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water resources / environmental consultants

PLUM POINT ENERGY STATION

GROUNDWATER MONITORING AND CORRECTIVE ACTION 2019 ANNUAL REPORT

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

JANUARY 28, 2020

PLUM POINT ENERGY STATION

GROUNDWATER MONITORING AND CORRECTIVE ACTION
2019 ANNUAL REPORT

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 Environmental Protection Agency (EPA) Coal Combustion Residuals rule, promulgated at Title 40 of the Code of Federal Regulations (40 CFR), Part 257, and published on April 17, 2015. Landfills regulated by this 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 semiannual detection monitoring events performed during 2019 in accordance with 40 CFR Part 257.

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 2019 semiannual monitoring events. Major conclusions from the evaluations include the following:

1. Detection monitoring was performed during May and October 2019 for the first and second half of 2019 monitoring periods, respectively.
2. The direction of groundwater flow varied between the first and second half monitoring events. Water levels gauged during May 2019 indicate groundwater flow was generally toward the south-southwest across the active landfill area. Water levels gauged during October 2019 indicate groundwater flow was generally toward the east-southeast.
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 reporting detection limit (RDL) for all wells except for upgradient well MW-108 for the period of record.

5. PPSC completed a successful alternate source demonstration (ASD) in accordance with §257.94(e)(2) in response to a confirmed statistically significant increase (SSI) for calcium at MW-116 during the second half of 2018 monitoring period. The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on January 29, 2019. Based on the successful ASD, PPSC continued with detection monitoring in accordance with §257.94.

6. Statistical evaluation of the first half of 2019 monitoring data identified confirmed statistically significant increases (SSIs) for calcium at MW-115 and MW-117 and for TDS at MW-117. PPSC completed a successful ASD in response to the SSIs in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on October 24, 2019. Based on the successful ASD, PPSC continued with detection monitoring in accordance with §257.94.

7. Statistical evaluation of the second half of 2019 monitoring data identified one confirmed SSI for TDS at MW-117. The SSI for TDS at MW-117 was previously confirmed during the first half of 2019 monitoring period and, as noted above, a successful ASD was made. In response to the confirmed SSI during the second half of 2019 monitoring period, PPSC completed a successful ASD in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on December 18, 2019. Based on the successful ASD, PPSC will continue with detection monitoring in accordance with §257.94.

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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 Environmental Protection Agency (EPA) Coal Combustion Residuals rule, promulgated at Title 40 of the Code of Federal Regulations (40 CFR), Part 257, and published on April 17, 2015. The 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 semiannual monitoring events performed during 2019. This report presents the results of groundwater sampling and the associated statistical evaluations, and 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 Plum Point Energy Station and the landfill is provided as Figure 1.2.

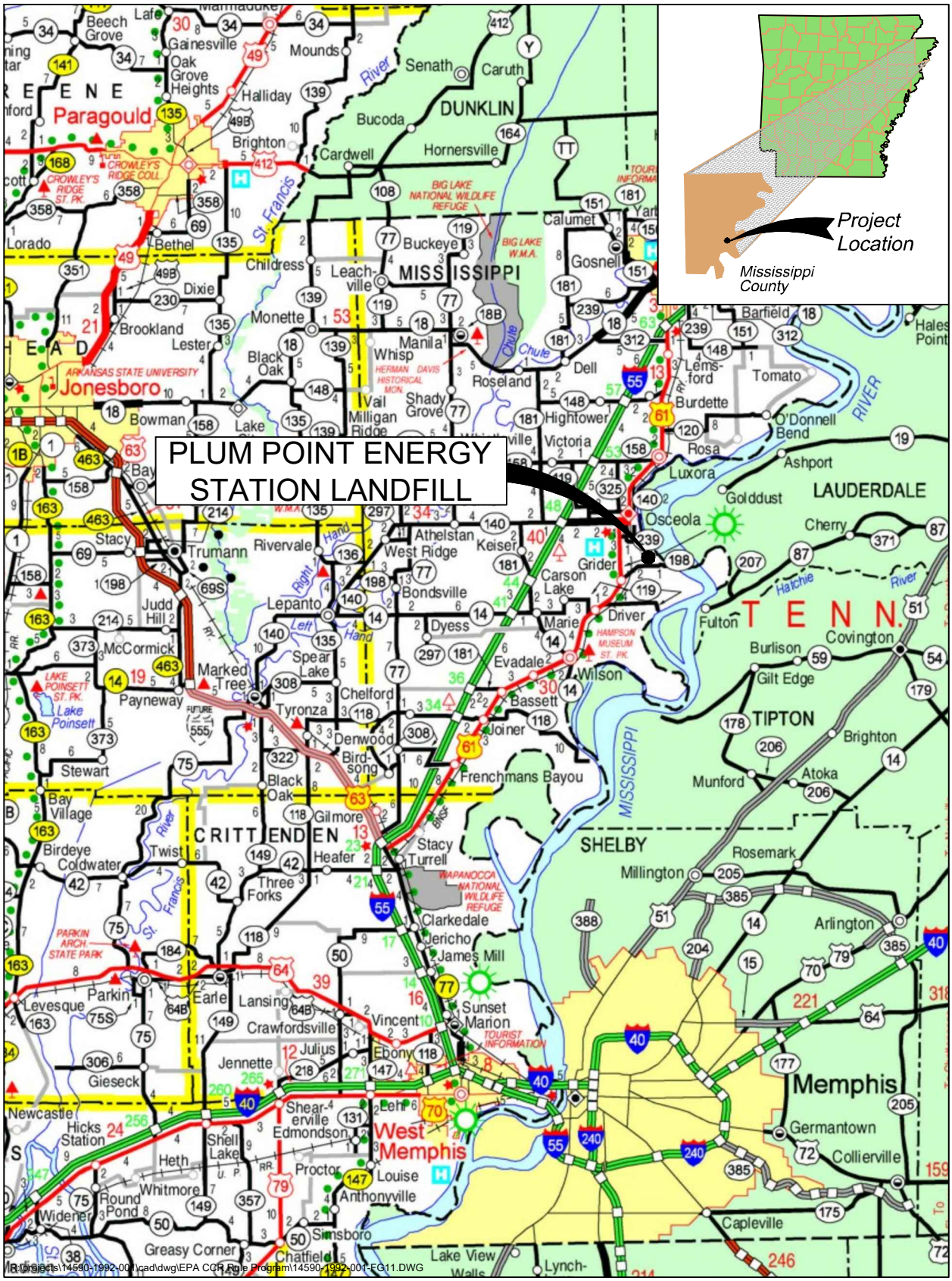


Figure 1.1. Location map.

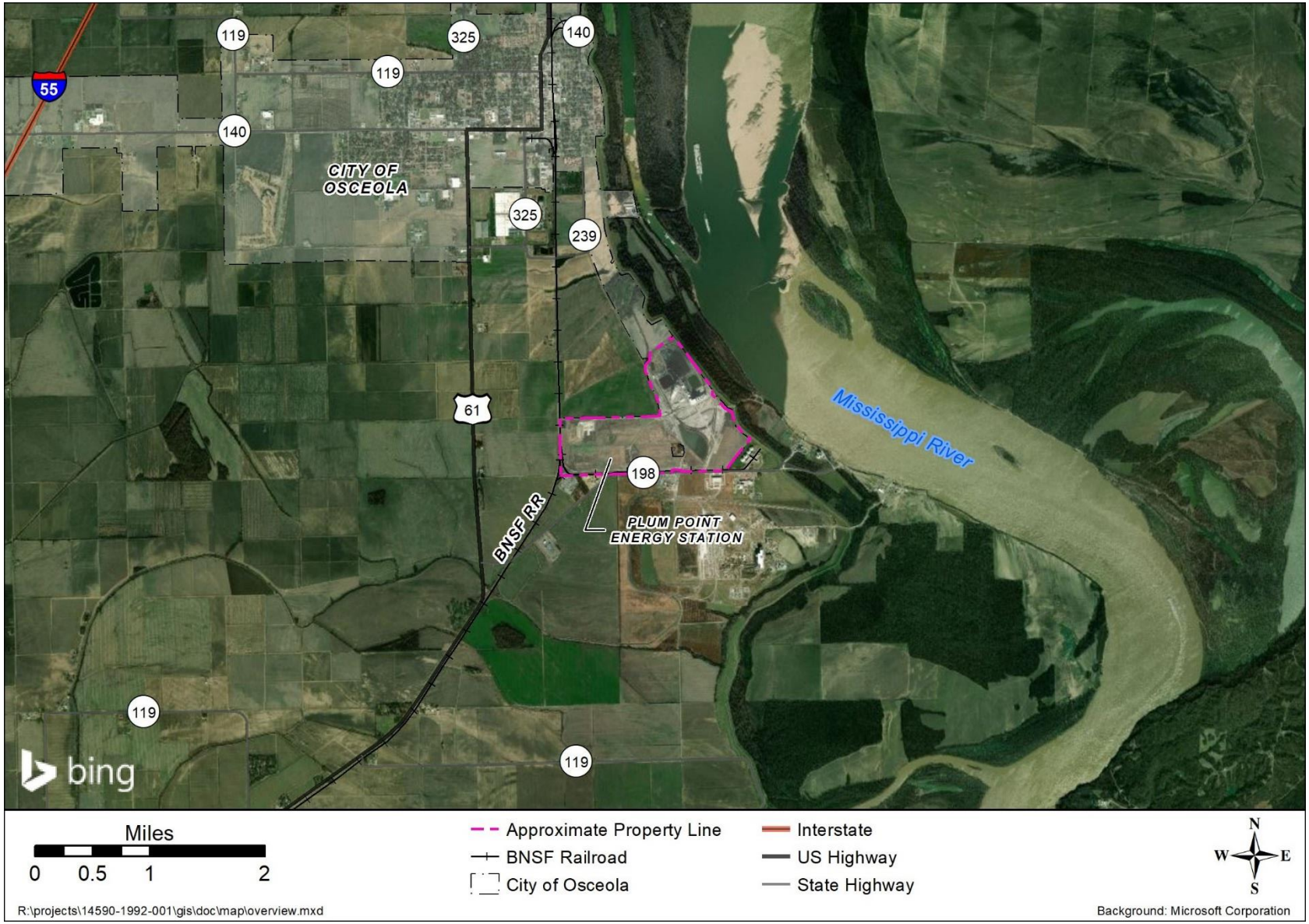


Figure 1.2. Vicinity map, Plum Point Energy Station.

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 Energy and Environment, Division of Environmental Quality (DEQ), 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 expanded and designed to conform to the requirements of the CCR rule. 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 is comprised of primarily dense clay with occasional lenses of fine-grained sand (Peterson, Broom, and Bush 1985). The regional direction of groundwater flow is toward the southwest (Schrader 2015).

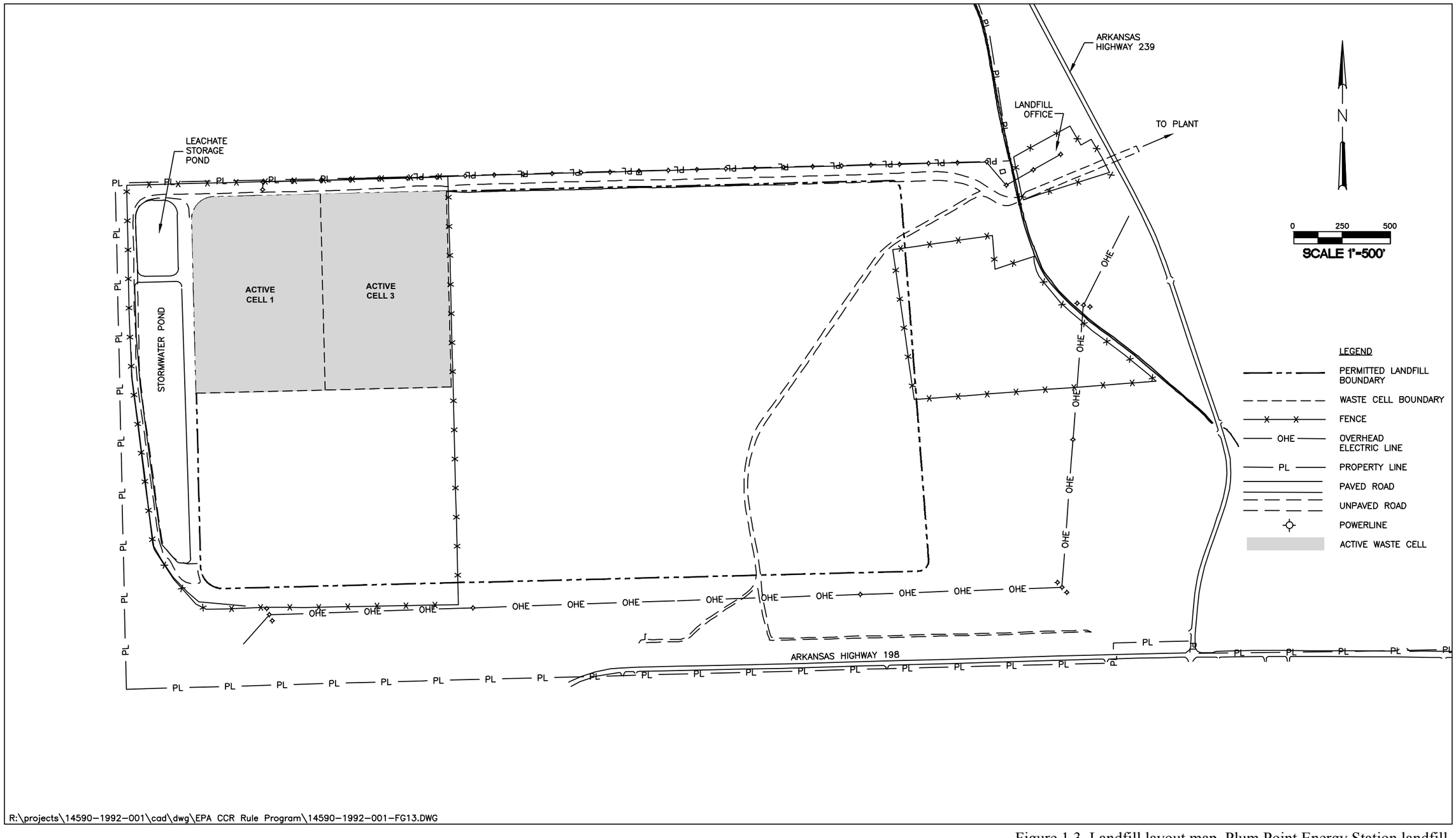


Figure 1.3. Landfill layout map, Plum Point Energy Station landfill.

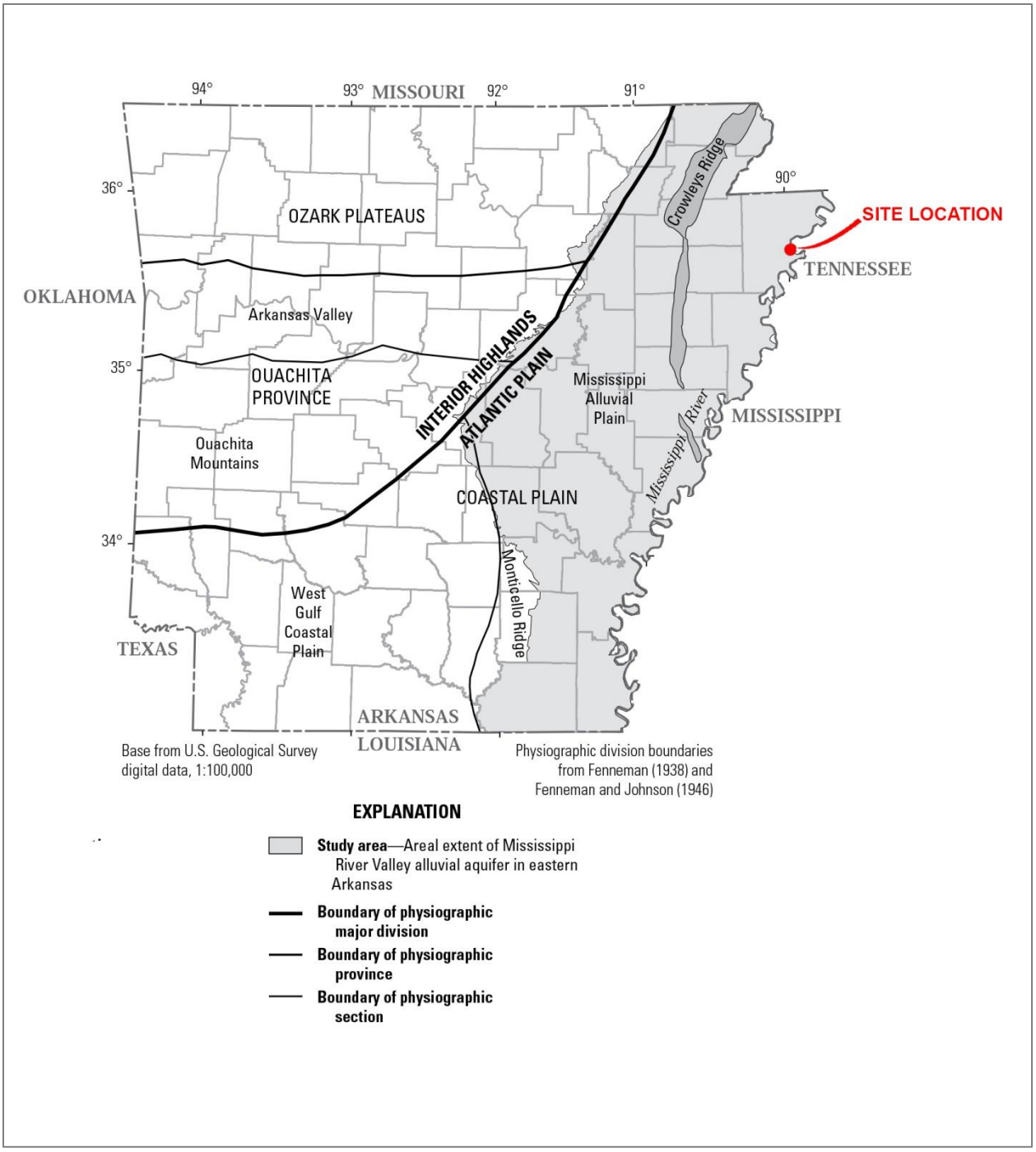


Figure 1.4. Physiographic location, Plum Point Energy Station (adapted from Schrader 2015).

1.4 Site Hydrogeology

A detailed site investigation was performed in 2001 as part of the DEQ permit application for the landfill. The findings from the investigation were submitted to DEQ by Genesis Environmental Consulting, Inc. (GEC), in a geotechnical and hydrogeological investigation (GHI) report (GEC 2001). Findings from the GHI indicated that the 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. Confining unit soils are 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 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 influenced by the river stage of 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 certified monitoring well network, changes made to the network during 2019, 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.

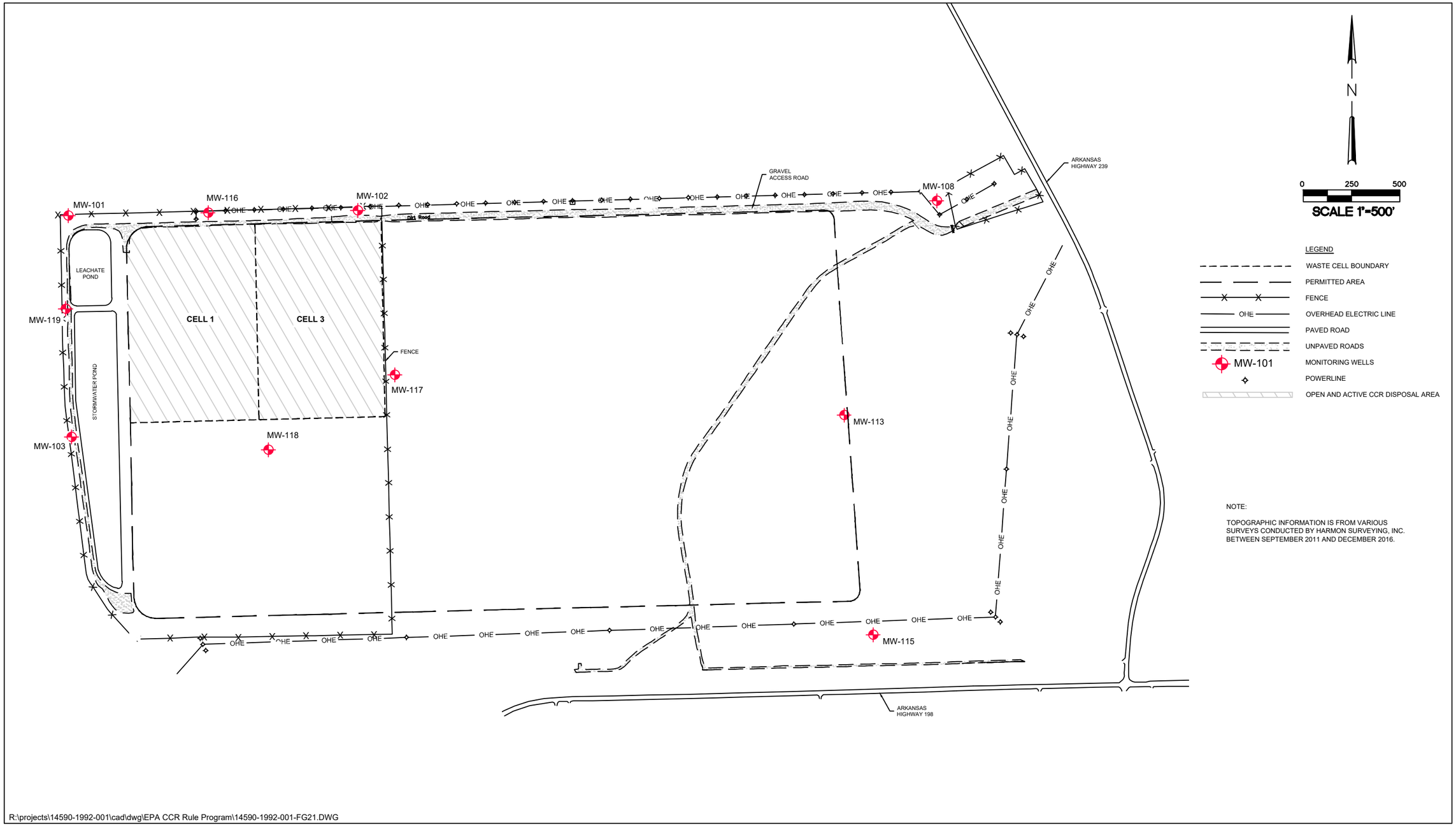


Figure 2.1. Monitoring well locations, Plum Point Energy Station.

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 2019

All of the 10 monitoring wells in the certified network were installed prior to 2019. No new wells were installed and none of the existing wells were altered or abandoned during 2019.

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. The first half 2019 detection monitoring event was conducted during May. Based on statistical evaluation of the data sets, verification sampling was performed during August, as discussed in Section 4.0. The second half 2019 detection monitoring event was conducted during October. Quarterly background sampling was conducted at MW-119 through the third quarter 2019 during the months of February, May, and August.

Detection monitoring for the 2020 monitoring year is tentatively scheduled for April and October.

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, if any, 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 2019 monitoring periods 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 or Geotech Geoturb portable turbidity meter and a handheld YSI 556 (MPS) or YSI ProPlus multiparameter instrument fitted with a flow-through cell. Field sampling forms for the 2019 monitoring events 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 2.2. Pace Analytical (Pace), 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. Laboratory reports from Pace are included in Appendix B.

Table 2.2. 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 2019 monitoring events. 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 Hydrograph

Static water levels were measured in all 10 monitoring wells prior to conducting any sampling activities for the May and October detection monitoring events. Water levels were measured using a Solinst 101 water level meter on May 14, 2019, and a Geotech water level meter on October 21, 2019, for the first and second half 2019 monitoring periods, respectively. 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 sheets included in Appendix A. Field water level measurements are tabulated in Table 3.1.

Table 3.1. Water level data.

Well ID	MP Elevation (ft NAVD88)	May 14, 2019		October 21, 2019	
		Depth to Water (ft below MP)	Water Elevation (ft NAVD88)	Depth to Water (ft below MP)	Water Elevation (ft NAVD88)
MW-101	242.75	5.15	237.60	16.43	226.32
MW-102	243.99	5.71	238.28	18.70	225.29
MW-103	243.25	6.08	237.17	17.73	225.52
MW-108	245.11	7.98	237.13	20.97	224.14
MW-113	244.63	6.60	238.03	20.68	223.95
MW-115	243.55	6.66	236.89	19.77	223.78
MW-116	243.97	6.21	237.76	18.89	225.08
MW-117	242.53	4.98	237.55	17.76	224.77
MW-118	241.23	4.15	237.08	16.25	224.98
MW-119	246.53	9.18	237.35	20.37	226.16

Hydrographs depicting water level elevations over time are included in Appendix C. As shown on the hydrograph, within-well water levels fluctuated seasonally as much as ±21 ft over the period of record for the CCR rule program.

3.1.2 Direction of Groundwater Flow

Depth-to-water measurements were converted to feet NAVD88 and used to construct the potentiometric surface maps shown on Figures 3.1 and 3.2 (figures are included at the end of Section 3.0). As shown on Figure 3.1, groundwater flow beneath the active landfill was generally to the southwest during the May 2019 monitoring event. As shown on Figure 3.2, groundwater flow beneath the active landfill was generally to the southeast during the October 2019 monitoring 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 cells 1 and 3. The hydraulic gradient was estimated to be 9.1×10^{-4} ft/ft during May 2019 and 6.8×10^{-4} ft/ft during October 2019 using the potentiometric surface maps shown on Figures 3.1 and 3.2, respectively. Based on these values,

V_x was calculated to be approximately 38 ft/year during May 2019 and 28 ft/year during October 2019. These values are 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 2019 monitoring events are summarized in Table 3.2. A review of the field quality control samples is provided in Section 3.4.

3.3 Laboratory Analytical Data

Laboratory reports for sampling performed during the 2019 monitoring periods are included in Appendix B. A review of the laboratory quality control information is provided in Section 3.4. Reported measured values along with field-measured pH are summarized in Tables 3.3 and 3.4 for the first and second half of 2019 monitoring periods, respectively. EPA-promulgated maximum contaminant levels (MCLs) are shown for comparison purposes. Of the appendix III parameters listed in Tables 3.3 and 3.4, fluoride is the only parameter with an established MCL. As shown in Tables 3.3 and 3.4, none of the measured levels for fluoride exceeded the fluoride MCL of 4 mg/L. Data from these monitoring events are compiled in the landfill's historical groundwater database for appendix III parameters, included as Appendix D.

Table 3.2. Field-measured water quality data.

Well	Date	Conductivity (µmhos/cm)	pH (su)	Temperature (C)	Turbidity (NTU)
Quarterly Background Sampling, February 2019					
MW-119	2/18/2019	450	6.6	16.4	1.8
First Half 2019 Monitoring, May 2019					
MW-101	5/16/2019	565	6.6	18.9	3.1
MW-102	5/16/2019	642	6.6	21.7	1.0
MW-103	5/15/2019	598	6.6	18.7	2.4
MW-108	5/14/2019	844	6.8	20.6	3.7
MW-113	5/14/2019	567	6.7	17.6	2.8
MW-115	5/14/2019	663	6.6	17.1	3.2
MW-116	5/16/2019	506	6.6	21.1	1.0
MW-117	5/15/2019	528	6.5	17.9	3.0
MW-118	5/15/2019	435	6.0	18.2	3.7
MW-119	5/16/2019	695	6.4	18.9	1.7
Verification Sampling and Quarterly Background Sampling, August 2019					
MW-108	8/1/2019	936	7.1	21.0	2.1
MW-115	8/1/2019	712	7.1	20.9	1.5
MW-117	8/2/2019	506	6.3	19.3	1.2
MW-118	8/2/2019	NM*	6.1	NM*	NM*
MW-119	8/2/2019	502	6.4	19.6	1.9
Second Half 2019 Monitoring, October 2019					
MW-101	10/23/2019	618	7.0	13.9	<0.02
MW-102	10/23/2019	665	6.7	18.0	<0.02
MW-103	10/22/2019	634	6.7	18.7	<0.02
MW-108	10/22/2019	862	6.7	15.3	<0.02
MW-113	10/22/2019	509	6.7	18.2	<0.02
MW-115	10/23/2019	643	6.9	17.7	<0.02
MW-116	10/23/2019	618	6.7	17.4	<0.02
MW-117	10/22/2019	530	6.5	19.1	<0.02
MW-118	10/22/2019	548	6.4	18.1	<0.02
MW-119	10/22/2019	725	6.7	18.9	<0.02

*NM= not measured.

Table 3.3. Summary of appendix III results, first half of 2019.

