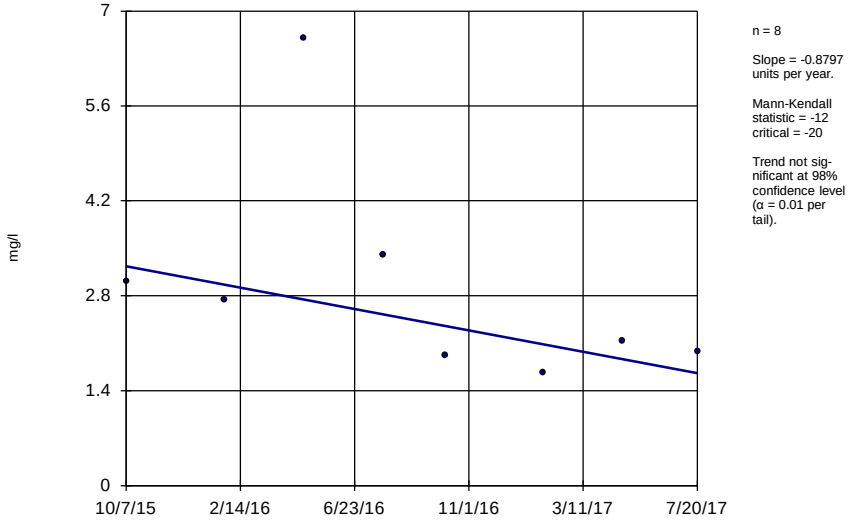
Constituent: Calcium Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-101



n = 8

Slope = -0.8797 units per year.

Mann-Kendall statistic = -12 critical = -20

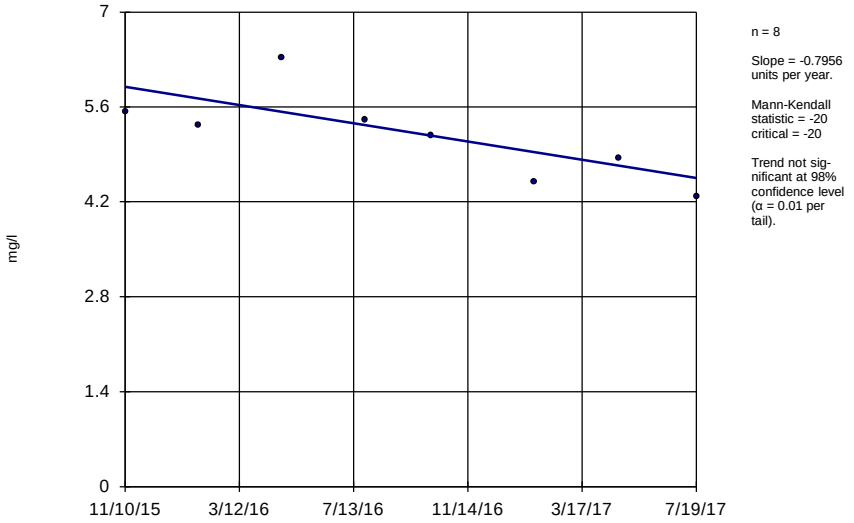
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Chloride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-102



n = 8

Slope = -0.7956 units per year.

Mann-Kendall statistic = -20
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

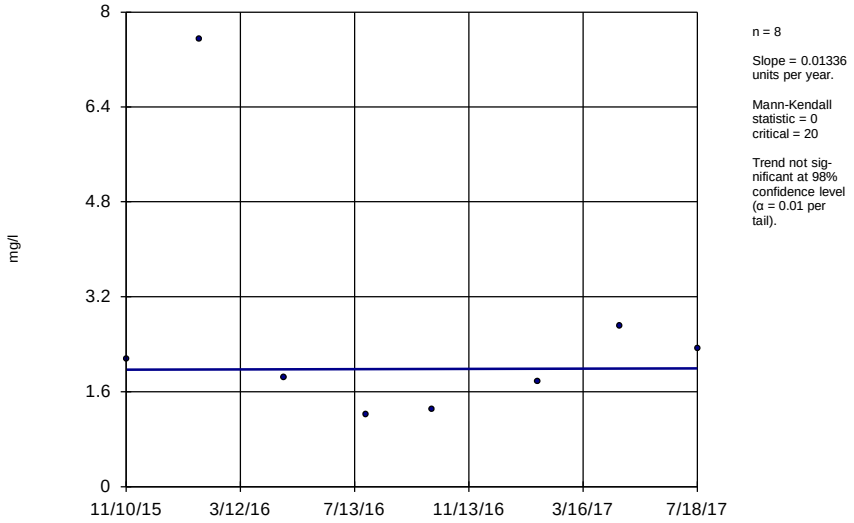
Constituent: Chloride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-115 (bg)



n = 8

Slope = 0.01336 units per year.

Mann-Kendall statistic = 0
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

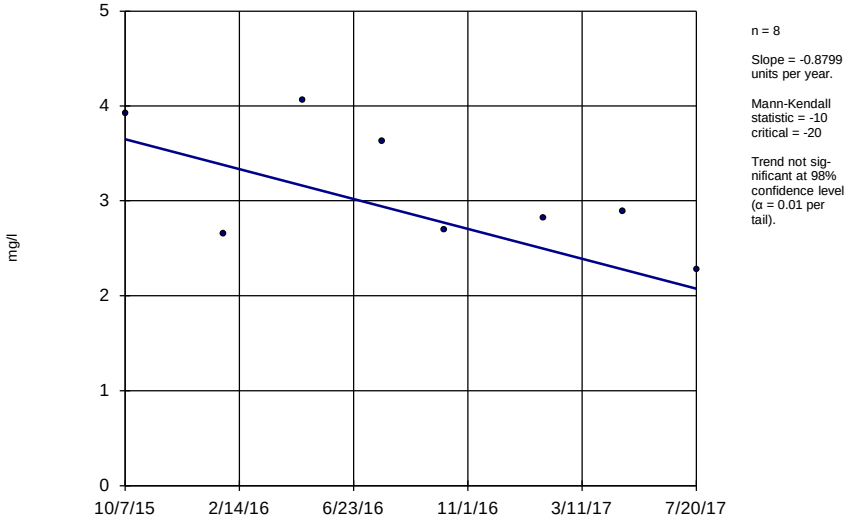
Constituent: Chloride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-103



n = 8

Slope = -0.8799 units per year.

Mann-Kendall statistic = -10
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

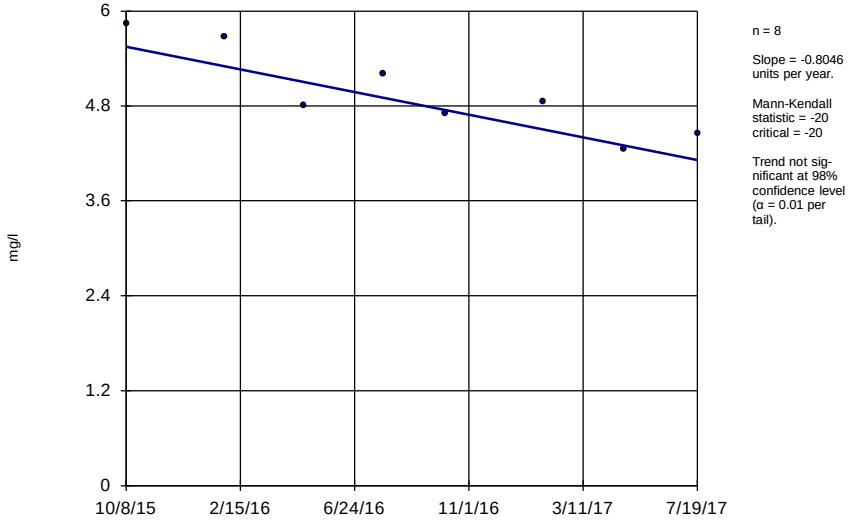
Constituent: Chloride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-116



n = 8

Slope = -0.8046 units per year.

Mann-Kendall statistic = -20
critical = -20

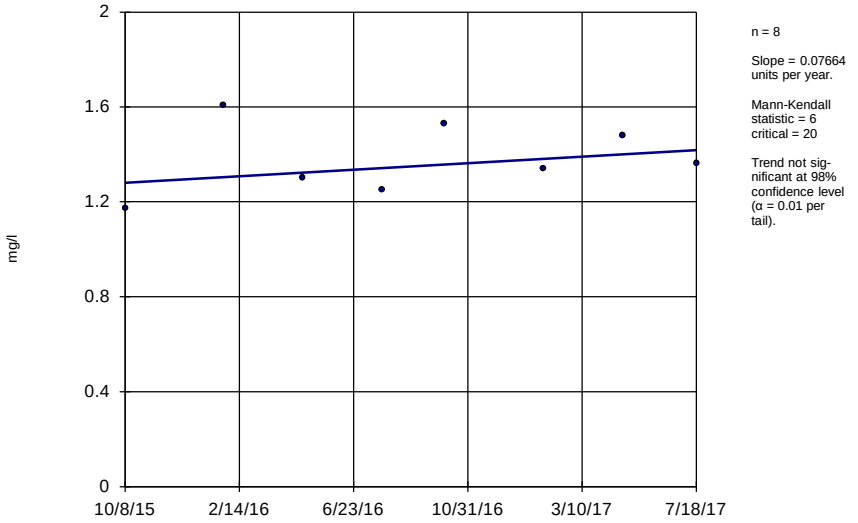
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Chloride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-117



n = 8

Slope = 0.07664 units per year.

Mann-Kendall statistic = 6 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

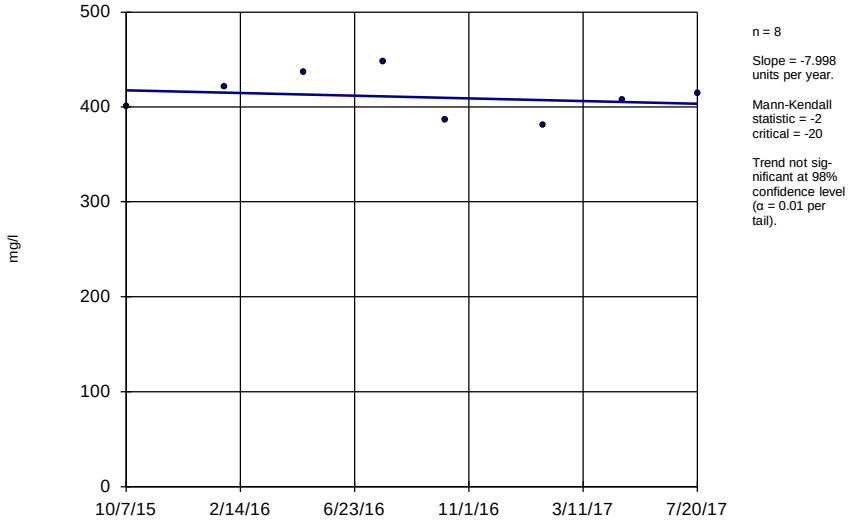
Constituent: Chloride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-101



n = 8

Slope = -7.998 units per year.

Mann-Kendall statistic = -2 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

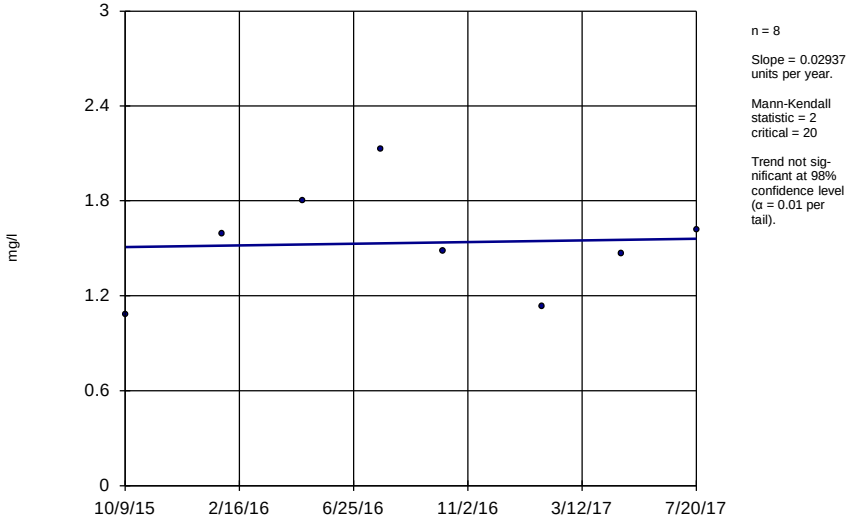
Constituent: Dissolved Solids Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-118



n = 8

Slope = 0.02937 units per year.

Mann-Kendall statistic = 2 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

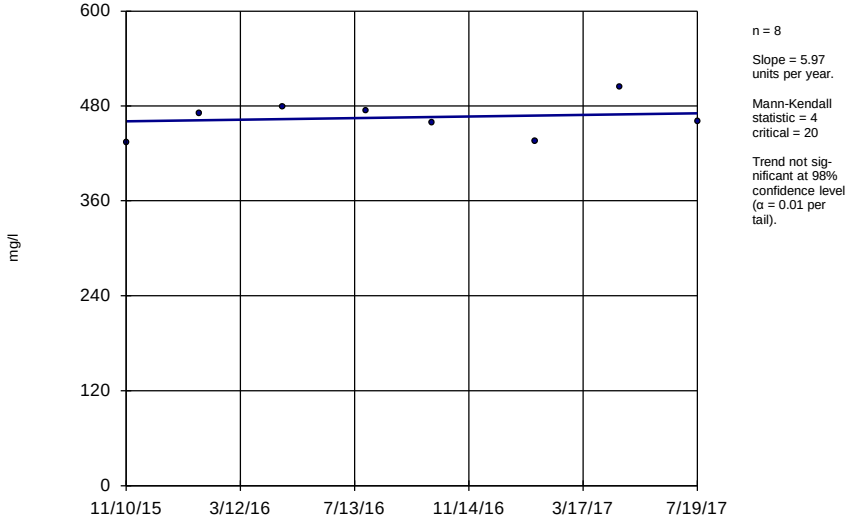
Constituent: Chloride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-102



n = 8

Slope = 5.97 units per year.

Mann-Kendall statistic = 4 critical = 20

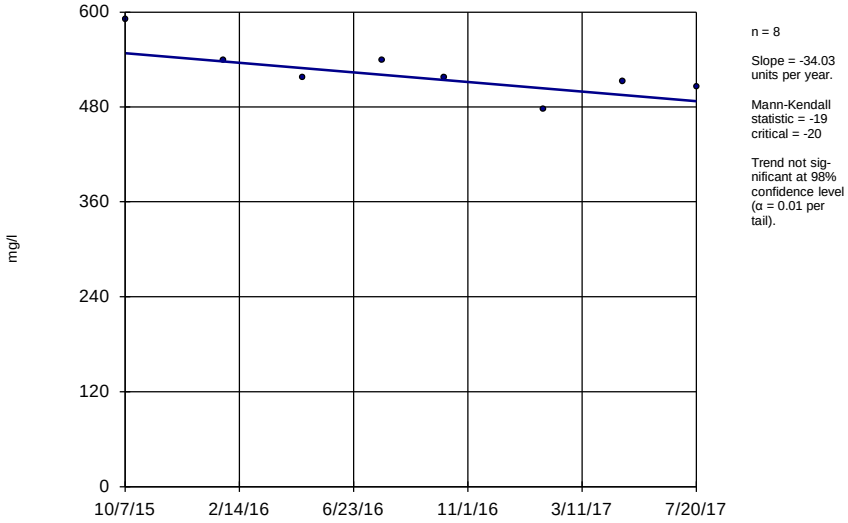
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Dissolved Solids Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-103



n = 8

Slope = -34.03 units per year.

Mann-Kendall statistic = -19 critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

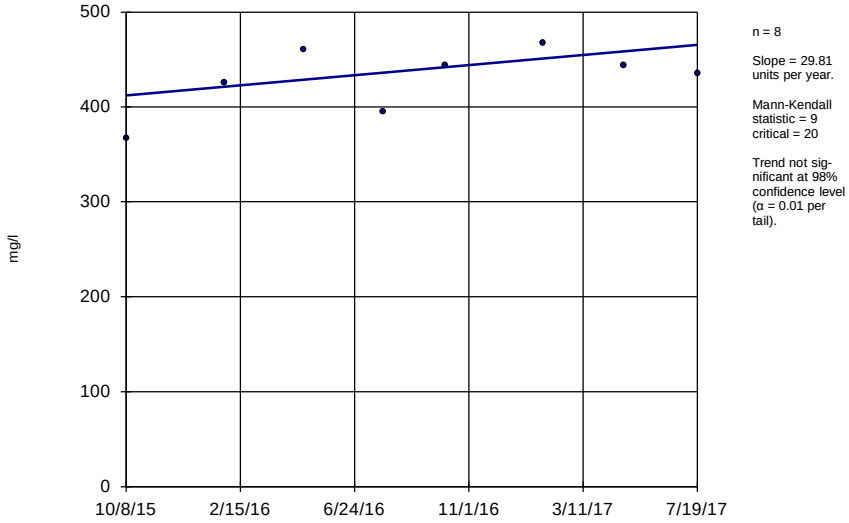
Constituent: Dissolved Solids Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-116



n = 8

Slope = 29.81 units per year.

Mann-Kendall statistic = 9 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

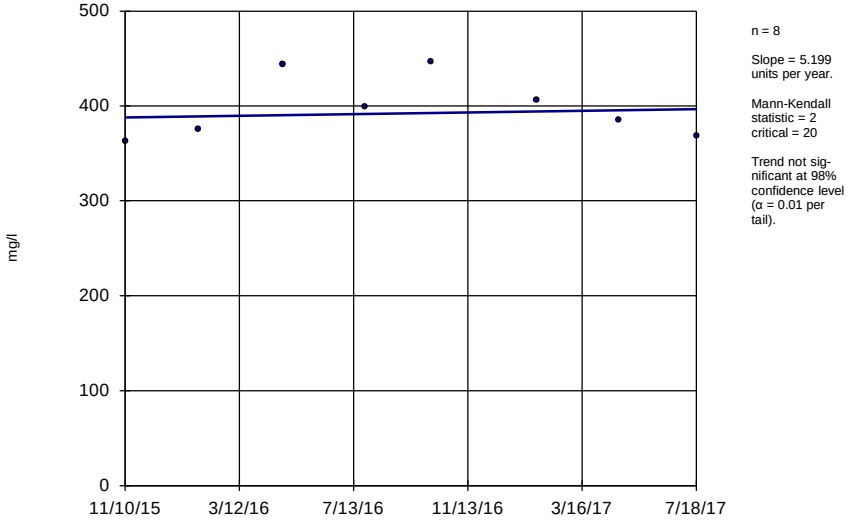
Constituent: Dissolved Solids Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-115 (bg)



n = 8

Slope = 5.199 units per year.

Mann-Kendall statistic = 2 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

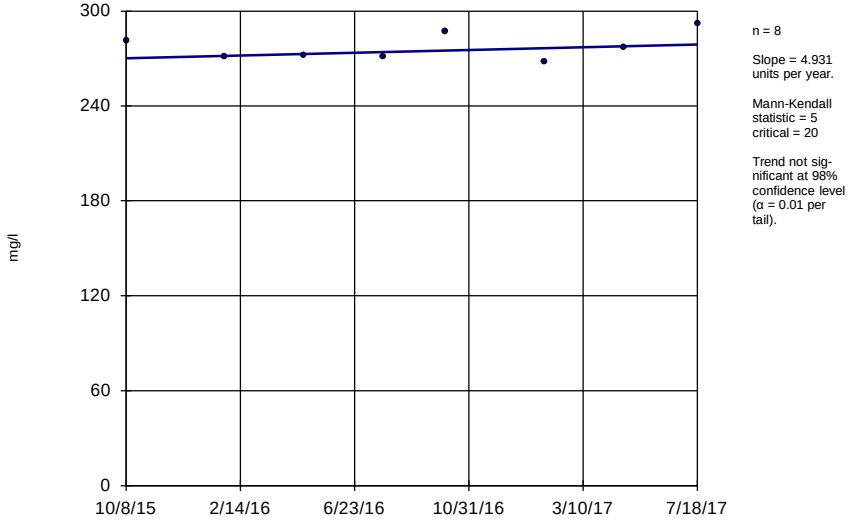
Constituent: Dissolved Solids Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-117



n = 8

Slope = 4.931 units per year.

Mann-Kendall statistic = 5 critical = 20

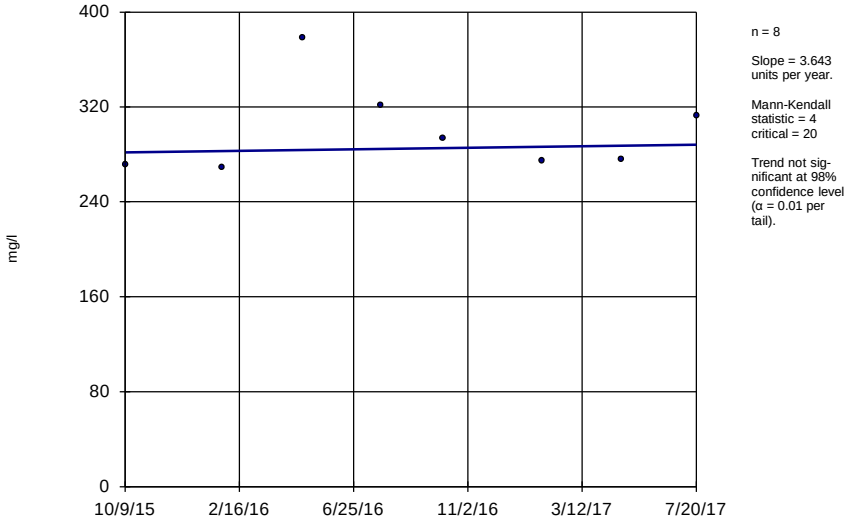
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Dissolved Solids Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-118



n = 8

Slope = 3.643 units per year.

Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

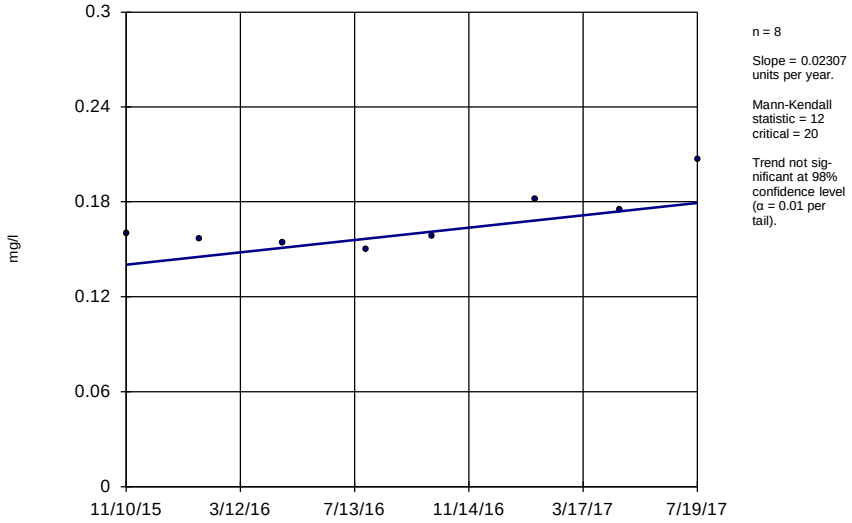
Constituent: Dissolved Solids Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-102



n = 8

Slope = 0.02307 units per year.

Mann-Kendall statistic = 12 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

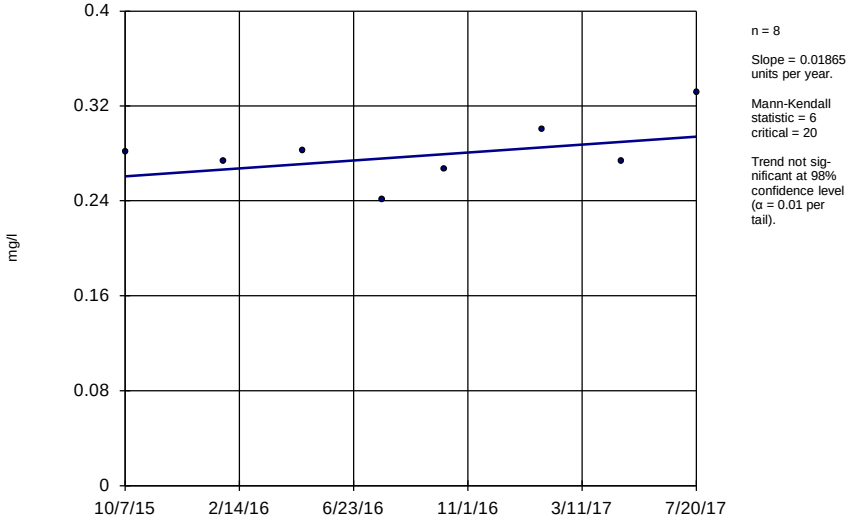
Constituent: Fluoride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-101



n = 8

Slope = 0.01865 units per year.

Mann-Kendall statistic = 6 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

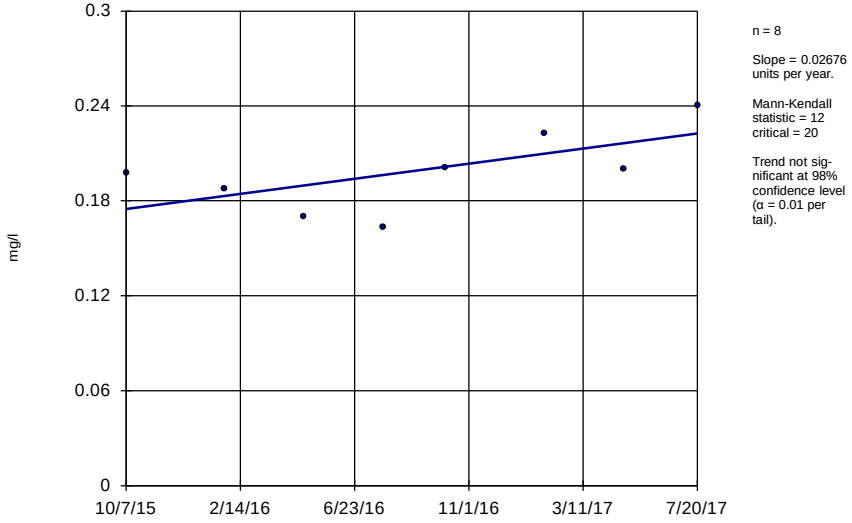
Constituent: Fluoride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-103



n = 8

Slope = 0.02676 units per year.

Mann-Kendall statistic = 12 critical = 20

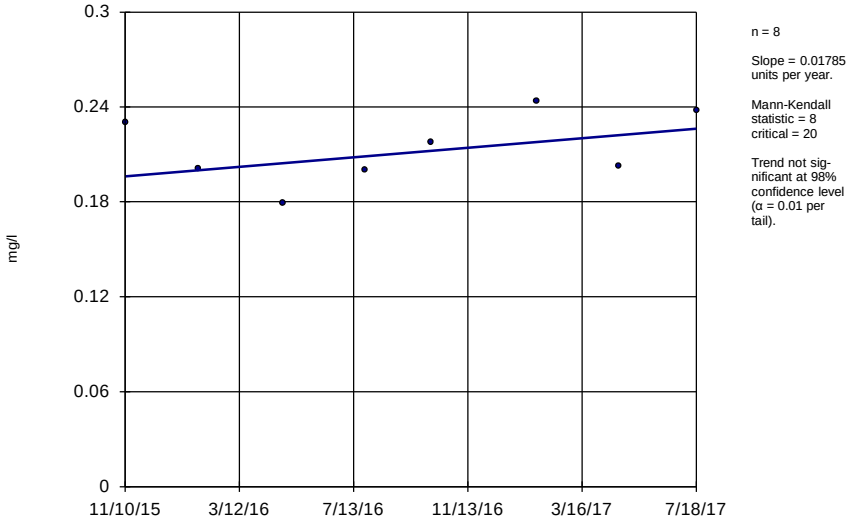
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Fluoride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-115 (bg)



n = 8

Slope = 0.01785 units per year.

Mann-Kendall statistic = 8 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

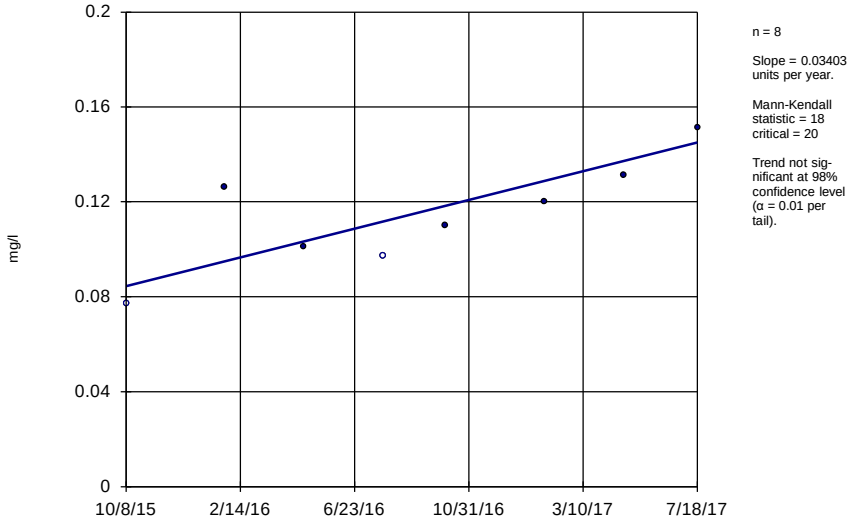
Constituent: Fluoride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-117



n = 8

Slope = 0.03403 units per year.

Mann-Kendall statistic = 18 critical = 20

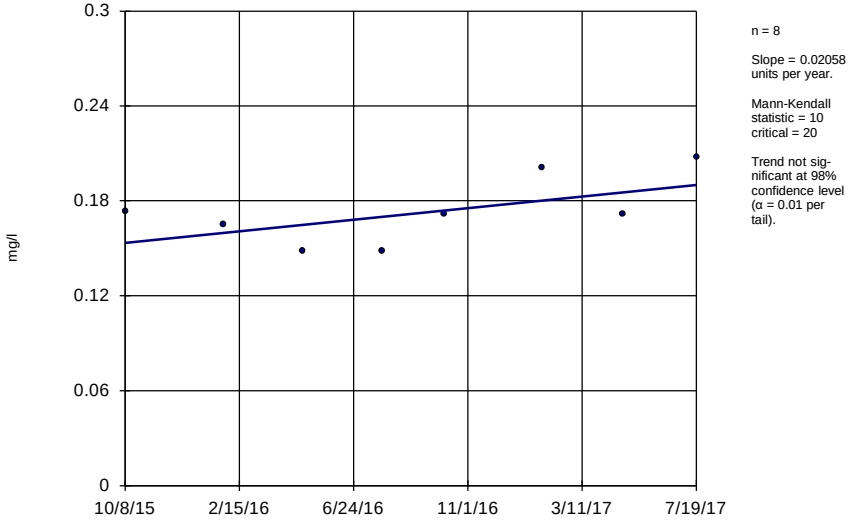
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Fluoride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-116



n = 8

Slope = 0.02058 units per year.

Mann-Kendall statistic = 10 critical = 20

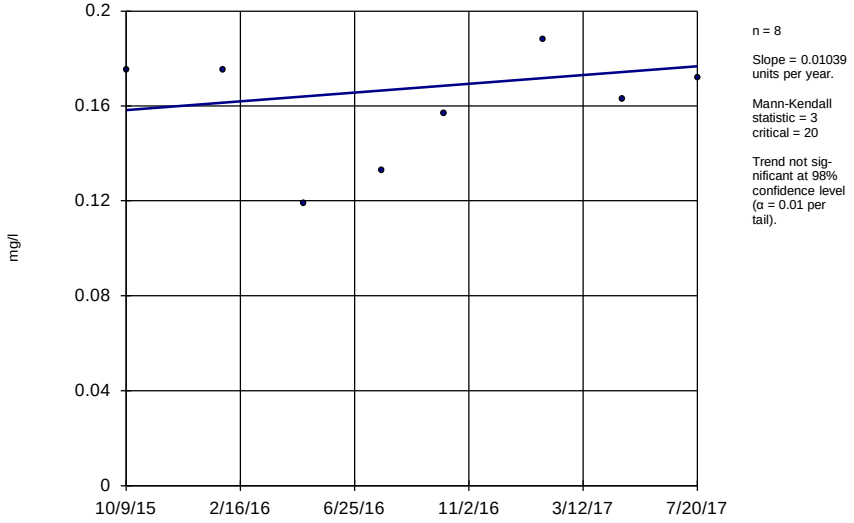
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Fluoride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-118



n = 8

Slope = 0.01039 units per year.

Mann-Kendall statistic = 3 critical = 20

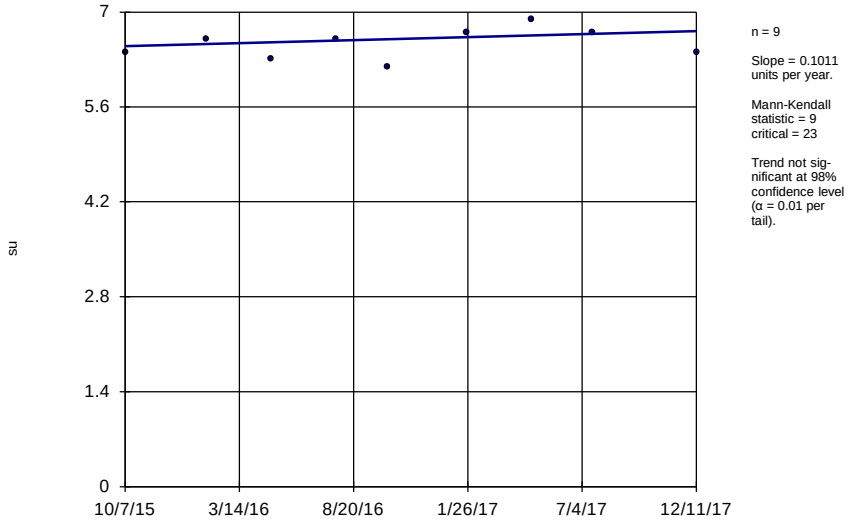
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Fluoride Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-101



n = 9

Slope = 0.1011 units per year.

Mann-Kendall statistic = 9
critical = 23

Trend not significant at 98% confidence level (α = 0.01 per tail).

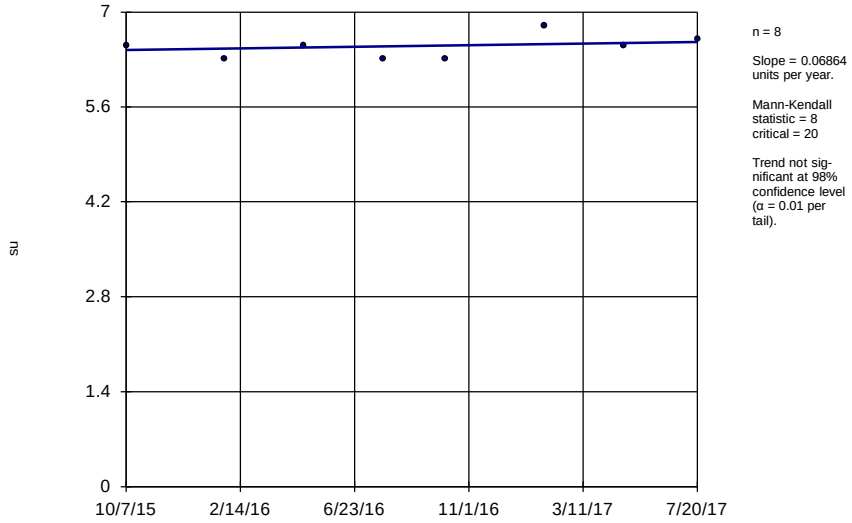
Constituent: pH Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-103



n = 8

Slope = 0.06864 units per year.

Mann-Kendall statistic = 8
critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

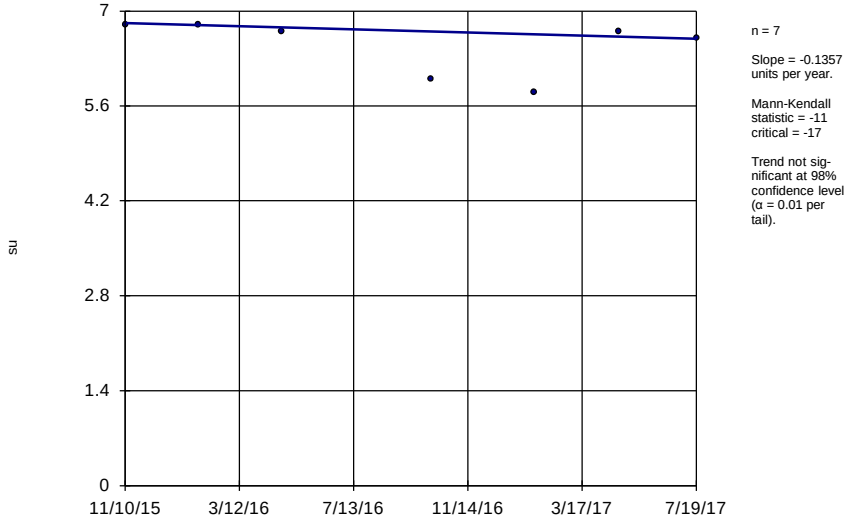
Constituent: pH Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-102



n = 7

Slope = -0.1357 units per year.

Mann-Kendall statistic = -11
critical = -17

Trend not significant at 98% confidence level (α = 0.01 per tail).

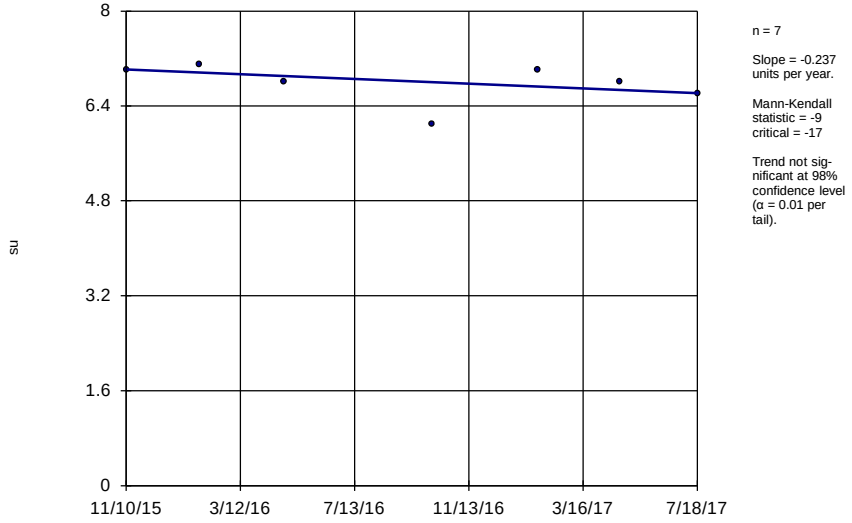
Constituent: pH Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-115 (bg)



n = 7

Slope = -0.237 units per year.

Mann-Kendall statistic = -9
critical = -17

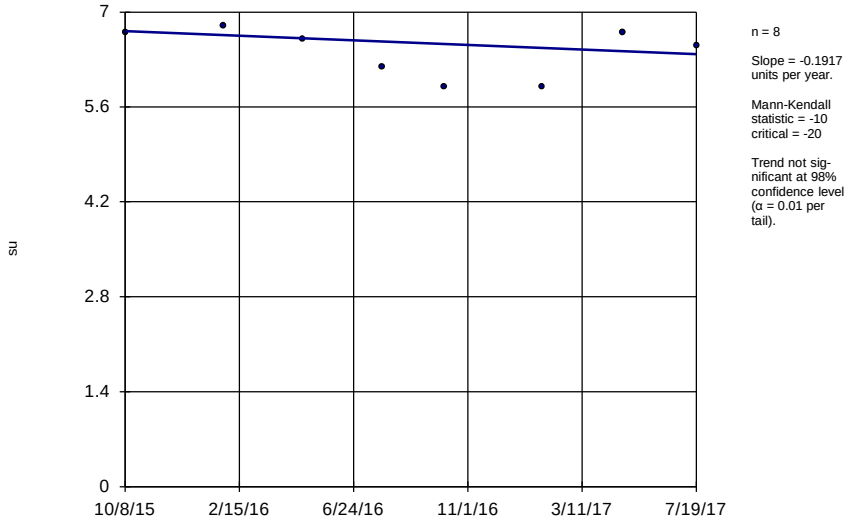
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: pH Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-116



n = 8

Slope = -0.1917 units per year.

Mann-Kendall statistic = -10
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

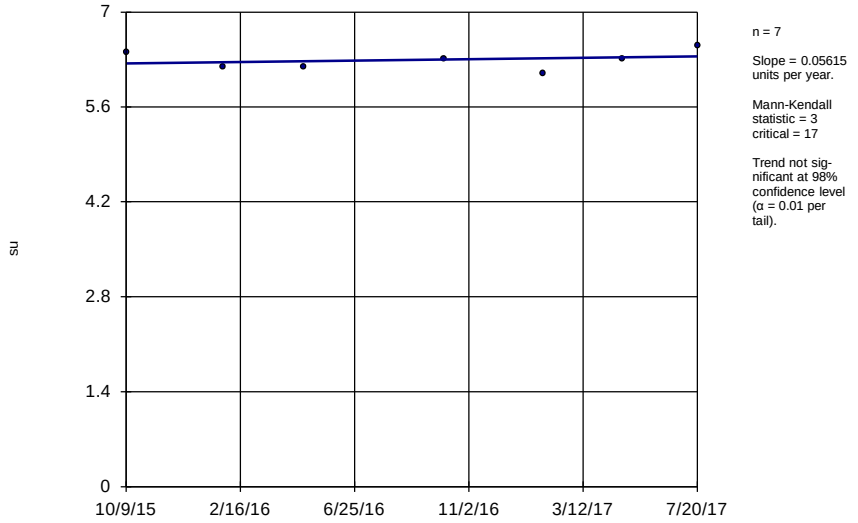
Constituent: pH Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-118



n = 7

Slope = 0.05615 units per year.

Mann-Kendall statistic = 3
critical = 17

Trend not significant at 98% confidence level (α = 0.01 per tail).

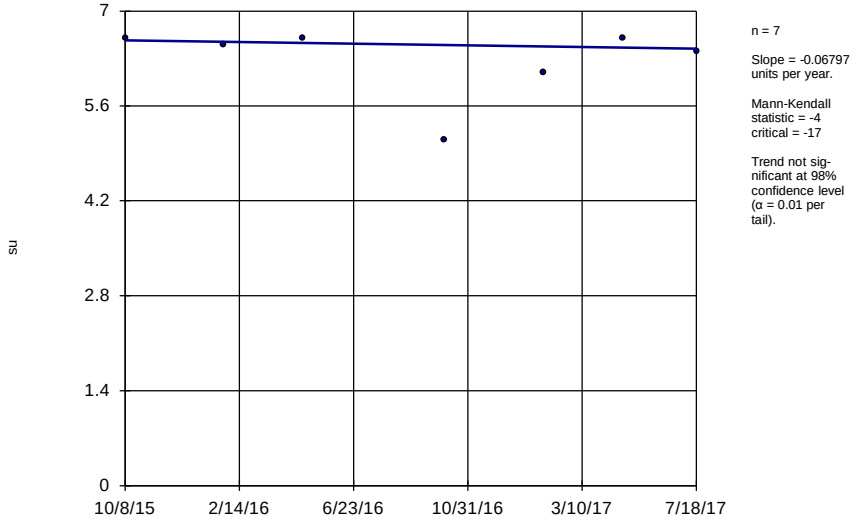
Constituent: pH Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-117



n = 7

Slope = -0.06797 units per year.

Mann-Kendall statistic = -4
critical = -17

Trend not significant at 98% confidence level (α = 0.01 per tail).

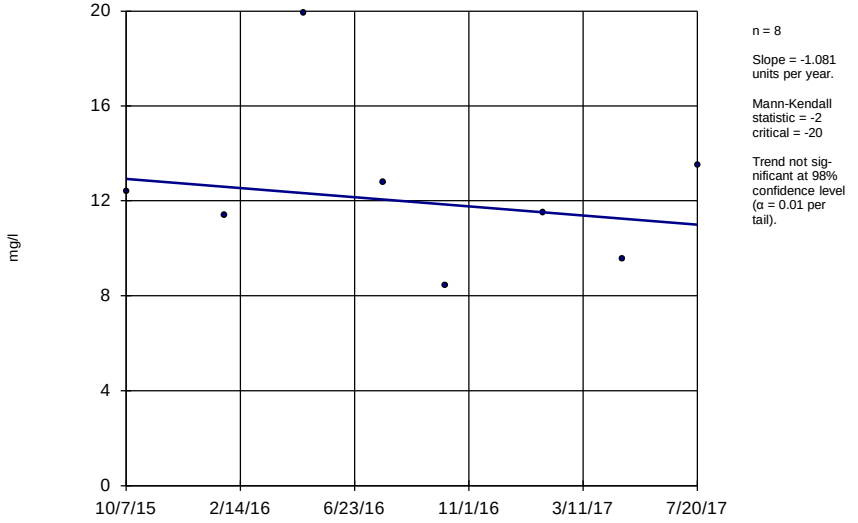
Constituent: pH Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 For the statistical analyses of ground water by FTN Associates only. UG

Sen's Slope Estimator

MW-101



n = 8

Slope = -1.081 units per year.