Well ID	Date Collected	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH (su)
Quarterly Background Sampling, February 2019								
MW-119	2/18/2019	0.110 J	103	2.27	0.253	43.0	374	6.6
MW-119 DUP[a]	2/18/2019	0.102 J	101	2.25	0.252	43.8	378	---
EB-1[a]	2/18/2019	0.0387 J	<1.00	<1.00	<0.100	<5.00	11.0	---
First Half 2019 Monitoring, May 2019								
MW-101	5/16/2019	0.118 J	103	1.01	0.263 B	9.17	392	6.6
MW-102	5/16/2019	0.150 J	121	2.87	0.196 B	75.4	466	6.6
MW-103	5/15/2019	0.154 J	106	1.10	0.213 B	23.4	396	6.6
MW-108	5/14/2019	0.224[b]	169	2.44	0.184 B	34.5	529	6.8
MW-113	5/14/2019	0.168 J	87.2	1.58	0.120 B	3.15 J	342	6.7
MW-115	5/14/2019	0.0751 J	128[b]	0.598 J	0.184 B	5.63	440	6.6
MW-116	5/16/2019	0.144 J	93.2	1.66	0.189 B	27.0	349	6.6
MW-117	5/15/2019	0.133 J	98.3[b]	1.25	0.147 B	6.66	341	6.5
MW-118	5/15/2019	0.125 J	76.4	1.44	0.185	16.5	286	6.0
MW-119	5/16/2019	0.109 J	135[b]	2.86	0.252	47.4	487	6.4
MW-117 DUP[c]	5/15/2019	0.132 J	95.0	1.13	0.149	6.96	338	---
EB-2[c]	5/16/2019	0.0557 J	0.0664 BJ	<1.00	<0.100	<5.00	<10.0	---
Verification Sampling, August 2019								
MW-108	8/1/2019	0.127 BJ	---	---	---	---	---	7.1
MW-115	8/1/2019	---	125	---	---	---	---	7.1
MW-117	8/2/2019	---	102	---	---	---	302	6.3
MW-118	8/2/2019	---	---	---	---	---	---	6.1
MW-119	8/2/2019	---	97.4	---	---	---	---	6.4
MW-117 DUP[d]	8/2/2019	---	102	---	---	---	339	---
EPA EB-1[d]	8/2/2019	0.0187 BJ	<1.00	---	---	---	<10.0	---
EPA MCL		**---**	**---**	**---**	**4**	**---**	**---**	**---**

Notes:

"B" flag indicates that the analyte was detected in an associated quality control blank.

"J" flag indicates that the analyte was detected at a level below the laboratory RDL; therefore the value is an estimate.

a. MW-119 DUP was a duplicate of MW-119 and EB-1 was a field equipment rinsate blank collected during the February sampling event.

b. Measurement shown represents result from a laboratory re-run of the groundwater sample for verification of initial laboratory results.

c. MW-117 DUP was a duplicate sample of MW-117 and EB-2 was a field equipment rinsate blank collected during the May sampling event.

d. MW-117 DUP was a duplicate sample of MW-117 and EPA EB-1 was a field equipment rinsate blank collected during the August sampling event.

Table 3.4. Summary of appendix III results, second half of 2019.

Well ID	Date Collected	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH (su)
MW-101	10/23/2019	0.0491 J	109	1.37	0.264	11.9	404	7.0
MW-102	10/23/2019	0.0602 J	117	3.62	0.201	85.6	461	6.7
MW-103	10/22/2019	0.0816 J	107	1.29	0.253	24.4	384	6.7
MW-108	10/22/2019	0.110 J	153	1.95	0.205	32.9	528	6.7
MW-113	10/22/2019	0.0881 J	75.9	1.73	0.110	4.88 J	307	6.7
MW-115	10/23/2019	0.0224 J	114	1.23	0.220	5.83	411	6.9
MW-116	10/23/2019	0.0829 J	109	2.75	0.216	63.1	417	6.7
MW-117	10/22/2019	0.0610 J	80.9[a]	0.864 J	0.136	5.45	322	6.5
MW-118	10/22/2019	0.0459 J	91.6	1.45	0.162	17.5	335	6.4
MW-119	10/22/2019	0.0480 J	110[a]	2.86	0.266	47.7	400	6.7
MW-117 DUP[b]	10/22/2019	0.132 J	88.4	0.871 J	0.129	5.38	296	---
EB-1[b]	10/23/2019	0.0557 J	<1.00	0.0645 J	<0.100	<5.00	<10.0	---
EPA MCL		---	---	---	**4**	---	---	---

Notes:

"B" flag indicates that the analyte was detected in an associated quality control blank.

"J" flag indicates that the analyte was detected at a level below the laboratory RDL; therefore the value is an estimate.

a. Measurement shown represents result from a laboratory re-run of the groundwater sample for verification of initial laboratory results.

b. MW-117 DUP was a duplicate of MW-117 and EB-1 was a field 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 Pace 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.

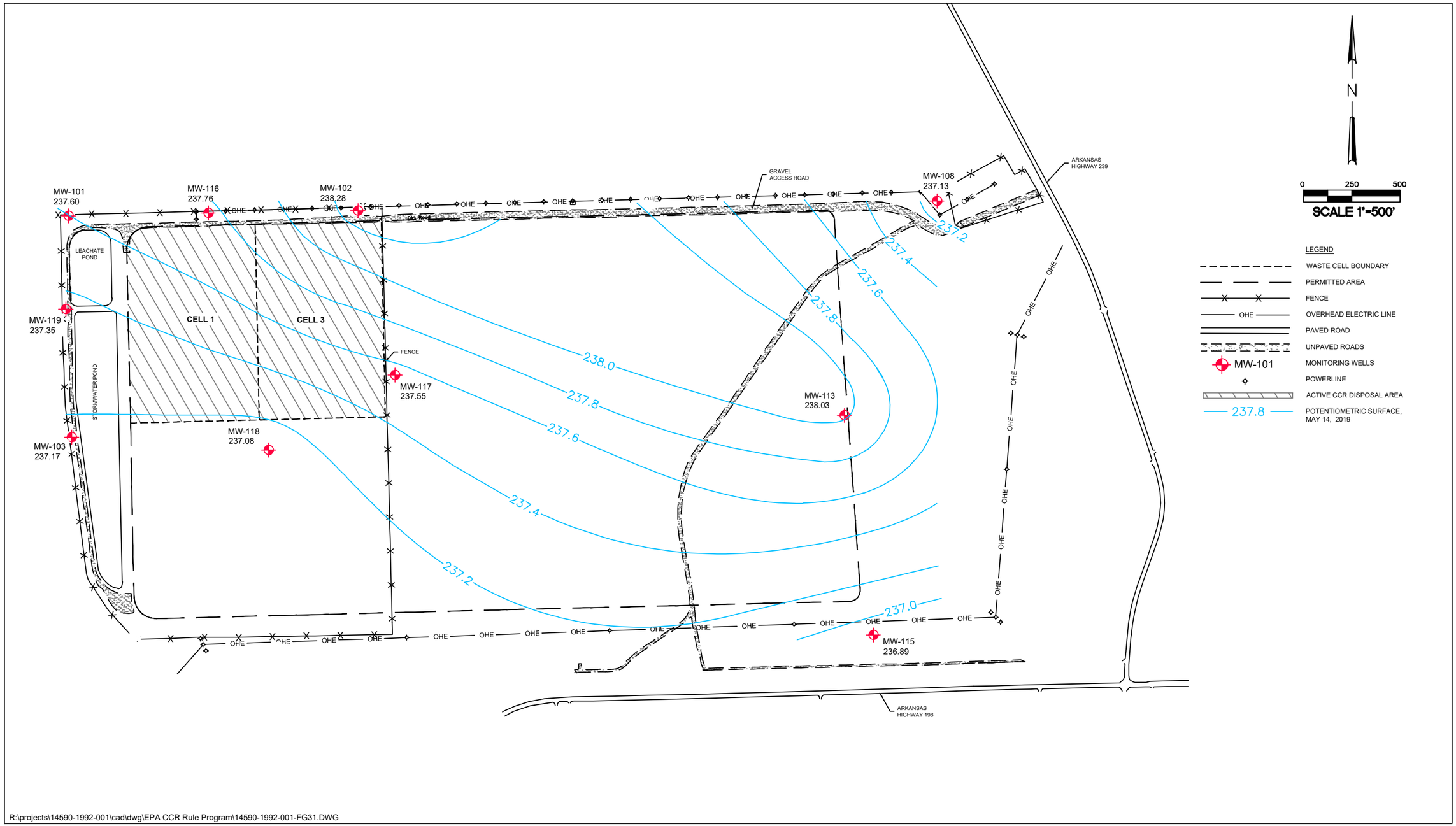
3.4.2 Review of Field Quality Control Samples

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 performed upon receipt of the data from the laboratory. Field duplicate pairs are evaluated to verify that the duplicate pair showed reasonable precision for analyzed parameters by calculating the relative percent difference (RPD) for parameters where the detected level was at least five times the laboratory RDL and where neither result was qualified or suspected of contamination. Calculated RPDs were below the quality control limit of 20% for all duplicate pairs evaluated,

indicating that field methods produced samples with an acceptable level of reproducibility. Results for the equipment rinsate blanks were all below their respective laboratory RDLs, except as noted below, indicating field decontamination methods were effective. Deviations from the QA/QC program are noted below:

- TDS was detected above the RDL in the field equipment rinsate blank collected during the February sampling event.



R:\projects\14590-1992-001\cad\dwg\EPA CCR Rule Program\14590-1992-001-FG31.DWG

Figure 3.1. Potentiometric surface, May 14, 2019.

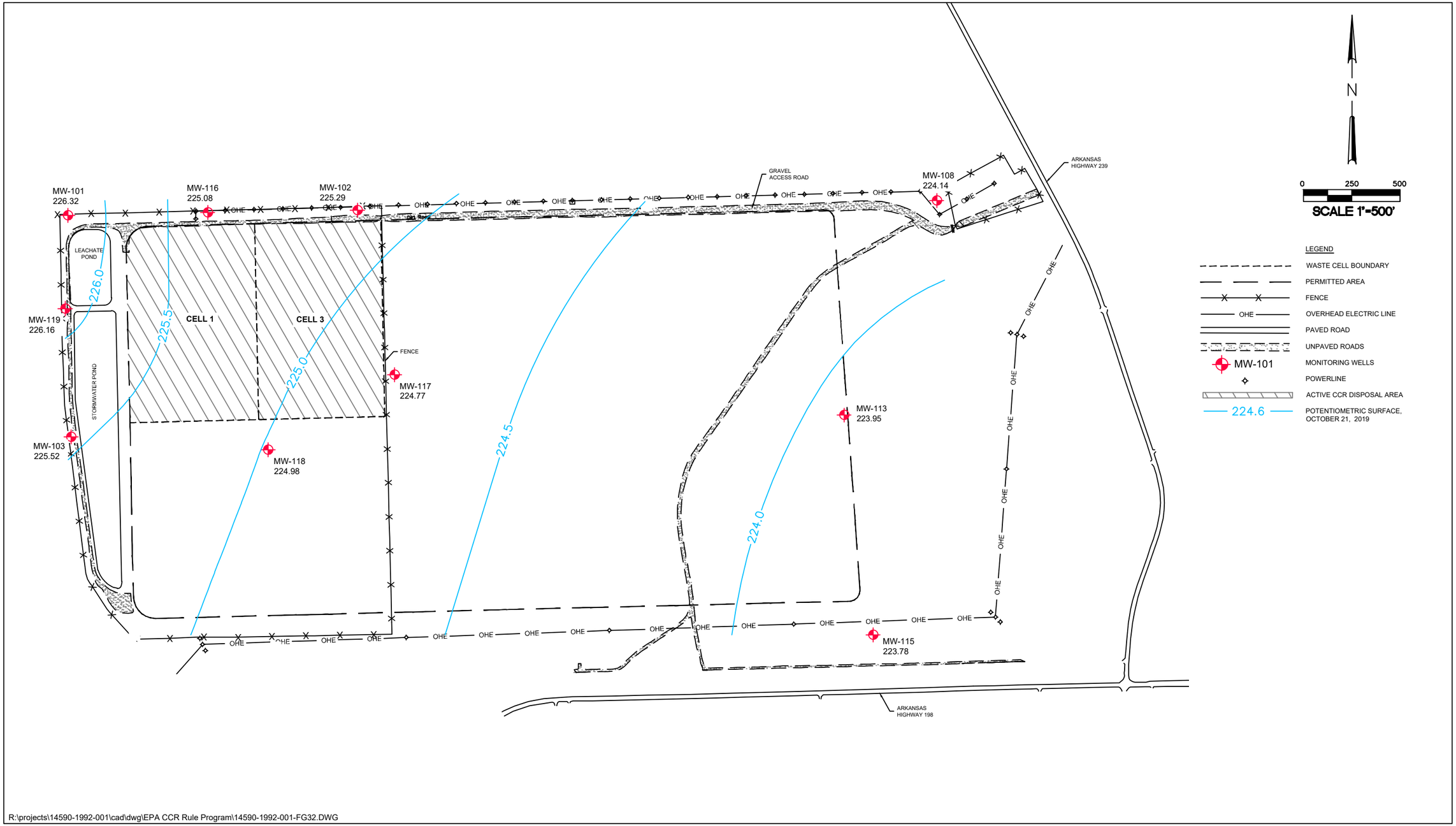


Figure 3.2. Potentiometric surface, October 21, 2019.

4.0 STATISTICAL EVALUATION

This section describes the statistical approach and evaluation of the detection monitoring data collected during 2019. Groundwater quality data were evaluated using the statistical software *Sanitas version 9.6*. 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 are 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)	7
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 87% of the time at levels 4σ above background. Given this comparison, the statistical power of the landfill's detection monitoring program exceeds EPA recommendations.

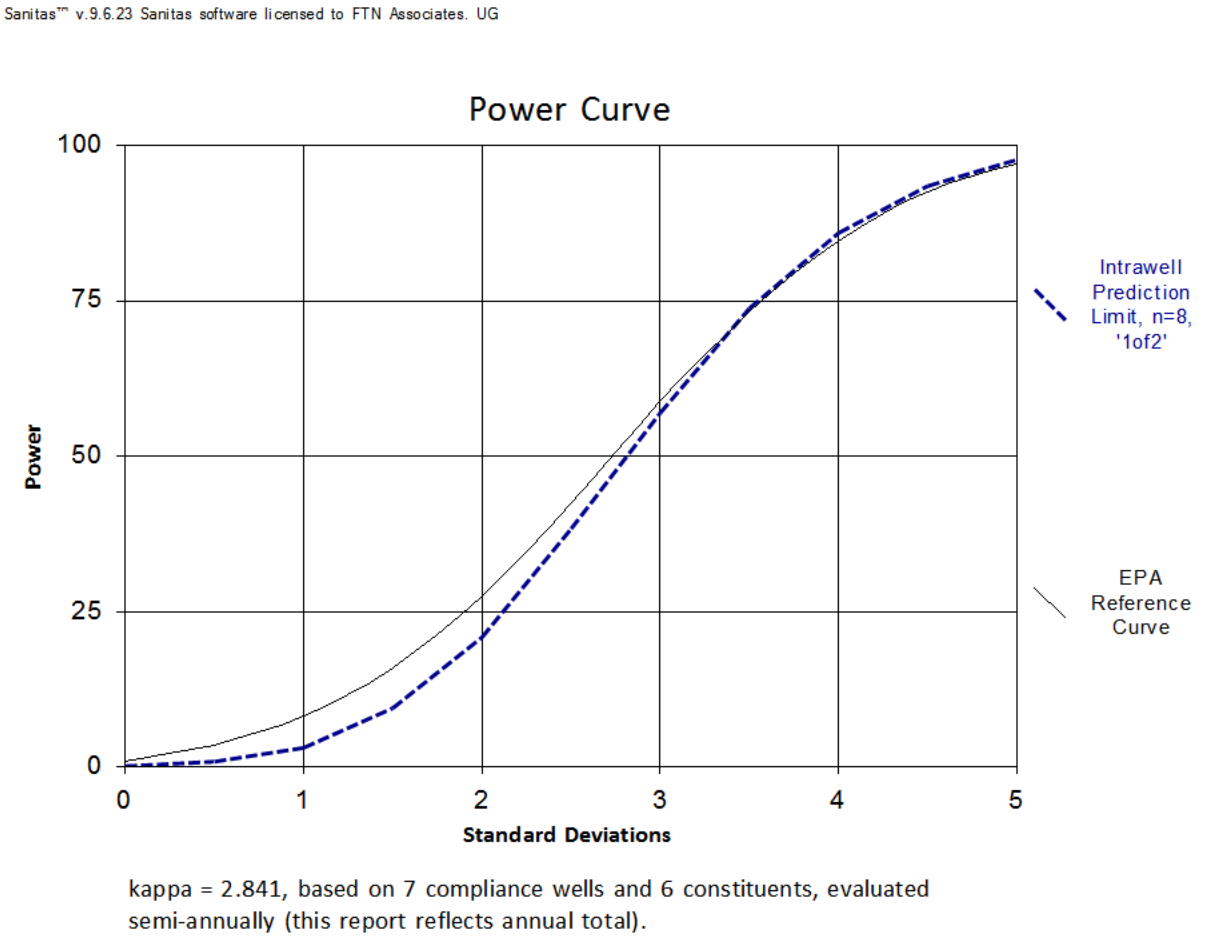


Figure 4.1. ERPC versus landfill power curve for detection monitoring.

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. Outlier 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, with the exception of one detection above the RDL at background well MW-108.
- Calcium, chloride, fluoride, sulfate, and TDS values are variable across the network.
- Measured pH is generally similar across the well network. As discussed in prior annual reports (FTN 2018, 2019), there is a noted deviation in the pH data collected during the July 2016 background sampling event that is thought to be the result of equipment malfunction. Due to the limited number of values in the background data sets available for statistical analysis, these data have not been excluded from the background data set. 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 May and October 2019 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.

Five outliers were identified in the May 2019 data set, and no outliers were identified in the October 2019 data set. In the May 2019 data set, the following well-parameter pairs had measured values that were statistically elevated compared to their respective period-of-record data sets: boron at MW-108, calcium at MW-117, calcium at MW-119, and TDS at MW-117; the measured value for chloride at MW-116 was statistically low compared to its period-of-record data set. None of the outliers are suspected to be the result of field or laboratory error. It is suspected that the limited range of data available for evaluation may cause the test to be overly sensitive to identification of outliers. As such, no action was taken to flag these data as unrepresentative of groundwater quality.

4.3 Statistical Evaluation Results

Groundwater quality data from the 2019 monitoring periods 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, First Half of 2019

Intrawell prediction limit analyses were performed on all detected appendix III parameters, in accordance with 257.93(h), using the background data sets identified in Appendix E. Results from the first half of 2019 monitoring period are summarized in Table 4.2 and graphical plots of the evaluation are included in Appendix G. Six potential exceedances were identified in the May 2019 data set, as shown in Table 4.2. Measurements for all other

well-parameter pairs were below calculated intrawell prediction limits. In accordance with the facility's SAP and "1 of 2" retesting strategy, verification sampling was performed during August 2019 for these well-parameter pairs. As shown in Table 4.2, the measured values in the verification sample for calcium at MW-115 and MW-117 and for TDS in MW-117 exceeded their respective prediction limits, resulting in confirmed statistically significant increases (SSIs) for those well-parameter pairs. Measured values for boron at MW-108, calcium at MW-119, and pH at MW-118 disconfirmed the potential exceedances at these wells.

Table 4.2. Summary of statistically significant results, intrawell prediction limit analysis, first half of 2019.

Well	Parameter	Prediction Limit (mg/L)	May 2019 Observation (mg/L)	August 2019 Verification (mg/L)	SSI Confirmed?
MW-108	Boron	0.2034	0.224[a,b]	0.127	No
MW-115	Calcium	122.1	128[b]	125	Yes
MW-117	Calcium	87.44	98.3[b]	102	Yes
MW-119	Calcium	115.6	135[b]	97.4	No
MW-118	pH	6.1[c]	6.0	6.1	No
MW-117	TDS	301	341	302	Yes

Notes:
a. Statistically high outlier (see Section 4.2.2).
b. Measurement shown represents result from a laboratory re-run of the groundwater sample for verification of initial laboratory results.
c. Lower prediction limit.

In response to the confirmed SSIs for calcium at MW-115 and MW-117 and for TDS at MW-117 identified during the first half of 2019 detection monitoring period, PPSC completed a successful alternate source demonstration (ASD), in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and posted to the facility's operating record on October 24, 2019. As required by §257.94(e)(2), a copy of the ASD is included in Appendix H. Based on the successful ASD, the facility continued with detection monitoring in accordance with §257.94.

4.3.2 Intrawell Prediction Limit Analysis, Second Half of 2019

Intrawell prediction limit analyses were performed on all detected appendix III parameters, in accordance with 257.93(h), using the background data sets identified in Appendix E. Results from the second half of 2019 monitoring period are summarized in Table 4.3 and graphical plots of the evaluation are included in Appendix G. No new potential exceedances were identified in the October 2019 data set; however, one previously confirmed SSI, TDS at MW-117, remained above the prediction limit. This well-parameter pair had a confirmed SSI during the first half of 2019 monitoring period, and as noted in Section 4.3.1, a successful ASD was made and is included in Appendix H. Because this SSI was confirmed during the first half of 2019, verification sampling was not performed. Measurements for all other well-parameter pairs during the second half of 2019 were below calculated intrawell prediction limits.

Table 4.3. Summary of statistically significant results, intrawell prediction limit analysis, second half of 2019.

Well	Parameter	Prediction Limit (mg/L)	October 2019 Observation (mg/L)	SSI Confirmed?
MW-117	TDS	301.8	322	Yes*

Notes:
*Verification sampling was not performed because SSI was previously confirmed.

The measured level of TDS at MW-117 during the second half of 2019 was similar to the level measured during the first half of 2019 when the SSI was first confirmed. As discussed in the ASD (Appendix H), measured TDS at this well is well within the range of values measured in onsite background wells and is also within published levels for the aquifer. In accordance with §257.94(e)(2), PPSC completed a successful ASD to address the reoccurrence of the SSI for TDS at MW-117. The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on December 18, 2019. Based on the successful ASD, PPSC will continue with detection monitoring in accordance with §257.94.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following recommendations and conclusions are based on a review of data for the landfill from the 2019 monitoring periods:

1. The direction of groundwater flow at the landfill is seasonally variable. During the monitoring events performed during the first and second half of 2019, flow was to the south-southwest and east-southeast, respectively, across the active landfill.
2. Of the parameters evaluated, only fluoride has an EPA MCL. None of the measured values in groundwater exceeded the MCL for fluoride.
3. 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 except upgradient well MW-108 for the period of record.
4. 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.
5. Intrawell prediction limit analysis of the first half of 2019 data set identified three confirmed SSIs: calcium at MW-115 and MW-117 and TDS at MW-117. A successful ASD was completed for the SSIs and posted to the facility's operating record on October 24, 2019. The facility continued with detection monitoring in accordance with §257.94.
6. Statistical evaluation of the second half of 2019 monitoring data identified one confirmed SSI for TDS at MW-117. The SSI for TDS at MW-117 was previously confirmed during the first half of 2019 monitoring period and, as noted above, a successful ASD was made. In response to the confirmed SSI during the second half of 2019 monitoring period, PPSC completed a successful ASD in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on December 18, 2019. Based on the successful ASD, PPSC will continue with detection monitoring in accordance with §257.94.

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APPENDIX A

Field Sampling Forms

Quarterly Background Sampling Event, First Quarter 2019

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-119	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 2/18/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: cloudy	Air Temp. (ºF): 32	Wind: north-northwest at 8 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☑ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	2/18/2019	2/18/2019	2/18/2019	2/18/2019	2/18/2019	
Time	24-hour	1000	1011	1031	1057	1158	
Depth to Water	feet	9.63	9.63	9.63	9.63	9.63	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1015	1020	1025	1030	1035	1040	1045	1050	1055			Remarks
Purge vol.	gallons												
Purge rate	mL/min	220	220	220	220	220	220	220	220	220			
pH	su	7.0	6.8	6.7	6.7	6.7	6.7	6.6	6.6	6.6			
Temp.	ºC	14.0	14.4	15.1	15.5	16.0	16.2	16.0	16.2	16.4			
Conductivity	µS/cm	425	438	444	451	450	449	450	450	450			
DO	mg/L	5.8	2.0	1.6	1.3	1.34	1.2	1.2	1.1	1.0			
ORP	mV	141.6	131.5	127.7	115.7	106.3	101.9	98.8	96.7	93.0			
Turbidity	NTU	5.8	4.6	3.7	4.2	2.7	1.6	1.6	1.1	1.8			
Color/tint	--	clear	clear	clear	clear	clear	clear	clear	clear	clear			
Odor	--	none	none	none	none	none	none	none	none	none			

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-119	2/18/2019	1110	4	0	
MW-119 DUP	2/18/2019	1115	4	0	
EB-1	2/18/2019	1220	4	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

First Half 2019 Sampling Event

Groundwater Level Data Sheet

Project Name: Plum Point Energy Station	Project Number: 14590-1992-001	Investigator: MCa	Page 1 of 1
Weather Conditions: P/C	Measuring Device: Solinst 101		

Well ID	Date	Time	Depth to Water (feet below TOC)	Damages/Repairs		
MW-1	5-14-19	1040	4.15	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-2		1052	5.71	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-3R		1030	6.08	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-4R2		1017	4.49	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-5		942	5.48	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-6		951	5.41	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-7		935	6.95	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-8		930	7.98	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-10R		956	3.78	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-11R		948	5.07	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-13R		918	6.60	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-15		910	6.66	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-16		1046	6.21	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-17		1007	4.96	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-18		1022	4.15	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-19	↓	1036	5.18	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-101	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/16/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: clear	Air Temp. (ºF): 79	Wind: southwest at 6 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/16/2019	5/16/2019	5/16/2019	5/16/2019	
Time	24-hour	1040	0945	0953	1023	1031	
Depth to Water	feet	4.15	5.22	5.22	5.26	5.27	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	0950	0955	1000	1005	1010	1015	1020					Remarks
Purge vol.	gallons												
Purge rate	mL/min	160	160	160	110	110	110	110					
pH	su	6.5	6.4	6.5	6.6	6.7	6.6	6.6					
Temp.	ºC	19.1	19.3	19.2	19.3	19.7	18.9	18.9					
Conductivity	µS/cm	561	562	563	565	565	566	565					
DO	mg/L	1.5	0.8	0.5	0.4	0.4	0.4	0.4					
ORP	mV	102.9	113.7	104.0	101.5	98.2	96.0	97.5					
Turbidity	NTU	3.0	5.5	4.4	3.9	3.6	3.2	3.1					
Color/tint	--	clear	clear	clear	clear	clear	clear	clear					
Odor	--	none	none	none	none	none	none	none					

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-101	5/16/2019	1030	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-102	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/16/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: clear	Air Temp. (ºF): 85	Wind: west-southwest at 6 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/16/2019	5/16/2019	5/16/2019	5/16/2019	
Time	24-hour	1052	1155	1207	1228	1239	
Depth to Water	feet	5.71	5.70	5.70	5.70	5.70	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1200	1205	1210	1215	1220	1225						Remarks
Purge vol.	gallons												
Purge rate	mL/min	120	120	120	120	120	120						
pH	su	6.5	6.6	6.6	6.6	6.6	6.6						
Temp.	ºC	21.9	22.3	22.1	21.7	21.5	21.7						
Conductivity	µS/cm	641	641	644	645	644	642						
DO	mg/L	1.4	1.0	0.8	0.7	0.7	0.6						
ORP	mV	107.8	101.7	100.5	96.0	96.4	97.8						
Turbidity	NTU	1.1	2.2	2.4	1.2	1.1	1.0						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--	none	none	none	none	none	none						

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-102	5/16/2019	1235	2	0	
EB-2	5/16/2019	1305	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-103	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/15/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: cloudy	Air Temp. (ºF): 80	Wind: south at 8 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	
Time	24-hour	1030	1410	1421	1448	1509	
Depth to Water	feet	6.08	6.05	6.05	6.05	6.05	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1415	1420	1425	1430	1435	1440	1445					Remarks
Purge vol.	gallons												
Purge rate	mL/min	170	170	170	170	170	170	170					
pH	su	6.5	6.6	6.6	6.7	6.7	6.6	6.6					
Temp.	ºC	19.4	19.1	19.3	19.7	19.3	18.8	18.7					
Conductivity	µS/cm	598	598	597	598	601	600	598					
DO	mg/L	2.8	1.5	1.1	0.5	0.5	0.4	0.4					
ORP	mV	109.8	108.7	105.5	103.4	102.2	105.1	106.7					
Turbidity	NTU	6.0	3.0	2.1	3.3	3.0	2.5	2.4					
Color/tint	--	clear	clear	clear	clear	clear	clear	clear					
Odor	--	none	none	none	none	none	none	none					

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-103	5/15/2019	1455	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-108	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/14/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: partly cloudy	Air Temp. (ºF): 75	Wind: south-southeast at 4 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/14/2019	
Time	24-hour	0930	1405	1421	1433	1449	
Depth to Water	feet	7.98	7.98	7.96	7.96	7.96	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1410	1415	1420	1425	1430							Remarks
Purge vol.	gallons												
Purge rate	mL/min	175	175	175	175	175							
pH	su	6.7	6.8	6.8	6.8	6.8							
Temp.	ºC	21.1	20.6	20.5	20.6	20.6							
Conductivity	µS/cm	848	846	845	845	844							
DO	mg/L	4.6	1.3	0.9	0.7	0.7							
ORP	mV	125.4	127.5	125.7	124.2	123.8							
Turbidity	NTU	6.1	5.3	4.7	4.5	3.7							
Color/tint	--	clear	clear	clear	clear	clear							
Odor	--	none	none	none	none	none							

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-108	5/14/2019	1440	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility:	Plum Point Energy Station	Site ID:	MW-113	Sampler:	Michael Clayton
Project Number:	R14590-1992-001 (EPA)	Date:	5/14/2019	Sampler Organization:	FTN Associates, Ltd.

Site Description

Weather: partly cloudy		Air Temp. (ºF): 76	Wind: southeast at 7 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:						

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/14/2019	
Time	24-hour	0918	1250	1301	1334	1357	
Depth to Water	feet	6.60	6.60	6.60	6.60	6.60	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1255	1300	1305	1310	1315	1320	1325	1330				Remarks
Purge vol.	gallons												
Purge rate	mL/min	150	150	150	150	150	150	150	150				
pH	su	6.5	6.6	6.7	6.7	6.5	6.7	6.7	6.7				
Temp.	ºC	17.2	17.9	18.0	18.0	17.9	17.7	17.6	17.6				
Conductivity	µS/cm	577	574	575	574	572	571	567	567				
DO	mg/L	8.5	7.0	6.8	6.6	6.5	6.6	6.4	6.6				
ORP	mV	113.6	123.0	121.2	118.2	117.0	116.4	118.6	119.5				
Turbidity	NTU	3.2	6.0	2.7	2.5	2.6	2.6	2.5	2.8				
Color/tint	--	clear	clear	clear	clear	clear	clear	clear	clear				
Odor	--	none	none	none	none	none	none	none	none				

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-113	5/14/2019	1345	2	0	

Sampler's Name (print):	Michael Clayton	Sampler Signature:	transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-115	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/14/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: partly cloudy	Air Temp. (ºF): 76	Wind: southeast at 7 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/14/2019	
Time	24-hour	0910	1150	1207	1227	1243	
Depth to Water	feet	6.66	6.66	6.67	6.67	6.67	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1200	1205	1210	1215	1220	1225						Remarks
Purge vol.	gallons												
Purge rate	mL/min	140	140	140	140	140	140						
pH	su	6.3	6.5	6.5	6.5	6.6	6.6						
Temp.	ºC	16.9	17.0	17.3	17.2	17.2	17.1						
Conductivity	µS/cm	662	662	659	662	662	663						
DO	mg/L	6.8	6.4	5.6	6.1	5.4	5.2						
ORP	mV	100.9	101.6	97.6	92.8	95.3	95.7						
Turbidity	NTU	3.3	4.2	4.2	4.0	3.1	3.2						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--	none	none	none	none	none	none						

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-115	5/14/2019	1235	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-116	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/16/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: clear	Air Temp. (ºF): 82	Wind: southwest at 7 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/16/2019	5/16/2019	5/16/2019	5/16/2019	
Time	24-hour	1045	1050	1102	1121	1140	
Depth to Water	feet	6.21	6.21	6.20	6.20	6.20	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1055	1100	1105	1110	1115	1120						Remarks
Purge vol.	gallons												
Purge rate	mL/min	100	100	100	100	100	100						
pH	su	6.4	6.5	6.6	6.6	6.6	6.6						
Temp.	ºC	20.4	20.6	20.9	20.7	21.1	21.1						
Conductivity	µS/cm	506	207	509	506	505	506						
DO	mg/L	1.4	1.1	0.6	0.5	0.4	0.4						
ORP	mV	95.3	95.2	88.7	89.4	91.0	88.4						
Turbidity	NTU	1.9	1.3	1.2	1.0	1.0	1.0						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--	none	none	none	none	none	none						

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-116	5/16/2019	1130	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-117	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/15/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: cloudy	Air Temp. (ºF): 84	Wind: southwest at 7 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	
Time	24-hour	1007	1525	1533	1617	1632	
Depth to Water	feet	4.98	4.94	4.94	4.96	4.97	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1530	1535	1540	1545	1550	1555	1600	1605	1610	1615		Remarks
Purge vol.	gallons												
Purge rate	mL/min	170	170	170	170	170	170	170	170	170	170		
pH	su	6.3	6.2	6.3	6.4	6.4	6.4	6.4	6.5	6.5	6.5		
Temp.	ºC	17.6	18.0	17.9	18.0	17.9	17.9	18.0	18.1	17.9	17.9		
Conductivity	µS/cm	526	526	526	526	526	526	526	528	528	528		
DO	mg/L	4.2	3.6	3.4	3.3	3.2	3.1	3.0	2.8	2.8	2.7		
ORP	mV	130.4	140.4	132.4	128.4	128.9	129.4	127.0	125.1	123.8	123.5		
Turbidity	NTU	2.5	2.5	2.8	2.4	2.8	3.9	2.7	2.4	2.3	3.0		
Color/tint	--	clear	clear	clear	clear	clear	clear	clear	clear	clear	clear		
Odor	--	none	none	none	none	none	none	none	none	none	none		

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-117	5/15/2019	1625	2	0	
MW-117 DUP	5/15/2019	1630	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-118	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/15/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: partly cloudy	Air Temp. (ºF): 77	Wind: south at 8 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	
Time	24-hour	1022	1310	1321	1342	1358	
Depth to Water	feet	4.15	4.10	4.10	4.10	4.10	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1315	1320	1325	1330	1335	1340						Remarks
Purge vol.	gallons												
Purge rate	mL/min	110	110	110	110	110	110						
pH	su	6.1	6.1	6.1	6.1	6.1	6.0						
Temp.	ºC	18.1	18.5	18.9	19.2	18.3	18.2						
Conductivity	µS/cm	435	433	435	436	435	435						
DO	mg/L	2.4	1.6	1.3	1.2	1.0	1.0						
ORP	mV	111.7	120.7	122.3	122.6	127.4	127.6						
Turbidity	NTU	5.9	2.8	2.9	5.4	2.8	3.8						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--	none	none	none	none	none	none						

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-118	5/15/2019	1350	2	0	

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-119	Sampler: Michael Clayton
Project Number: R14590-1992-001 (EPA)	Date: 5/16/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: clear	Air Temp. (ºF): 71	Wind: southwest at 5 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☑ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☑ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	5/14/2019	5/16/2019	5/16/2019	5/16/2019	5/16/2019	
Time	24-hour	1036	0820	0831	0908	0925	
Depth to Water	feet	5.18	9.61	9.61	9.63	9.65	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408

Time	24-hour	0825	0830	0835	0840	0845	0850	0855	0900	0905			Remarks
Purge vol.	gallons												
Purge rate	mL/min	170	170	170	170	170	170	170	170	170			
pH	su	6.3	6.4	6.3	6.3	6.3	6.4	6.4	6.4	6.4			
Temp.	ºC	18.9	18.7	18.6	18.7	18.7	18.8	18.8	18.9	18.9			
Conductivity	µS/cm	717	716	711	703	703	69	696	695	695			
DO	mg/L	2.1	1.2	0.8	0.6	0.6	0.5	0.5	0.5	0.5			
ORP	mV	98.7	93.3	97.0	97.1	95.8	92.8	91.7	91.3	90.7			
Turbidity	NTU	2.6	1.8	2.2	1.9	1.4	1.3	1.9	2.2	1.7			
Color/tint	--	clear	clear	clear	clear	clear	clear	clear	clear	clear			
Odor	--	none	none	none	none	none	none	none	none	none			

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-119	5/16/2019	0915	2	0	appendix III parameters
MW-119	5/16/2019	0920	3	0	appendix IV parameters

Sampler's Name (print): Michael Clayton	Sampler Signature: transcribed by HLF

Quarterly Background and Verification Sampling Event, Third Quarter 2019

Groundwater Level Data Sheet

Project Name: Plum Point Energy Station	Project Number: 14590-1992-001	Investigator: MCC	Page 1 of 1
Weather Conditions: P/C 87°	Measuring Device: Geotech 100'		

Well ID	Date	Time	Depth to Water (feet below TOC)	Damages/Repairs		
MW-1	7/31/19	1324	10.00	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-2		1341	10.97	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-3R		1309	11.03	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-4R2		1250	8.96	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-5		1157	Ants nest in well 9.41	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☑ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-6		1217	9.65	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-7		1143	12.72	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-8		1135	12.72	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-10R		1226	8.30	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-11R		1208	9.73	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-13R		1122	11.97	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-15		1117	12.29	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-16		1330	11.42	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-17		1237	9.78	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☑ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-18		1301	8.83	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record
MW-19	↓	1318	14.05	☐ Damaged well pad/casing ☐ Damaged bollards ☐ Damaged equipment	☐ Damaged TOC ☐ Damaged lock ☐ Un-kept vegetation	☐ Lacks visibility ☐ Lacks access ☐ See gw sample record

Groundwater Sampling Record
PPES-EPA Sampling Program

Facility: Plum Point Energy Station	Site ID: MW 108	Sampler: MCC
Project Number: R14590-1992-001	Date: 8/1/19	Sampler Organization: FTN

Site Description

Weather: P/C	Air Temp (°F): 84	Wind: NNE @ 2			
Site type: ☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☒ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper –T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	7/31/19	8/1/19	→	→	→	
Time	24-hour	1135	1115	1131	1152	1158	
Depth to Water	feet	12.72	13.07	13.09	13.12	13.13	
Product/ Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters: ☐ YSI ProPlus ☒ YSI MPS 556 ☐ Other: ☒ Hach 2100P Turbidimeter ☐ HF Scientific 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)] × [internal diameter of well (inches)]^2 × 0.0408									
Time	24-hour	1120	1125	1130	1135	1140	1145	1150				Remarks
Purge vol.	gallons											
Purge rate	mL/min	170	170	170	170	170	170	170				
pH	su	7.36	7.21	7.22	7.19	7.15	7.13	7.13				
Temp.	°C	22.14	21.67	20.92	20.52	20.62	20.77	21.01				
Sp. Cond.	µS/cm	954	953	953	948	943	938	936				
D.O.	mg/L	1.06	0.76	0.71	0.64	0.56	0.40	0.35				
ORP	mV	116.4	116.6	116.5	117.7	119.1	119.1	118.7				
Turbidity	NTU	5.69	4.92	4.04	3.86	3.09	2.44	2.14				
Color/tint		Clear	→	→	→	→	→	→				
Odor		None	→	→	→	→	→	→				

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW 108	8/1/19	1155	1	0	1 x 250 mL Boron

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

Groundwater Sampling Record
PPES-EPA Sampling Program

Facility: Plum Point Energy Station	Site ID: MW 115	Sampler: MCC
Project Number: R14590-1992-001	Date: 8/1/19	Sampler Organization: FTN

Site Description

Weather: PC	Air Temp (°F): 75	Wind: NE @ 6			
Site type: ☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☒ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper –T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	7/31/19	8/1/19	→	→	→	
Time	24-hour	1117	0820	0833		0944	
Depth to Water	feet	12.29	12.45	12.45	0938 12.47	12.47	
Product/ Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters: ☐ YSI ProPlus ☒ YSI MPS 556 ☐ Other: ☒ Hach 2100P Turbidimeter ☐ HF Scientific 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)] × [internal diameter of well (inches)]^2 × 0.0408

Time	24-hour	830	835	840	2.45	900	905	910	915	920	925	930	935 Remarks
Purge vol.	gallons												
Purge rate	mL/min	~~150~~ 110	110	110	110	110	110	110	110	110	110	110	110
pH	su	6.37	6.09	6.63	6.40	6.87	6.92	7.01	7.03	7.07	7.10	7.13	7.12
Temp.	°C	18.91	19.60	20.44	19.86	20.26	20.23	20.68	20.90	20.83	20.94	20.90	20.47
Sp. Cond.	µS/cm	716	713	720	710	711	712	710	710	711	711	711	712
D.O.	mg/L	6.90	6.29	5.28	5.53	4.68	4.60	4.89	4.81	4.71	4.33	4.52	4.47
ORP	mV	117.2	142.8	99.7	97.9	96.2	92.2	86.8	85.8	86.0	86.5	85.0	84.6
Turbidity	NTU	2.59	2.15	2.47	2.05	2.94	1.55	1.44	1.83	1.57	1.47	1.02	1.53
Color/tint		Clear	→	→	→	→	→	→	→	→	→	→	→
Odor		None	→	→	→	→	→	→	→	→	→	→	→

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW 115	8/1/19	0940	1	0	Calcium

Sampler's Name (print): Michael Clayton

Sampler Signature: Michael Clayton

Groundwater Sampling Record

Facility:	Plum Point Energy Station	Site ID:	MW-117	Sampler:	Michael Clayton
Project Number:	R14590-1992-001 (EPA)	Date:	8/2/2019	Sampler Organization:	FTN Associates, Ltd.

Site Description

Weather: partly cloudy	Air Temp. (ºF): 85	Wind: north at 7 mph				
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:						

Water Level Data

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

Water level meter: ☑ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	7/31/2019	8/2/2019	8/2/2019	8/2/2019	8/2/2019	
Time	24-hour	1237	1130	1141	1217	1227	
Depth to Water	feet	9.78	10.10	10.10	10.10	10.10	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☐ YSI ProPlus ☑ Hach 2100P Turbidimeter
☑ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☐ 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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1135	1140	1145	1150	1155	1200	1205	1210	1215			Remarks
Purge vol.	gallons												
Purge rate	mL/min	170	170	170	170	150	150	150	150	150			
pH	su	6.8	6.4	6.2	6.0	6.1	6.2	6.3	6.3	6.3			
Temp.	ºC	19.0	19.2	18.9	19.1	19.4	19.5	19.2	19.2	19.3			
Conductivity	µS/cm	480	480	487	490	501	503	507	506	506			
DO	mg/L	3.9	3.7	3.8	3.7	3.5	3.5	3.4	3.3	3.3			
ORP	mV	116.7	127.6	139.0	149.8	144.7	138.2	130.4	130.6	130.1			
Turbidity	NTU	2.0	1.9	1.8	1.9	1.6	1.4	1.4	1.3	1.2			
Color/tint	--	clear	clear	clear	clear	clear	clear	clear	clear	clear			
Odor	--	none	none	none	none	none	none	none	none	none			

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-117	8/2/2019	1220	2	0	
MW-117 DUP	8/2/2019	1225	2	0	
EPA EB-1	8/2/2019	1240	2	0	

Sampler's Name (print):	Michael Clayton	Sampler Signature:	transcribed by HLF

Groundwater Sampling Record
PPES-EPA Sampling Program

Facility: Plum Point Energy Station	Site ID: MW 118	Sampler: MCC
Project Number: R14590-1992-001	Date: 8/2/19	Sampler Organization: FTN

Site Description

Weather: P/C	Air Temp (°F): 80	Wind: NNE @ 4			
Site type: ☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☒ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper –T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	7/31/19	8/2/19				
Time	24-hour	1301	945				
Depth to Water	feet	8.83	9.20				
Product/ Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters: ☐ YSI ProPlus ☒ YSI MPS 556 ☐ Other: ☒ Hach 2100P Turbidimeter ☐ HF Scientific 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)] × [internal diameter of well (inches)]^2 × 0.0408

Time	24-hour	950	955	1000	1005	1010	1015	1020	1025	1030			Remarks
Purge vol.	gallons												
Purge rate	mL/min	160	160	160	160	160	160	160	160	160			
pH	su	6.47	6.25	6.01	5.68	5.84	5.95	6.07	6.09	6.11			
Temp.	°C												
Sp. Cond.	µS/cm												
D.O.	mg/L												
ORP	mV												
Turbidity	NTU												
Color/tint													
Odor													

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks

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

Groundwater Sampling Record
PPES-EPA Sampling Program

Facility: Plum Point Energy Station	Site ID: MW-119	Sampler: MCC
Project Number: R14590-1992-001	Date: 8-2-19	Sampler Organization: FTN

Site Description

Weather: PC	Air Temp (°F): 73	Wind: NNE @ 5			
Site type: ☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering 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:					

Water Level Data

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

Water level meter: ☒ Geotech/Keck 100' ☐ Geotech/Keck 200' ☐ Heron Dipper –T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	7/31/19	8/2/19	→	→	→	
Time	24-hour	1318	820	842	917	933	
Depth to Water	feet	14.05	14.46	14.47	14.47	14.47	
Product/ Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters: ☐ YSI ProPlus ☒ YSI MPS 556 ☐ Other: ☒ Hach 2100P Turbidimeter ☐ HF Scientific 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)] × [internal diameter of well (inches)]^2 × 0.0408

Time	24-hour	830	835	840	845	850	855	900	905	910	915		Remarks
Purge vol.	gallons												
Purge rate	mL/min	200	200	200	200	200	200	200	200	200	200		
pH	su	6.62	6.21	5.81	5.84	6.13	6.21	6.24	6.29	6.35	6.37		
Temp.	°C	19.58	19.59	19.35	19.47	19.55	19.55	19.58	19.54	19.59	19.64		
Sp. Cond.	µS/cm	509	512	512	507	503	502	502	502	502	502		
D.O.	mg/L	2.51	1.58	1.32	0.87	0.81	0.70	0.66	0.63	0.34	0.55		
ORP	mV	130.0	144.9	174.4	161.9	144.0	141.5	139.7	138.1	134.2	133.8		
Turbidity	NTU	3.70	3.01	2.74	2.41	2.35	2.47	2.10	1.98	1.91	1.89		
Color/tint		Clear	→	→	→	→	→	→	→	→	→		
Odor		None	→	→	→	→	→	→	→	→	→		

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW 119	8/2/19	0920	3	0	2x250 mL 2x ILTR Radium

Sampler's Name (print): Michael Clayton

Sampler Signature:

Second Half 2019 Sampling Event

Ground Water Level Elevation Data Sheet

Project Name:	Project Number:	Investigator:	Page 1 of 1
PlumPoint		AJP	
Weather Conditions:	**Measuring Device:**		
Overcast	HeronDipperT		

Well ID	Date	Time	Depth to Water (feet below TOC)		Comments
MW-15	10/21/12	1343	19.77		
MW-11R		1351	17.26		
MW-6		1355	17.77		
MW-10R		1401	15.23		
MW-17		1408	17.76		
MW-5		1414	18.55		
MW-13R		1423	20.64		
MW-4		1439	20.97		
MW-7		1443	21.21		
MW-2		1448	18.70		
MW-16		1452	18.89		
MW-1		1456	16.43		
MW-19		1500	20.37		
MW-3R		1506	17.73		
MW-14		1512	16.25		
MW-4R2	↓	1526	15.55		

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-101	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/23/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 45	Wind:			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/23/2019	10/23/2019	10/23/2019	10/23/2019	
Time	24-hour	1456	0710	0800	0810	0825	
Depth to Water	feet	16.43	16.55	16.62	16.62	16.62	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	0758	0801	0804	0807	0810							Remarks
Purge vol.	gallons												
Purge rate	mL/min	225	225	225	225	225							
pH	su	7.0	7.0	7.0	7.0	7.0							
Temp.	ºC	13.2	13.4	13.6	13.6	13.9							
Conductivity	µS/cm	620	618	619	620	618							
DO	mg/L	0.6	0.5	0.5	0.5	0.5							
ORP	mV	187.2	170.5	159.5	156.4	154.3							
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02							
Color/tint	--	clear	clear	clear	clear	clear							
Odor	--	yes	UNK	UNK	UNK	UNK							

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-101	10/23/2019	0810	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-102	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/23/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 51	Wind: north at 2 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/23/2019	10/23/2019	10/23/2019	10/23/2019	
Time	24-hour	1448	0919	0931	0934	0956	
Depth to Water	feet	18.70	19.00	19.69	19.69	19.69	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	0925	0928	0931	0934								Remarks
Purge vol.	gallons												
Purge rate	mL/min	175	175	175	175								
pH	su	6.7	6.7	6.7	6.7								
Temp.	ºC	17.6	17.7	17.9	18.0								
Conductivity	µS/cm	665	665	665	665								
DO	mg/L	0.8	0.7	0.5	0.6								
ORP	mV	117.9	118.9	119.5	119.7								
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02								
Color/tint	--	clear	clear	clear	clear								
Odor	--	none	none	none	none								

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-102	10/23/2019	0934	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-103	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/22/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 64	Wind: west at 16 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	
Time	24-hour	1506	1438	1503	1506	1529	
Depth to Water	feet	17.73	17.79	17.89	17.89	17.93	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408

Time	24-hour	1448	1451	1454	1457	1500	1503	1506					Remarks
Purge vol.	gallons												
Purge rate	mL/min	150	150	150	150	150	150	150					
pH	su	6.6	6.7	6.6	6.7	6.7	6.7	6.7					
Temp.	ºC	18.5	18.5	18.6	18.5	18.6	18.6	18.7					
Conductivity	µS/cm	622	623	626	629	631	635	634					
DO	mg/L	0.8	0.5	0.5	0.4	0.4	0.4	0.4					
ORP	mV	161.1	160.1	158.7	157.9	155.5	154.2	152.3					
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02					
Color/tint	--	clear	clear	clear	clear	clear	clear	clear					
Odor	--	none	none	none	none	none	none	none					

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-103	10/22/2019	1500	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility:	Plum Point Energy Station	Site ID:	MW-108	Sampler:	Andrew Pruitt
Project Number:	R14590-1992-001 (EPA)	Date:	10/22/2019	Sampler Organization:	FTN Associates, Ltd.

Site Description

Weather: clear sky	Air Temp. (ºF):	Wind:				
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	
Time	24-hour	1439	0653	0747	0800	0820	
Depth to Water	feet	20.97	21.00	21.44	21.30	21.36	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	0747	0750	0753	0756	0759							Remarks
Purge vol.	gallons												
Purge rate	mL/min	250	250	250	250	250							
pH	su	6.7	6.7	6.7	6.7	6.7							
Temp.	ºC	15.1	15.1	15.2	15.3	15.3							
Conductivity	µS/cm	878	877	874	870	862							
DO	mg/L	0.9	0.5	0.8	0.8	0.8							
ORP	mV	158.8	174.2	173.1	172.8	172.0							
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02							
Color/tint	--	clear	clear	clear	clear	clear							
Odor	--	none	none	none	none	none							

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-108	10/22/2019	0800	2	0	

Sampler's Name (print):	Andrew Pruitt	Sampler Signature:	transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-113	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/22/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 51	Wind: west-southwest at 6 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	
Time	24-hour	1423	0832	0845	0854	0910	
Depth to Water	feet	20.68	20.71	20.72	20.72	20.72	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408

Time	24-hour	0839	0842	0845	0848	0851	0854						Remarks
Purge vol.	gallons												
Purge rate	mL/min	200	200	200	200	200	200						
pH	su	6.8	6.8	6.7	6.7	6.7	6.7						
Temp.	ºC	17.9	18.0	18.0	18.0	18.1	18.2						
Conductivity	µS/cm	518.3	511.6	510.1	500.1	507.5	508.8						
DO	mg/L	3.9	3.9	3.8	3.8	3.7	3.8						
ORP	mV	161.1	162.7	164.4	165.2	167.0	171.1						
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--	none	none	none	none	none	none						

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-113	10/22/2019	0854	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-115	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/23/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF):	Wind:			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/23/2019	10/23/2019	10/23/2019	10/23/2019	
Time	24-hour	1343	1007	1032	1038	1041	
Depth to Water	feet	19.77	19.79	19.79	19.79	19.79	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1014	1017	1020	1023	1026	1029	1032	1035	1038			Remarks
Purge vol.	gallons												
Purge rate	mL/min	175	175	175	175	175	175	175	175	175			
pH	su	6.9	6.9	6.8	6.9	6.9	6.9	6.9	6.9	6.9			
Temp.	ºC	17.4	17.3	17.1	17.2	17.4	17.4	17.6	17.6	17.7			
Conductivity	µS/cm	649	644	643	644	642	643	642	644	643			
DO	mg/L	2.3	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.4			
ORP	mV	122.8	120.8	120.6	120.3	120.3	119.4	119.4	120.0	121.3			
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Color/tint	--	clear	clear	clear	clear	clear	clear	clear	clear	clear			
Odor	--	none	none	none	none	none	none	none	none	none			

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-115	10/23/2019	1038	2	0	
EB-1	10/23/2019	1100	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-116	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/23/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 45	Wind: north at 2 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/23/2019	10/23/2019	10/23/2019	10/23/2019	
Time	24-hour	1452	0831	0847	0855	0910	
Depth to Water	feet	18.89	18.97	18.97	18.97	18.97	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	0840	0843	0846	0849	0852	0855						Remarks
Purge vol.	gallons												
Purge rate	mL/min	225	225	225	225	225	225						
pH	su	6.8	6.8	6.7	6.7	6.7	6.7						
Temp.	ºC	17.3	17.3	17.3	17.4	17.3	17.4						
Conductivity	µS/cm	615	615	615	616	620	618						
DO	mg/L	0.7	0.6	0.6	0.5	0.5	0.5						
ORP	mV	142.7	142.8	141.3	140.1	139.2	138.2						
Turbidity	NTU	0.02	0.02	0.02	0.02	0.02	0.02						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--	none	none	none	none	none	none						

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-116	10/23/2019	0855	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-117	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/22/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 59	Wind: west at 12 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	
Time	24-hour	1404	1124	1149	1156	1220	
Depth to Water	feet	17.76	17.83	17.84	17.84	17.84	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408

Time	24-hour	1141	1144	1147	1150	1153	1156						Remarks
Purge vol.	gallons												
Purge rate	mL/min	250	250	250	250	250	250						
pH	su	6.4	6.5	6.5	6.5	6.5	6.5						
Temp.	ºC	18.7	18.8	19.0	19.1	19.0	19.1						
Conductivity	µS/cm	524	531	531	531	532	530						
DO	mg/L	3.3	4.0	3.8	3.6	3.6	3.6						
ORP	mV	151.6	157.0	158.2	163.0	164.2	164.5						
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--												

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-117	10/22/2019	1156	2	0	
MW-117 DUP	10/22/2019	1200	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-118	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/22/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 61	Wind: west at 15 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	
Time	24-hour	1512	1340	1357	1400	1420	
Depth to Water	feet	16.25	16.30	16.29	16.29	16.29	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1345	1348	1351	1354	1357	1400						Remarks
Purge vol.	gallons												
Purge rate	mL/min	150	150	150	150	150	150						
pH	su	6.9	6.4	6.3	6.5	6.4	6.4						
Temp.	ºC	18.2	18.1	18.3	18.2	18.3	18.1						
Conductivity	µS/cm	552	551	550	547	547	548						
DO	mg/L	4.0	4.0	3.6	3.6	3.4	3.5						
ORP	mV	117.8	129.1	143.2	153.8	158.4	166.3						
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Color/tint	--	clear	clear	clear	clear	clear	clear						
Odor	--	none	none	none	none	none	none						

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-118	10/22/2019	1400	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

Groundwater Sampling Record

Facility: Plum Point Energy Station	Site ID: MW-119	Sampler: Andrew Pruitt
Project Number: R14590-1992-001 (EPA)	Date: 10/22/2019	Sampler Organization: FTN Associates, Ltd.