Mann-Kendall statistic = -2
critical = -20

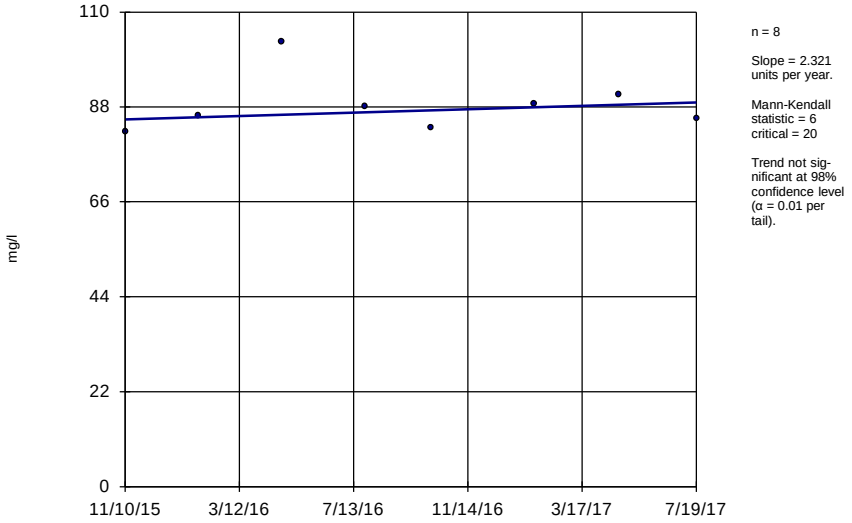
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-102



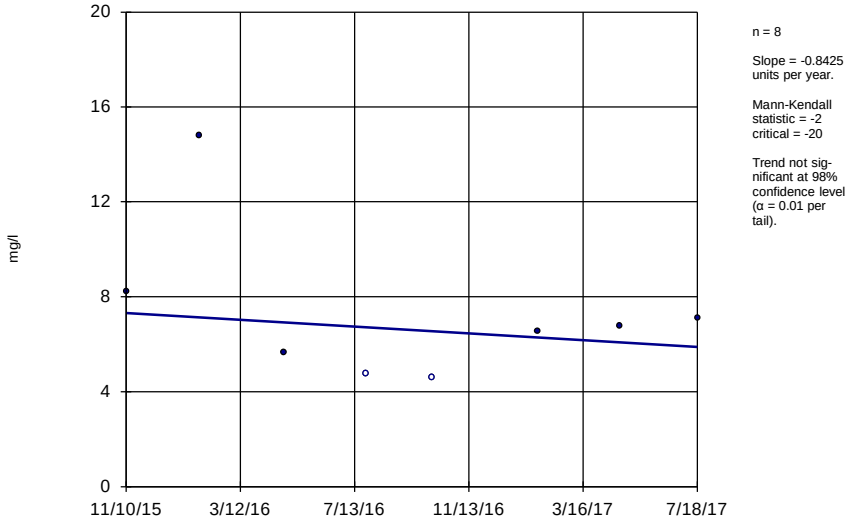
Constituent: Sulfate Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-115 (bg)

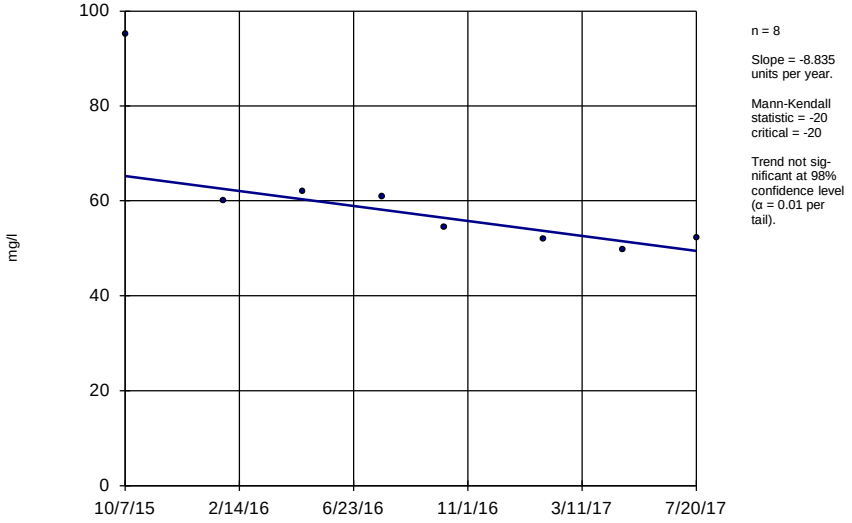


Constituent: Sulfate Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-103

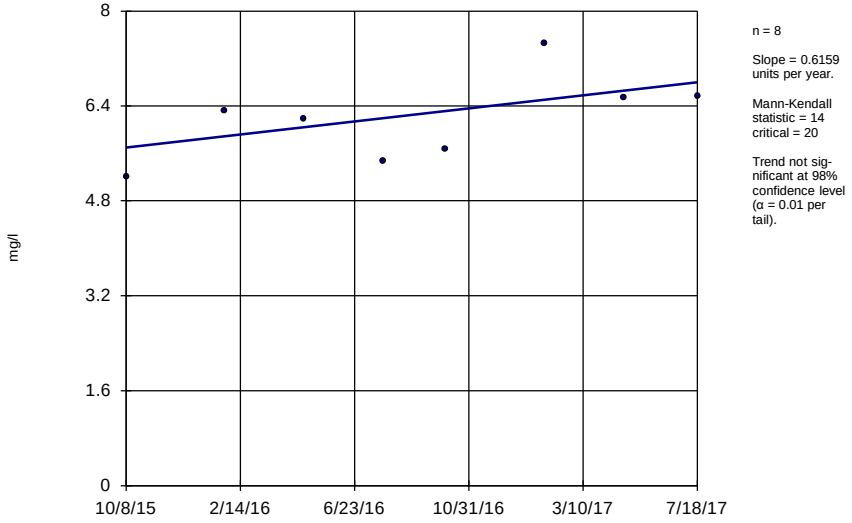


Constituent: Sulfate Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-117

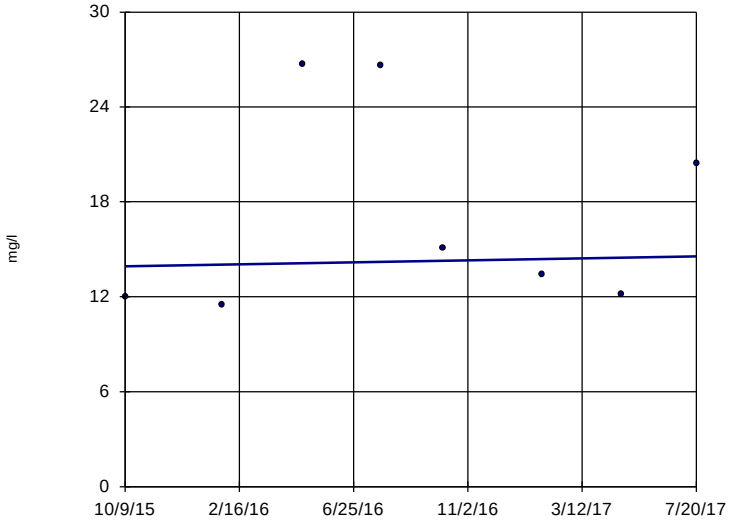


Constituent: Sulfate Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sen's Slope Estimator

MW-118



n = 8

Slope = 0.346 units per year.

Mann-Kendall statistic = 2 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 12/15/2017 4:33 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Background Data Set Date Ranges

Date Ranges

Date: 12/15/2017 4:16 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Boron (mg/l)
- MW-101 background:10/7/2015-7/18/2017
- MW-102 background:10/7/2015-7/18/2017
- MW-103 background:10/7/2015-7/18/2017
- MW-108 background:1/28/2016-9/20/2017
- MW-113 background:1/28/2016-9/20/2017
- MW-115 background:10/7/2015-7/18/2017
- MW-116 background:10/7/2015-7/18/2017
- MW-117 background:10/7/2015-7/18/2017
- MW-118 background:10/7/2015-7/18/2017

Calcium (mg/l)
- MW-101 background:10/7/2015-7/18/2017
- MW-102 background:10/7/2015-7/18/2017
- MW-103 background:10/7/2015-7/18/2017
- MW-108 background:1/28/2016-9/20/2017
- MW-113 background:1/28/2016-9/20/2017
- MW-115 background:10/7/2015-7/18/2017
- MW-116 background:10/7/2015-7/18/2017
- MW-117 background:10/7/2015-7/18/2017
- MW-118 background:10/7/2015-7/18/2017

Chloride (mg/l)
- MW-101 background:10/7/2015-7/18/2017
- MW-102 background:10/7/2015-7/18/2017
- MW-103 background:10/7/2015-7/18/2017
- MW-108 background:1/28/2016-9/20/2017
- MW-113 background:1/28/2016-9/20/2017
- MW-115 background:10/7/2015-7/18/2017
- MW-116 background:10/7/2015-7/18/2017
- MW-117 background:10/7/2015-7/18/2017
- MW-118 background:10/7/2015-7/18/2017

Dissolved Solids (mg/l)
- MW-101 background:10/7/2015-7/18/2017
- MW-102 background:10/7/2015-7/18/2017
- MW-103 background:1/28/2016-9/20/2017
- MW-108 background:1/28/2016-9/20/2017
- MW-113 background:10/7/2015-7/18/2017
- MW-115 background:10/7/2015-7/18/2017
- MW-116 background:10/7/2015-7/18/2017
- MW-117 background:10/7/2015-7/18/2017
- MW-118 background:10/7/2015-7/18/2017

Fluoride (mg/l)
- MW-101 background:10/7/2015-7/18/2017
- MW-102 background:10/7/2015-7/18/2017
- MW-103 background:10/7/2015-7/18/2017
- MW-108 background:1/28/2016-9/20/2017
- MW-113 background:1/28/2016-9/20/2017
- MW-115 background:10/7/2015-7/18/2017
- MW-116 background:10/7/2015-7/18/2017
- MW-117 background:10/7/2015-7/18/2017
- MW-118 background:10/7/2015-7/18/2017

pH (su)
- MW-101 background:10/7/2015-7/18/2017
- MW-102 background:10/7/2015-7/18/2017
- MW-103 background:10/7/2015-7/18/2017
- MW-108 background:1/28/2016-9/20/2017
- MW-113 background:1/28/2016-9/20/2017
- MW-115 background:10/7/2015-7/18/2017
- MW-116 background:10/7/2015-7/18/2017
- MW-117 background:10/7/2015-7/18/2017
- MW-118 background:10/7/2015-7/18/2017

Sulfate (mg/l)
- MW-101 background:10/7/2015-7/18/2017
- MW-102 background:10/7/2015-7/18/2017

Date Ranges

Date: 12/15/2017 4:16 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

MW-103 background:1/28/2016-9/20/2017
MW-108 background:1/28/2016-9/20/2017
MW-113 background:10/7/2015-7/18/2017
MW-115 background:10/7/2015-7/18/2017
MW-117 background:10/7/2015-7/18/2017
MW-118 background:10/7/2015-7/18/2017

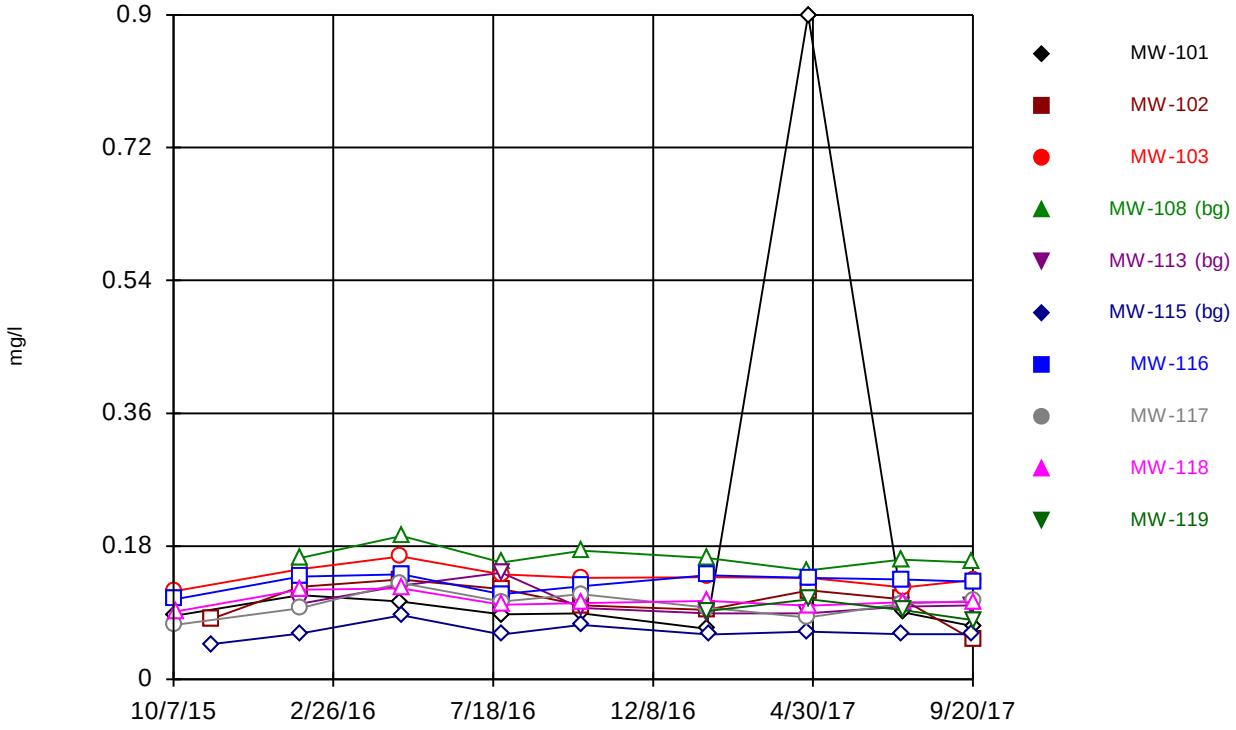
APPENDIX F

Exploratory Data Analysis Plots

Time-Series Plots

Hollow symbols indicate censored values.

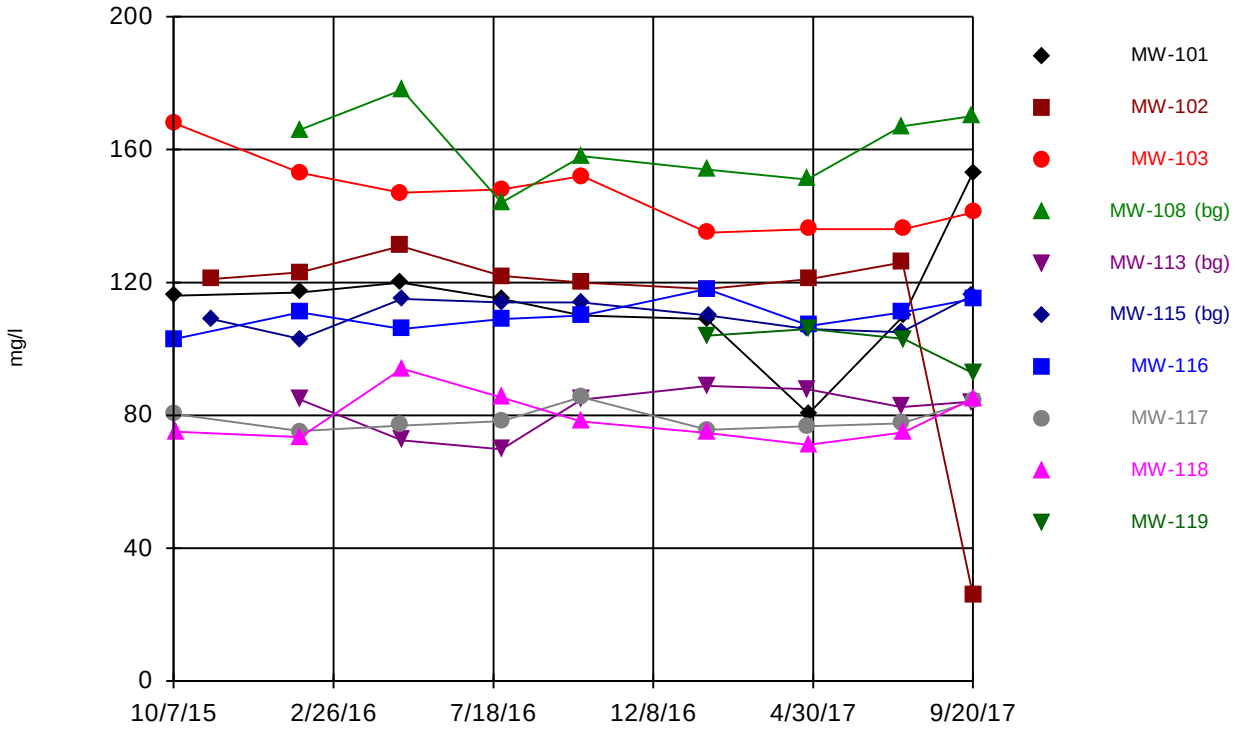
Time Series



Constituent: Boron Analysis Run 12/10/2017 4:55 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Time Series

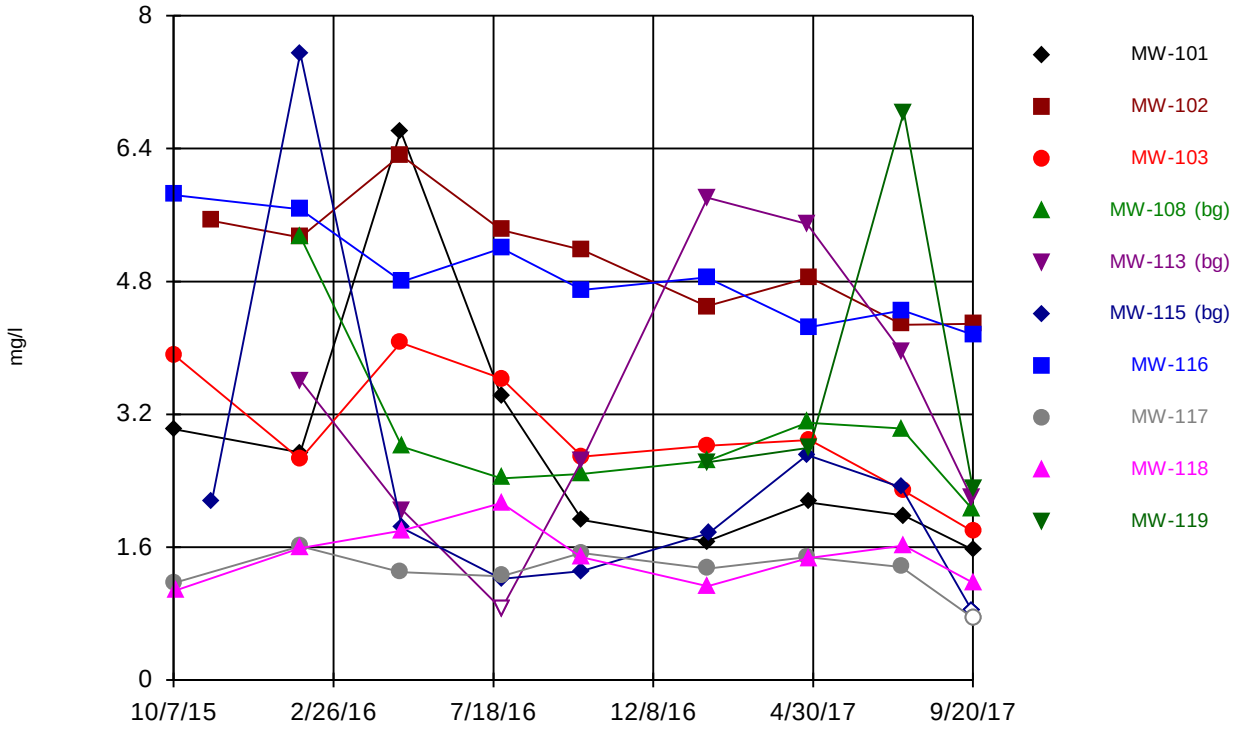


Constituent: Calcium Analysis Run 11/17/2017 11:08 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Time Series



Constituent: Chloride Analysis Run 11/17/2017 11:08 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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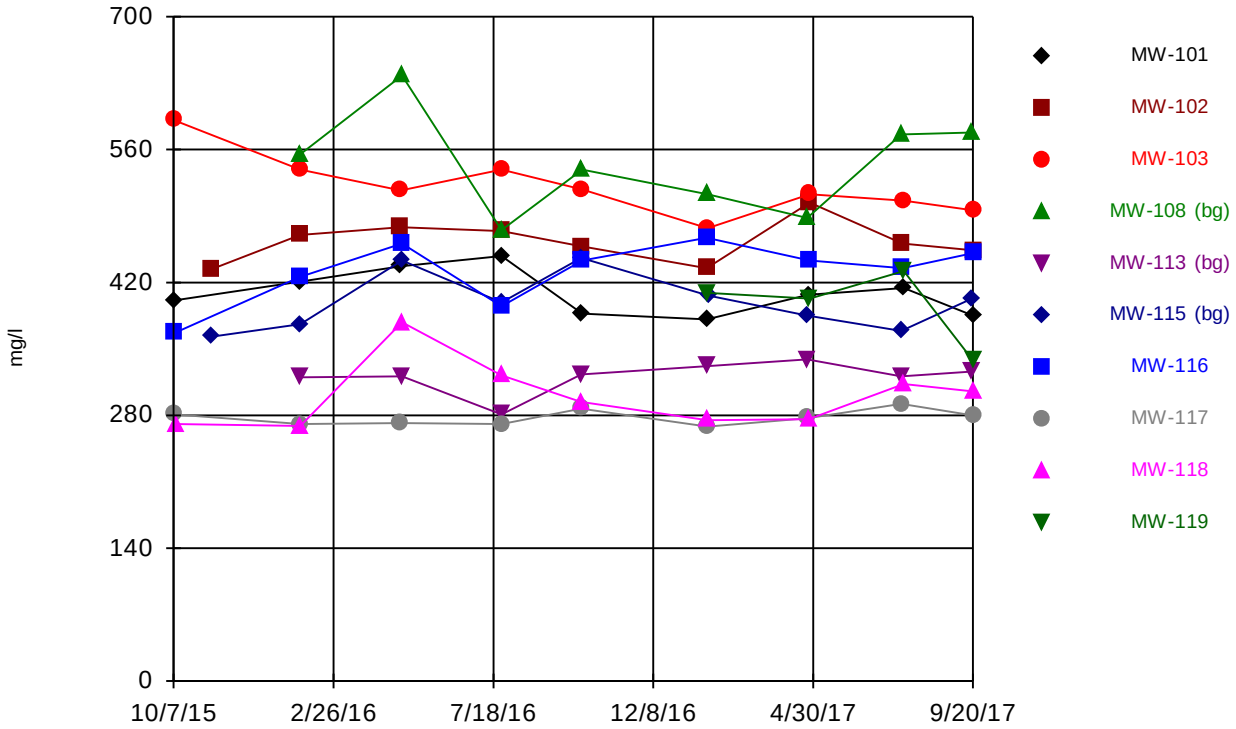
Time Series

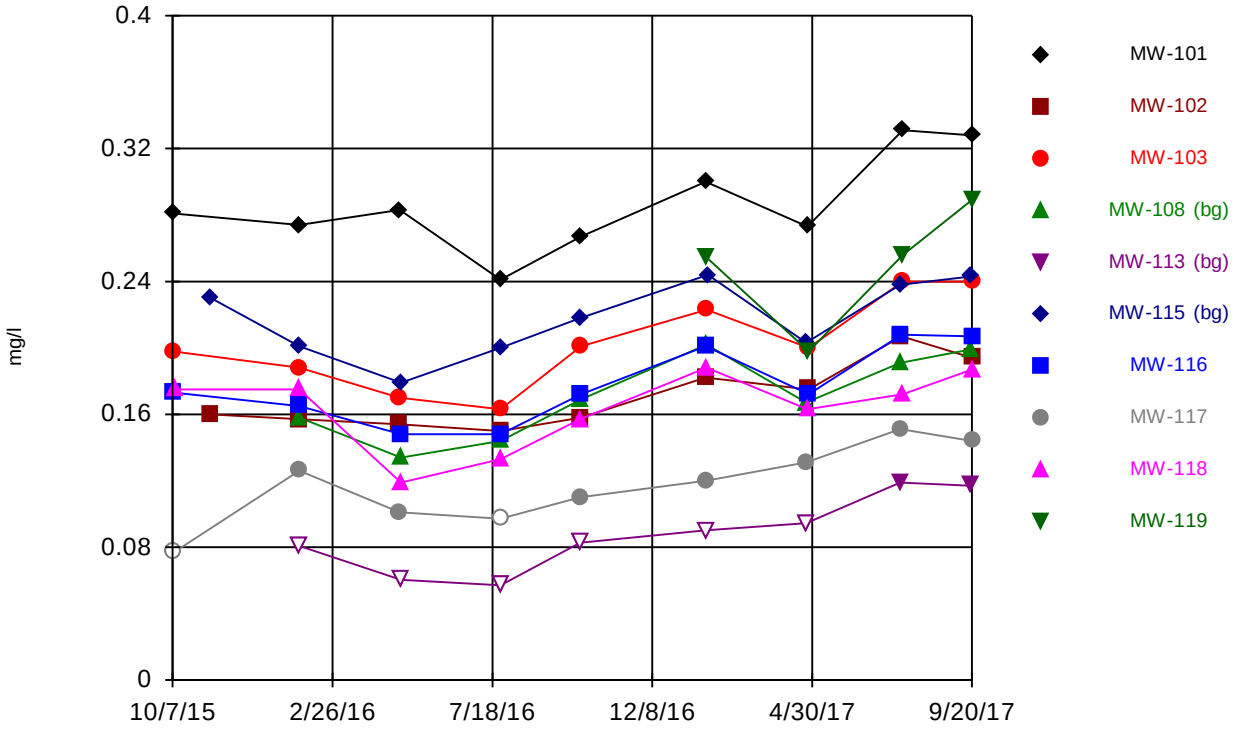


Constituent: Dissolved Solids Analysis Run 11/17/2017 11:08 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Time Series

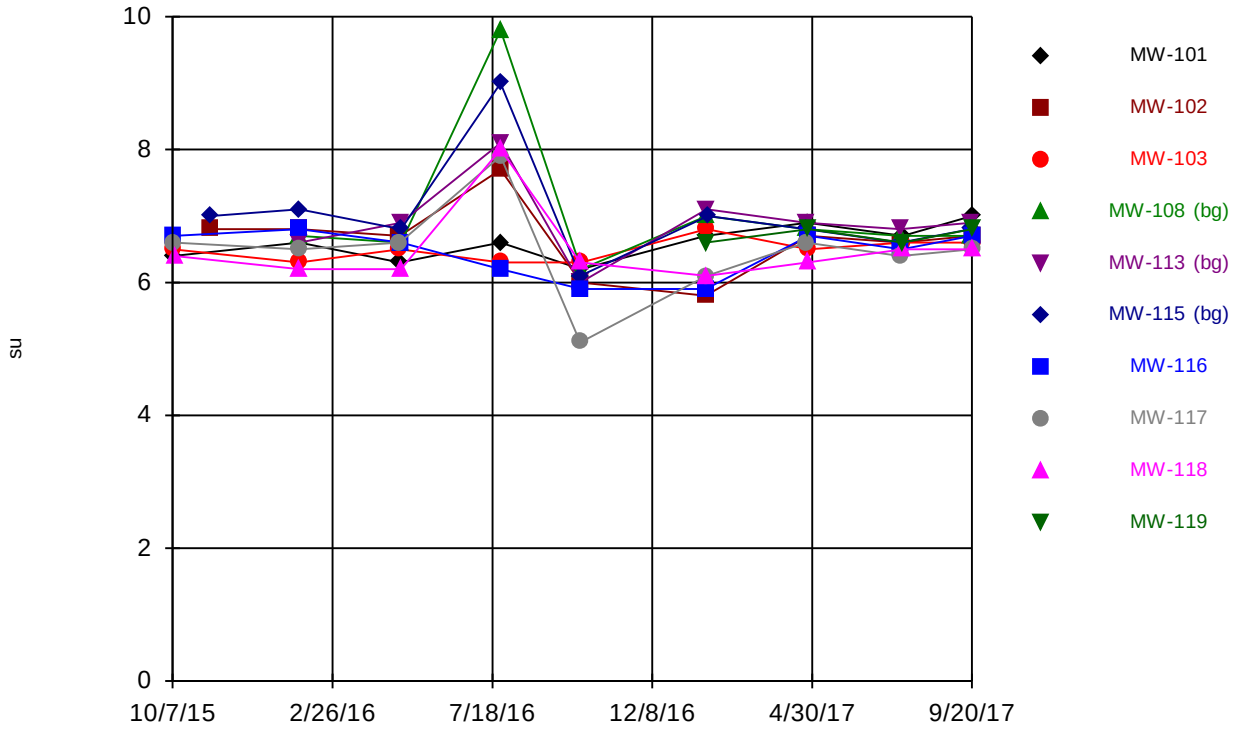


Constituent: Fluoride Analysis Run 11/17/2017 11:08 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 Sanitas software licensed to FTN Associates. UG

Time Series

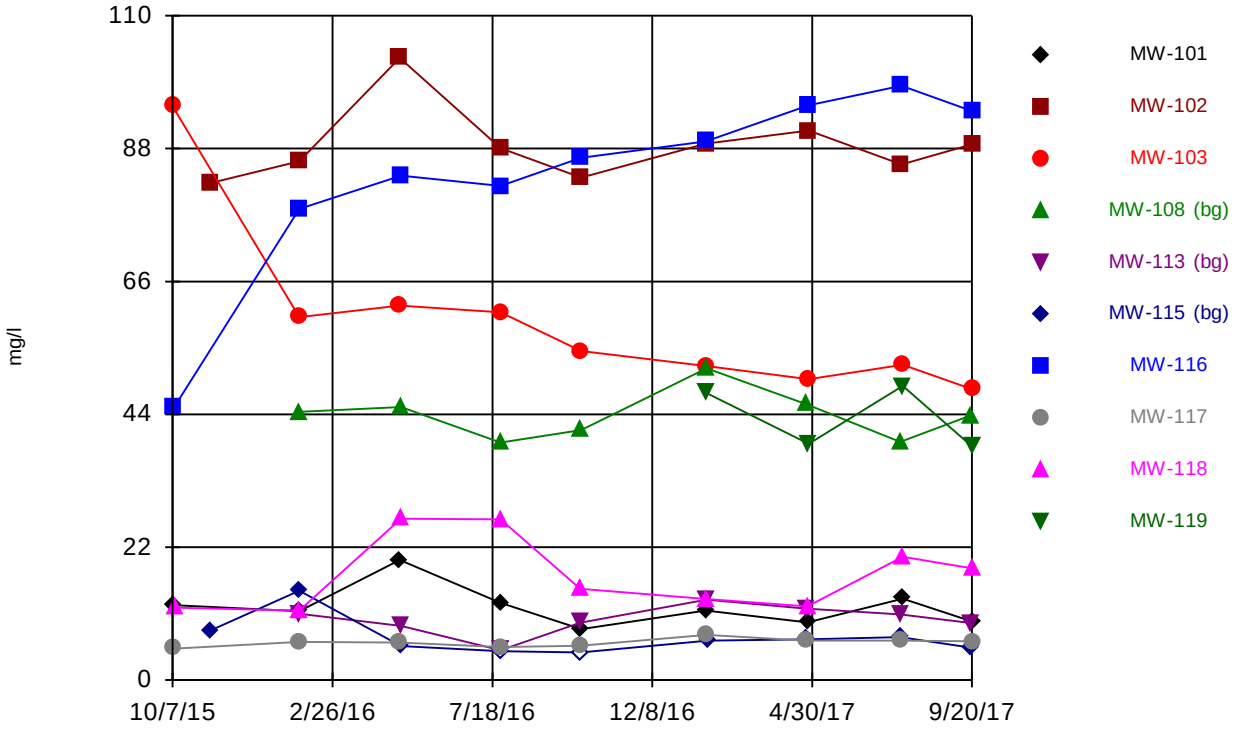


Constituent: pH Analysis Run 11/17/2017 11:08 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Time Series

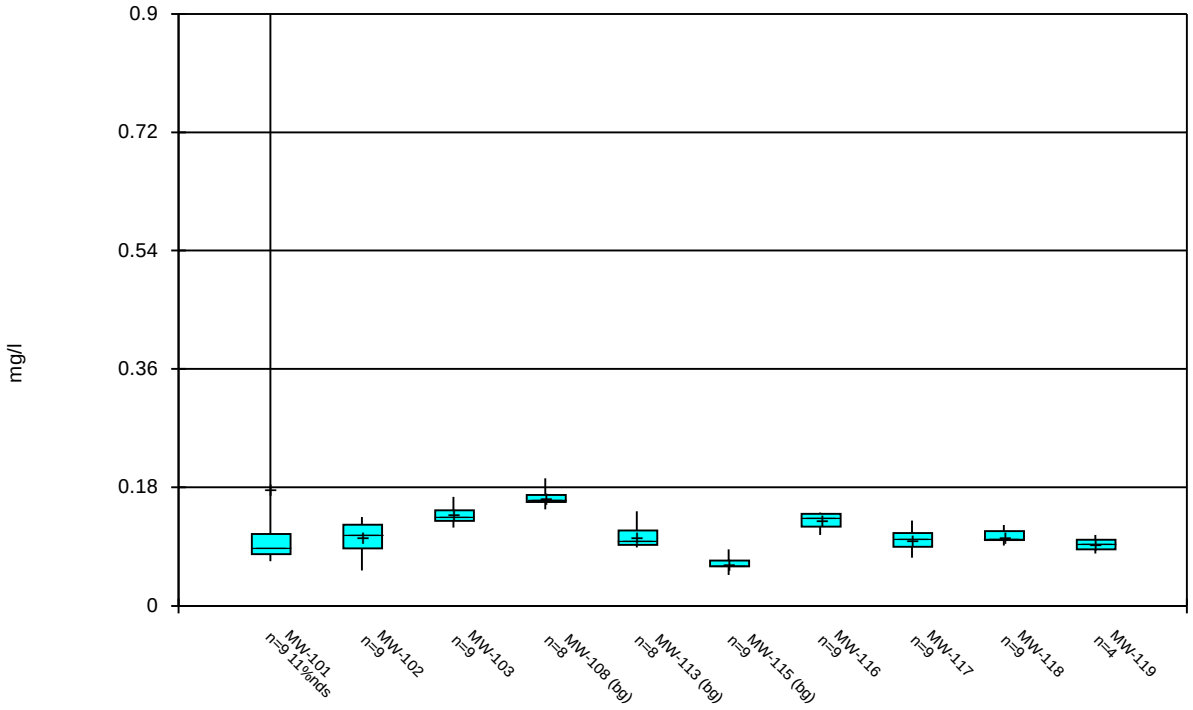


Constituent: Sulfate Analysis Run 11/17/2017 11:08 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box-and-Whisker Plots

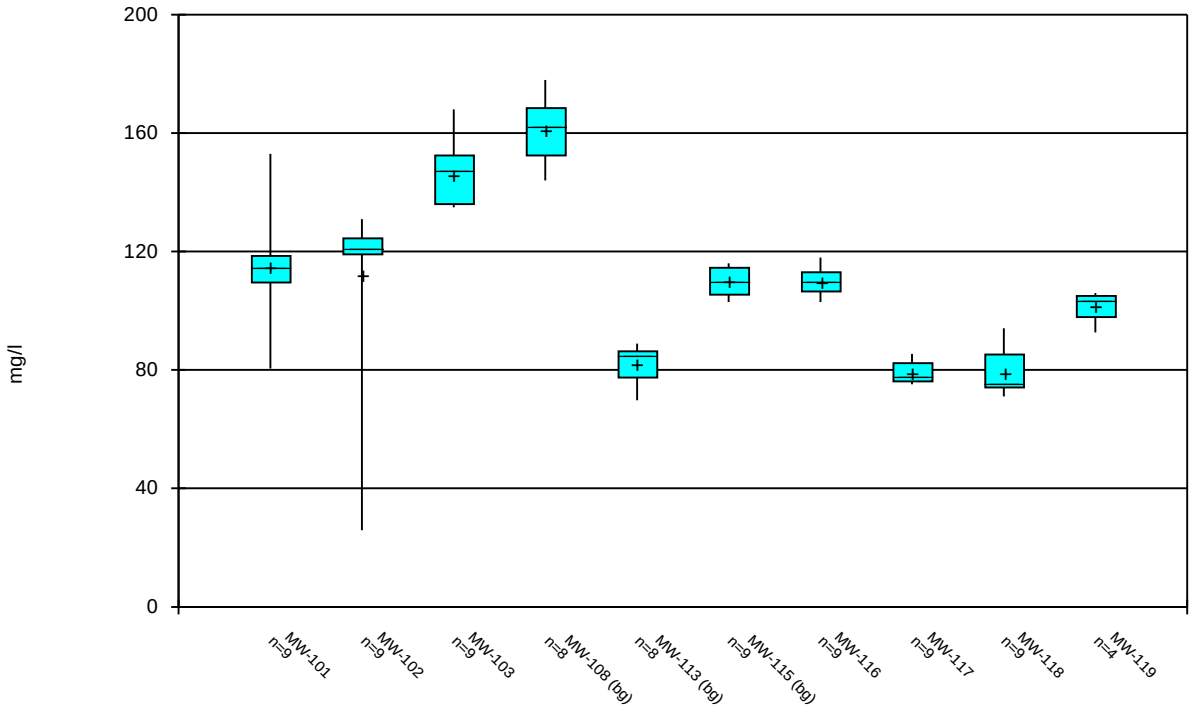
Box & Whiskers Plot



Constituent: Boron Analysis Run 12/10/2017 4:56 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

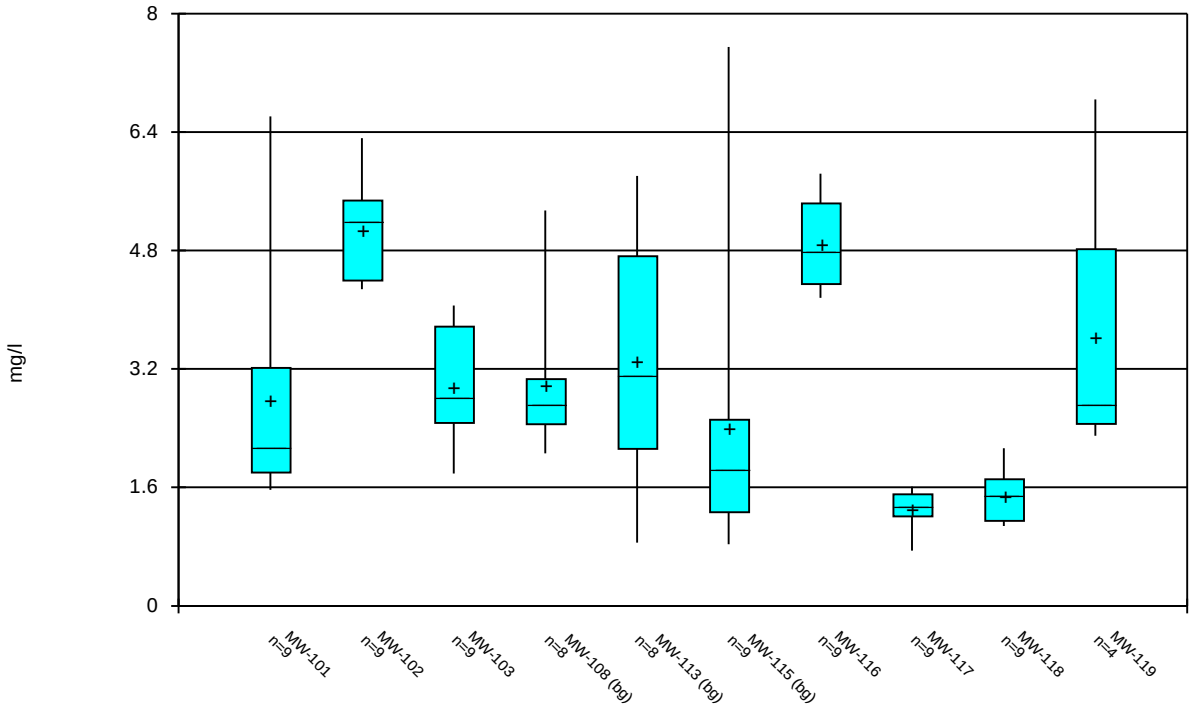
Box & Whiskers Plot



Constituent: Calcium Analysis Run 11/17/2017 11:09 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot



Constituent: Chloride Analysis Run 11/17/2017 11:09 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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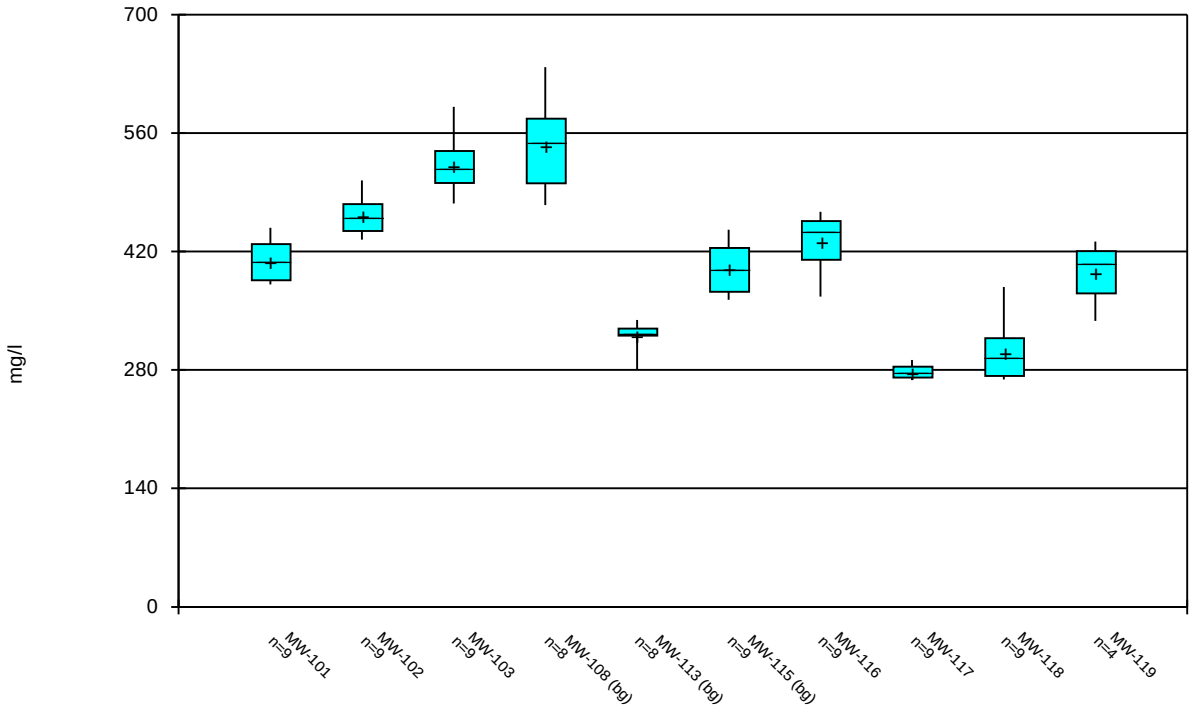
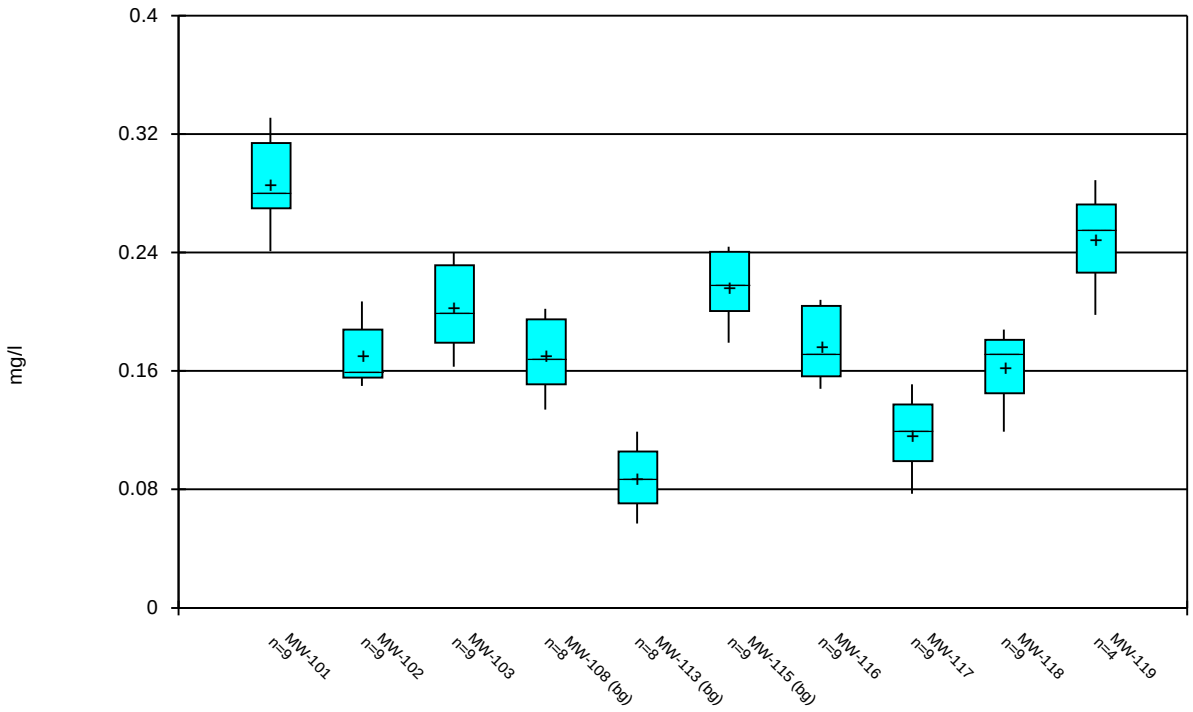
Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 11/17/2017 11:09 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot

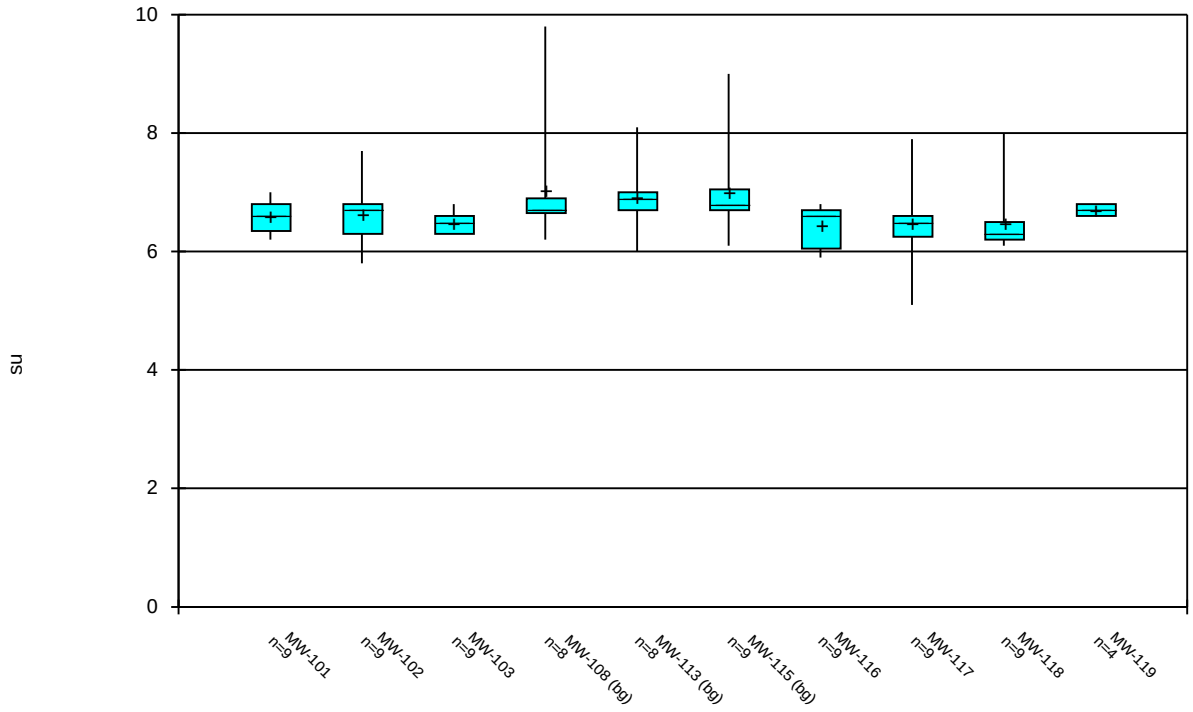


Constituent: Fluoride Analysis Run 11/17/2017 11:09 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.5.32 Sanitas software licensed to FTN Associates. UG

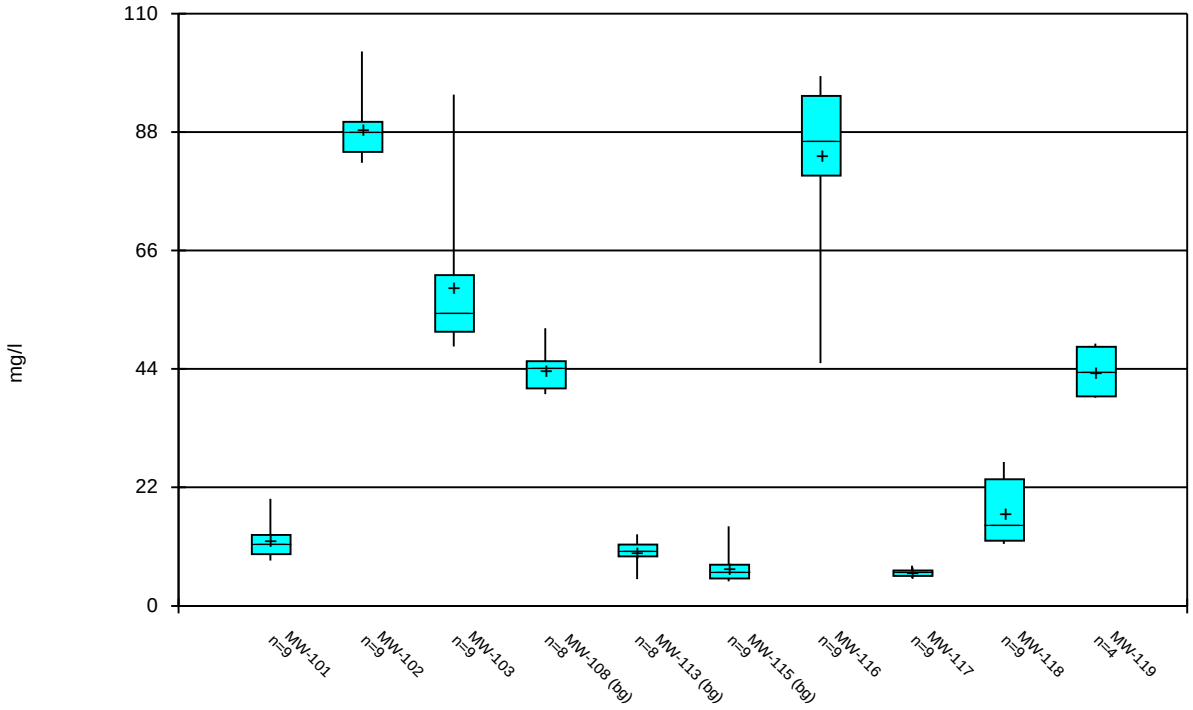
Box & Whiskers Plot



Constituent: pH Analysis Run 11/17/2017 11:09 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot



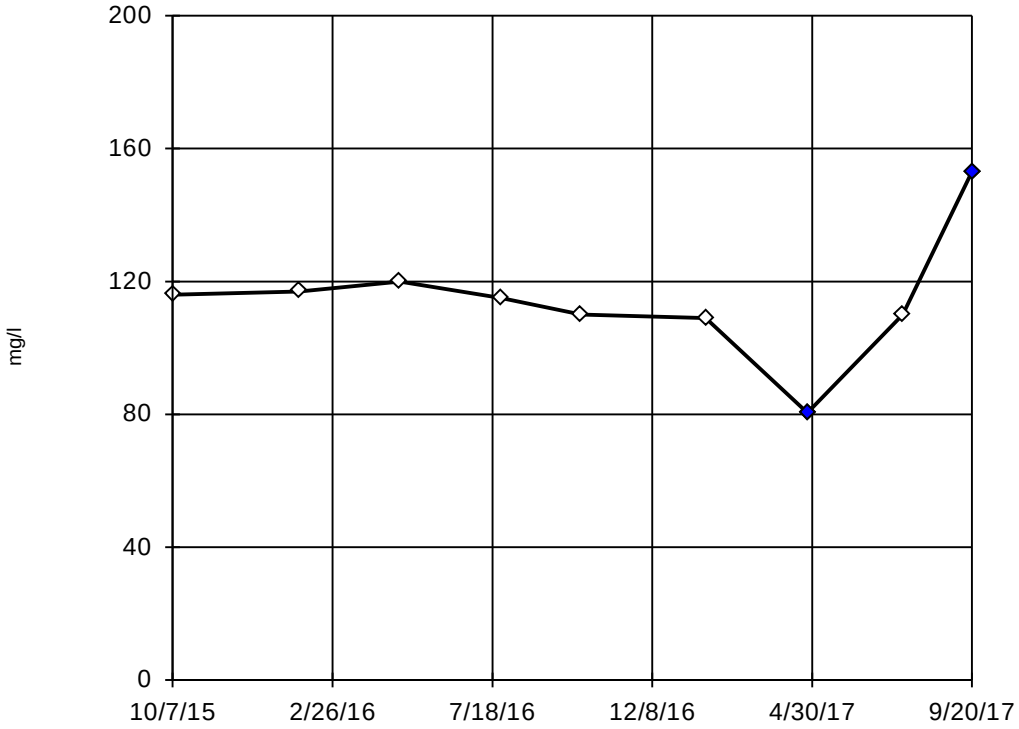
Constituent: Sulfate Analysis Run 11/17/2017 11:09 AM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Statistically Significant Outliers, September Data Set

Tukey's Outlier Screening

MW-101



n = 9

Outliers are drawn as solid.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 147.6, low cutoff = 84.64, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 11/16/2017 3:46 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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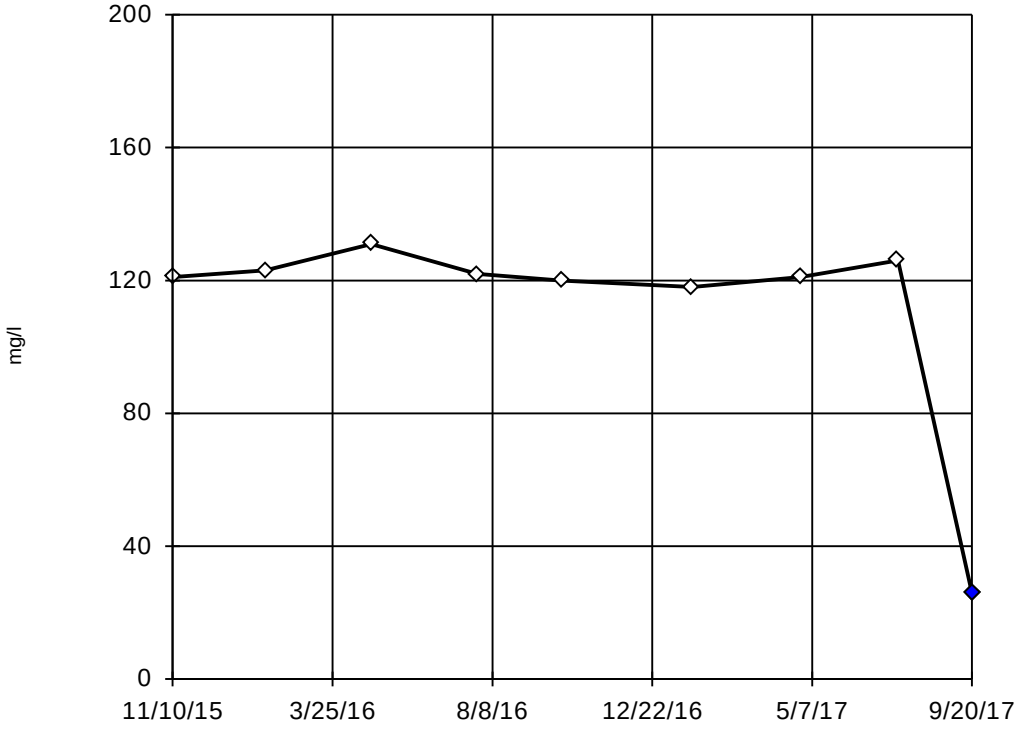
Dixon's Outlier Test

MW-102



n = 9

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 112.
Std. Dev. = 32.51.
25.9: c = 0.9201
tabl = 0.512.
Alpha = 0.05.

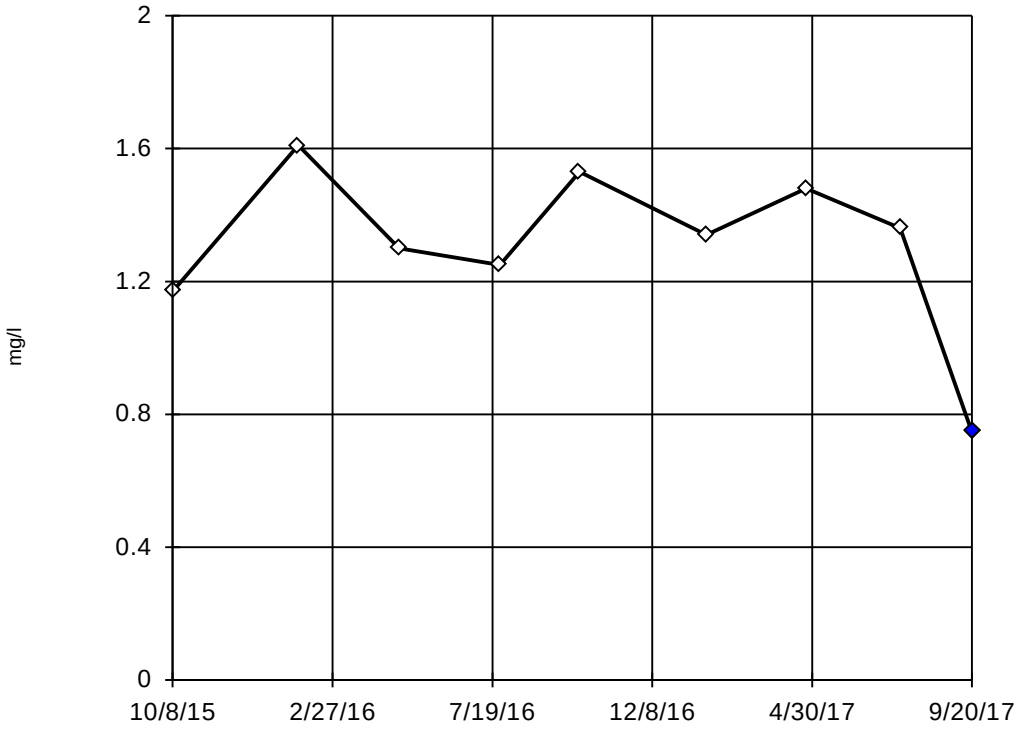
Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.8956
Critical = 0.851
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Calcium Analysis Run 11/16/2017 3:46 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Dixon's Outlier Test

MW-117



n = 9

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 1.31.
Std. Dev. = 0.2527.
0.747 (J): c = 0.5402
tabl = 0.512.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9694
Critical = 0.851
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Chloride Analysis Run 11/16/2017 3:46 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

APPENDIX G

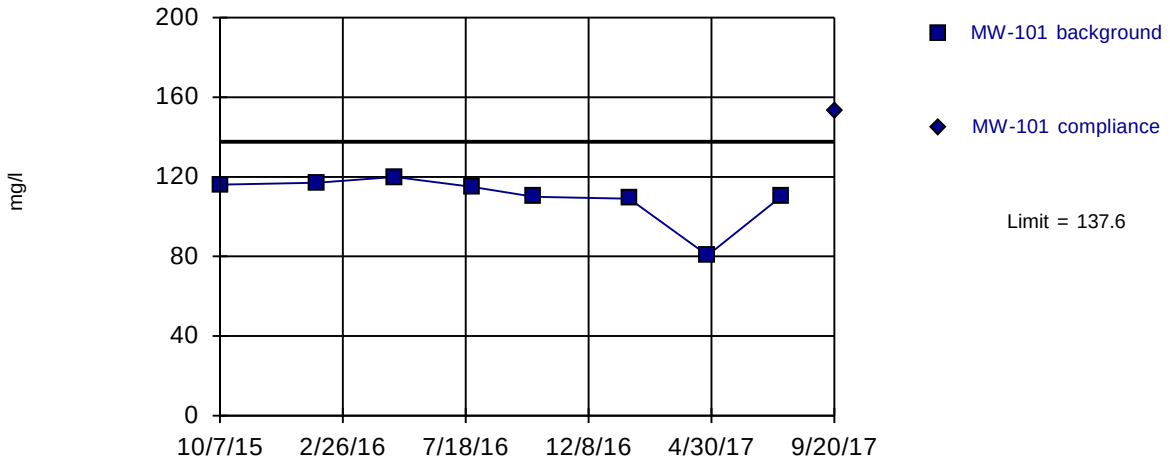
Statistical Evaluation Results

Prediction Limits, Second Half of 2017 Sampling – September 2017

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square transformation): Mean=12166, Std. Dev.=2464, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7547, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 11/16/2017 4:02 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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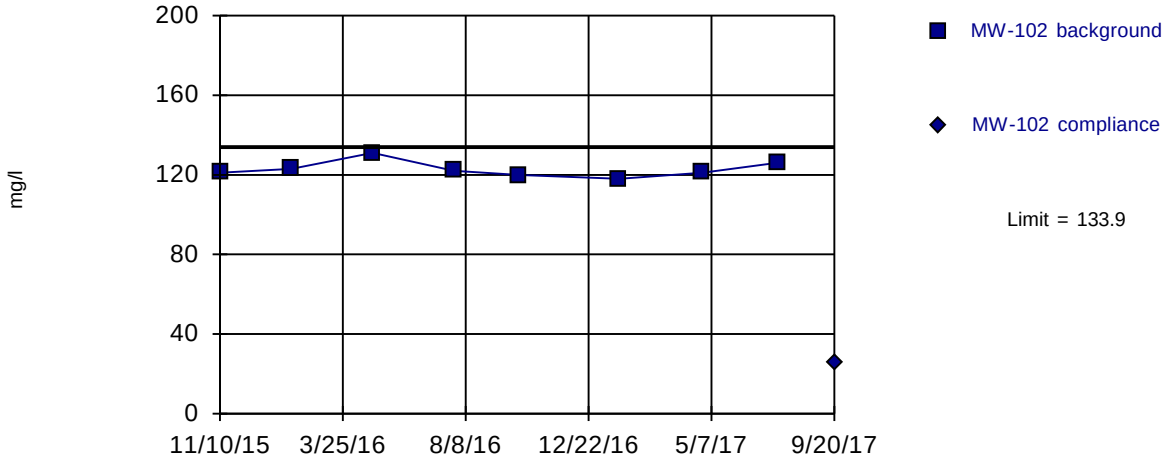
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=122.8, Std. Dev.=4.062, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8956, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

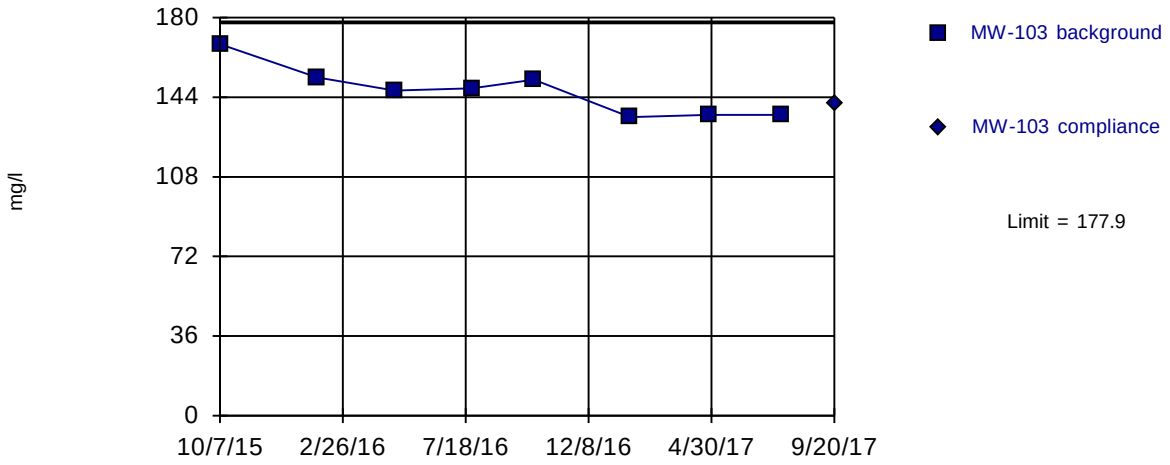
Constituent: Calcium Analysis Run 11/16/2017 4:02 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=146.9, Std. Dev.=11.27, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8944, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 11/16/2017 4:02 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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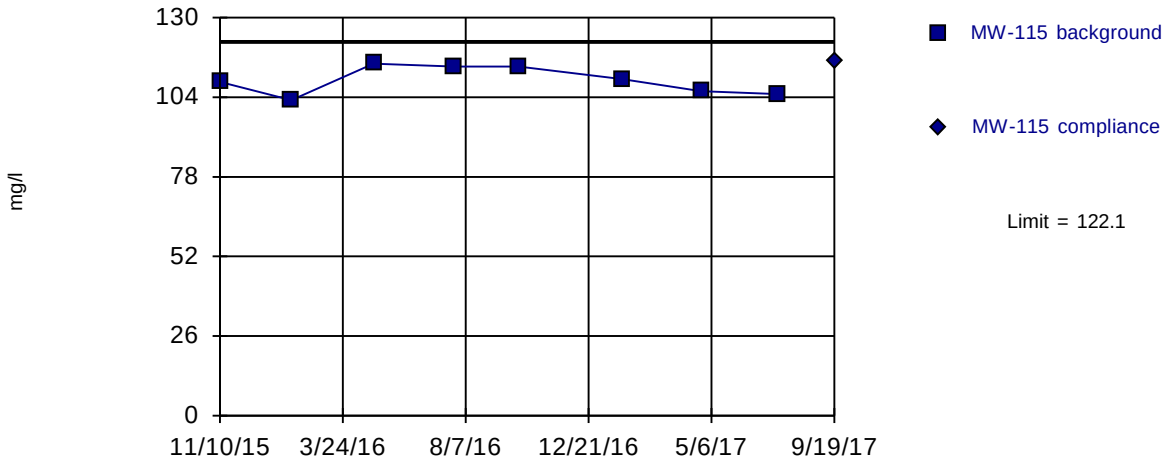
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9154, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