Site Description

Weather: sunny	Air Temp. (ºF): 65	Wind: west-northwest at 16 mph			
Site type: ☑ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Dewatering Well ☐ Spring ☐ Other:	Well casing material: ☐ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches		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: ☐ Geotech/Keck 100' ☐ Geotech/Keck 200' ☑ Heron Dipper–T ☐ Solinst 101 ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Date	mm/dd/yy	10/21/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	
Time	24-hour	1500	1545	1559	1605	1621	
Depth to Water	feet	20.37	20.37	20.38	20.38	20.38	
Product/Thickness	LNAPL/DNAPL feet						

Field Data

Field data meters:
☑ YSI ProPlus ☐ Hach 2100P Turbidimeter
☐ YSI MPS 556 ☐ HF Scientific Turbidimeter
☐ Other: ☑ Other: Geoturb 17061366

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)] × [internal diameter of well (inches)]^2 × 0.0408										
Time	24-hour	1553	1556	1559	1602	1605							Remarks
Purge vol.	gallons												
Purge rate	mL/min	300	300	300	300	300							
pH	su	6.7	6.7	6.7	6.7	6.7							
Temp.	ºC	18.8	18.9	18.8	18.8	18.9							
Conductivity	µS/cm	717	723	726	724	725							
DO	mg/L	0.3	0.3	0.2	0.2	0.2							
ORP	mV	124.2	106.7	99.4	92.4	89.3							
Turbidity	NTU	<0.02	<0.02	<0.02	<0.02	<0.02							
Color/tint	--	clear	clear	clear	clear	clear							
Odor	--	unk	unk	unk	unk	unk							slight odor; unknown

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-119	10/22/2019	1605	2	0	

Sampler's Name (print): Andrew Pruitt	Sampler Signature: transcribed by HLF

APPENDIX B

Laboratory Reports

Quarterly Background Sampling Event, First Quarter 2019

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

February 26, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1071521
Samples Received:	02/19/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

TABLE OF CONTENTS

MW-119 L1071521-01 GW

Collected by: Michael Clayton
Collected date/time: 02/18/19 11:10
Received date/time: 02/19/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1240023	1	02/21/19 16:05	02/21/19 16:34	AEC
Wet Chemistry by Method 9056A	WG1239296	1	02/20/19 01:25	02/20/19 01:25	ELN
Mercury by Method 7470A	WG1239361	1	02/19/19 18:13	02/20/19 23:23	TCT
Metals (ICP) by Method 6010B	WG1240171	1	02/23/19 12:11	02/24/19 13:42	WBD
Metals (ICPMS) by Method 6020	WG1239305	1	02/19/19 20:07	02/21/19 12:37	JDG

MW-119 DUP L1071521-02 GW

Collected by: Michael Clayton
Collected date/time: 02/18/19 11:15
Received date/time: 02/19/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1240023	1	02/21/19 16:05	02/21/19 16:34	AEC
Wet Chemistry by Method 9056A	WG1239296	1	02/20/19 01:40	02/20/19 01:40	ELN
Mercury by Method 7470A	WG1239361	1	02/19/19 18:13	02/20/19 23:26	TCT
Metals (ICP) by Method 6010B	WG1240171	1	02/23/19 12:11	02/24/19 13:45	WBD
Metals (ICPMS) by Method 6020	WG1240697	1	02/24/19 22:10	02/25/19 13:10	LD
Metals (ICPMS) by Method 6020	WG1240697	1	02/24/19 22:10	02/25/19 21:37	LD

EB-1 L1071521-03 GW

Collected by: Michael Clayton
Collected date/time: 02/18/19 12:20
Received date/time: 02/19/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1240023	1	02/21/19 16:05	02/21/19 16:34	AEC
Wet Chemistry by Method 9056A	WG1239296	1	02/20/19 01:56	02/20/19 01:56	ELN
Mercury by Method 7470A	WG1239361	1	02/19/19 18:13	02/20/19 23:28	TCT
Metals (ICP) by Method 6010B	WG1240171	1	02/23/19 12:11	02/24/19 13:48	WBD
Metals (ICPMS) by Method 6020	WG1240697	1	02/24/19 22:10	02/25/19 13:14	LD
Metals (ICPMS) by Method 6020	WG1240697	1	02/24/19 22:10	02/25/19 21:42	LD

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

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	374000		2820	10000	1	02/21/2019 16:34	WG1240023

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2270		51.9	1000	1	02/20/2019 01:25	WG1239296
Fluoride	253		9.90	100	1	02/20/2019 01:25	WG1239296
Sulfate	43000		77.4	5000	1	02/20/2019 01:25	WG1239296

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	02/20/2019 23:23	WG1239361

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	110	J	12.6	200	1	02/24/2019 13:42	WG1240171
Calcium	103000		46.3	1000	1	02/24/2019 13:42	WG1240171
Lithium	21.6		5.30	15.0	1	02/24/2019 13:42	WG1240171
Molybdenum	U		1.60	5.00	1	02/24/2019 13:42	WG1240171

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U		0.754	2.00	1	02/21/2019 12:37	WG1239305
Arsenic	0.352	J	0.250	2.00	1	02/21/2019 12:37	WG1239305
Barium	154		0.360	5.00	1	02/21/2019 12:37	WG1239305
Beryllium	U		0.120	2.00	1	02/21/2019 12:37	WG1239305
Cadmium	0.194	J	0.160	1.00	1	02/21/2019 12:37	WG1239305
Chromium	U		0.540	2.00	1	02/21/2019 12:37	WG1239305
Cobalt	1.18	J	0.260	2.00	1	02/21/2019 12:37	WG1239305
Lead	U		0.240	2.00	1	02/21/2019 12:37	WG1239305
Selenium	0.592	J J4 J5	0.380	2.00	1	02/21/2019 12:37	WG1239305
Thallium	U		0.190	2.00	1	02/21/2019 12:37	WG1239305

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	378000		2820	10000	1	02/21/2019 16:34	WG1240023

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2250		51.9	1000	1	02/20/2019 01:40	WG1239296
Fluoride	252		9.90	100	1	02/20/2019 01:40	WG1239296
Sulfate	43800		77.4	5000	1	02/20/2019 01:40	WG1239296

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	02/20/2019 23:26	WG1239361

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	102	J	12.6	200	1	02/24/2019 13:45	WG1240171
Calcium	101000		46.3	1000	1	02/24/2019 13:45	WG1240171
Lithium	22.8		5.30	15.0	1	02/24/2019 13:45	WG1240171
Molybdenum	U		1.60	5.00	1	02/24/2019 13:45	WG1240171

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U	J4	0.754	2.00	1	02/25/2019 21:37	WG1240697
Arsenic	0.596	J	0.250	2.00	1	02/25/2019 13:10	WG1240697
Barium	142		0.360	5.00	1	02/25/2019 13:10	WG1240697
Beryllium	U		0.120	2.00	1	02/25/2019 13:10	WG1240697
Cadmium	U		0.160	1.00	1	02/25/2019 13:10	WG1240697
Chromium	U		0.540	2.00	1	02/25/2019 13:10	WG1240697
Cobalt	1.20	J	0.260	2.00	1	02/25/2019 13:10	WG1240697
Lead	U		0.240	2.00	1	02/25/2019 13:10	WG1240697
Selenium	0.524	J	0.380	2.00	1	02/25/2019 13:10	WG1240697
Thallium	U		0.190	2.00	1	02/25/2019 13:10	WG1240697

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	11000		2820	10000	1	02/21/2019 16:34	WG1240023

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	02/20/2019 01:56	WG1239296
Fluoride	U		9.90	100	1	02/20/2019 01:56	WG1239296
Sulfate	U		77.4	5000	1	02/20/2019 01:56	WG1239296

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	02/20/2019 23:28	WG1239361

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	38.7	J	12.6	200	1	02/24/2019 13:48	WG1240171
Calcium	U		46.3	1000	1	02/24/2019 13:48	WG1240171
Lithium	U		5.30	15.0	1	02/24/2019 13:48	WG1240171
Molybdenum	U		1.60	5.00	1	02/24/2019 13:48	WG1240171

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U	J4	0.754	2.00	1	02/25/2019 21:42	WG1240697
Arsenic	U		0.250	2.00	1	02/25/2019 13:14	WG1240697
Barium	U		0.360	5.00	1	02/25/2019 13:14	WG1240697
Beryllium	U		0.120	2.00	1	02/25/2019 13:14	WG1240697
Cadmium	U		0.160	1.00	1	02/25/2019 13:14	WG1240697
Chromium	U		0.540	2.00	1	02/25/2019 13:14	WG1240697
Cobalt	U		0.260	2.00	1	02/25/2019 13:14	WG1240697
Lead	0.308	J	0.240	2.00	1	02/25/2019 13:14	WG1240697
Selenium	U		0.380	2.00	1	02/25/2019 13:14	WG1240697
Thallium	U		0.190	2.00	1	02/25/2019 13:14	WG1240697

Method Blank (MB)

(MB) R3386324-1 02/21/19 16:34

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

Laboratory Control Sample (LCS)

(LCS) R3386324-2 02/21/19 16:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8620000	98.0	85.0-115	

Method Blank (MB)

(MB) R3385219-1 02/19/19 11:20

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77.4	5000

L1071367-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1071367-01 02/19/19 22:20 • (DUP) R3385219-3 02/19/19 22:35

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2280	2260	1	1.00		15
Fluoride	254	253	1	0.276		15
Sulfate	43400	43300	1	0.244		15

L1071521-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1071521-03 02/20/19 01:56 • (DUP) R3385219-6 02/20/19 02:11

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

Laboratory Control Sample (LCS)

(LCS) R3385219-2 02/19/19 11:35

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	39900	99.9	80.0-120	
Fluoride	8000	8210	103	80.0-120	
Sulfate	40000	40300	101	80.0-120	

L1071367-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071367-01 02/19/19 22:20 • (MS) R3385219-4 02/19/19 22:51 • (MSD) R3385219-5 02/19/19 23:06

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	2280	51300	51400	98.1	98.1	1	80.0-120			0.0886	15
Fluoride	5000	254	5240	5250	99.7	99.9	1	80.0-120			0.219	15
Sulfate	50000	43400	89500	89500	92.2	92.2	1	80.0-120			0.00950	15

L1071521-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1071521-03 02/20/19 01:56 • (MS) R3385219-7 02/20/19 02:26

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	U	49400	98.8	1	80.0-120	
Fluoride	5000	U	5050	101	1	80.0-120	
Sulfate	50000	U	49000	98.1	1	80.0-120	

Method Blank (MB)

(MB) R3385605-1 02/20/19 22:25

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Mercury	U		0.0490	0.200

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

(LCS) R3385605-2 02/20/19 22:27 • (LCSD) R3385605-3 02/20/19 22:30

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	%	%	%			%	%
Mercury	3.00	3.02	3.07	101	102	80.0-120			1.72	20

L1071482-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071482-01 02/20/19 22:32 • (MS) R3385605-4 02/20/19 22:35 • (MSD) R3385605-5 02/20/19 22:37

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	%	%		%			%	%
Mercury	3.00	U	3.09	3.22	103	107	1	75.0-125			4.00	20

L1071503-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071503-01 02/20/19 22:40 • (MS) R3385605-6 02/20/19 22:42 • (MSD) R3385605-7 02/20/19 22:44

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	%	%		%			%	%
Mercury	3.00	U	3.04	3.31	101	110	1	75.0-125			8.59	20

Method Blank (MB)

(MB) R3386526-1 02/24/19 12:52

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000
Lithium	U		5.30	15.0
Molybdenum	U		1.60	5.00

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

(LCS) R3386526-2 02/24/19 12:55 • (LCSD) R3386526-3 02/24/19 12:57

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Boron	1000	995	1020	99.5	102	80.0-120			2.20	20
Calcium	10000	9990	10100	99.9	101	80.0-120			1.55	20
Lithium	1000	1020	1030	102	103	80.0-120			1.89	20
Molybdenum	1000	998	1030	99.8	103	80.0-120			2.67	20

L1071868-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071868-01 02/24/19 13:00 • (MS) R3386526-5 02/24/19 13:05 • (MSD) R3386526-6 02/24/19 13:07

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	ND	1150	1160	99.9	101	1	75.0-125			0.947	20
Calcium	10000	2610	12600	12600	100	100	1	75.0-125			0.222	20
Lithium	1000	29.3	1110	1110	108	108	1	75.0-125			0.0911	20
Molybdenum	1000	8.54	1010	1010	100	99.8	1	75.0-125			0.450	20

Method Blank (MB)

(MB) R3385849-1 02/21/19 12:24

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.754	2.00
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Beryllium	U		0.120	2.00
Cadmium	U		0.160	1.00
Chromium	0.734	J	0.540	2.00
Cobalt	U		0.260	2.00
Lead	U		0.240	2.00
Selenium	U		0.380	2.00
Thallium	U		0.190	2.00

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

(LCS) R3385849-2 02/21/19 12:28 • (LCSD) R3385849-3 02/21/19 12:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	51.3	50.4	103	101	80.0-120			1.74	20
Arsenic	50.0	52.8	52.4	106	105	80.0-120			0.725	20
Barium	50.0	52.5	53.9	105	108	80.0-120			2.63	20
Beryllium	50.0	47.7	46.3	95.4	92.5	80.0-120			3.03	20
Cadmium	50.0	51.9	50.5	104	101	80.0-120			2.73	20
Chromium	50.0	51.5	50.7	103	101	80.0-120			1.42	20
Cobalt	50.0	52.2	50.5	104	101	80.0-120			3.21	20
Lead	50.0	50.0	50.2	100	100	80.0-120			0.313	20
Selenium	50.0	61.9	61.6	124	123	80.0-120	J4	J4	0.553	20
Thallium	50.0	49.6	49.1	99.3	98.3	80.0-120			1.01	20

L1071521-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071521-01 02/21/19 12:37 • (MS) R3385849-5 02/21/19 12:47 • (MSD) R3385849-6 02/21/19 12:51

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	52.1	59.2	104	118	1	75.0-125			12.6	20
Arsenic	50.0	0.352	51.3	57.0	102	113	1	75.0-125			10.6	20
Barium	50.0	154	205	209	103	110	1	75.0-125			1.74	20
Beryllium	50.0	U	46.8	51.4	93.6	103	1	75.0-125			9.33	20
Cadmium	50.0	0.194	52.0	57.6	104	115	1	75.0-125			10.1	20
Chromium	50.0	U	51.2	55.8	102	112	1	75.0-125			8.54	20
Cobalt	50.0	1.18	51.3	56.0	100	110	1	75.0-125			8.69	20

L1071521-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071521-01 02/21/19 12:37 • (MS) R3385849-5 02/21/19 12:47 • (MSD) R3385849-6 02/21/19 12:51

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	50.0	U	50.3	55.5	101	111	1	75.0-125			9.81	20
Selenium	50.0	0.592	64.8	69.6	128	138	1	75.0-125	J5	J5	7.13	20
Thallium	50.0	U	49.4	54.9	98.8	110	1	75.0-125			10.5	20

Method Blank (MB)

(MB) R3386680-1 02/25/19 12:39

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Beryllium	U		0.120	2.00
Cadmium	U		0.160	1.00
Chromium	U		0.540	2.00
Cobalt	U		0.260	2.00
Lead	U		0.240	2.00
Selenium	U		0.380	2.00
Thallium	U		0.190	2.00

Method Blank (MB)

(MB) R3386803-1 02/25/19 21:04

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.754	2.00

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

(LCS) R3386680-2 02/25/19 12:43 • (LCSD) R3386680-3 02/25/19 12:48

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	49.7	48.4	99.5	96.8	80.0-120			2.74	20
Barium	50.0	47.3	46.9	94.6	93.8	80.0-120			0.928	20
Beryllium	50.0	48.4	47.5	96.9	95.0	80.0-120			2.00	20
Cadmium	50.0	47.4	49.0	94.9	98.1	80.0-120			3.35	20
Chromium	50.0	50.7	49.7	101	99.4	80.0-120			1.94	20
Cobalt	50.0	50.7	50.6	101	101	80.0-120			0.150	20
Lead	50.0	48.4	48.2	96.9	96.5	80.0-120			0.407	20
Selenium	50.0	48.0	48.3	96.0	96.6	80.0-120			0.618	20
Thallium	50.0	47.8	47.5	95.5	95.0	80.0-120			0.562	20

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

(LCS) R3386803-2 02/25/19 21:09 • (LCSD) R3386803-3 02/25/19 21:14

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	61.9	61.2	124	122	80.0-120	J4	J4	1.12	20

L1072263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1072263-01 02/25/19 12:52 • (MS) R3386680-5 02/25/19 13:01 • (MSD) R3386680-6 02/25/19 13:05

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	15.8	62.5	63.7	93.3	95.8	1	75.0-125			1.97	20
Barium	50.0	ND	49.3	50.3	93.6	95.5	1	75.0-125			1.94	20
Beryllium	50.0	ND	48.5	47.3	97.0	94.6	1	75.0-125			2.48	20
Cadmium	50.0	ND	49.2	50.3	98.4	101	1	75.0-125			2.31	20
Chromium	50.0	6.84	54.9	55.2	96.1	96.7	1	75.0-125			0.566	20
Cobalt	50.0	ND	48.0	48.3	95.9	96.5	1	75.0-125			0.617	20
Lead	50.0	ND	47.2	47.9	94.4	95.7	1	75.0-125			1.40	20
Selenium	50.0	ND	51.4	48.6	103	97.1	1	75.0-125			5.63	20
Thallium	50.0	ND	47.4	46.8	94.9	93.6	1	75.0-125			1.37	20

L1072263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1072263-01 02/25/19 21:18 • (MS) R3386803-5 02/25/19 21:28 • (MSD) R3386803-6 02/25/19 21:32

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	ND	64.8	62.7	130	125	1	75.0-125	J5		3.24	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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

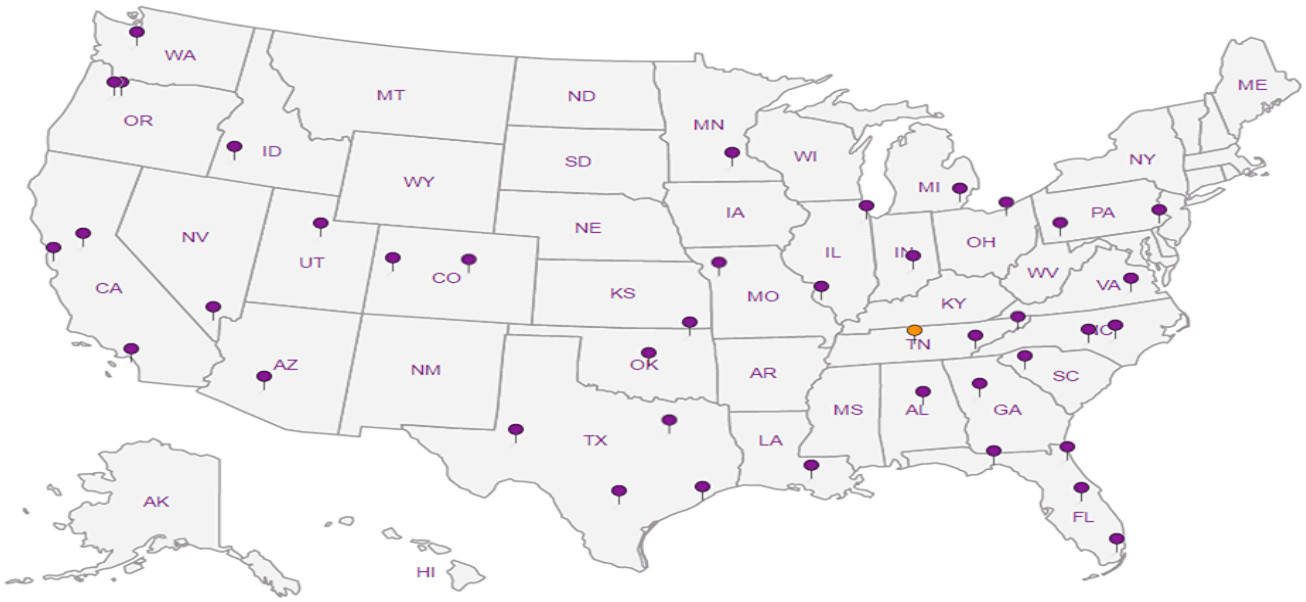
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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

Report to: **Dana Derrington**

Email To: **Christopher.Lussier@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 # **14590-1992-001**

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

Pres Chk: <2 | | <2 | <2 | | | | | | |

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CCR Metals 250mlHDPE-HNO3	Cl, F, SO4, TDS 250mlHDPE-NoPres	RA-226 1L-HDPE-Add HNO3	RA-228 1L-HDPE-Add HNO3						Remarks	Sample # (lab only)
MW-119	Grab	GW		2-18-2019	1110	4	X	X	X	X							-01
MW-119 DUP	↓	GW		↓	1115	4	X	X	X	X							02
EB-1		GW		↓	1220	4	X	X	X	X							03
		GW				4	X	X	X	X							

Chain of Custody Page 2 of 2

Pace Analytical® National Center for Testing & Innovation

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

L# 1071521

H247

Acctnum: NAESOAR
Template: T146260
Prelogin: P694216
TSR: 134 - Mark W. Beasley
PB: 2/13/19 mc
Shipped Via: FedEX Ground

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

Remarks:****Log radiums to a separate SDG****

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 4757 5091 2620

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
RAD SCREEN <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes (No) HCL / MeoH TBR
Michael Clayton	2-18-19	1500		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.3+0 °C Bottles Received: 12
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/19/19 Time: 0900
			BK Faiss	Hold: Condition: NCF / OK

Andy Vann

From: Mark Beasley
Sent: Wednesday, February 20, 2019 11:16 AM
To: Login
Subject: L1071521 *NAESOAR*

Change MOG to MOICP per client please.

Thanks

Mark Beasley
National Account Manager
Pace Analytical National Center for Testing & Innovation
12065 Lebanon Road | Mt. Juliet, TN 37122
615.773.9672 | Cell 615.330.1602
mbeasley@pacenational.com | pacenational.com

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ANALYTICAL REPORT

March 19, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1071526
Samples Received:	02/19/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Olivia Studebaker
Project Manager

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 Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

MW-119 L1071526-01 Non-Potable Water

Collected by: Michael Clayton
Collected date/time: 02/18/19 11:10
Received date/time: 02/19/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1245169	1	03/08/19 17:00	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1240812	1	02/22/19 09:27	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1240812	1	02/22/19 09:27	02/25/19 16:46	RGT	Mt. Juliet, TN

MW-119 DUP L1071526-02 Non-Potable Water

Collected by: Michael Clayton
Collected date/time: 02/18/19 11:15
Received date/time: 02/19/19 08:45

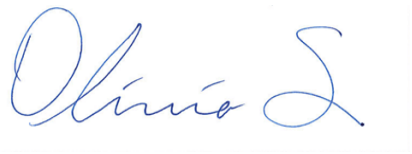
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1245169	1	03/08/19 17:00	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1240812	1	02/22/19 09:27	03/18/19 10:34	MK	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1240812	1	02/22/19 09:27	02/25/19 16:46	RGT	Mt. Juliet, TN

EB-1 L1071526-03 Non-Potable Water

Collected by: Michael Clayton
Collected date/time: 02/18/19 12:20
Received date/time: 02/19/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1245169	1	03/08/19 17:00	03/11/19 11:47	MK	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1240812	1	02/22/19 09:27	03/11/19 11:47	MK	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1240812	1	02/22/19 09:27	02/25/19 16:46	RGT	Mt. Juliet, TN

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. Where applicable, 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
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.519		0.379	0.638	03/18/2019 10:34	WG1245169
(T) Barium	*107*			*62.0-143*	*03/18/2019 10:34*	WG1245169
(T) Yttrium	*104*			*79.0-136*	*03/18/2019 10:34*	WG1245169

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.705		0.575	0.882	03/18/2019 10:34	WG1240812

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.186		0.196	0.244	02/25/2019 16:46	WG1240812
(T) Barium-133	*75.4*			*30.0-110*	*02/25/2019 16:46*	WG1240812

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.08		0.351	0.609	03/18/2019 10:34	WG1245169
(T) Barium	*107*			*62.0-143*	*03/18/2019 10:34*	WG1245169
(T) Yttrium	*99.5*			*79.0-136*	*03/18/2019 10:34*	WG1245169

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.15		0.495	0.873	03/18/2019 10:34	WG1240812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0639		0.144	0.264	02/25/2019 16:46	WG1240812
(T) Barium-133	*73.6*			*30.0-110*	*02/25/2019 16:46*	WG1240812

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0757		0.391	0.551	03/11/2019 11:47	WG1245169
(T) Barium	*107*			*62.0-143*	*03/11/2019 11:47*	WG1245169
(T) Yttrium	*102*			*79.0-136*	*03/11/2019 11:47*	WG1245169

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.0991		0.700	1.07	03/11/2019 11:47	WG1240812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0991		0.309	0.52	02/25/2019 16:46	WG1240812
(T) Barium-133	*68.5*			*30.0-110*	*02/25/2019 16:46*	WG1240812

Method Blank (MB)

(MB) R3390595-1 03/11/19 11:47

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.350		0.406
(T) Barium	*108*		
(T) Yttrium	*107*		

L1071255-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1071255-10 03/11/19 11:47 • (DUP) R3390595-5 03/11/19 11:47

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.793	0.00858	1	196	1.29		20	3
(T) Barium	*85.3*	*98.2*						
(T) Yttrium	*96.4*	*119*						

Laboratory Control Sample (LCS)

(LCS) R3390595-2 03/11/19 11:47

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.07	101	80.0-120	
(T) Barium			*101*		
(T) Yttrium			*95.2*		

L1071526-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071526-03 03/11/19 11:47 • (MS) R3390595-3 03/11/19 11:47 • (MSD) R3390595-4 03/11/19 11:47

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	20.0	-0.0757	17.0	16.8	84.8	84.0	1	70.0-130			1.01		20
(T) Barium		*107*			*99.4*	*98.8*							
(T) Yttrium		*102*			*105*	*111*							

Method Blank (MB)

(MB) R3387198-6 02/26/19 16:47

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.0287		0.0303
(T) Barium-133	*83.5*		

L1071526-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1071526-02 02/25/19 16:46 • (DUP) R3387198-5 02/25/19 16:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.0639	0.122	1	62.4	0.277		20	3
(T) Barium-133	*73.6*	*92.0*						

Laboratory Control Sample (LCS)

(LCS) R3387198-2 02/25/19 16:46

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.52	110	80.0-120	
(T) Barium-133			*85.0*		

L1071526-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1071526-01 02/25/19 16:46 • (MS) R3387198-3 02/25/19 16:46 • (MSD) R3387198-4 02/25/19 16:46

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.186	18.6	20.4	91.5	100	1	75.0-125			9.09		20
(T) Barium-133		*75.4*			*95.7*	*90.6*							

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

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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

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

ACCREDITATIONS & LOCATIONS

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

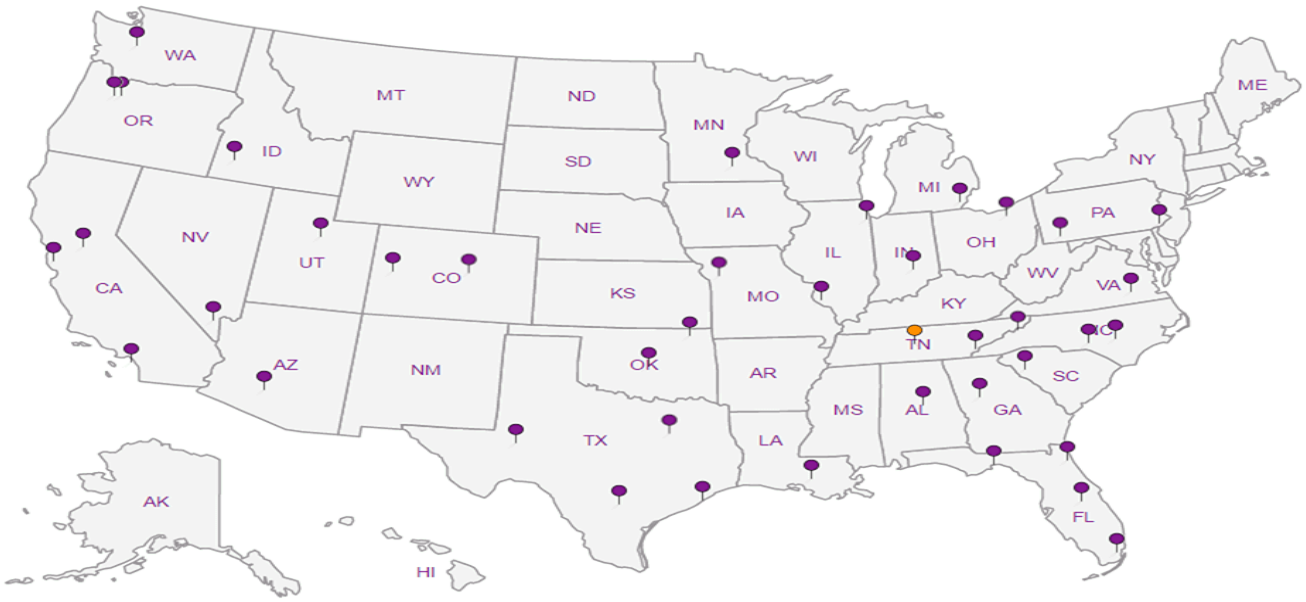
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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

Report to: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Pres Chk: <2 | | <2 | <2

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CCR Metals 250mlHDPE-HNO3	Cl, F, SO4, TDS 250mlHDPE-NoPres	RA-226 1L-HDPE-Add HNO3	RA-228 1L-HDPE-Add HNO3	Remarks	Sample # (lab only)
MW-119	GRAB	GW		2-18-2019	1110	4	X	X	X	X		-01
MW-119 DUP	↓	GW		↓	1115	4	X	X	X	X		02
EB-1		GW		↓	1220	4	X	X	X	X		03
		GW				4	X	X	X	X		

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# 1071526
H247

Acctnum: NAESOAR
Template: T146260
Prelogin: P694216
TSR: 134 - Mark W. Beasley
PB: 2/13/19 mc

Shipped Via: FedEX Ground

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

Remarks:**Log radiums to a separate SDG******

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 4757 5091 2620

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
RAD SCREEN: [illegible]

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes (No) HCL / MeoH TBR	If preservation required by Login: Date/Time
Michael Clayton	2-18-19	1500			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.3+0 °C Bottles Received: 12	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) BK Faiss	Date: 2/19/19 Time: 0900	Hold: Condition: NCF / OK

First Half 2019 Sampling Event

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

May 29, 2019

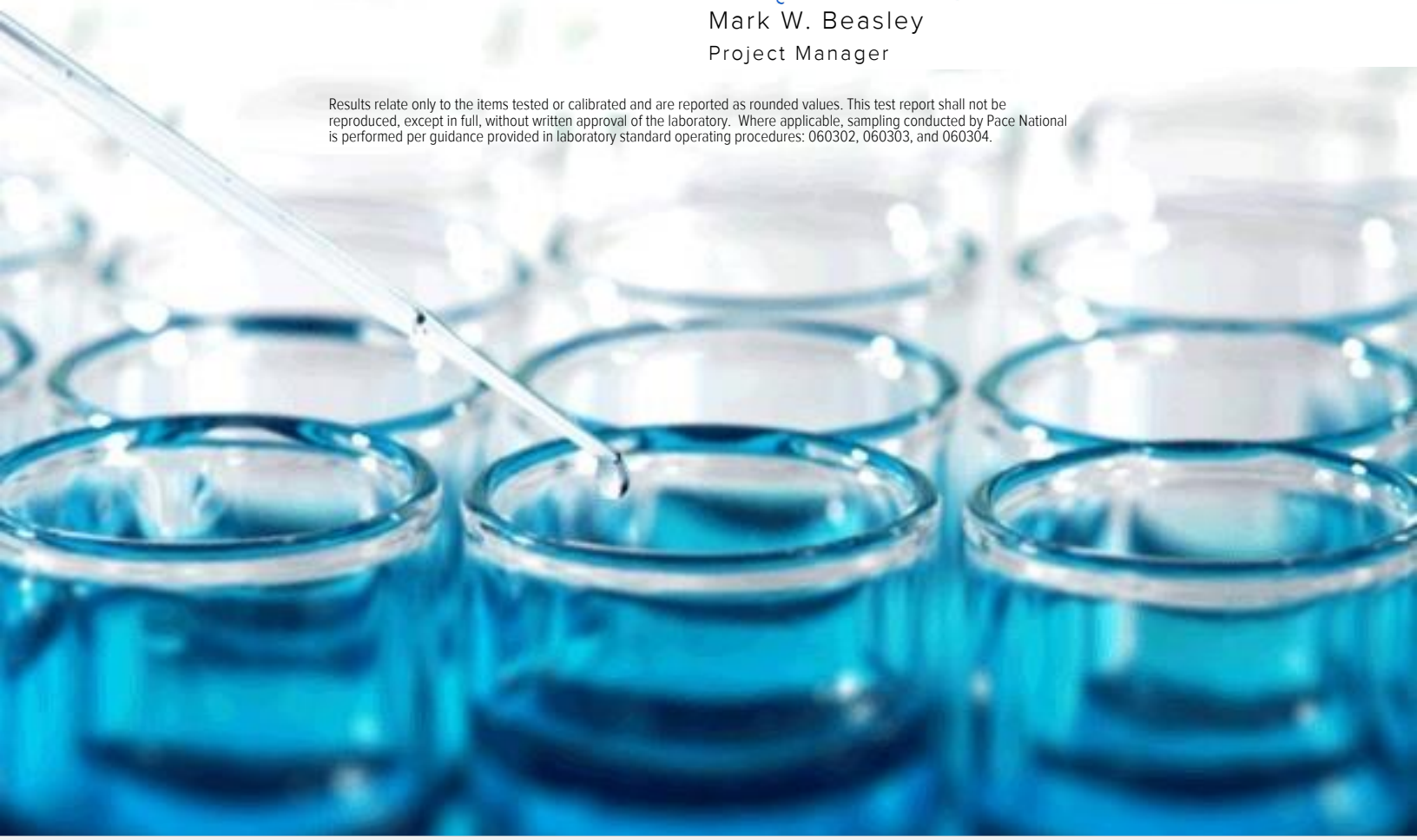
Plum Point Services Co., LLC

Sample Delivery Group:	L1100588
Samples Received:	05/18/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



MW-101 L1100588-01 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 10:30 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:19	05/25/19 20:19	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:23	CCE	Mt. Juliet, TN

MW-102 L1100588-02 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 12:35 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:30	05/25/19 20:30	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:25	CCE	Mt. Juliet, TN

MW-103 L1100588-03 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 14:55 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:41	05/25/19 20:41	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:28	CCE	Mt. Juliet, TN

MW-108 L1100588-04 GW

Collected by: Michael Clayton | Collected date/time: 05/14/19 14:40 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:52	05/25/19 20:52	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:31	CCE	Mt. Juliet, TN

MW-113 L1100588-05 GW

Collected by: Michael Clayton | Collected date/time: 05/14/19 13:45 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:03	05/25/19 21:03	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:33	CCE	Mt. Juliet, TN

MW-115 L1100588-06 GW

Collected by: Michael Clayton | Collected date/time: 05/14/19 12:35 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:14	05/25/19 21:14	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284390	1	05/23/19 11:06	05/24/19 18:40	TRB	Mt. Juliet, TN

MW-116 L1100588-07 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 11:30 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:25	05/25/19 21:25	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:14	TRB	Mt. Juliet, TN

MW-117 L1100588-08 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 16:25 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:35	05/25/19 21:35	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:16	TRB	Mt. Juliet, TN

MW-118 L1100588-09 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 13:50 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:29	05/25/19 16:29	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:19	TRB	Mt. Juliet, TN

MW-119 L1100588-10 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 09:15 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:44	05/25/19 16:44	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:21	TRB	Mt. Juliet, TN

MW-117 DUP L1100588-11 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 16:30 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:59	05/25/19 16:59	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:24	TRB	Mt. Juliet, TN

EB-2 L1100588-12 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 13:05 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 17:14	05/25/19 17:14	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:27	TRB	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

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	392000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1010		51.9	1000	1	05/25/2019 20:19	WG1286592
Fluoride	263	B	9.90	100	1	05/25/2019 20:19	WG1286592
Sulfate	9170		77.4	5000	1	05/25/2019 20:19	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	118	J	12.6	200	1	05/25/2019 11:23	WG1284387
Calcium	103000		46.3	1000	1	05/25/2019 11:23	WG1284387

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	466000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2870		51.9	1000	1	05/25/2019 20:30	WG1286592
Fluoride	196	B	9.90	100	1	05/25/2019 20:30	WG1286592
Sulfate	75400		77.4	5000	1	05/25/2019 20:30	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	150	J	12.6	200	1	05/25/2019 11:25	WG1284387
Calcium	121000		46.3	1000	1	05/25/2019 11:25	WG1284387

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	396000		2820	10000	1	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1100		51.9	1000	1	05/25/2019 20:41	WG1286592
Fluoride	213	B	9.90	100	1	05/25/2019 20:41	WG1286592
Sulfate	23400		77.4	5000	1	05/25/2019 20:41	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	154	J	12.6	200	1	05/25/2019 11:28	WG1284387
Calcium	106000		46.3	1000	1	05/25/2019 11:28	WG1284387

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	529000		2820	10000	1	05/21/2019 12:08	WG1283769

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2440		51.9	1000	1	05/25/2019 20:52	WG1286592
Fluoride	184	B	9.90	100	1	05/25/2019 20:52	WG1286592
Sulfate	34500		77.4	5000	1	05/25/2019 20:52	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	222		12.6	200	1	05/25/2019 11:31	WG1284387
Calcium	169000		46.3	1000	1	05/25/2019 11:31	WG1284387

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	342000		2820	10000	1	05/21/2019 12:08	WG1283769

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1580		51.9	1000	1	05/25/2019 21:03	WG1286592
Fluoride	120	B	9.90	100	1	05/25/2019 21:03	WG1286592
Sulfate	3150	J	77.4	5000	1	05/25/2019 21:03	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	168	J	12.6	200	1	05/25/2019 11:33	WG1284387
Calcium	87200		46.3	1000	1	05/25/2019 11:33	WG1284387

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	440000		2820	10000	1	05/21/2019 12:08	WG1283769

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	598	J	51.9	1000	1	05/25/2019 21:14	WG1286592
Fluoride	184	B	9.90	100	1	05/25/2019 21:14	WG1286592
Sulfate	5630		77.4	5000	1	05/25/2019 21:14	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	75.1	J	12.6	200	1	05/24/2019 18:40	WG1284390
Calcium	128000	O1 V	46.3	1000	1	05/24/2019 18:40	WG1284390

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	349000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1660		51.9	1000	1	05/25/2019 21:25	WG1286592
Fluoride	189	B	9.90	100	1	05/25/2019 21:25	WG1286592
Sulfate	27000		77.4	5000	1	05/25/2019 21:25	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	144	J	12.6	200	1	05/25/2019 11:14	WG1284393
Calcium	93200		46.3	1000	1	05/25/2019 11:14	WG1284393

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	341000		2820	10000	1	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1250		51.9	1000	1	05/25/2019 21:35	WG1286592
Fluoride	147	B	9.90	100	1	05/25/2019 21:35	WG1286592
Sulfate	6660		77.4	5000	1	05/25/2019 21:35	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	133	J	12.6	200	1	05/25/2019 11:16	WG1284393
Calcium	95300		46.3	1000	1	05/25/2019 11:16	WG1284393

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	286000		2820	10000	1	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1440		51.9	1000	1	05/25/2019 16:29	WG1286607
Fluoride	185		9.90	100	1	05/25/2019 16:29	WG1286607
Sulfate	16500		77.4	5000	1	05/25/2019 16:29	WG1286607

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	125	J	12.6	200	1	05/25/2019 11:19	WG1284393
Calcium	76400		46.3	1000	1	05/25/2019 11:19	WG1284393

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	487000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2860		51.9	1000	1	05/25/2019 16:44	WG1286607
Fluoride	252		9.90	100	1	05/25/2019 16:44	WG1286607
Sulfate	47400		77.4	5000	1	05/25/2019 16:44	WG1286607

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	109	J	12.6	200	1	05/25/2019 11:21	WG1284393
Calcium	131000		46.3	1000	1	05/25/2019 11:21	WG1284393

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	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1130		51.9	1000	1	05/25/2019 16:59	WG1286607
Fluoride	149		9.90	100	1	05/25/2019 16:59	WG1286607
Sulfate	6960		77.4	5000	1	05/25/2019 16:59	WG1286607

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	05/25/2019 11:24	WG1284393
Calcium	95000		46.3	1000	1	05/25/2019 11:24	WG1284393

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	U		2820	10000	1	05/23/2019 23:16	WG1284879

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	05/25/2019 17:14	WG1286607
Fluoride	U		9.90	100	1	05/25/2019 17:14	WG1286607
Sulfate	U		77.4	5000	1	05/25/2019 17:14	WG1286607

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	55.7	J	12.6	200	1	05/25/2019 11:27	WG1284393
Calcium	66.4	B J	46.3	1000	1	05/25/2019 11:27	WG1284393

Method Blank (MB)

(MB) R3413844-1 05/21/19 12:08

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

L1100588-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1100588-06 05/21/19 12:08 • (DUP) R3413844-3 05/21/19 12:08

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	440000	445000	1	1.13		5

Laboratory Control Sample (LCS)

(LCS) R3413844-2 05/21/19 12:08

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8660000	98.4	85.0-115	

Method Blank (MB)

(MB) R3413851-1 05/21/19 14:27

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

L1100588-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1100588-11 05/21/19 14:27 • (DUP) R3413851-3 05/21/19 14:27

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	338000	343000	1	1.47		5

Laboratory Control Sample (LCS)

(LCS) R3413851-2 05/21/19 14:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8810000	100	85.0-115	

Method Blank (MB)

(MB) R3415426-1 05/23/19 23:16

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

L1100588-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1100588-10 05/23/19 23:16 • (DUP) R3415426-3 05/23/19 23:16

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	487000	481000	1	1.24		5

Laboratory Control Sample (LCS)

(LCS) R3415426-2 05/23/19 23:16

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8860000	101	85.0-115	

Method Blank (MB)

(MB) R3415072-1 05/25/19 14:18

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		51.9	1000
Fluoride	56.4	J	9.90	100
Sulfate	U		77.4	5000

L1100485-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-07 05/25/19 15:59 • (DUP) R3415072-3 05/25/19 16:10

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	3800	3730	1	1.86		15
Fluoride	189	185	1	2.20		15
Sulfate	10100	9850	1	2.26		15

L1100485-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-14 05/25/19 18:09 • (DUP) R3415072-6 05/25/19 18:20

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

Laboratory Control Sample (LCS)

(LCS) R3415072-2 05/25/19 14:29

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40900	102	80.0-120	
Fluoride	8000	8450	106	80.0-120	
Sulfate	40000	41500	104	80.0-120	

L1100485-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100485-07 05/25/19 15:59 • (MS) R3415072-4 05/25/19 16:20 • (MSD) R3415072-5 05/25/19 16:31

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	3800	53800	53600	100	99.6	1	80.0-120			0.482	15
Fluoride	5000	189	5270	5220	102	101	1	80.0-120			0.983	15
Sulfate	50000	10100	59000	58900	97.8	97.7	1	80.0-120			0.132	15

L1100485-14 Original Sample (OS) • Matrix Spike (MS)

(OS) L1100485-14 05/25/19 18:09 • (MS) R3415072-7 05/25/19 18:31

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	U	50200	100	1	80.0-120	
Fluoride	5000	U	5110	102	1	80.0-120	
Sulfate	50000	U	50200	100	1	80.0-120	

Method Blank (MB)

(MB) R3415074-1 05/25/19 08:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77.4	5000

L1100662-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1100662-02 05/25/19 17:44 • (DUP) R3415074-6 05/25/19 18:28

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	23300	23400	1	0.484		15
Fluoride	777	780	1	0.475		15
Sulfate	56100	56200	1	0.340		15

Laboratory Control Sample (LCS)

(LCS) R3415074-2 05/25/19 08:46

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40500	101	80.0-120	
Fluoride	8000	8190	102	80.0-120	
Sulfate	40000	41500	104	80.0-120	

L1100662-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1100662-02 05/25/19 17:44 • (MS) R3415074-7 05/25/19 18:43

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	23300	72700	98.8	1	80.0-120	
Fluoride	5000	777	5760	99.7	1	80.0-120	
Sulfate	50000	56100	104000	95.6	1	80.0-120	E

Method Blank (MB)

(MB) R3415216-1 05/26/19 12:14

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) R3415216-2 05/26/19 12:17 • (LCSD) R3415216-3 05/26/19 12:19

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	998	986	99.8	98.6	80.0-120			1.26	20
Calcium	10000	9380	9480	93.8	94.8	80.0-120			0.996	20

L1100383-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100383-01 05/25/19 10:23 • (MS) R3415228-2 05/25/19 10:28 • (MSD) R3415228-3 05/25/19 10:31

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	ND	1040	1060	97.5	99.9	1	75.0-125			2.35	20
Calcium	10000	11300	20500	21000	92.3	97.1	1	75.0-125			2.30	20

Method Blank (MB)

(MB) R3414882-1 05/24/19 18:32

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) R3414882-2 05/24/19 18:34 • (LCSD) R3414882-3 05/24/19 18:37

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	981	938	98.1	93.8	80.0-120			4.47	20
Calcium	10000	9930	9690	99.3	96.9	80.0-120			2.49	20

L1100588-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100588-06 05/24/19 18:40 • (MS) R3414882-5 05/24/19 18:45 • (MSD) R3414882-6 05/24/19 18:48

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	75.1	1070	1040	99.5	96.3	1	75.0-125			3.06	20
Calcium	10000	128000	134000	135000	63.5	74.0	1	75.0-125	V	V	0.777	20

Method Blank (MB)

(MB) R3415021-1 05/25/19 10:45

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	293	J	46.3	1000

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

(LCS) R3415021-2 05/25/19 10:47 • (LCSD) R3415021-3 05/25/19 10:49

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	974	951	97.4	95.1	80.0-120			2.35	20
Calcium	10000	9930	9690	99.3	96.9	80.0-120			2.46	20

L1100809-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100809-02 05/25/19 10:52 • (MS) R3415021-5 05/25/19 10:57 • (MSD) R3415021-6 05/25/19 10:59

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	ND	1120	1140	95.3	97.3	1	75.0-125			1.76	20
Calcium	10000	167000	175000	174000	81.4	71.7	1	75.0-125		V	0.560	20

L1100823-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100823-01 05/25/19 11:02 • (MS) R3415021-7 05/25/19 11:04 • (MSD) R3415021-8 05/25/19 11:06

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	2130	3040	3070	91.5	94.3	1	75.0-125			0.916	20
Calcium	10000	66800	75900	75400	91.9	86.6	1	75.0-125			0.692	20

Guide to Reading and Understanding Your Laboratory Report

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Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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, the sample preparation volume or weight values differ from the standard, 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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Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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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
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

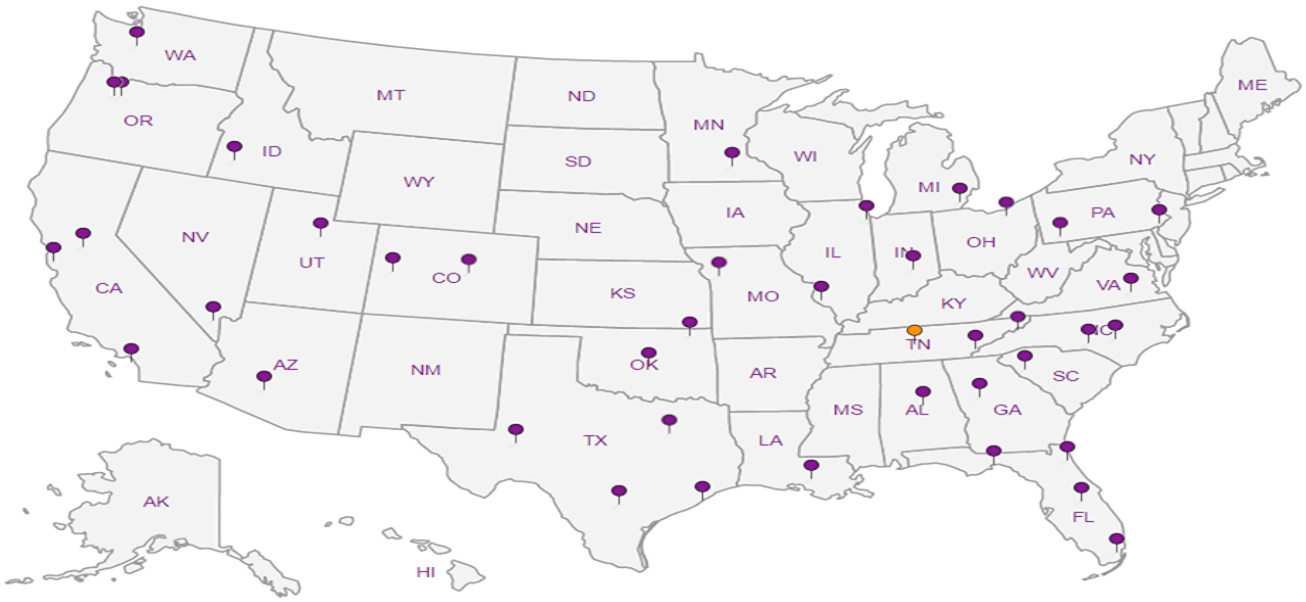
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3								Remarks	Sample # (lab only)
							42										
MW-101	Grab	GW		5-16-19	1030	2	X	X									-01
MW-102		GW		5-16-19	1235	2	X	X									02
MW-103		GW		5-15-19	1455	2	X	X									03
MW-108		GW		5-14-19	1440	2	X	X									04
MW-113		GW		5-14-19	1345	2	X	X									05
MW-115		GW		5-14-19	1235	2	X	X									06
MW-116		GW		5-16-19	1130	2	X	X									07
MW-117		GW		5-15-19	1625	2	X	X									08
MW-118		GW		5-15-19	1350	2	X	X									09
MW-119		GW		5-16-19	915	2	X	X									10

RAD SCREEN: <0.5 mR/hr

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

Pace Analytical®
National Center for Testing & Innovation

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

L# L1160588
J009

Acctnum: NAESOAR
Template: T134757
Prelogin: P708148
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

* 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 # 4794 8837 0400

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)
Michael Clayton	5-17-19	1300	
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: 4.1 °C Bottles Received: 24

Date: 5/18/19 Time: 0800

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: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Chain of Custody Page 2 of 2

Pace Analytical®
National Center for Testing & Innovation

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

L# L1160589

Table #

Acctnum: NAESOAR
Template: T134757
Prelogin: P708148
TSR: 134 - Mark W. Beasley
PB:

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3	Remarks	Sample # (lab only)
MW-117 DUP	Grab	GW		5-15-19	1630	2	X	X		-11
EB-2	↓	GW		5-16-19	1305	2	X	X		12
		GW				2	X	X		
		GW				2	X	X		
		GW				2	X	X		

RAD SCREEN: <0.5 mR/hr

* 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 # Same

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

	Date:	Time:		
Relinquished by : (Signature) Michael Clayton	5-17-19	1300	Received by: (Signature)	
Relinquished by : (Signature)			Received by: (Signature)	
Relinquished by : (Signature)			Received for lab by: (Signature)	

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

Temp: 4.1 °C Bottles Received: 24

Date: 5/8/19 Time: 0800

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 14, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1106577
Samples Received:	05/18/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

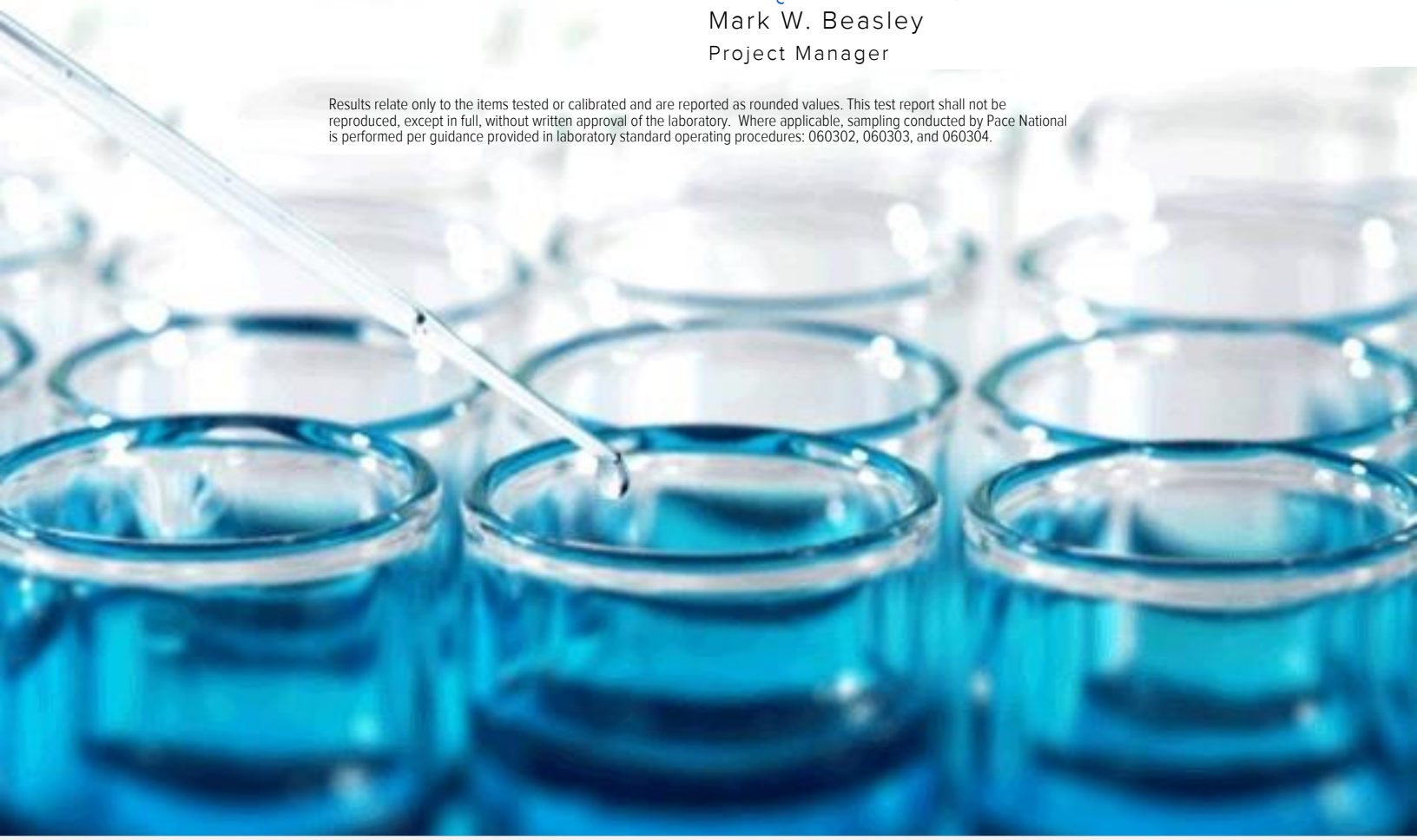


TABLE OF CONTENTS

MW-108 L1106577-01 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 14:40
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:24	CCE	Mt. Juliet, TN

MW-115 L1106577-02 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 12:35
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:27	CCE	Mt. Juliet, TN

MW-117 L1106577-03 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 16:25
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:30	CCE	Mt. Juliet, TN

MW-119 L1106577-04 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 09:15
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:32	CCE	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	224	B	12.6	200	1	06/12/2019 09:24	WG1294030

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	128000		46.3	1000	1	06/12/2019 09:27	WG1294030

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	98300		46.3	1000	1	06/12/2019 09:30	WG1294030

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	135000		46.3	1000	1	06/12/2019 09:32	WG1294030

Method Blank (MB)

(MB) R3420383-1 06/12/19 08:47

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	51.0	J	12.6	200
Calcium	U		46.3	1000

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

(LCS) R3420383-2 06/12/19 08:49 • (LCSD) R3420383-3 06/12/19 08:52

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Boron	1000	1040	1010	104	101	80.0-120			2.24	20
Calcium	10000	9720	9690	97.2	96.9	80.0-120			0.230	20

L1106433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106433-01 06/12/19 08:55 • (MS) R3420383-5 06/12/19 09:01 • (MSD) R3420383-6 06/12/19 09:03

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	ND	1080	1090	97.9	99.0	1	75.0-125			1.05	20
Calcium	10000	49100	59000	58700	98.7	96.1	1	75.0-125			0.454	20

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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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Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

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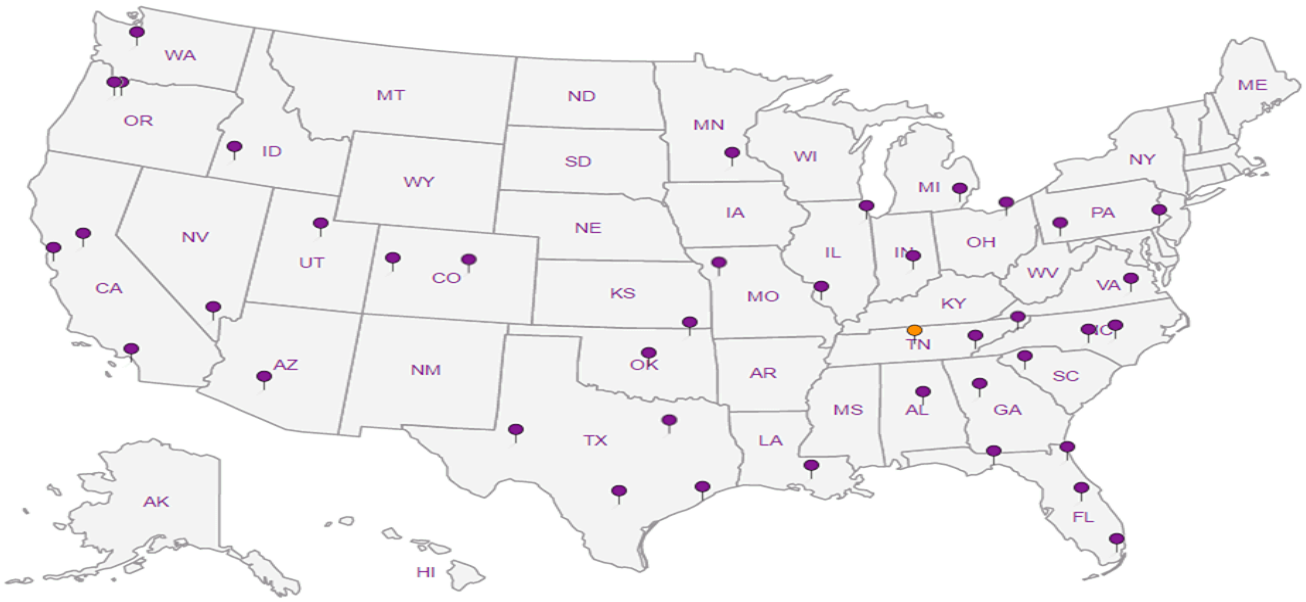

Plum Point Services Co., LLC

2739 SCR 623
Osceola, AR 72370

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

Pres Chk

Report to: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntr	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3	42	Remarks	Sample # (lab only)
MW-101	Grab	GW		5-16-19	1030	2	X	X			~~01~~
MW-102		GW		5-16-19	1235	2	X	X			~~02~~
MW-103		GW		5-15-19	1455	2	X	X			~~03~~
MW-108		GW		5-14-19	1440	2	X	X			~~04~~ -01
MW-113		GW		5-14-19	1345	2	X	X			~~05~~
MW-115		GW		5-14-19	1235	2	X	X			~~06~~ -02
MW-116		GW		5-16-19	1130	2	X	X			~~07~~
MW-117		GW		5-15-19	1625	2	X	X			~~08~~ -03
MW-118		GW		5-15-19	1350	2	X	X			~~09~~
MW-119		GW		5-16-19	915	2	X	X			~~10~~ -04

RAD SCREEN: <0.5 mR/hr

Chain of Custody Page 2 of 2

Pace Analytical
National Center for Testing & Innovation

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

L# ~~L1160588~~
J009
L1106577

NV 6/4/19

Acctnum: NAESOAR
Template: T134757
Prelogin: P708148
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

* 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 # 4794 8837 0408

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)
Michael Clayton	5-17-19	1300	
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: 4.1 +0 -1.1 °C Bottles Received: 24

Date: 5/18/19 Time: 0800

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

Andy Vann

From: Mark Beasley
Sent: Friday, June 07, 2019 2:07 PM
To: Project Service; Sample Storage
Subject: L1100588 *FTNLRAR* relog

Relog the following as R5 due 6/14:

L1100588-04 BICP
L1100588-06 CAICP
L1100588-08 CAICP
L1100588-10 CAICP

Thanks
Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]
Sent: Friday, June 07, 2019 1:35 PM
To: Mark Beasley
Cc: Dana Derrington
Subject: Lab Re-runs for SDG L1100588 (Plum Point EPA Program)

Hi Mark,

Could you verify the results for the samples below from the attached report and if correct, ask the lab to re-run the samples? Please do not re-run the sample for dissolved solids; the re-run result will be out of hold so we won't be able to use it anyway.