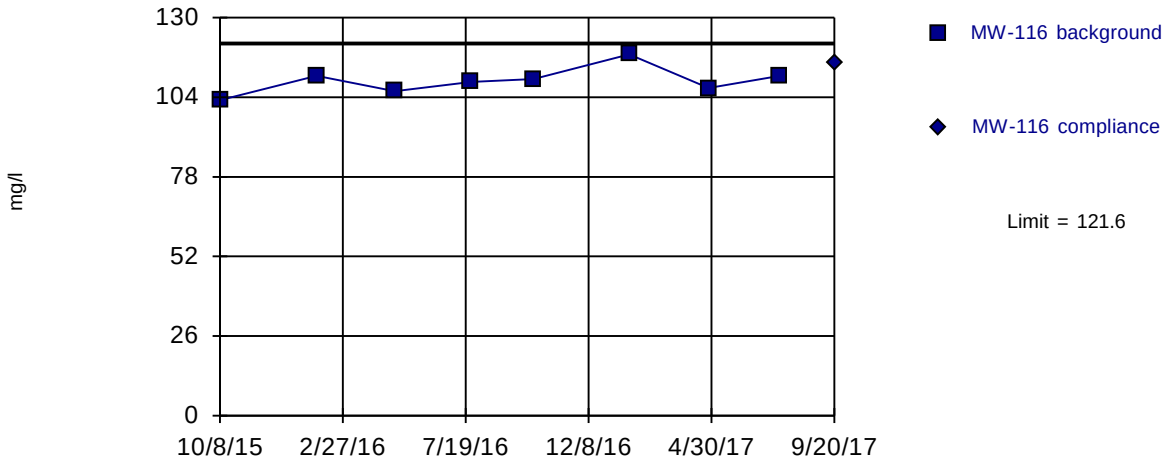
Constituent: Calcium Analysis Run 11/16/2017 4:02 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=109.4, Std. Dev.=4.438, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9448, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 11/16/2017 4:02 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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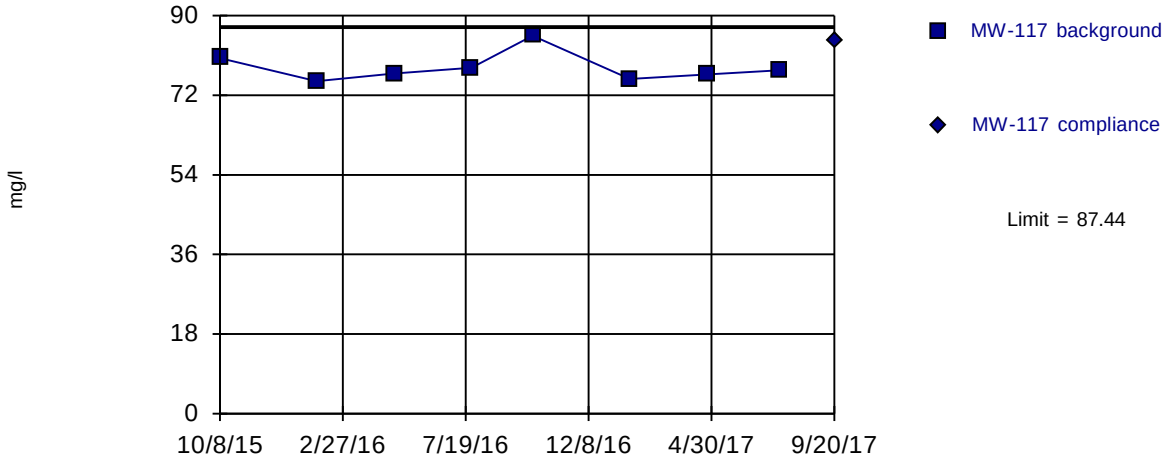
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8288, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

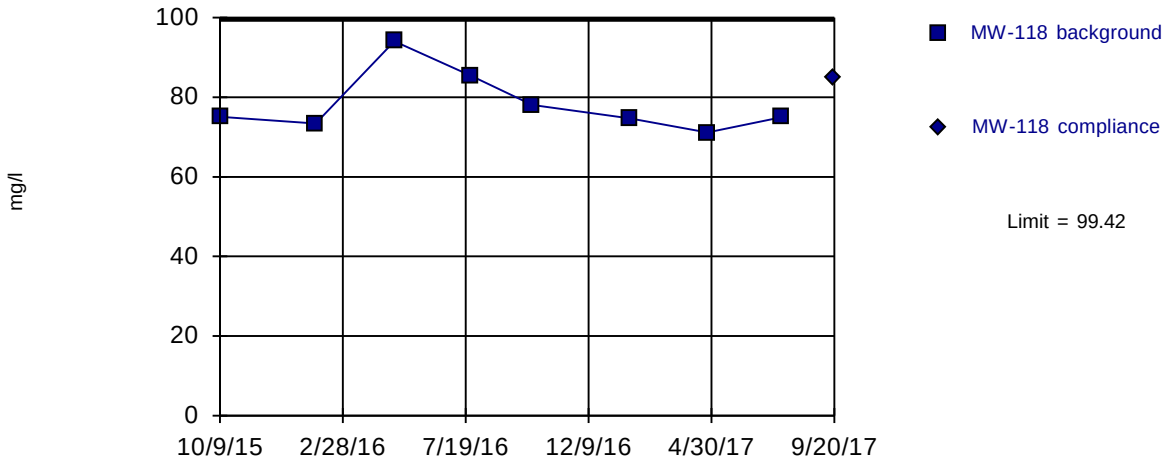
Constituent: Calcium Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.35, Std. Dev.=7.66, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8173, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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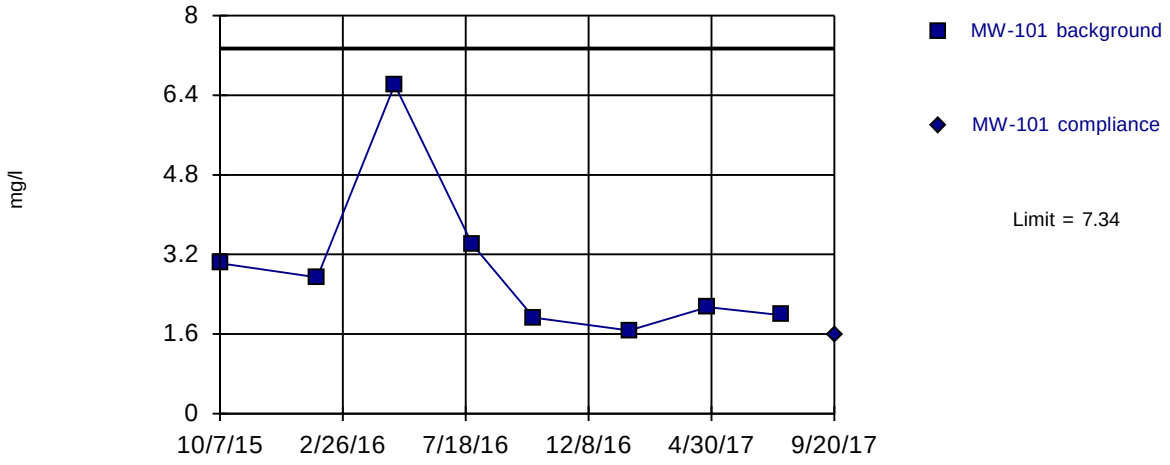
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.938, Std. Dev.=1.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7523, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

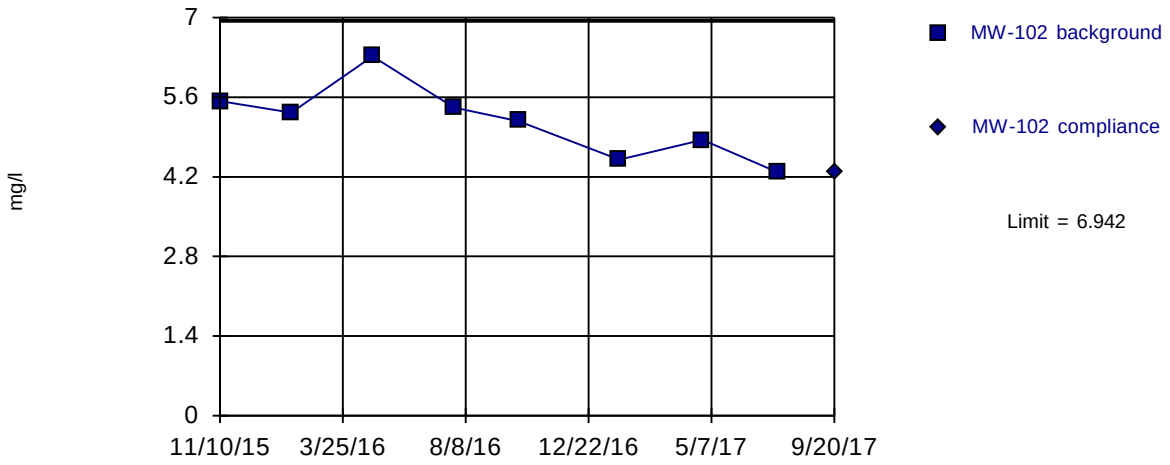
Constituent: Chloride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=5.176, Std. Dev.=0.6418, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9652, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Chloride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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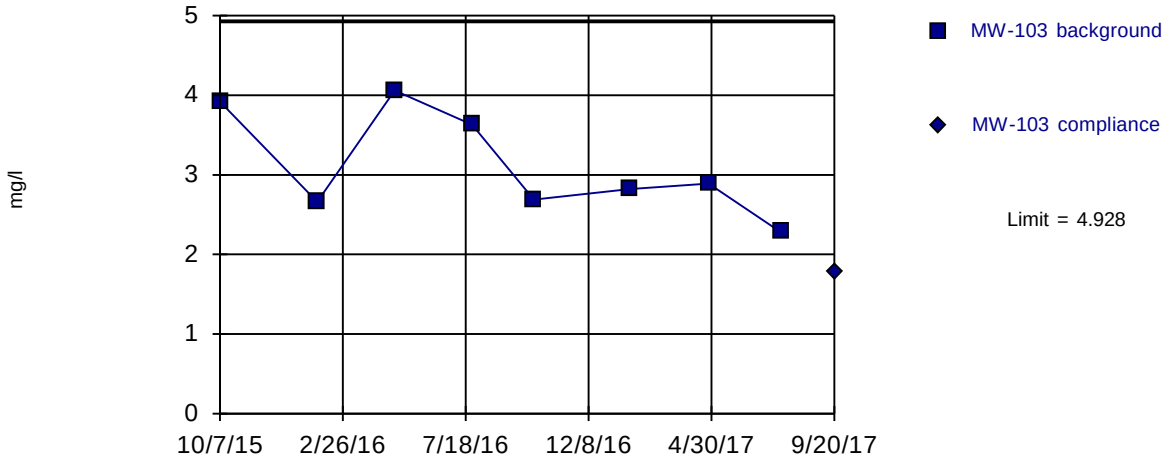
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.119, Std. Dev.=0.6578, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.892, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

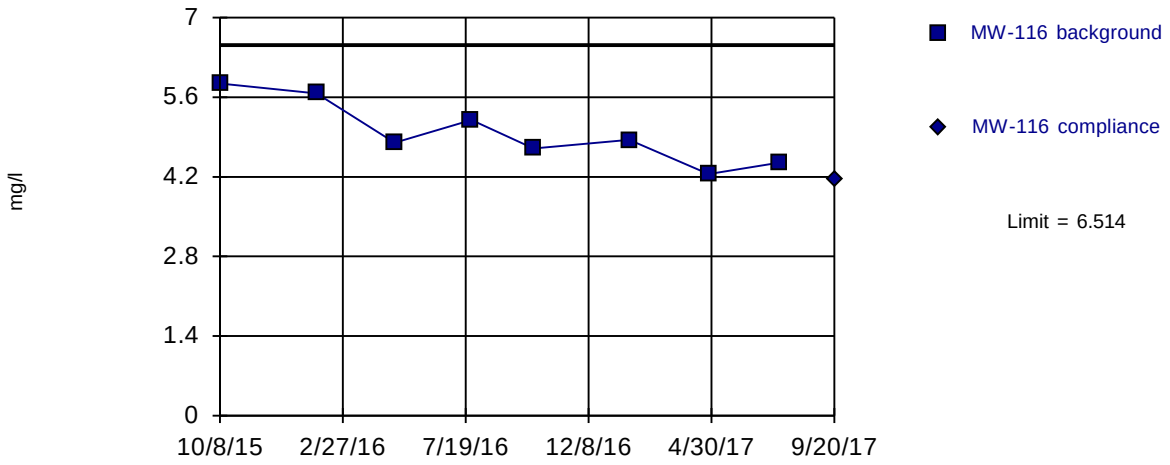
Constituent: Chloride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=4.97, Std. Dev.=0.5612, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9382, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Chloride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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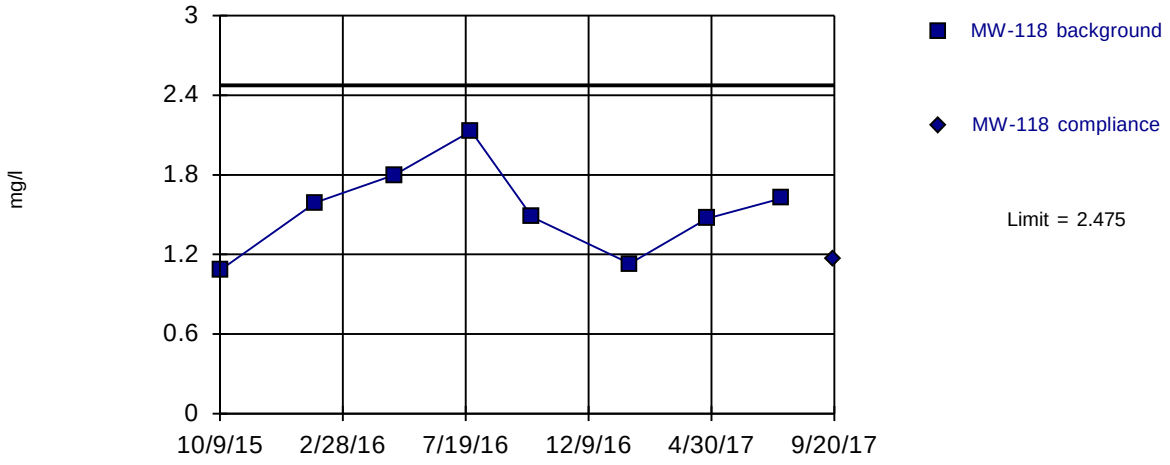
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.538, Std. Dev.=0.3407, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9523, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

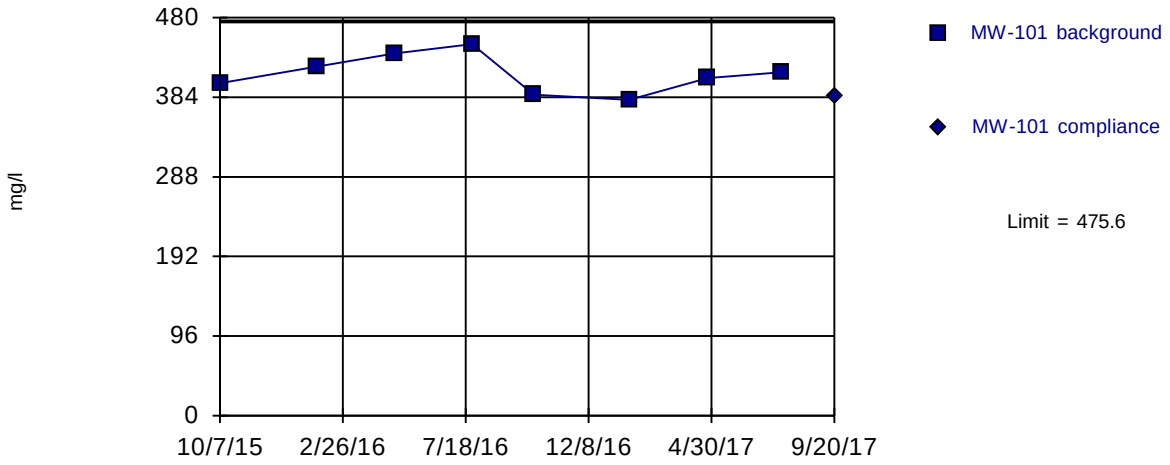
Constituent: Chloride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=412, Std. Dev.=23.11, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.971, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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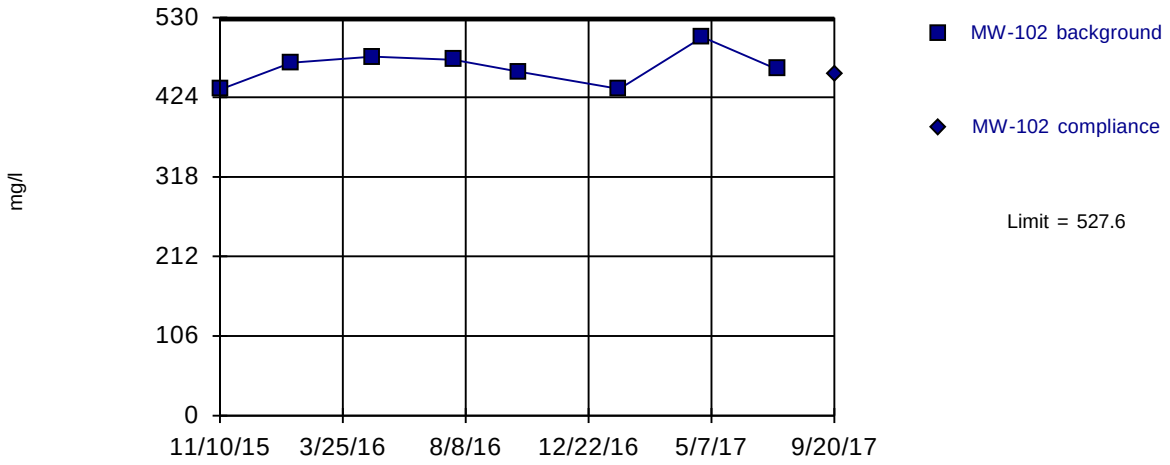
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=464.3, Std. Dev.=23.04, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9447, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

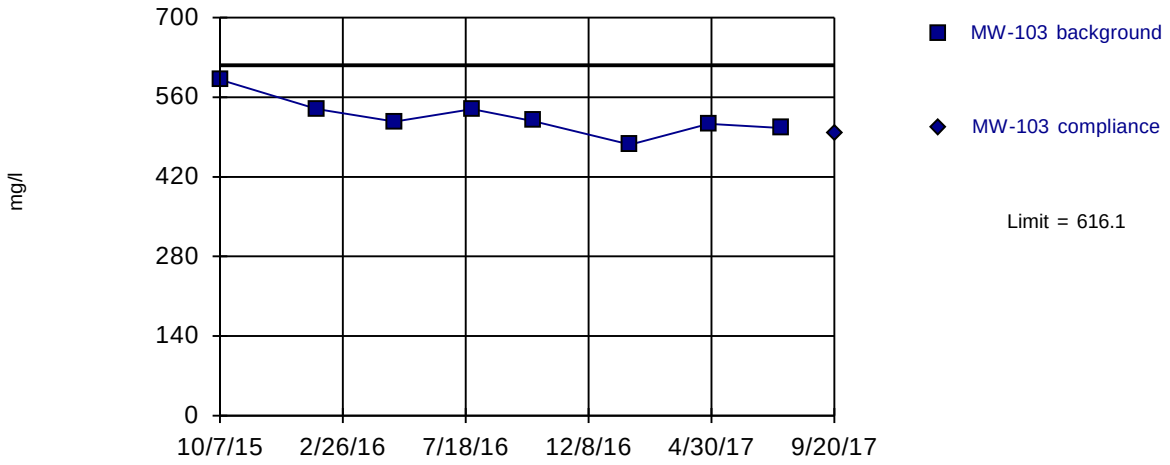
Constituent: Dissolved Solids Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=525, Std. Dev.=33.1, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9204, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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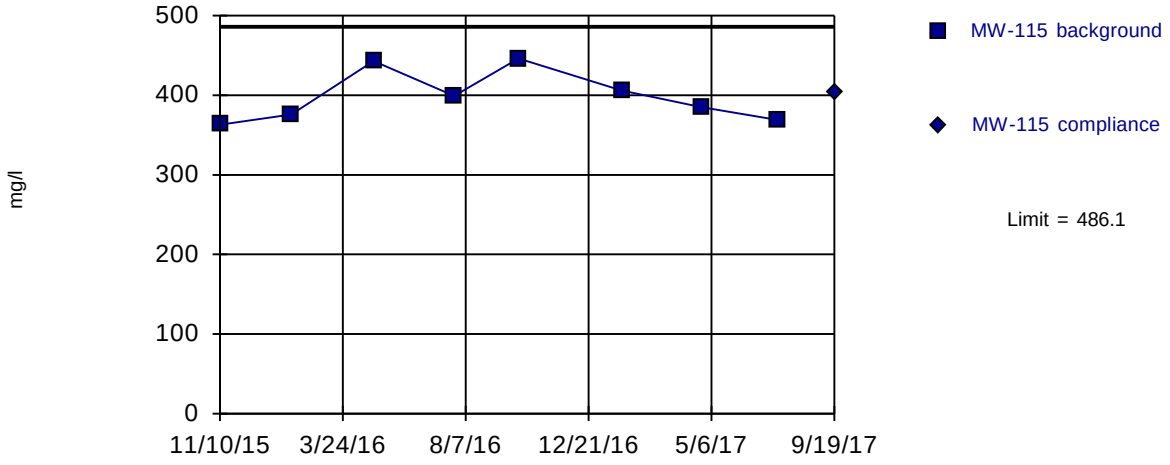
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=398.4, Std. Dev.=31.87, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8923, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