Well ID	Analyte	Result	Flag	RDL	Units
MW-108	BORON	0.222		0.2	mg/l
MW-115	CALCIUM	128		1	mg/l
MW-117	CALCIUM	95.3		1	mg/l
MW-119	CALCIUM	131		1	mg/l
MW-117	DISSOLVED SOLIDS	341		10	mg/l

← *verify only; please do not include in re-runs.*

Thank you!

Heather

Heather Ferguson
FTN Associates, Ltd.
3 Innwood Circle, Suite 220 ⬙ Little Rock, AR 72211 (501) 225-7779 ⬙ fax (501) 225-6738
hlf@ftn-assoc.com http://www.ftn-assoc.com

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

May 28, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1100432
Samples Received:	05/18/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

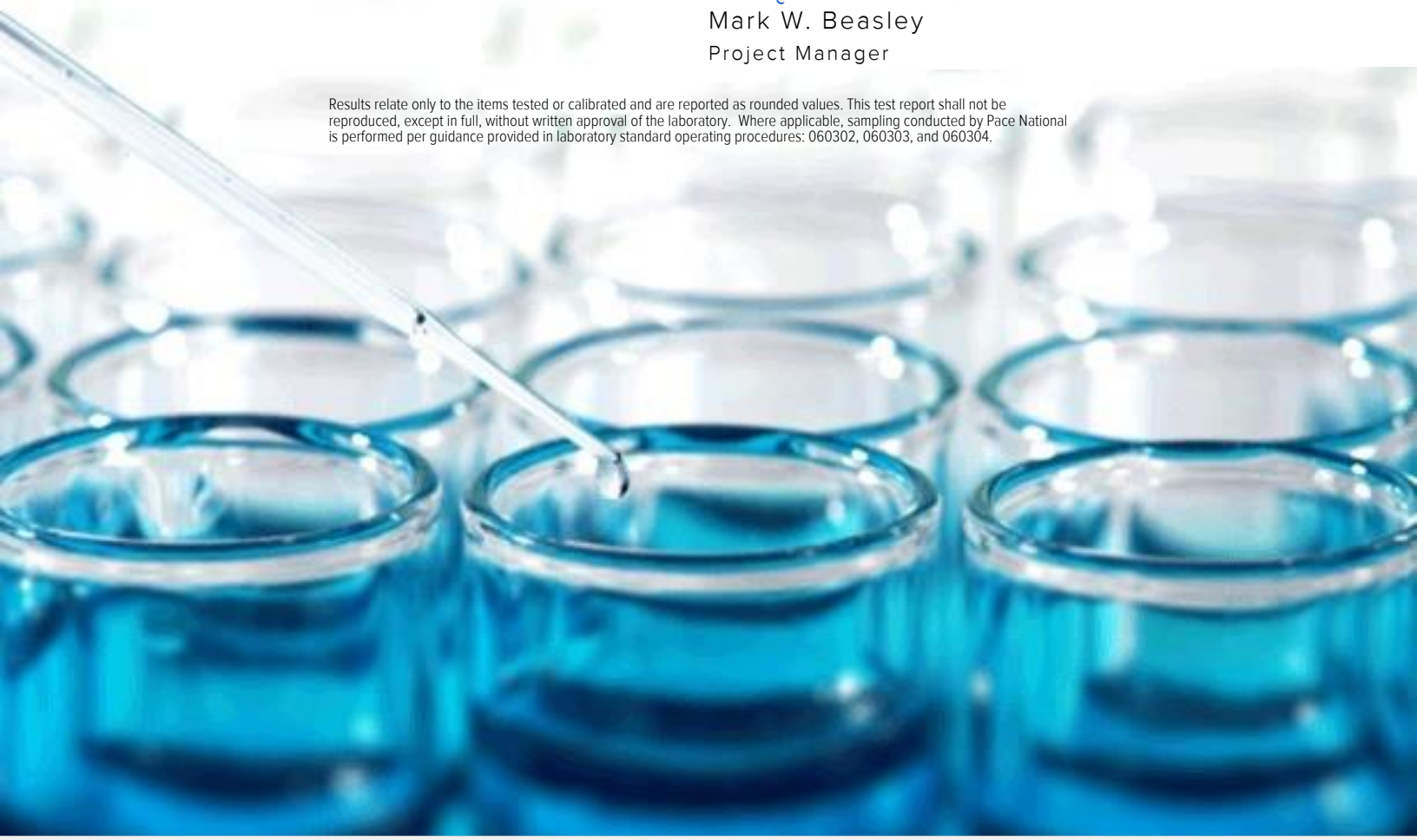

TABLE OF CONTENTS

MW-119 L1100432-01 GW

Collected by: Michael Clayton
Collected date/time: 05/16/19 09:20
Received date/time: 05/18/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7470A	WG1283577	1	05/20/19 16:00	05/21/19 11:25	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 10:52	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1284298	1	05/23/19 08:17	05/27/19 03:55	LAT	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	05/21/2019 11:25	WG1283577

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Lithium	31.8	B	5.30	15.0	1	05/25/2019 10:52	WG1284387
Molybdenum	U		1.60	5.00	1	05/25/2019 10:52	WG1284387

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U	J4	0.754	2.00	1	05/27/2019 03:55	WG1284298
Arsenic	0.512	J	0.250	2.00	1	05/27/2019 03:55	WG1284298
Barium	199		0.360	5.00	1	05/27/2019 03:55	WG1284298
Beryllium	U		0.120	2.00	1	05/27/2019 03:55	WG1284298
Cadmium	U		0.160	1.00	1	05/27/2019 03:55	WG1284298
Chromium	U		0.540	2.00	1	05/27/2019 03:55	WG1284298
Cobalt	1.74	J	0.260	2.00	1	05/27/2019 03:55	WG1284298
Lead	0.250	J	0.240	2.00	1	05/27/2019 03:55	WG1284298
Selenium	0.564	J	0.380	2.00	1	05/27/2019 03:55	WG1284298
Thallium	U		0.190	2.00	1	05/27/2019 03:55	WG1284298

Method Blank (MB)

(MB) R3413192-1 05/21/19 11:01

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Mercury	U		0.0490	0.200

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

(LCS) R3413192-2 05/21/19 11:08 • (LCSD) R3413192-3 05/21/19 11:11

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	%	%	%			%	%
Mercury	3.00	3.09	3.12	103	104	80.0-120			0.938	20

L1100361-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100361-01 05/21/19 11:13 • (MS) R3413192-4 05/21/19 11:16 • (MSD) R3413192-5 05/21/19 11:18

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	%	%		%			%	%
Mercury	3.00	U	3.08	3.47	103	116	1	75.0-125			11.8	20

Method Blank (MB)

(MB) R3415216-1 05/26/19 12:14

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lithium	10.4	J	5.30	15.0
Molybdenum	U		1.60	5.00

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

(LCS) R3415216-2 05/26/19 12:17 • (LCSD) R3415216-3 05/26/19 12:19

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Lithium	1000	1030	1040	103	104	80.0-120			0.253	20
Molybdenum	1000	996	969	99.6	96.9	80.0-120			2.73	20

L1100383-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100383-01 05/25/19 10:23 • (MS) R3415228-2 05/25/19 10:28 • (MSD) R3415228-3 05/25/19 10:31

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lithium	1000	16.3	1060	1060	104	104	1	75.0-125			0.101	20
Molybdenum	1000	ND	1010	958	101	95.8	1	75.0-125			4.91	20

Method Blank (MB)

(MB) R3415125-1 05/27/19 02:42

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.754	2.00
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Beryllium	U		0.120	2.00
Cadmium	U		0.160	1.00
Chromium	0.947	J	0.540	2.00
Cobalt	U		0.260	2.00
Lead	U		0.240	2.00
Selenium	U		0.380	2.00
Thallium	U		0.190	2.00

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

(LCS) R3415125-2 05/27/19 02:47 • (LCSD) R3415125-3 05/27/19 02:51

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	60.3	59.6	121	119	80.0-120	J4		1.24	20
Arsenic	50.0	48.0	48.7	96.0	97.5	80.0-120			1.56	20
Barium	50.0	48.9	49.2	97.8	98.4	80.0-120			0.624	20
Beryllium	50.0	48.9	47.4	97.9	94.8	80.0-120			3.19	20
Cadmium	50.0	49.2	50.4	98.4	101	80.0-120			2.47	20
Chromium	50.0	53.5	50.2	107	100	80.0-120			6.48	20
Cobalt	50.0	48.1	49.1	96.2	98.2	80.0-120			2.07	20
Lead	50.0	49.0	48.7	98.1	97.5	80.0-120			0.581	20
Selenium	50.0	48.1	48.6	96.2	97.3	80.0-120			1.14	20
Thallium	50.0	48.7	48.8	97.4	97.7	80.0-120			0.295	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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.

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Georgia	NELAP	North Carolina [3]	41
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Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

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EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

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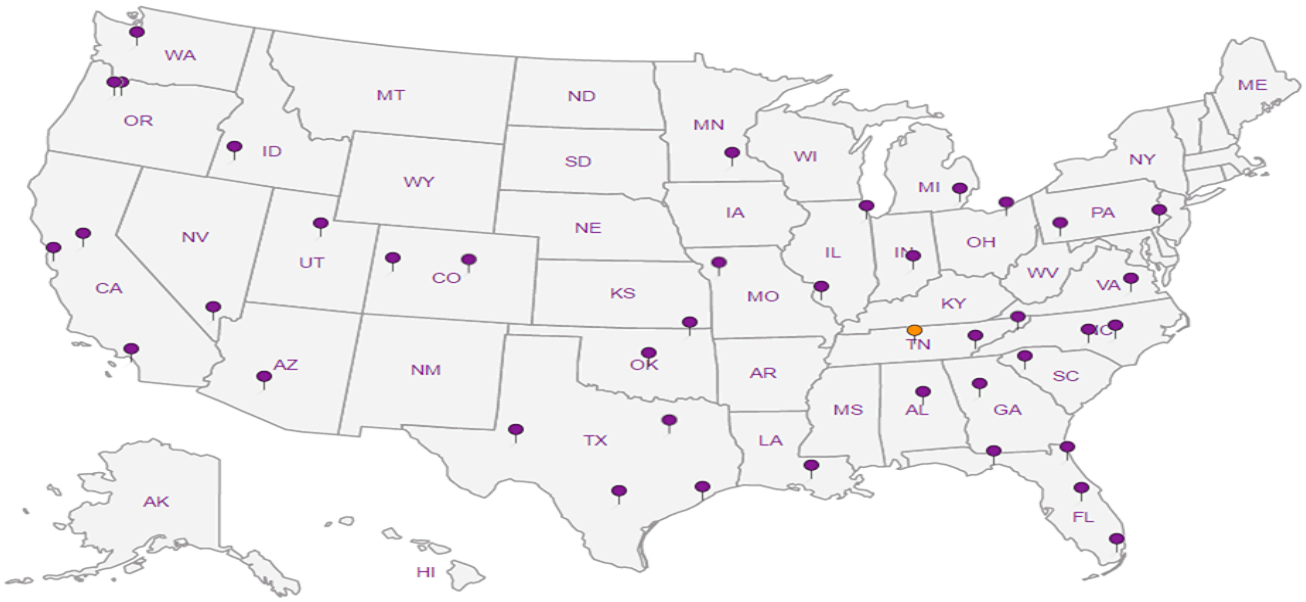


Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# 1100432

H238

Acctnum: NAESOAR
Template: T146260
Prelogin: P708137
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

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

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

Report to: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Pres Chk	Metals 250mlHDPE-HNO3	RA-226 1L-HDPE-Add HNO3	RA-228 1L-HDPE-Add HNO3	Remarks	Sample # (lab only)
MW-119	Grab	GW		5-16-19	920	3		X	X	X		-01
		GW				3		X	X	X		
		GW				3		X	X	X		

RAD SCREEN: <0.5 mR/hr

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

Remarks:****Log radiums to a separate SDG****
Metals = As,Ba,Be,Cd,Co,Cr,Hg,Li,Mo,Pb,Sb,Se,Tl (Li & Mo by 6010)

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 4794 8837 0410

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

Temp: 1.1 °C Bottles Received: 3

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

	Date:	Time:	
Relinquished by : (Signature) Michael Clayton	5-17-19	1300	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Mk Farris

Date: 5/18/19 Time: 0845

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

May 30, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1100433
Samples Received:	05/18/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

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 Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

MW-119 L1100433-01 Non-Potable Water

Collected by: Michael Clayton
Collected date/time: 05/16/19 09:20
Received date/time: 05/18/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1282757	1	05/20/19 08:52	05/23/19 15:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/24/19 17:04	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1284773	1	05/23/19 15:02	05/24/19 17:04	RRE	Mt. Juliet, TN

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. Where applicable, 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
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.20		0.366	0.539	05/23/2019 15:10	WG1282757
(T) Barium	*114*			*62.0-143*	*05/23/2019 15:10*	WG1282757
(T) Yttrium	*116*			*79.0-136*	*05/23/2019 15:10*	WG1282757

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.35		0.774	0.732	05/24/2019 17:04	WG1284773

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.16		0.408	0.193	05/24/2019 17:04	WG1284773
(T) Barium-133	*83.2*			*30.0-143*	*05/24/2019 17:04*	WG1284773

Method Blank (MB)

(MB) R3414542-1 05/23/19 10:45

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	0.186		0.368
(T) Barium	*107*		
(T) Yttrium	*116*		

L1098015-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1098015-01 05/23/19 15:10 • (DUP) R3414542-5 05/23/19 10:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	0.715	0.455	1	44.5	0.529		20	3
(T) Barium	*105*	*114*						
(T) Yttrium	*102*	*124*						

Laboratory Control Sample (LCS)

(LCS) R3414542-2 05/23/19 10:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.27	105	80.0-120	
(T) Barium			*120*		
(T) Yttrium			*116*		

L1097614-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1097614-01 05/23/19 10:45 • (MS) R3414542-3 05/23/19 10:45 • (MSD) R3414542-4 05/23/19 10:45

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	16.7	-0.135	16.3	16.0	97.5	95.7	1	70.0-130			1.80		20
(T) Barium		*113*			*120*	*113*							
(T) Yttrium		*118*			*113*	*116*							

Method Blank (MB)

(MB) R3415635-1 05/24/19 17:04

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.459		0.209
(T) Barium-133	*84.6*		

L1100844-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100844-01 05/24/19 17:04 • (DUP) R3415635-5 05/24/19 17:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.495	0.573	1	14.6	0.182		20	3
(T) Barium-133	*90.4*	*88.8*						

Laboratory Control Sample (LCS)

(LCS) R3415635-2 05/24/19 17:04

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	20.1	19.1	95.0	80.0-120	
(T) Barium-133			*79.1*		

L1100433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100433-01 05/24/19 17:04 • (MS) R3415635-3 05/24/19 17:04 • (MSD) R3415635-4 05/24/19 17:04

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	1.16	19.9	20.9	93.2	98.0	1	75.0-125			4.71		20
(T) Barium-133		*83.2*			*81.1*	*84.7*							

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

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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

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

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

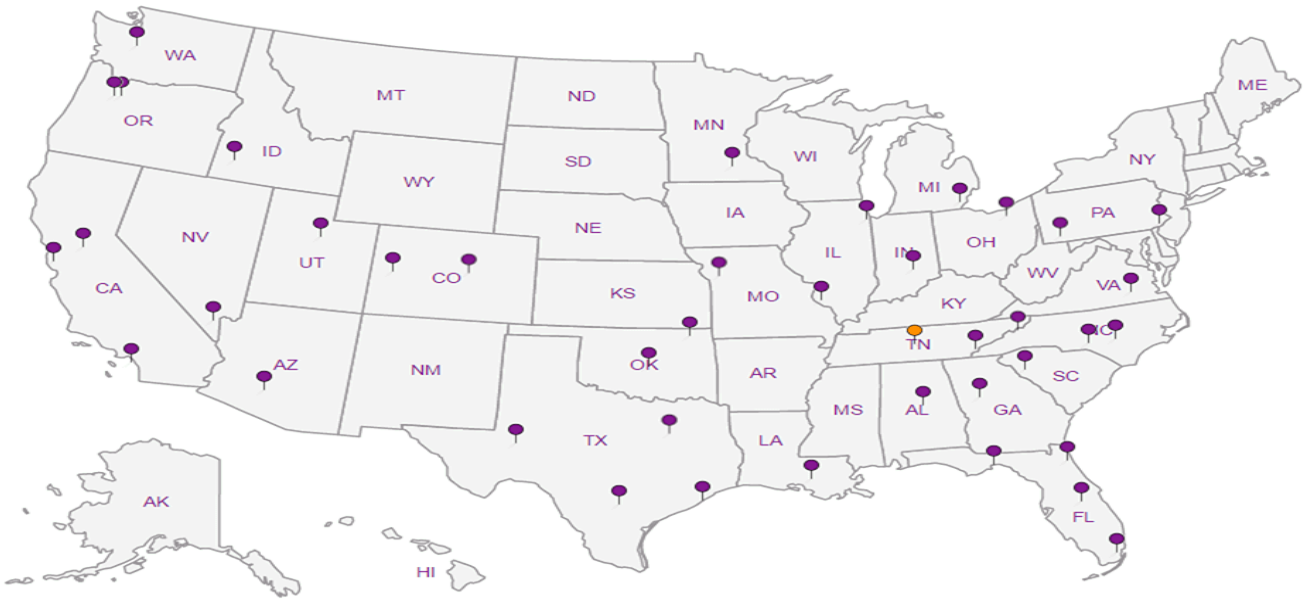
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National performs all testing at our central laboratory.



Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# 1100433

H238

Acctnum: NAESOAR
Template: T146260
Prelogin: P708137
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

Plum Point Services Co., LLC

2739 SCR 623
Osceola, AR 72370

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

Report to: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Michael Clayton

Site/Facility ID #

P.O. #

Collected by (signature):

Quote #

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

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Metals 250mlHDPE-HNO3	RA-226 1L-HDPE-Add HNO3	RA-228 1L-HDPE-Add HNO3								Remarks	Sample # (lab only)
							Analysis / Container / Preservative											
							2	2	2									
MW-119	Grab	GW		5-16-19	920	3	X	X	X									-01
		GW				3	X	X	X									
		GW				3	X	X	X									

RAD SCREEN: <0.5 mR/hr

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

Remarks:**Log radiums to a separate SDG****
Metals = As,Ba,Be,Cd,Co,Cr,Hg,Li,Mo,Pb,Sb,Se,Tl (Li & Mo by 6010)

pH _____ Temp _____
Flow _____ Other _____

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

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

Tracking # 4794 8837 0410

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

Temp: 1.1 °C Bottles Received: 3

Date: 5/18/19 Time: 0845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

	Date:	Time:	
Relinquished by : (Signature)	5-17-19	1300	Received by: (Signature)
Relinquished by : (Signature)			Received by: (Signature)
Relinquished by : (Signature)			Received for lab by: (Signature)

Quarterly Background and Verification Sampling Event, Third Quarter 2019

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 09, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1125145
Samples Received:	08/03/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

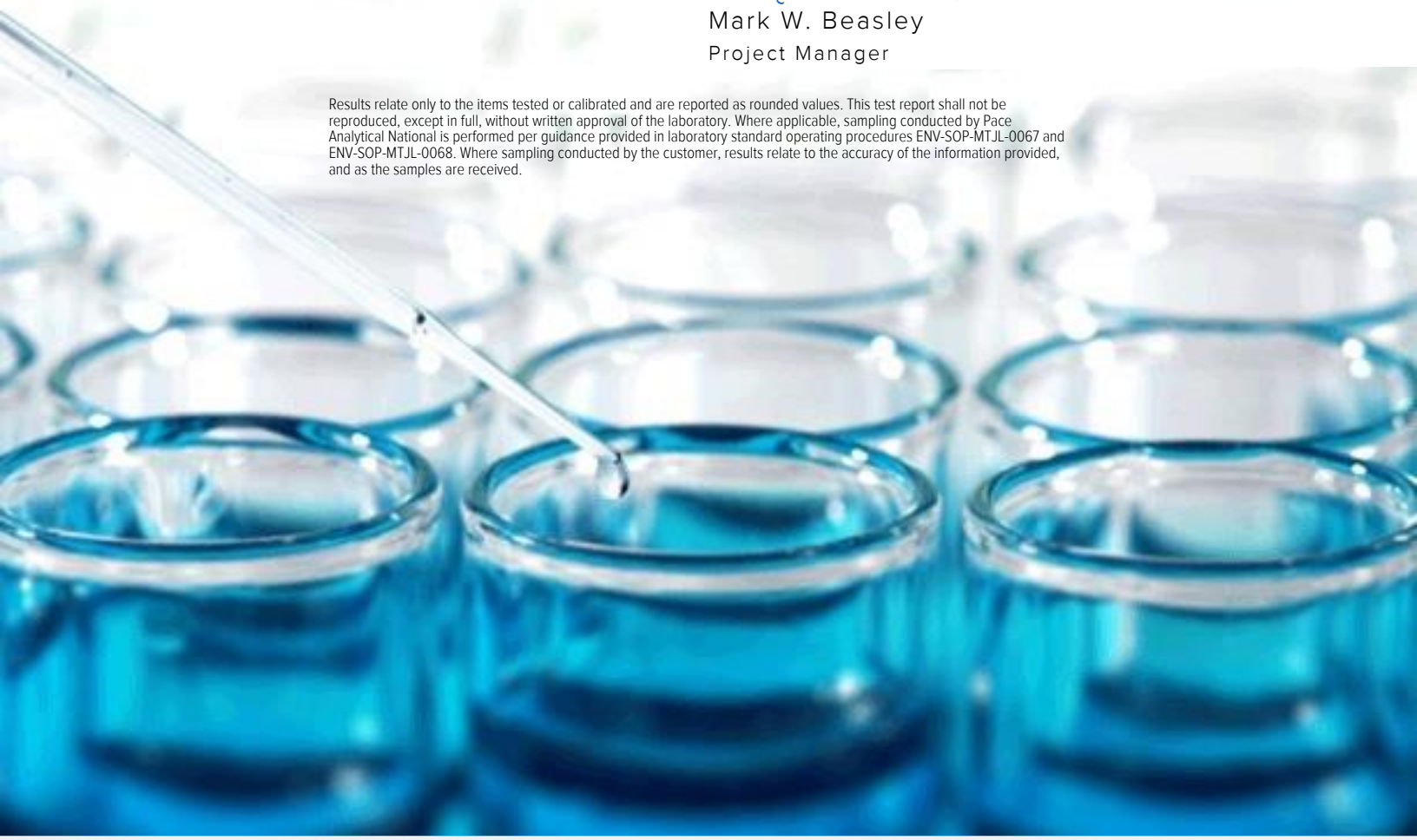


TABLE OF CONTENTS

MW-108 L1125145-01 GW

Collected by: Michael Clayton | Collected date/time: 08/01/19 11:55 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:06	TRB	Mt. Juliet, TN

MW-115 L1125145-02 GW

Collected by: Michael Clayton | Collected date/time: 08/01/19 09:40 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:09	TRB	Mt. Juliet, TN

MW-117 L1125145-03 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 12:20 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:11	TRB	Mt. Juliet, TN

MW-117 DUP L1125145-04 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 12:25 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:14	TRB	Mt. Juliet, TN

MW-119 L1125145-05 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 09:20 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:17	TRB	Mt. Juliet, TN

EPA EB-1 L1125145-06 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 12:40 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:19	TRB	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	127	B J	12.6	200	1	08/06/2019 11:06	WG1322637

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	125000		46.3	1000	1	08/06/2019 11:09	WG1322637

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	302000		2820	10000	1	08/06/2019 15:12	WG1322631

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	102000		46.3	1000	1	08/06/2019 11:11	WG1322637

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	339000		2820	10000	1	08/06/2019 15:12	WG1322631

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	102000		46.3	1000	1	08/06/2019 11:14	WG1322637

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	97400		46.3	1000	1	08/06/2019 11:17	WG1322637

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	U		2820	10000	1	08/06/2019 15:12	WG1322631

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	18.7	B J	12.6	200	1	08/06/2019 11:19	WG1322637
Calcium	U		46.3	1000	1	08/06/2019 11:19	WG1322637

Method Blank (MB)

(MB) R3438618-1 08/06/19 15:12

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

L1125145-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1125145-03 08/06/19 15:12 • (DUP) R3438618-3 08/06/19 15:12

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	302000	306000	1	1.32		5

Laboratory Control Sample (LCS)

(LCS) R3438618-2 08/06/19 15:12

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8540000	97.0	85.0-115	

Method Blank (MB)

(MB) R3437811-1 08/06/19 10:25

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	12.8	J	12.6	200
Calcium	U		46.3	1000

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

(LCS) R3437811-2 08/06/19 10:28 • (LCSD) R3437811-3 08/06/19 10:30

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Boron	1000	990	999	99.0	99.9	80.0-120			0.934	20
Calcium	10000	10300	10500	103	105	80.0-120			2.43	20

L1125119-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1125119-01 08/06/19 10:33 • (MS) R3437811-5 08/06/19 10:38 • (MSD) R3437811-6 08/06/19 10:40

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	242	1030	1020	79.0	77.9	1	75.0-125			1.10	20
Calcium	10000	2330	34600	34700	323	323	1	75.0-125	J5	J5	0.159	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.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
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Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