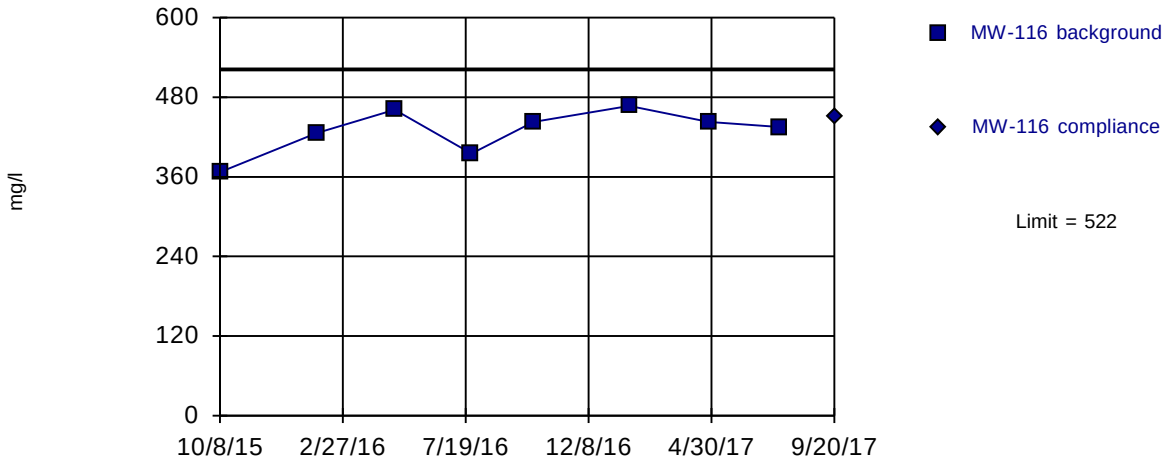
Constituent: Dissolved Solids Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=429.6, Std. Dev.=33.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9103, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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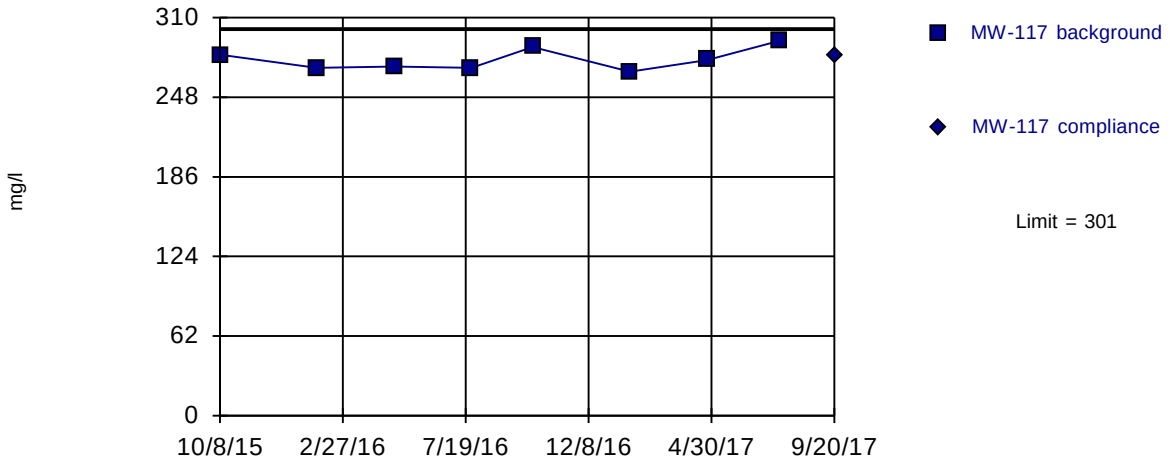
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

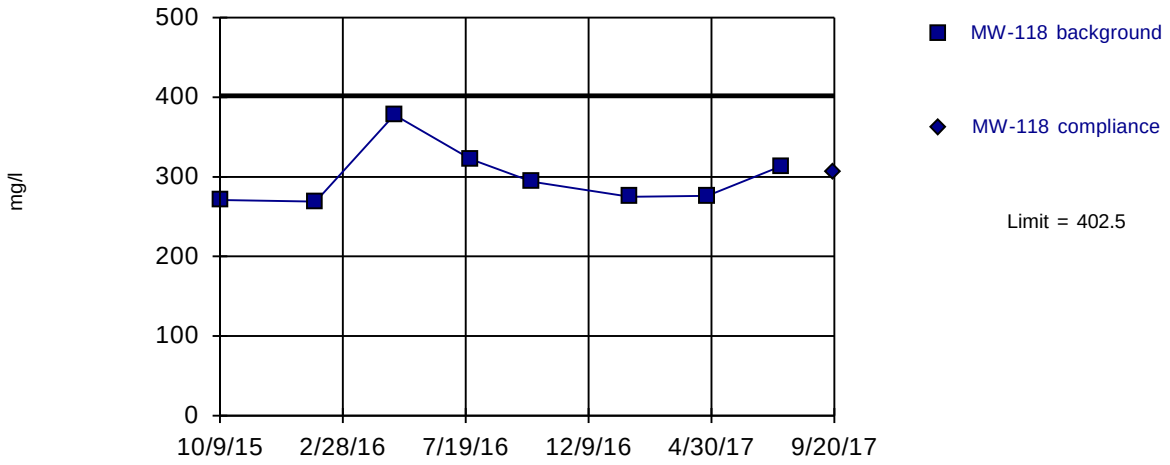
Constituent: Dissolved Solids Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=299.8, Std. Dev.=37.37, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8238, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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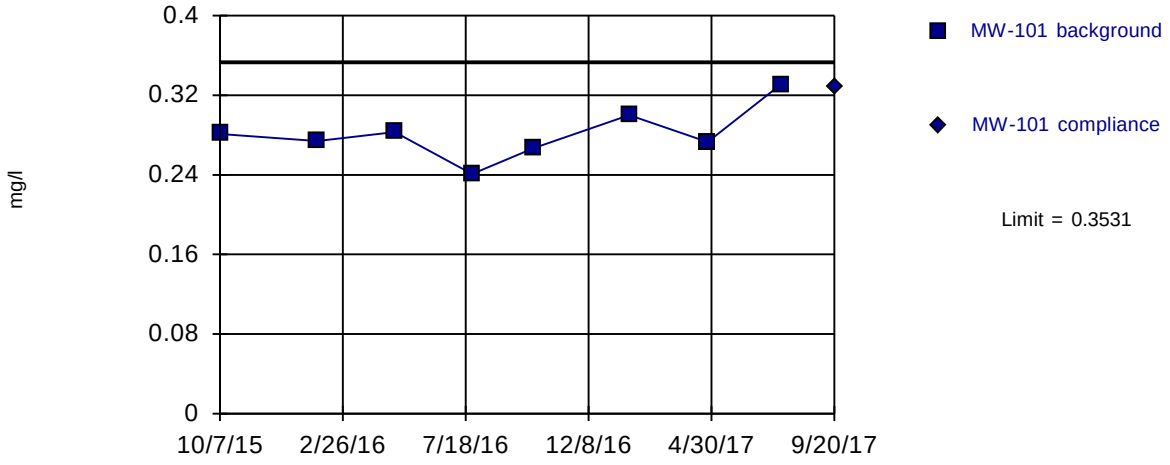
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2813, Std. Dev.=0.02611, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9417, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

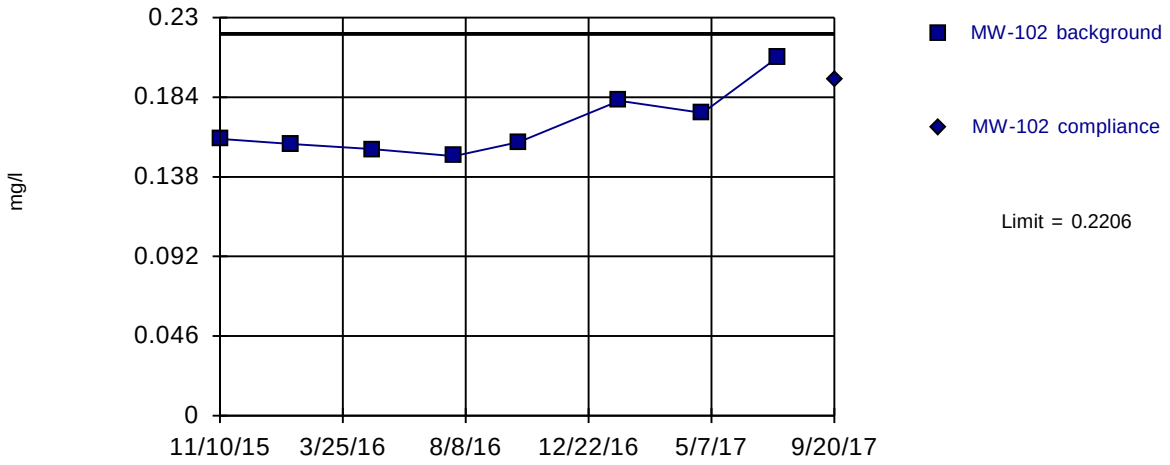
Constituent: Fluoride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1679, Std. Dev.=0.01916, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8449, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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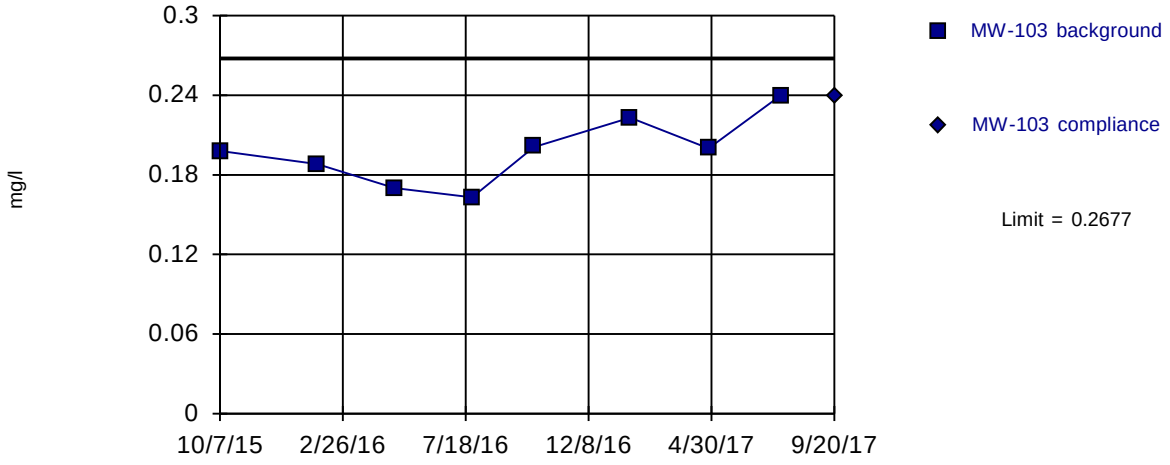
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1979, Std. Dev.=0.02539, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9583, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

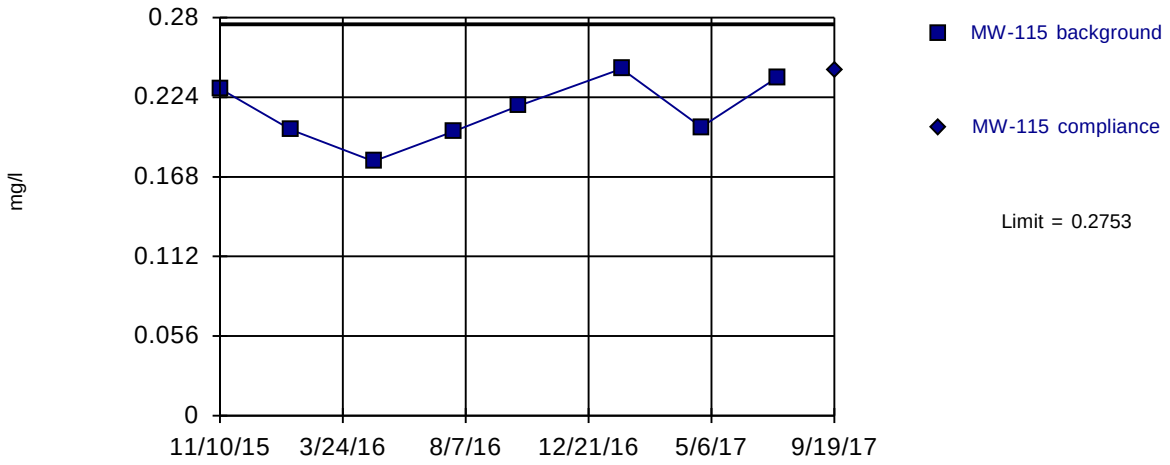
Constituent: Fluoride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2141, Std. Dev.=0.02223, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9478, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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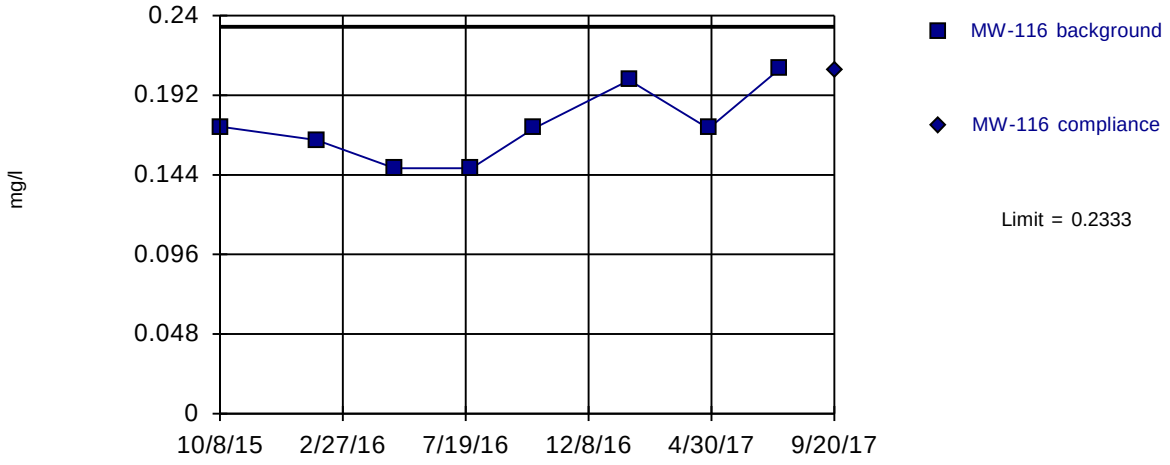
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1734, Std. Dev.=0.02179, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8928, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 11/16/2017 4:03 PM View: Appendix III

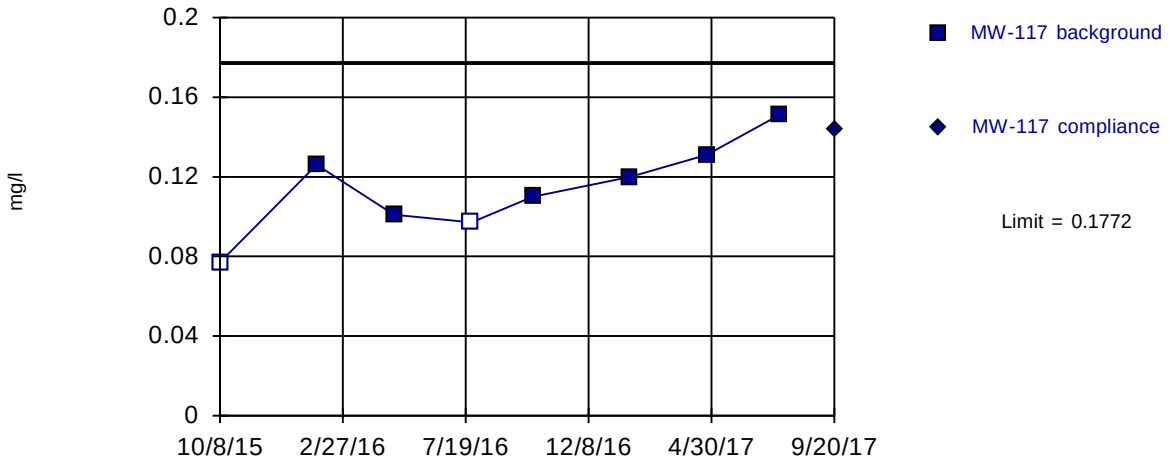
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1141, Std. Dev.=0.02292, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.993, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Fluoride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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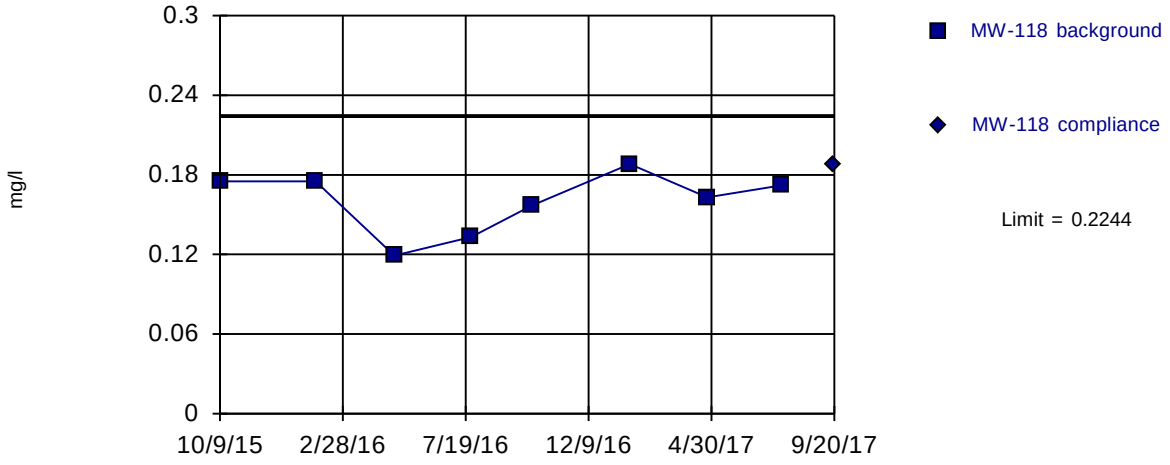
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1603, Std. Dev.=0.02332, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9051, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

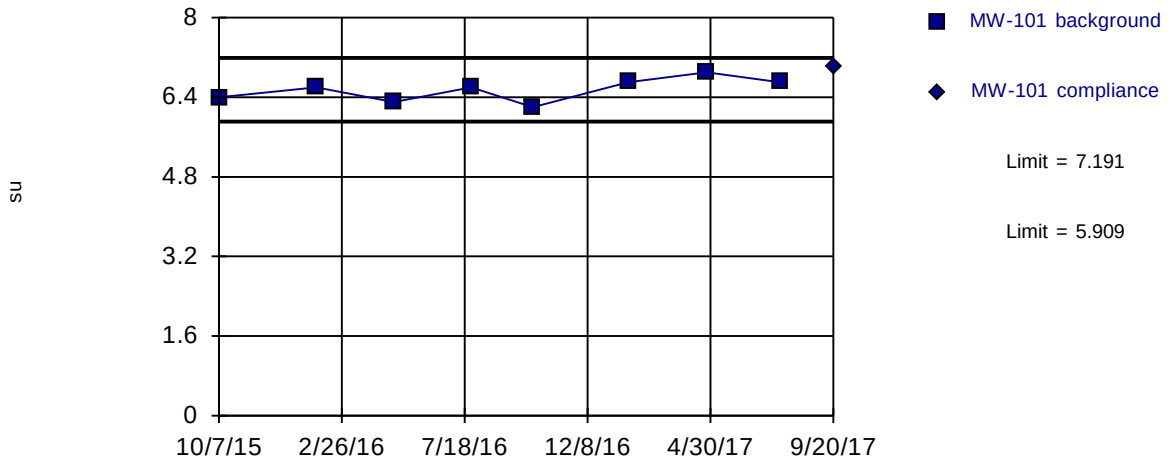
Constituent: Fluoride Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.55, Std. Dev.=0.233, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9552, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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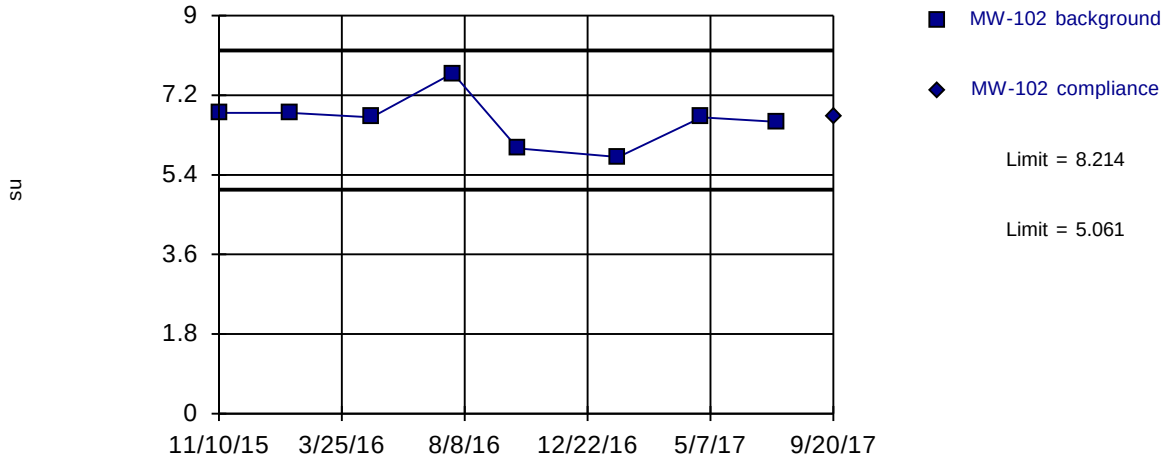
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.638, Std. Dev.=0.5731, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8994, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