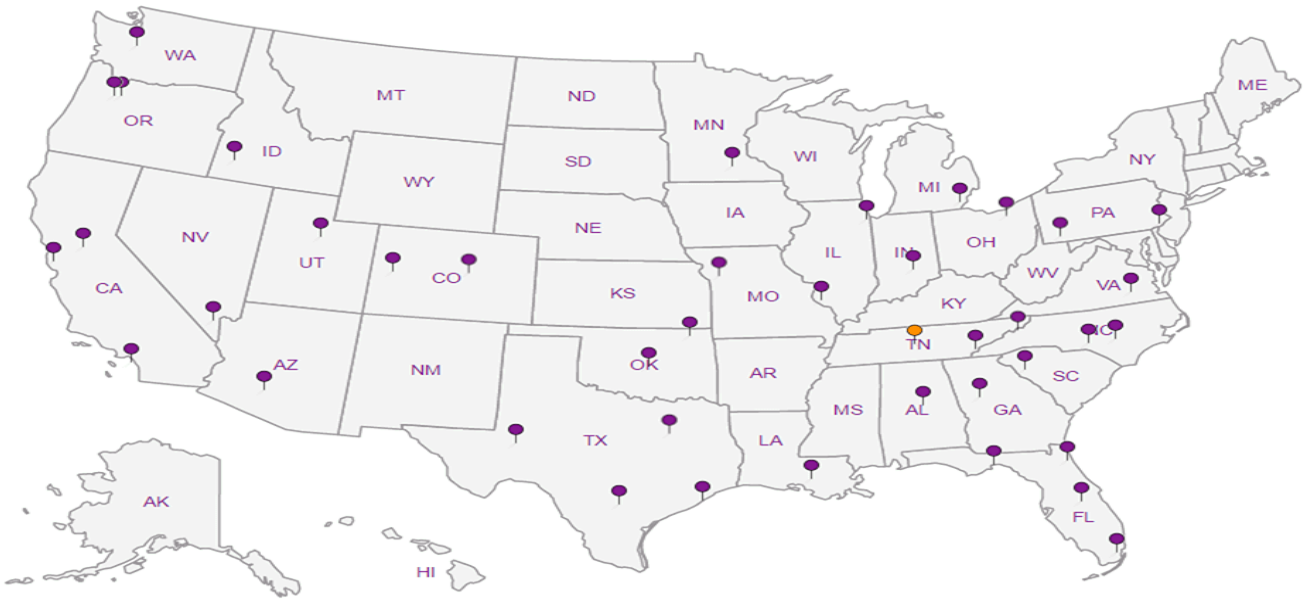
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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

Report to: **Dana Derrington**

Email To: Christopher.Lussier@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 # **14590-1992-001**

Lab Project # **NAESOAR-PLUMPOINT**

Collected by (print): Michael Clayton

Site/Facility ID #

P.O. # **2019-00325**

Collected by (signature):

Immediately Packed on Ice N ___ Y U

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

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TDS 250mlHDPE-NoPres	Total B 250mlHDPE-HNO3	Total B, Ca 250mlHDPE-HNO3	Total Ca 250mlHDPE-HNO3	Remarks	Sample # (lab only)
MW-108	Grab	GW		8/1/19	1155	1		X				-01
MW-115		GW		8/1/19	0940	1				X		02
MW-117		GW		8/2/19	1220	2	X			X		03
MW-117 DUP		GW		8/2/19	1225	2	X			X		04
MW-119		GW		8/2/19	0920	1				X		05
EPA EB-1		GW		8/2/19	1240	2	X		X			06
		GW				2	X		X			

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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

L# 1125115
H207

Acctnum: **NAESOAR**
Template: **T130326**
Prelogin: **P720961**
TSR: **134 - Mark W. Beasley**
PB:
Shipped Via: **FedEX Ground**

* 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 # 1082 5993 1483 50

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

RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	8/2/19	1500	
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
Ø

Temp: 2.6-1-2.5 °C AS 2 Bottles Received: 9

Date: 8-3-19 Time: 8:45

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 07, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1125151
Samples Received:	08/03/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

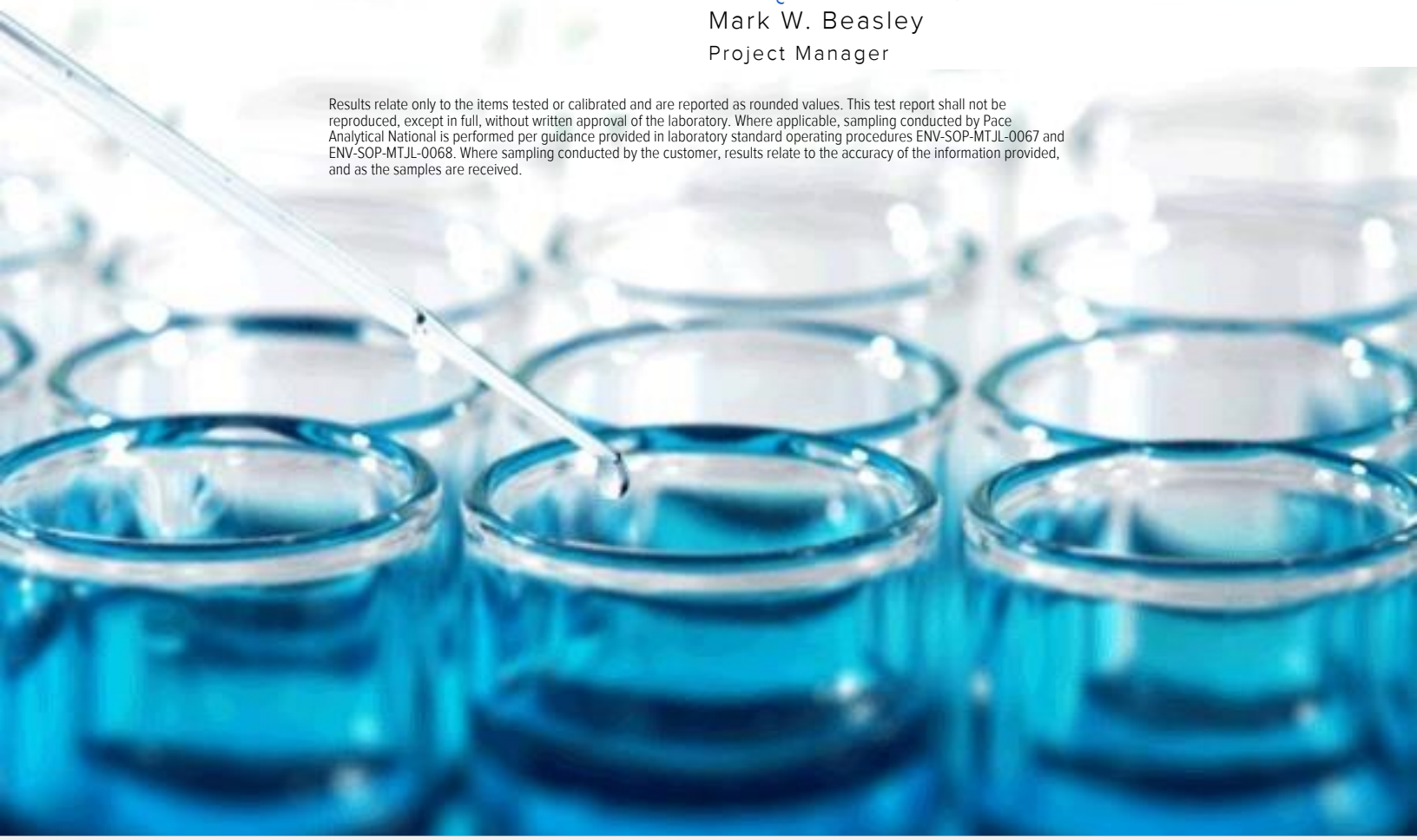


TABLE OF CONTENTS

MW-119 L1125151-01 GW

Collected by	Collected date/time	Received date/time
	08/02/19 09:20	08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7470A	WG1322653	1	08/04/19 13:31	08/05/19 09:46	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:27	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1322639	1	08/04/19 13:07	08/05/19 03:32	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1322639	1	08/04/19 13:07	08/05/19 09:46	LAT	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.0490	0.200	1	08/05/2019 09:46	WG1322653

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Lithium	13.1	J	5.30	15.0	1	08/06/2019 11:27	WG1322637
Molybdenum	U		1.60	5.00	1	08/06/2019 11:27	WG1322637

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U		0.754	2.00	1	08/05/2019 03:32	WG1322639
Arsenic	0.494	J	0.250	2.00	1	08/05/2019 03:32	WG1322639
Barium	141		0.360	5.00	1	08/05/2019 03:32	WG1322639
Beryllium	U		0.120	2.00	1	08/05/2019 03:32	WG1322639
Cadmium	U		0.160	1.00	1	08/05/2019 09:46	WG1322639
Chromium	U		0.540	2.00	1	08/05/2019 03:32	WG1322639
Cobalt	2.89		0.260	2.00	1	08/05/2019 03:32	WG1322639
Lead	U		0.240	2.00	1	08/05/2019 09:46	WG1322639
Selenium	U		0.380	2.00	1	08/05/2019 03:32	WG1322639
Thallium	U		0.190	2.00	1	08/05/2019 09:46	WG1322639

Method Blank (MB)

(MB) R3437374-1 08/05/19 08:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Mercury	U		0.0490	0.200

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

(LCS) R3437374-2 08/05/19 08:54 • (LCSD) R3437374-3 08/05/19 08:56

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	%	%	%			%	%
Mercury	3.00	3.29	3.23	110	108	80.0-120			2.01	20

L1124604-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1124604-01 08/05/19 08:57 • (MS) R3437374-4 08/05/19 08:59 • (MSD) R3437374-5 08/05/19 09:01

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	%	%		%			%	%
Mercury	3.00	ND	2.99	3.00	99.5	100	1	75.0-125			0.454	20

Method Blank (MB)

(MB) R3437811-1 08/06/19 10:25

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Lithium	U		5.30	15.0
Molybdenum	U		1.60	5.00

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

(LCS) R3437811-2 08/06/19 10:28 • (LCSD) R3437811-3 08/06/19 10:30

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	%	%	%			%	%
Lithium	1000	978	1000	97.8	100	80.0-120			2.26	20
Molybdenum	1000	1020	1040	102	104	80.0-120			1.42	20

L1125119-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1125119-01 08/06/19 10:33 • (MS) R3437811-5 08/06/19 10:38 • (MSD) R3437811-6 08/06/19 10:40

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	%	%		%			%	%
Lithium	1000	222	1000	981	78.0	75.8	1	75.0-125			2.15	20
Molybdenum	1000	229	1040	1030	81.0	80.5	1	75.0-125			0.489	20

Method Blank (MB)

(MB) R3437293-1 08/05/19 02:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.754	2.00
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Beryllium	U		0.120	2.00
Cadmium	U		0.160	1.00
Chromium	0.951	J	0.540	2.00
Cobalt	U		0.260	2.00
Lead	U		0.240	2.00
Selenium	U		0.380	2.00
Thallium	U		0.190	2.00

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

(LCS) R3437293-2 08/05/19 02:09 • (LCSD) R3437293-3 08/05/19 02:13

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	47.3	46.5	94.6	93.1	80.0-120			1.58	20
Arsenic	50.0	48.8	48.5	97.6	97.0	80.0-120			0.641	20
Barium	50.0	44.4	43.8	88.8	87.6	80.0-120			1.35	20
Beryllium	50.0	44.2	43.3	88.4	86.6	80.0-120			2.06	20
Cadmium	50.0	53.0	52.1	106	104	80.0-120			1.75	20
Chromium	50.0	50.5	49.6	101	99.2	80.0-120			1.72	20
Cobalt	50.0	51.1	50.6	102	101	80.0-120			0.931	20
Lead	50.0	49.0	50.5	98.0	101	80.0-120			2.99	20
Selenium	50.0	49.9	49.2	99.8	98.4	80.0-120			1.47	20
Thallium	50.0	47.8	47.9	95.6	95.8	80.0-120			0.225	20

L1125122-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1125122-04 08/05/19 02:16 • (MS) R3437293-5 08/05/19 02:22 • (MSD) R3437293-6 08/05/19 02:26

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	54.6	56.5	109	113	1	75.0-125			3.38	20
Arsenic	50.0	1.54	45.4	46.1	87.8	89.0	1	75.0-125			1.37	20
Barium	50.0	10.3	62.9	62.5	105	105	1	75.0-125			0.541	20
Beryllium	50.0	0.151	50.0	50.7	99.8	101	1	75.0-125			1.35	20
Cadmium	50.0	0.185	46.9	47.4	93.5	94.5	1	75.0-125			1.05	20
Chromium	50.0	U	41.9	42.0	83.8	83.9	1	75.0-125			0.191	20
Cobalt	50.0	U	40.9	41.1	81.9	82.3	1	75.0-125			0.448	20

L1125122-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1125122-04 08/05/19 02:16 • (MS) R3437293-5 08/05/19 02:22 • (MSD) R3437293-6 08/05/19 02:26

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	50.0	U	49.5	51.5	98.9	103	1	75.0-125			4.12	20
Selenium	50.0	0.586	51.8	55.2	102	109	1	75.0-125			6.32	20
Thallium	50.0	0.205	48.3	49.6	96.1	98.9	1	75.0-125			2.80	20

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Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

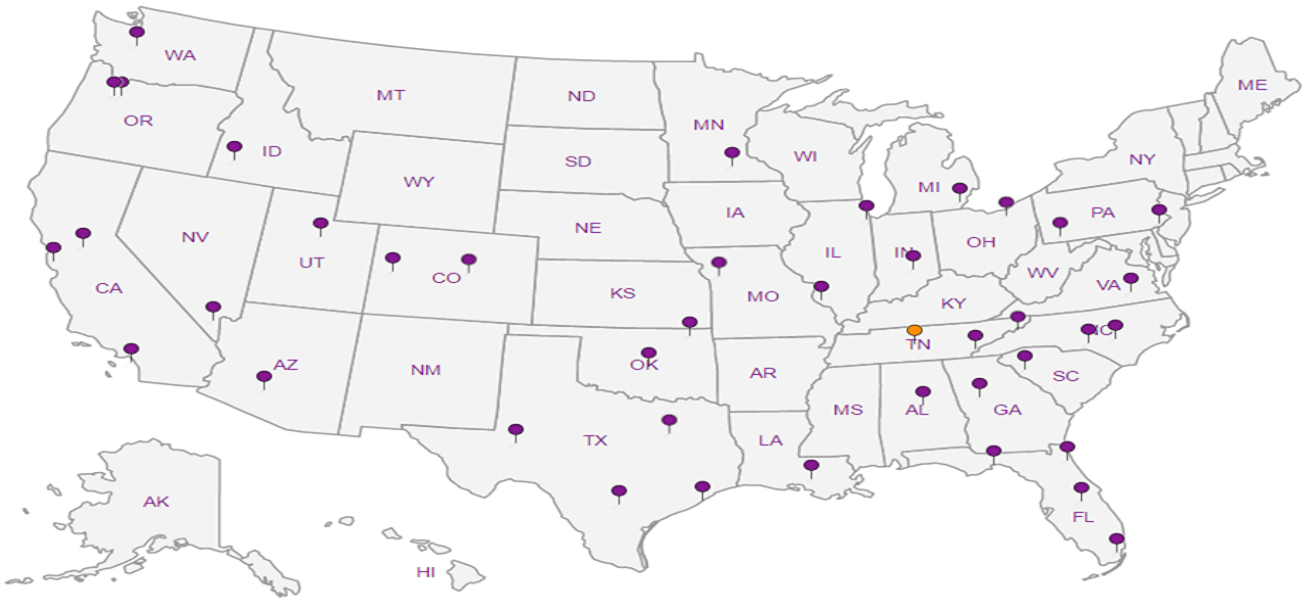
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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

Report to: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Michael Clayton

Site/Facility ID #

P.O. # 2019-00325

Collected by (signature):

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

Date Results Needed

Quote #

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Metals 250mlHDPE-HNO3	RA-226,RA-228 1L-HDPE-Add HNO3	Remarks	Sample # (lab only)
MW-119	Comp/Grab	GW		8/2/19	0920	2	X	X		-01
		GW				2	X	X		

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# 1125751

H206

Acctnum: NAESOAR

Template: T130326

Prelogin: P720966

TSR: 134 - Mark W. Beasley

PB:

Shipped Via: FedEX Ground

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

Remarks: Metals = As,Ba,Be,Cd,Co,Cr,Hg,Li,Mo,Pb,Sb,Se,Tl

pH _____ Temp _____

Flow _____ Other _____

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

Tracking # 1082 5993 1450 -83

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	If preservation required by Login: Date/Time
	8/2/19	1500		Ø	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 35 +.2 =3.7 °C Bottles Received: 2	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 8-3-19 Time: 8:45	Hold: / Condition: NCF / OK

Second Half 2019 Sampling Event

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 30, 2019

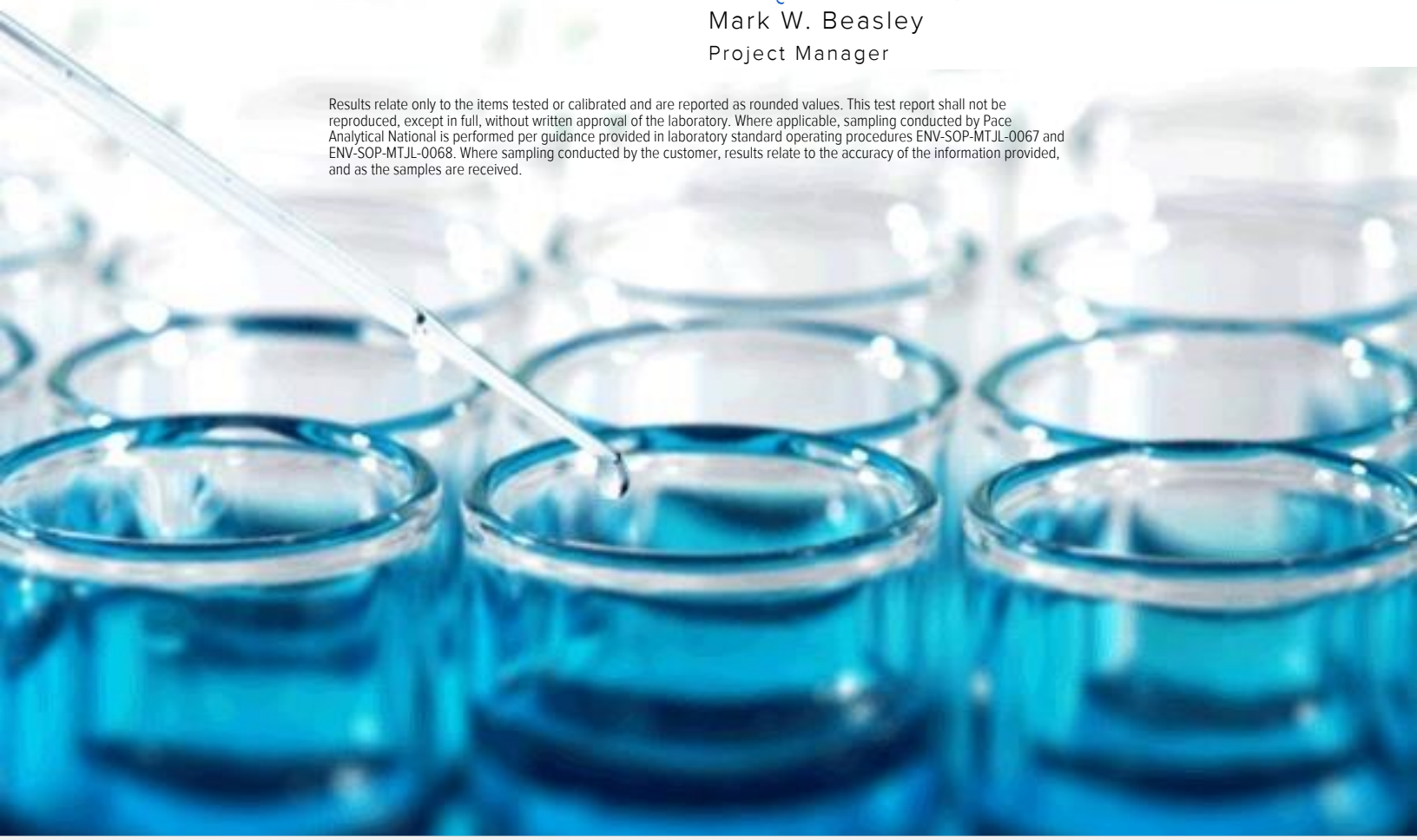
Plum Point Services Co., LLC

Sample Delivery Group:	L1153616
Samples Received:	10/24/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



MW-101 L1153616-01 GW

Collected by: Andrew Pruitt | Collected date/time: 10/23/19 08:10 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 17:33	10/28/19 17:33	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:03	EL	Mt. Juliet, TN

MW-102 L1153616-02 GW

Collected by: Andrew Pruitt | Collected date/time: 10/23/19 09:34 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 17:51	10/28/19 17:51	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:06	EL	Mt. Juliet, TN

MW-103 L1153616-03 GW

Collected by: Andrew Pruitt | Collected date/time: 10/22/19 15:06 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 18:09	10/28/19 18:09	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:09	EL	Mt. Juliet, TN

MW-108 L1153616-04 GW

Collected by: Andrew Pruitt | Collected date/time: 10/22/19 08:00 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 18:26	10/28/19 18:26	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:11	EL	Mt. Juliet, TN

MW-113 L1153616-05 GW

Collected by: Andrew Pruitt | Collected date/time: 10/22/19 08:54 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 18:44	10/28/19 18:44	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:14	EL	Mt. Juliet, TN

MW-115 L1153616-06 GW

Collected by: Andrew Pruitt | Collected date/time: 10/23/19 10:38 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 19:02	10/28/19 19:02	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370048	1	10/28/19 07:26	10/28/19 19:17	EL	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

MW-116 L1153616-07 GW

Collected by: Andrew Pruitt | Collected date/time: 10/23/19 08:55 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 19:37	10/28/19 19:37	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:32	EL	Mt. Juliet, TN

MW-117 L1153616-08 GW

Collected by: Andrew Pruitt | Collected date/time: 10/22/19 11:56 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 20:47	10/28/19 20:47	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:35	EL	Mt. Juliet, TN

MW-118 L1153616-09 GW

Collected by: Andrew Pruitt | Collected date/time: 10/22/19 14:00 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369825	1	10/26/19 14:50	10/26/19 16:35	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 21:05	10/28/19 21:05	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:37	EL	Mt. Juliet, TN

MW-119 L1153616-10 GW

Collected by: Andrew Pruitt | Collected date/time: 10/22/19 16:05 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369826	1	10/27/19 07:38	10/27/19 08:07	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 21:23	10/28/19 21:23	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:45	EL	Mt. Juliet, TN

MW-117 DUP L1153616-11 GW

Collected by: Andrew Pruitt | Collected date/time: 10/22/19 12:00 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369826	1	10/27/19 07:38	10/27/19 08:07	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 21:40	10/28/19 21:40	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:48	EL	Mt. Juliet, TN

EB-1 L1153616-12 GW

Collected by: Andrew Pruitt | Collected date/time: 10/23/19 11:00 | Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1369826	1	10/27/19 07:38	10/27/19 08:07	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1370811	1	10/28/19 21:58	10/28/19 21:58	LDC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1370049	1	10/28/19 17:12	10/29/19 01:51	EL	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

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	404000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1370		51.9	1000	1	10/28/2019 17:33	WG1370811
Fluoride	264		9.90	100	1	10/28/2019 17:33	WG1370811
Sulfate	11900		77.4	5000	1	10/28/2019 17:33	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	49.1	J	12.6	200	1	10/28/2019 19:03	WG1370048
Calcium	109000		46.3	1000	1	10/28/2019 19:03	WG1370048

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	461000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	3620		51.9	1000	1	10/28/2019 17:51	WG1370811
Fluoride	201		9.90	100	1	10/28/2019 17:51	WG1370811
Sulfate	85600		77.4	5000	1	10/28/2019 17:51	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	60.2	J	12.6	200	1	10/28/2019 19:06	WG1370048
Calcium	117000		46.3	1000	1	10/28/2019 19:06	WG1370048

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	384000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1290		51.9	1000	1	10/28/2019 18:09	WG1370811
Fluoride	253		9.90	100	1	10/28/2019 18:09	WG1370811
Sulfate	24400		77.4	5000	1	10/28/2019 18:09	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	81.6	J	12.6	200	1	10/28/2019 19:09	WG1370048
Calcium	107000		46.3	1000	1	10/28/2019 19:09	WG1370048

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	528000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1950		51.9	1000	1	10/28/2019 18:26	WG1370811
Fluoride	205		9.90	100	1	10/28/2019 18:26	WG1370811
Sulfate	32900		77.4	5000	1	10/28/2019 18:26	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	110	J	12.6	200	1	10/28/2019 19:11	WG1370048
Calcium	153000		46.3	1000	1	10/28/2019 19:11	WG1370048

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	307000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1730		51.9	1000	1	10/28/2019 18:44	WG1370811
Fluoride	110		9.90	100	1	10/28/2019 18:44	WG1370811
Sulfate	4880	J	77.4	5000	1	10/28/2019 18:44	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	88.1	J	12.6	200	1	10/28/2019 19:14	WG1370048
Calcium	75900		46.3	1000	1	10/28/2019 19:14	WG1370048

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	411000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1230		51.9	1000	1	10/28/2019 19:02	WG1370811
Fluoride	220		9.90	100	1	10/28/2019 19:02	WG1370811
Sulfate	5830		77.4	5000	1	10/28/2019 19:02	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	22.4	J	12.6	200	1	10/28/2019 19:17	WG1370048
Calcium	114000		46.3	1000	1	10/28/2019 19:17	WG1370048

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	417000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2750		51.9	1000	1	10/28/2019 19:37	WG1370811
Fluoride	216		9.90	100	1	10/28/2019 19:37	WG1370811
Sulfate	63100		77.4	5000	1	10/28/2019 19:37	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	82.9	J	12.6	200	1	10/29/2019 01:32	WG1370049
Calcium	109000		46.3	1000	1	10/29/2019 01:32	WG1370049

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	322000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	864	J	51.9	1000	1	10/28/2019 20:47	WG1370811
Fluoride	136		9.90	100	1	10/28/2019 20:47	WG1370811
Sulfate	5450		77.4	5000	1	10/28/2019 20:47	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	61.0	J	12.6	200	1	10/29/2019 01:35	WG1370049
Calcium	91000		46.3	1000	1	10/29/2019 01:35	WG1370049

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	335000		2820	10000	1	10/26/2019 16:35	WG1369825

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1450		51.9	1000	1	10/28/2019 21:05	WG1370811
Fluoride	162		9.90	100	1	10/28/2019 21:05	WG1370811
Sulfate	17500		77.4	5000	1	10/28/2019 21:05	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	45.9	J	12.6	200	1	10/29/2019 01:37	WG1370049
Calcium	91600		46.3	1000	1	10/29/2019 01:37	WG1370049

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	400000		2820	10000	1	10/27/2019 08:07	WG1369826

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2860		51.9	1000	1	10/28/2019 21:23	WG1370811
Fluoride	266		9.90	100	1	10/28/2019 21:23	WG1370811
Sulfate	47700		77.4	5000	1	10/28/2019 21:23	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	48.0	J	12.6	200	1	10/29/2019 01:45	WG1370049
Calcium	123000		46.3	1000	1	10/29/2019 01:45	WG1370049

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	296000		2820	10000	1	10/27/2019 08:07	WG1369826

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	871	J	51.9	1000	1	10/28/2019 21:40	WG1370811
Fluoride	129		9.90	100	1	10/28/2019 21:40	WG1370811
Sulfate	5380		77.4	5000	1	10/28/2019 21:40	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	62.0	J	12.6	200	1	10/29/2019 01:48	WG1370049
Calcium	88400		46.3	1000	1	10/29/2019 01:48	WG1370049

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	U		2820	10000	1	10/27/2019 08:07	WG1369826

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	64.5	J	51.9	1000	1	10/28/2019 21:58	WG1370811
Fluoride	U		9.90	100	1	10/28/2019 21:58	WG1370811
Sulfate	U		77.4	5000	1	10/28/2019 21:58	WG1370811

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	U		12.6	200	1	10/29/2019 01:51	WG1370049
Calcium	U		46.3	1000	1	10/29/2019 01:51	WG1370049

Method Blank (MB)

(MB) R3466394-1 10/26/19 16:35

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

L1153608-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1153608-10 10/26/19 16:35 • (DUP) R3466394-3 10/26/19 16:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	318000	315000	1	0.948		5

L1153616-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1153616-09 10/26/19 16:35 • (DUP) R3466394-4 10/26/19 16:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	335000	334000	1	0.299		5

Laboratory Control Sample (LCS)

(LCS) R3466394-2 10/26/19 16:35

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8300000	94.3	85.0-115	

Method Blank (MB)

(MB) R3465887-1 10/27/19 08:07

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

L1153629-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1153629-04 10/27/19 08:07 • (DUP) R3465887-3 10/27/19 08:07

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	4540000	4850000	1	6.60	J3	5

L1153629-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1153629-12 10/27/19 08:07 • (DUP) R3465887-4 10/27/19 08:07

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	4140000	4060000	1	1.95		5

Laboratory Control Sample (LCS)

(LCS) R3465887-2 10/27/19 08:07

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8240000	93.6	85.0-115	

Method Blank (MB)

(MB) R3466113-1 10/28/19 12:09

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
Sulfate	U		77.4	5000

L1153521-61 Original Sample (OS) • Duplicate (DUP)

(OS) L1153521-61 10/28/19 14:03 • (DUP) R3466113-3 10/28/19 14:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	95.9	69.2	1	32.3	J P1	15
Fluoride	U	0.000	1	0.000		15
Sulfate	171	153	1	11.5	J	15

L1153616-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1153616-06 10/28/19 19:02 • (DUP) R3466113-6 10/28/19 19:19

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	1230	1220	1	0.579		15
Fluoride	220	220	1	0.0454		15
Sulfate	5830	5840	1	0.242		15