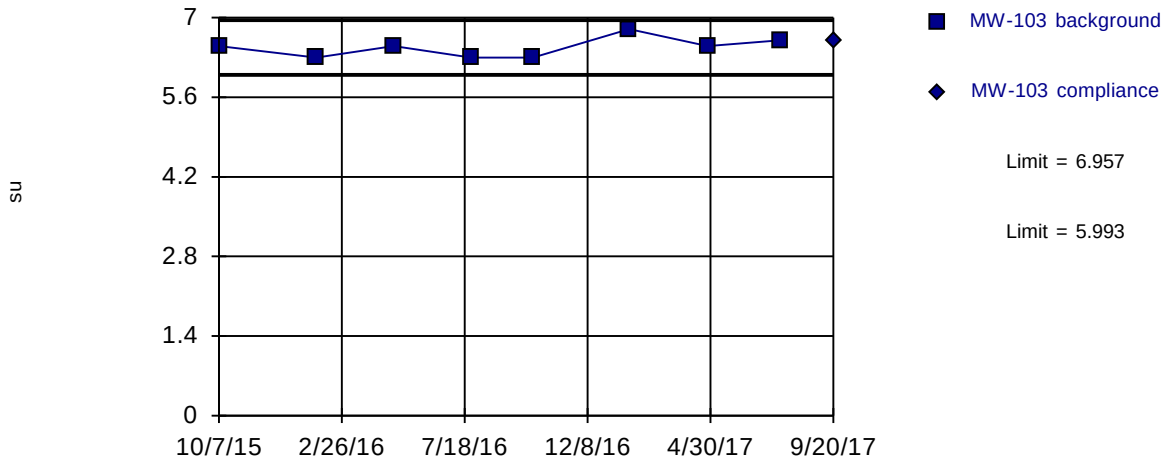
Constituent: pH Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.475, Std. Dev.=0.1753, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8695, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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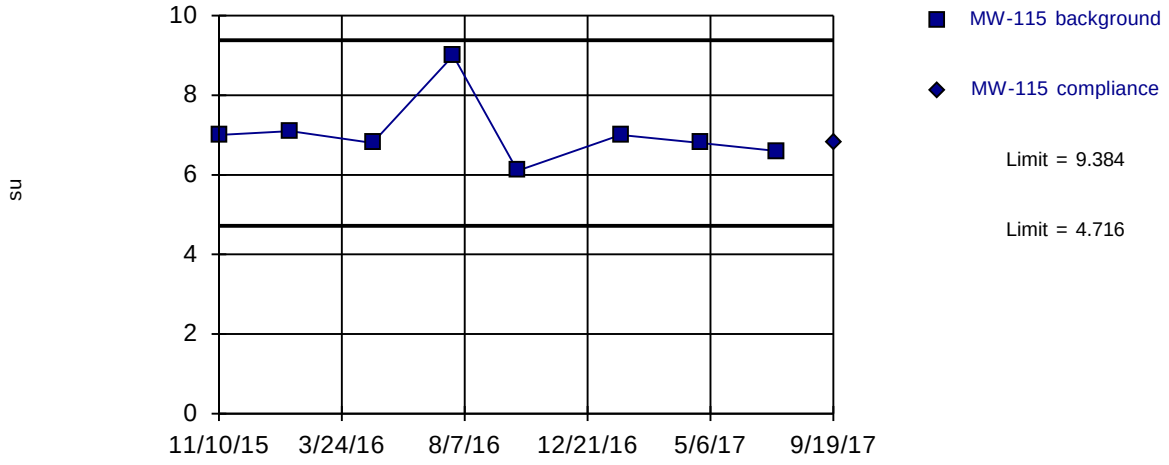
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.05, Std. Dev.=0.8485, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7617, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

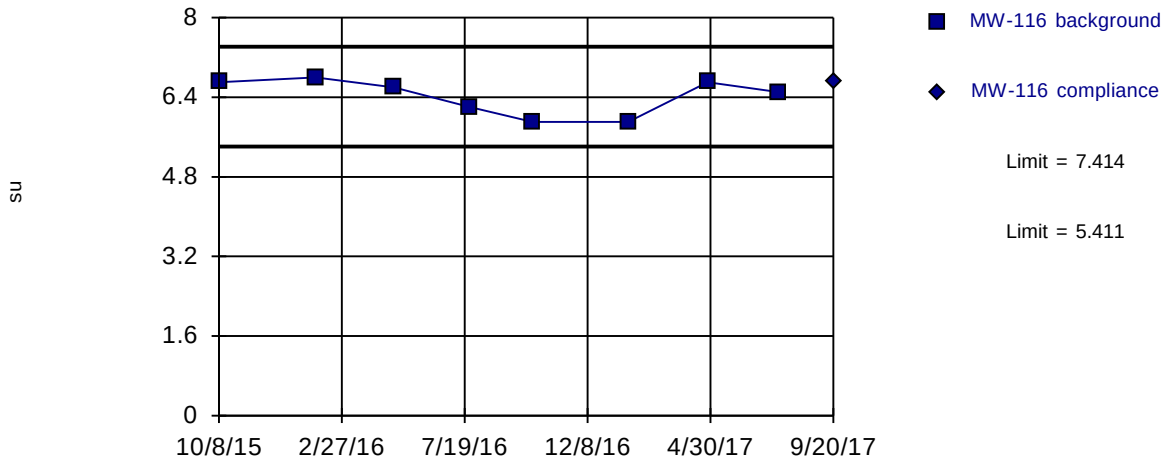
Constituent: pH Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.413, Std. Dev.=0.3643, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8539, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: pH Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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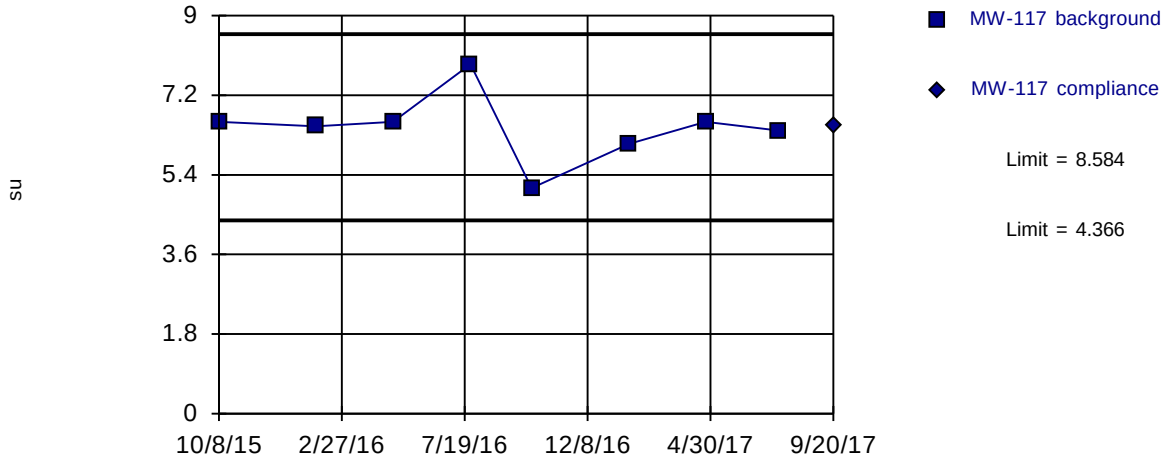
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.475, Std. Dev.=0.7667, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.871, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

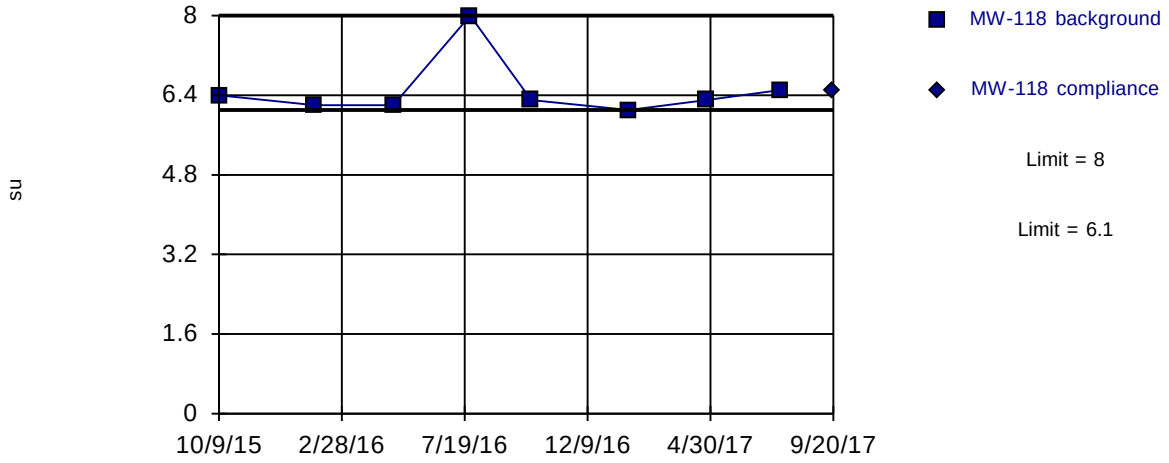
Constituent: pH Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limits

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. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

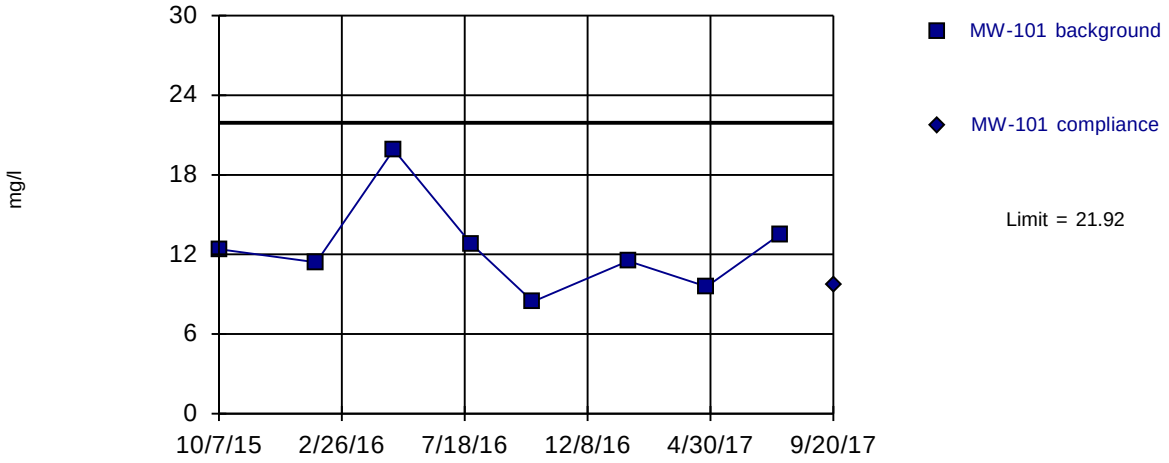
Constituent: pH Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=12.44, Std. Dev.=3.446, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8639, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

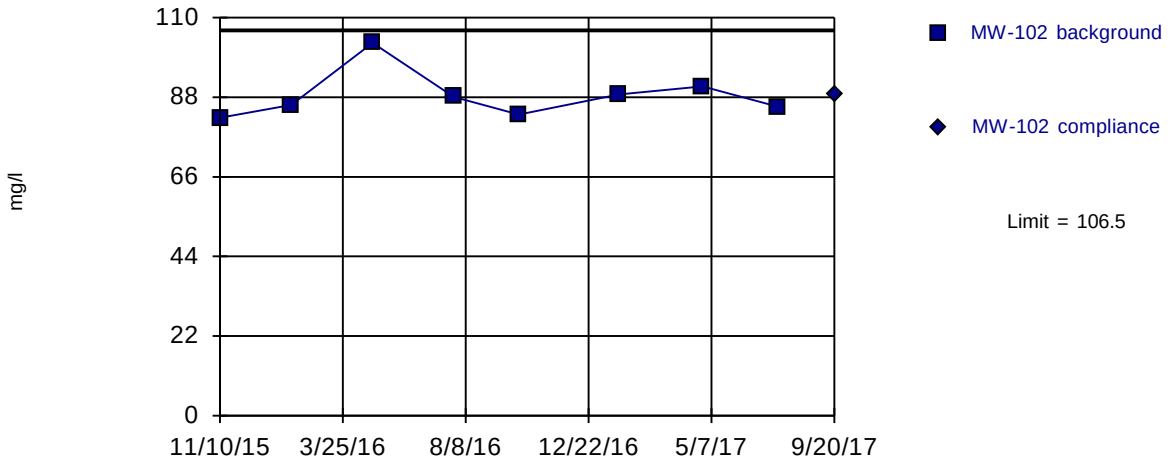
Constituent: Sulfate Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=88.46, Std. Dev.=6.543, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8238, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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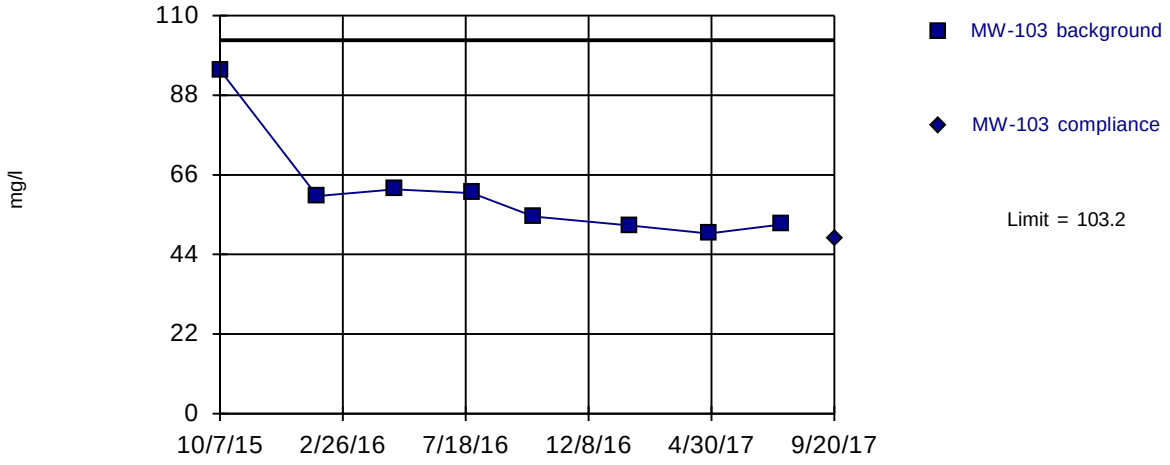
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=3.914, Std. Dev.=0.2823, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7518, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 11/16/2017 4:03 PM View: Appendix III

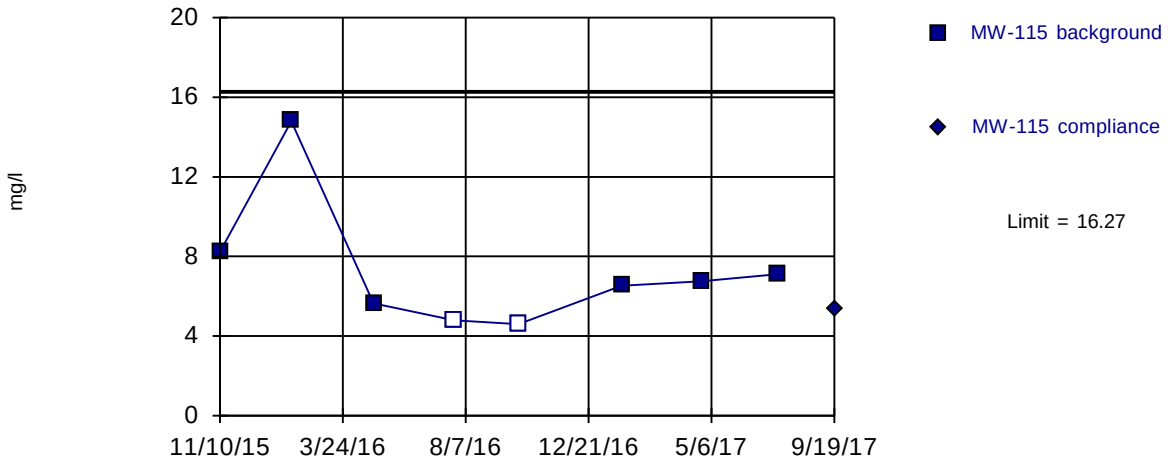
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.301, Std. Dev.=3.262, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7624, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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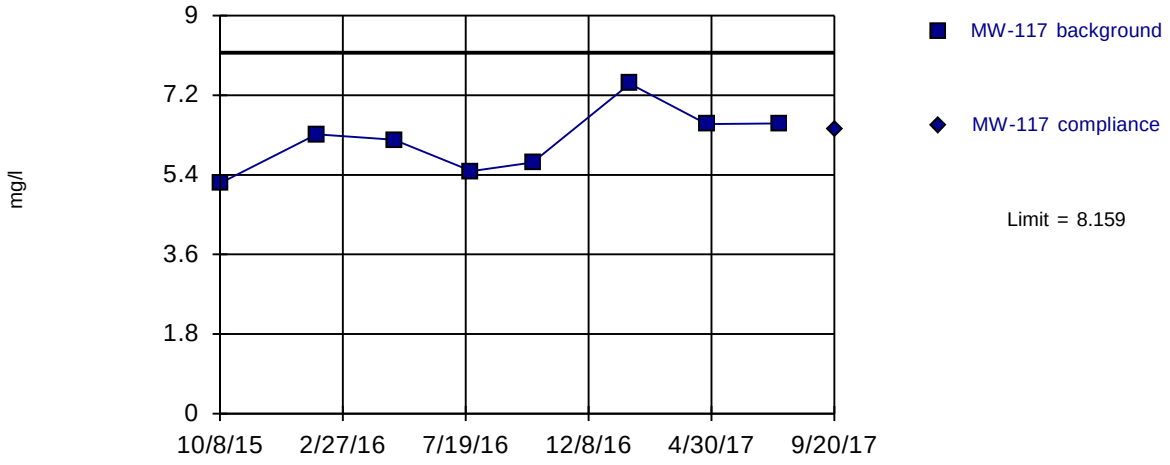
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.181, Std. Dev.=0.7192, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.958, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

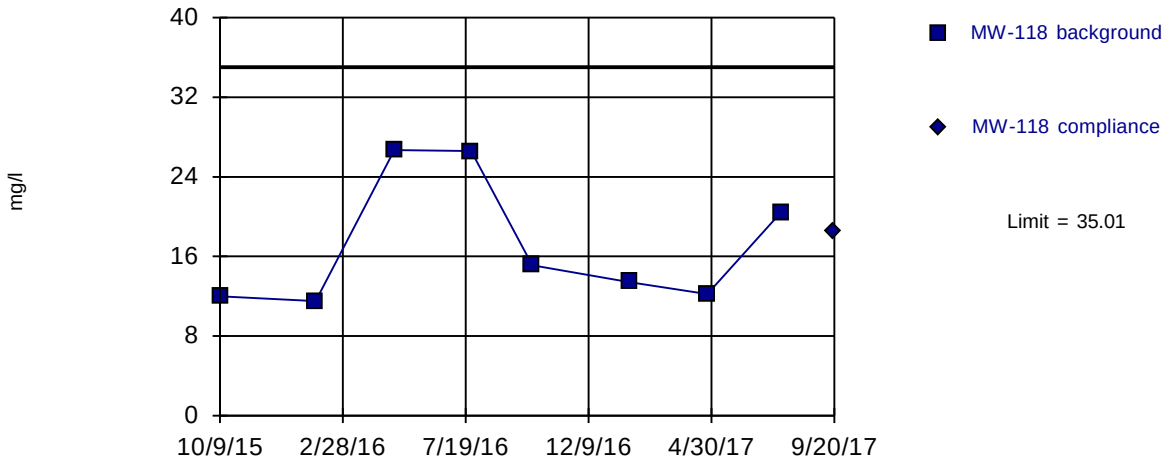
Constituent: Sulfate Analysis Run 11/16/2017 4:03 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=17.24, Std. Dev.=6.461, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8056, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 11/16/2017 4:03 PM View: Appendix III

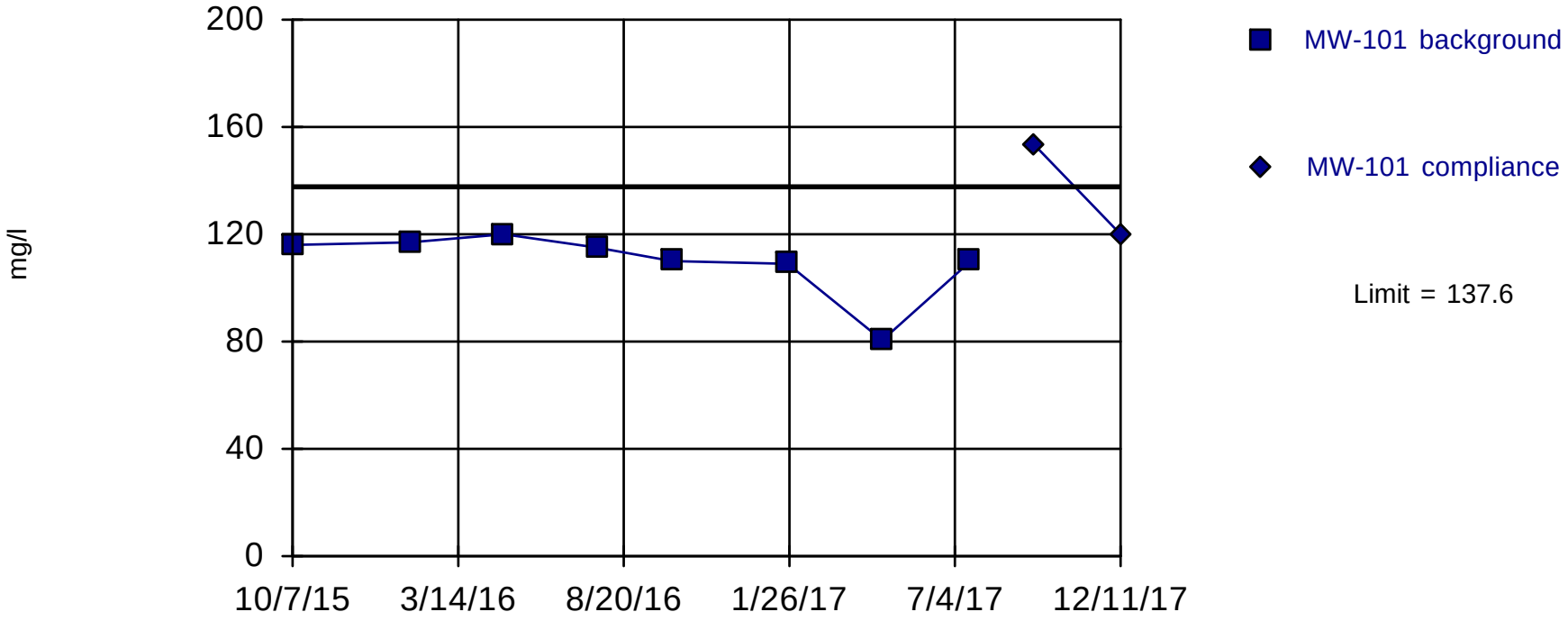
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Prediction Limits, Verification Sampling – December 2017

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square transformation): Mean=12166, Std. Dev.=2464, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7547, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 12/15/2017 4:31 PM View: Appendix III

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database