Laboratory Control Sample (LCS)

(LCS) R3466113-2 10/28/19 12:27

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Chloride	40000	39200	97.9	80.0-120	
Fluoride	8000	7920	99.0	80.0-120	
Sulfate	40000	39300	98.3	80.0-120	

L1153582-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153582-01 10/28/19 15:48 • (MS) R3466113-4 10/28/19 16:05 • (MSD) R3466113-5 10/28/19 16:58

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	3430	52900	52800	98.9	98.8	1	80.0-120			0.105	15
Fluoride	5000	ND	5000	5040	99.3	100	1	80.0-120			0.681	15
Sulfate	50000	ND	50400	50700	98.4	99.1	1	80.0-120			0.771	15

L1153616-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1153616-07 10/28/19 19:37 • (MS) R3466113-7 10/28/19 20:30

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	2750	52400	99.3	1	80.0-120	
Fluoride	5000	216	5190	99.4	1	80.0-120	
Sulfate	50000	63100	109000	91.7	1	80.0-120	E

Method Blank (MB)

(MB) R3466084-1 10/28/19 18:00

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) R3466084-2 10/28/19 18:02 • (LCSD) R3466084-3 10/28/19 18:04

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	990	997	99.0	99.7	80.0-120			0.670	20
Calcium	10000	10100	10100	101	101	80.0-120			0.358	20

L1153614-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153614-01 10/28/19 18:07 • (MS) R3466084-5 10/28/19 18:12 • (MSD) R3466084-6 10/28/19 18:15

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	%	%		%			%	%
Boron	1000	35.7	1030	1030	98.9	99.5	1	75.0-125			0.551	20
Calcium	10000	88600	97300	97100	87.7	85.7	1	75.0-125			0.207	20

Method Blank (MB)

(MB) R3466075-1 10/29/19 01:14

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) R3466075-7 10/29/19 02:17 • (LCSD) R3466075-3 10/29/19 01:19

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	975	977	97.5	97.7	80.0-120			0.229	20
Calcium	10000	9690	9800	96.9	98.0	80.0-120			1.18	20

L1153629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153629-01 10/29/19 01:22 • (MS) R3466075-5 10/29/19 01:27 • (MSD) R3466075-6 10/29/19 01:29

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	836	1770	1820	93.8	98.1	1	75.0-125			2.38	20
Calcium	10000	93000	102000	102000	86.2	89.6	1	75.0-125			0.335	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.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

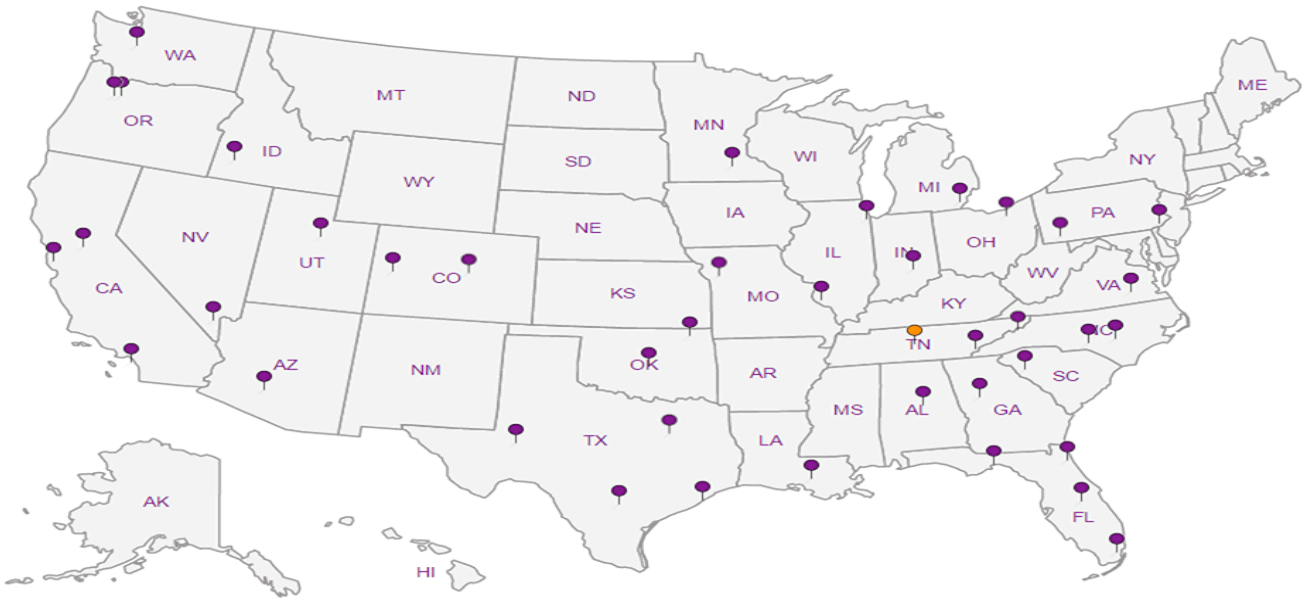
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National performs all testing at our central laboratory.



EPA

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

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

Report to: Dana Derrington

Email To: Richard.Gray@nrg.com, dld@ftn-assoc.com, hlf@ftn-assoc.com

Project Description: Plum Point Energy Station

City/State Collected: Osceola, AR

Please Circle: PT MT CT ET

Phone: 870-815-1248
Fax:

Client Project # 14590-1992-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Andrew Pruitt

Site/Facility ID #

P.O. # 2019-00325

Collected by (signature): Andrew Pruitt
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
Date Results Needed

Quote #

Analysis / Container / Preservative

Pres Chk

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3								Remarks	Sample # (lab only)
MW-101	Grab	GW		10/23/19	0810	2	X	X									-01
MW-102		GW		10/23/19	0934	2	X	X									02
MW-103		GW		10/22/19	1506	2	X	X									03
MW-108		GW		10/22/19	0800	2	X	X									04
MW-113		GW		10/22/19	0854	2	X	X									05
MW-115		GW		10/23/19	1038	2	X	X									06
MW-116		GW		10/23/19	0855	2	X	X									07
MW-117		GW		10/22/19	1156	2	X	X									08
MW-118		GW		10/22/19	1400	2	X	X									09
MW-119		GW		10/22/19	1605	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 X FedEx __ Courier _____

Tracking # 1275 8601 9051

Relinquished by : (Signature) Andrew Pruitt — Date: 10/23/19 — Time: 1700

Received by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Relinquished by : (Signature) — Date: — Time:

Received by: (Signature)

Temp: 4.0+0.4°C 3.9-4.1 — Bottles Received: 24

If preservation required by Login: Date/Time

Relinquished by : (Signature) — Date: — Time:

Received for lab by: (Signature)

Date: 10-24-19 — Time: 8:45

Hold:

Condition: NCF / OK

Chain of Custody Page 1 of 2

Pace Analytical®
National Center for Testing & Innovation

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

SDG # L1153616

J039

Acctnum: NAESOAR

Template: T134757

Prelogin: P735663

PM: 134 - Mark W. Beasley

PB:

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
RAD Screen <0.5 mR/hr: Y N

EPA

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

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

Report to: Dana Derrington

Email To: Richard.Gray@nrg.com, dld@ftn-assoc.com, hlf@ftn-assoc.com

Project Description: Plum Point Energy Station

City/State Collected: Osceola, AR

Please Circle: PT MT CT ET

Phone: 870-815-1248
Fax:

Client Project # 14590-1992-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Andrew Pruitt

Site/Facility ID #

P.O. # 2019-00325

Collected by (signature): Andrew Pruitt

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

Pres Chk

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3	Remarks	Sample # (lab only)
MW-117 DUP	Grab	GW		10/22/19	1200	2	X	X		11
EB-1	↓	GW		10/23/19	1100	2	X	X		12
		~~GW~~				~~2~~	~~X~~	~~X~~		
		GW				~~2~~	~~X~~	~~X~~		
		GW				2	X	X		

Chain of Custody Page 2 of 2

Pace Analytical® National Center for Testing & Innovation

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

SDG # L1153618

Table #

Acctnum: NAESOAR
Template: T134757
Prelogin: P735663
PM: 134 - Mark W. Beasley
PB:

Shipped Via: FedEX Ground

* 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 # 1275 8601 9051

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
RAD Screen <0.5 mR/hr: ✓Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Andrew Pruitt	10/23/19	1700	
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: ~~4.1~~ °C 3.9 4.2 4.1 Bottles Received: 24

Date: 10-24-19 Time: 8:45

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 13, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1158374
Samples Received:	10/24/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

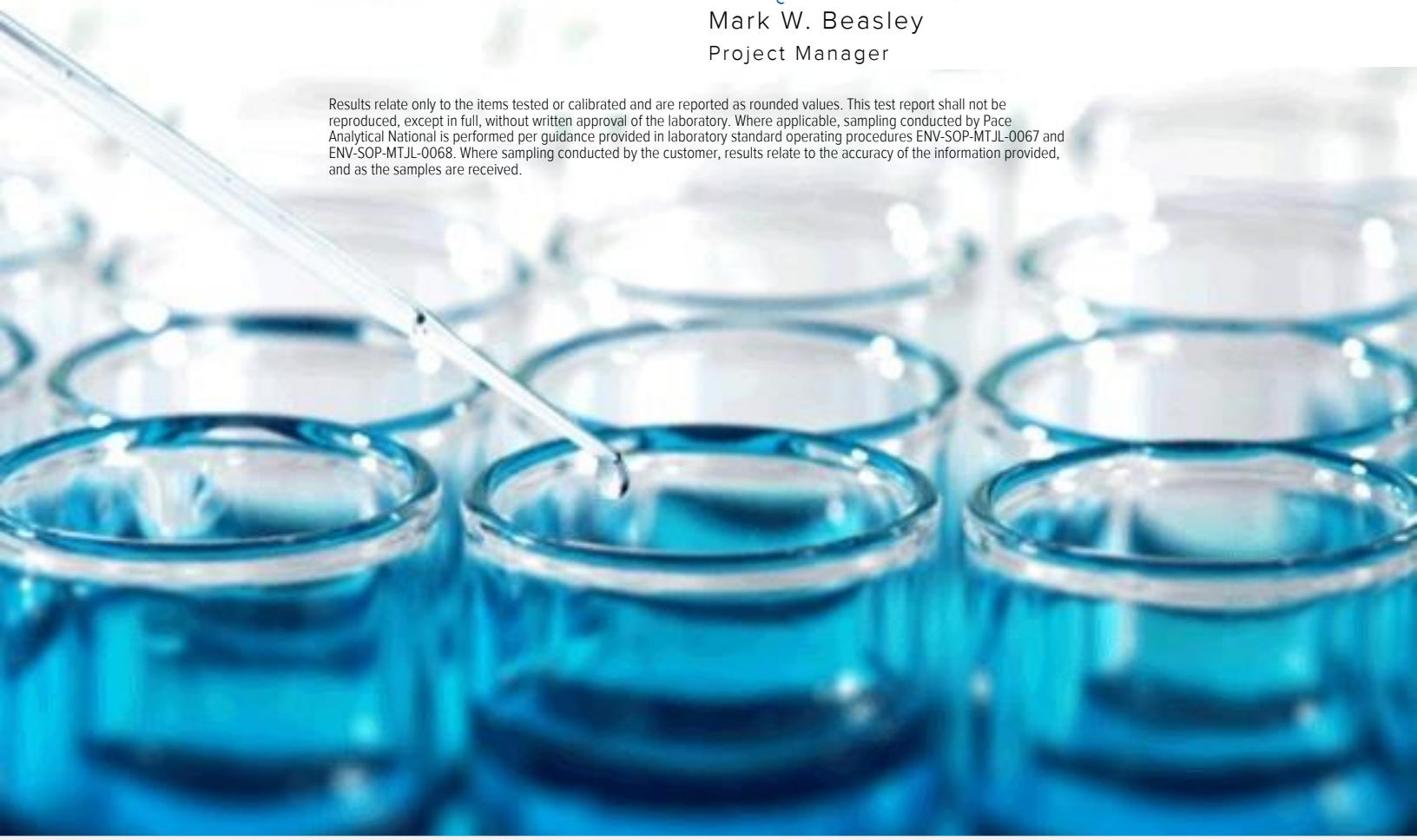


TABLE OF CONTENTS

MW-117 L1158374-01 GW

Collected by: Andrew Pruitt
Collected date/time: 10/22/19 11:56
Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020	WG1378898	1	11/12/19 11:09	11/12/19 17:29	LD	Mt. Juliet, TN

MW-119 L1158374-02 GW

Collected by: Andrew Pruitt
Collected date/time: 10/22/19 16:05
Received date/time: 10/24/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020	WG1378898	1	11/12/19 11:09	11/12/19 17:32	LD	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	80900		46.0	1000	1	11/12/2019 17:29	WG1378898

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	110000		46.0	1000	1	11/12/2019 17:32	WG1378898

Method Blank (MB)

(MB) R3471180-1 11/12/19 16:40

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Calcium	U		46.0	1000

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

(LCS) R3471180-2 11/12/19 16:44 • (LCSD) R3471180-3 11/12/19 16:47

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	5000	4640	4610	92.8	92.2	80.0-120			0.596	20

L1158207-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1158207-07 11/12/19 16:51 • (MS) R3471180-5 11/12/19 16:57 • (MSD) R3471180-6 11/12/19 17:01

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	5000	45400	51000	50000	113	92.0	1	75.0-125			2.04	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.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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

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

ACCREDITATIONS & LOCATIONS

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

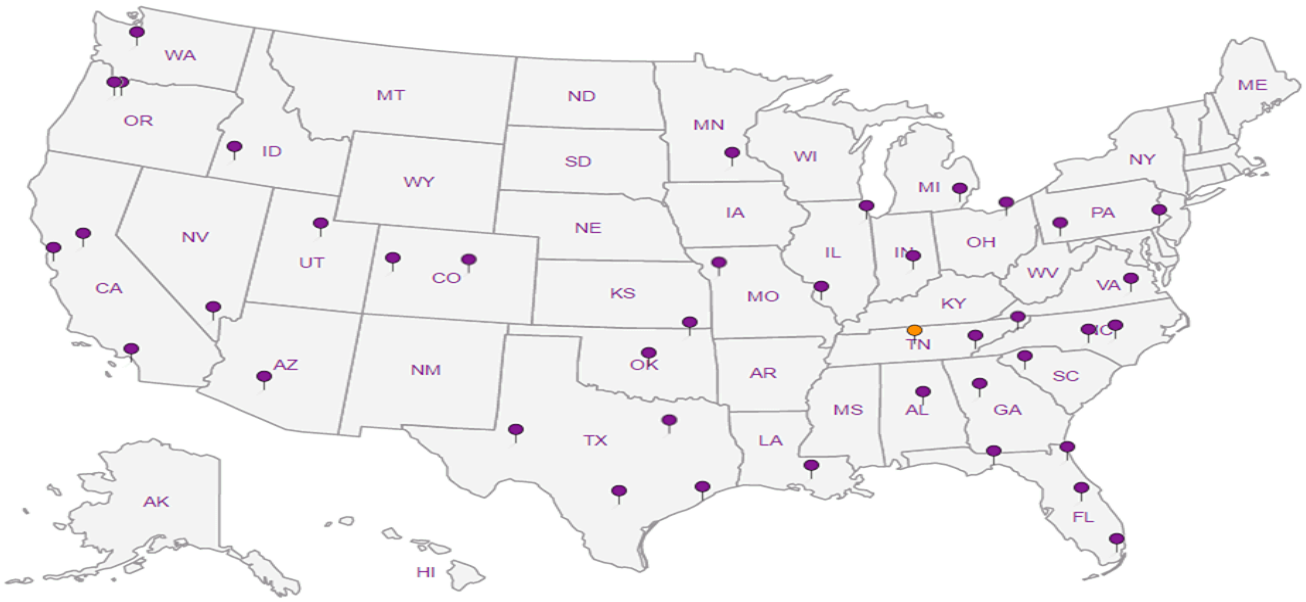
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National performs all testing at our central laboratory.



EPA

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: Dana Derrington

Email To: Richard.Gray@nrg.com, dld@ftn-assoc.com, hlf@ftn-assoc.com

Project Description: Plum Point Energy Station

City/State Collected: Osceola, AR

Please Circle: PT MT CT ET

Phone: 870-815-1248
Fax:

Client Project # 14590-1992-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Andrew Pruitt

Site/Facility ID #

P.O. # 2019-00325

Collected by (signature): Andrew Pruitt

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

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3	L2	Remarks	Sample # (lab only)
MW-101	Grab	GW		10/23/19	0810	2	X	X			~~-01~~
MW-102		GW		10/23/19	0934	2	X	X			~~02~~
MW-103		GW		10/22/19	1506	2	X	X			~~03~~
MW-108		GW		10/22/19	0800	2	X	X			~~04~~
MW-113		GW		10/22/19	0854	2	X	X			~~05~~
MW-115		GW		10/23/19	1038	2	X	X			~~06~~
MW-116		GW		10/23/19	0855	2	X	X			~~07~~
MW-117		GW		10/22/19	1156	2	X	X			~~08~~ -01
MW-118		GW		10/22/19	1400	2	X	X			~~09~~
MW-119		GW		10/22/19	1605	2	X	X			~~10~~ -02

* 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 X FedEx __ Courier _____

Tracking # 1275 8601 9051

Relinquished by : (Signature): Andrew Pruitt — Date: 10/23/19 — Time: 1700

Received by: (Signature)

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

Relinquished by : (Signature) — Date: — Time:

Received by: (Signature)

Temp: ~~AORA~~ °C 3.9+2.1 — Bottles Received: 29

If preservation required by Login: Date/Time

Relinquished by : (Signature) — Date: — Time:

Received for lab by: (Signature)

Date: 10-24-19 — Time: 8:45

Hold:

Conditions: NCF / (OK)

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		✓ N
Bottles arrive intact:		✓ N
Correct bottles used:		✓ N
Sufficient volume sent:		✓ N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		✓ N
RAD Screen <0.5 mR/hr:		✓ N

Chain of Custody Page 1 of 2

Pace Analytical® National Center for Testing & Innovation

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

SDG # ~~L1153616~~ J039 L1153374

Acctnum: NAESOAR

Template: T134757

Prelogin: P735663

PM: 134 - Mark W. Beasley

PB:

Shipped Via: FedEX Ground

AV 11/7/19

Andy Vann

From: Mark Beasley
Sent: Thursday, November 7, 2019 4:18 PM
To: Project Service; Sample Storage
Subject: L1153616 *FTNLRAR* relog

Relog L1153616-08 & -10 for CAG. Log as R5 due 11/14.

Thanks
Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]
Sent: Thursday, November 07, 2019 1:03 PM
To: Mark Beasley
Subject: Lab Re-Runs for SDG L1153616

Hi Mark,

Could you ask the lab to verify the results for calcium at MW-117 and MW-119 from the attached SDG, and if the results are correct, to please re-run the samples?

Thanks so much!

Heather

Heather Ferguson

FTN Associates, Ltd.
3 Innwood Circle, Suite 220
Little Rock, AR 72211
P: (501) 225-7779
F: (501) 225-6738
https://www.ftn-assoc.com

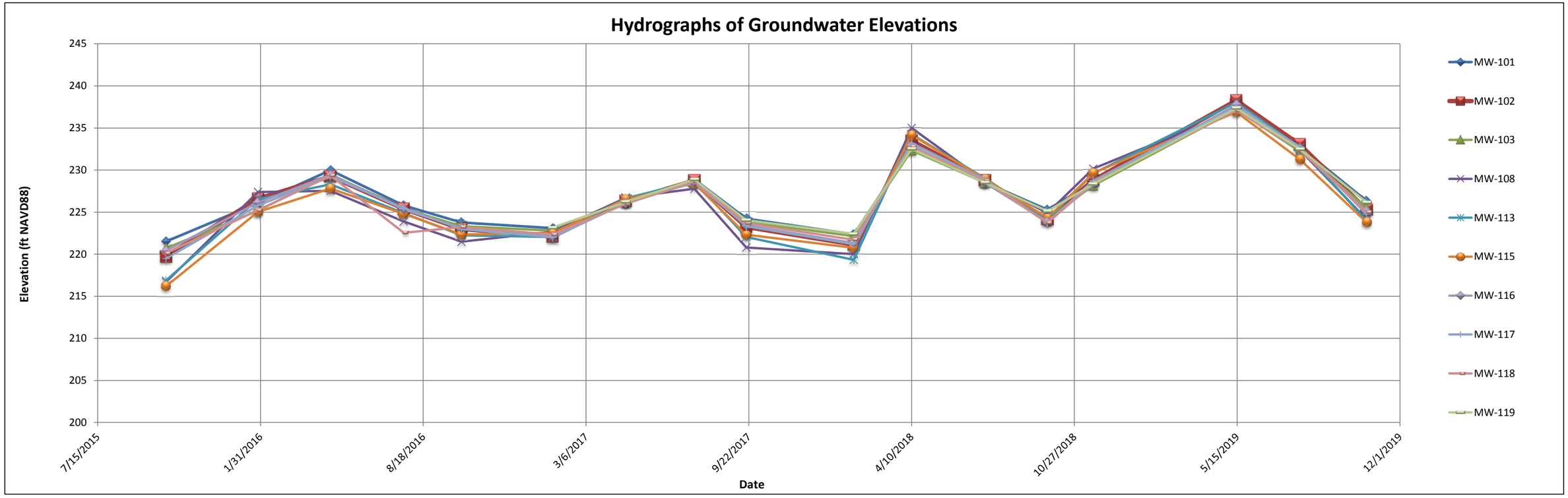
APPENDIX C

Water Elevation Data and Hydrographs

Historical water levels.

Date	Water Surface Elevation (ft, North American Vertical Datum of 1988)									
	MW-101	MW-102	MW-103	MW-108	MW-113	MW-115	MW-116	MW-117	MW-118	MW-119
10/7/2015	221.51	219.73	220.71	216.68	216.87	216.17	220.40	219.48	220.12	N/A*
1/28/2016	226.07	226.58	225.16	227.39	226.53	225.03	226.14	225.78	225.22	N/A*
4/26/2016	229.97	229.24	229.48	227.53	228.30	227.80	229.43	229.23	229.33	N/A*
7/25/2016	225.79	225.38	225.41	223.87	224.87	224.78	225.33	225.45	222.53	N/A*
10/4/2016	223.76	223.00	223.33	221.47	222.23	222.34	223.10	222.99	223.23	N/A*
1/24/2017	223.08	222.09	222.79	222.66	222.03	222.54	222.12	222.00	222.34	223.14
4/24/2017	226.04	226.33	226.33	226.71	226.65	226.53	226.07	226.11	225.98	226.22
7/17/2017	228.89	228.74	228.48	227.77	228.65	228.41	228.53	228.77	228.65	228.86
9/19/2017	224.21	223.23	223.82	220.80	222.03	222.32	223.42	223.33	223.67	224.04
1/29/2018	222.35	221.12	222.14	220.01	219.32	220.74	221.33	221.18	221.71	222.39
4/10/2018	232.63	233.50	232.34	234.99	234.23	234.15	232.89	233.19	232.76	232.52
7/9/2018	228.52	228.81	228.50	228.72	229.03	228.95	228.49	228.87	228.73	228.49
9/24/2018	225.29	224.15	224.16	224.89	224.08	224.29	223.83	223.71	223.72	225.11
11/19/2018	228.54	228.80	228.16	230.16	229.57	229.62	228.31	228.71	228.46	228.33
2/18/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	236.90
5/14/2019	237.60	238.28	237.17	237.13	238.03	236.89	237.76	237.55	237.08	237.35
7/31/2019	232.75	233.02	232.22	232.39	232.66	231.26	232.55	232.75	232.40	232.48
10/21/2019	226.32	225.29	225.52	224.14	223.95	223.78	225.08	224.77	224.98	226.16

*Monitoring well not installed yet.


Hydrographs of Groundwater Elevations
Elevation (ft NAVD88)
245
240
235
230
225
220
215
210
205
200
7/15/2015
1/31/2016
8/18/2016
3/6/2017
9/22/2017
4/10/2018
10/27/2018
5/15/2019
12/1/2019
Date
MW-101
MW-102
MW-103
MW-108
MW-113
MW-115
MW-116
MW-117
MW-118
MW-119

APPENDIX D

Appendix III Groundwater Quality Historical Database

Well	Sampling 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	7.0
	12/11/2017	n/a	120	n/a	n/a	n/a	n/a	6.4
	4/12/2018	0.084(BJ)	121	2.75	0.307	17.4	420	6.4
	9/26/2018	0.0981(BJ)	115	1.94(B)	0.29(B)	14.6	421	6.8
	5/16/2019	0.118(J)	103	1.01	0.263(B)	9.17	392	6.6
	10/23/2019	0.0491(J)	109	1.37	0.264	11.9	404	7.0
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	6.0
	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
	4/11/2018	0.144(BJ)	136	1.77	0.206	46.7	472	6.3
	7/9/2018	n/a	124	n/a	n/a	n/a	n/a	6.7
	9/27/2018	0.121(BJ)	121	3.84	0.183(B)	88.6	453	6.5
	5/16/2019	0.15(J)	121	2.87	0.196(B)	75.4	466	6.6
	10/23/2019	0.0602(J)	117	3.62	0.201	85.6	461	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
	4/11/2018	0.122(BJ)	128	3.24	0.163	80.6	468	6.2
	9/26/2018	0.145(BJ)	129	1.36(B)	0.217(B)	32.8	440	6.6
	5/15/2019	0.154(J)	106	1.1	0.213(B)	23.4	396	6.6
	10/22/2019	0.0816(J)	107	1.29	0.253	24.4	384	6.7

Asterisk indicates the value was below the practical quantitation limit.

B: Analyte was detected in an associated quality control blank.

J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.

Well	Sampling Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH (su)
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	7.0
	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
	4/10/2018	0.171(BJ)	183	3.03	0.177	44.5	582	6.5
	9/25/2018	0.183(BJ)	163	3.11	0.188(B)	52.2	537	6.7
	5/14/2019	0.224(B)	169	2.44	0.184(B)	34.5	529	6.8
	8/1/2019	0.127(BJ)	n/a	n/a	n/a	n/a	n/a	7.1
	10/22/2019	0.11(J)	153	1.95	0.205	32.9	528	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	6.0
	1/26/2017	0.0891(J)	88.9	5.81	0.0901(J)	13.3	332	7.1
	4/25/2017	0.089(J)	87.9	5.49	0.0944(J)	11.8	339	6.9
	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
	4/10/2018	0.0899(BJ)	92	2.94	0.0562(J)	10.1	340	6.4
	9/25/2018	0.111(BJ)	90	2.84(B)	0.114(B)	9.81	337	6.7
	5/14/2019	0.168(J)	87.2	1.58	0.12(B)	3.15(J)	342	6.7
	10/22/2019	0.0881(J)	75.9	1.73	0.11	4.88(J)	307	6.7
MW-115	*upgradient*							
	11/10/2015	0.0473(J)	109	2.14	0.23	8.23	363	7.0
	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)	9.0
	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	7.0
	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
	4/10/2018	0.0666(BJ)	111	1.34	0.209	5.81	368	6.3
	9/25/2018	0.0764(BJ)	121	1.18(B)	0.216(B)	5(J)	417	6.7
	5/14/2019	0.0751(J)	128	0.598(J)	0.184(B)	5.63	440	6.6
	8/1/2019	n/a	125	n/a	n/a	n/a	n/a	7.1
	10/23/2019	0.0224(J)	114	1.23	0.22	5.83	411	6.9

Asterisk indicates the value was below the practical quantitation limit.

B: Analyte was detected in an associated quality control blank.

J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.

Well	Sampling Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH (su)
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
	1/30/2018	n/a	n/a	n/a	n/a	35.5	n/a	6.5
	4/11/2018	0.111(BJ)	137	4.9	0.166	113	511	6.4
	7/9/2018	n/a	125	n/a	n/a	n/a	n/a	6.6
	9/26/2018	0.153(BJ)	130	4.13	0.183(B)	97.5	500	6.6
	5/16/2019	0.144(J)	93.2	1.66	0.189(B)	27	349	6.6
	10/23/2019	0.0829(J)	109	2.75	0.216	63.1	417	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
	4/11/2018	0.0952(BJ)	82.5	1.57	0.124	7.28	290	6.4
	9/27/2018	0.127(BJ)	89.7	1.25(B)	0.144(B)	7.19	318	6.4
	11/19/2018	n/a	85.7	n/a	n/a	n/a	288	6.6
	5/15/2019	0.133(J)	98.3	1.25	0.147(B)	6.66	341	6.5
	8/2/2019	n/a	102	n/a	n/a	n/a	302	6.3
	10/22/2019	0.061(J)	80.9	0.864(J)	0.136	5.45	322	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)	8.0
	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
	4/11/2018	0.0949(BJ)	71.8	1.36	0.157	15.2	257	5.8
	7/9/2018	n/a	n/a	n/a	n/a	n/a	n/a	6.5

Asterisk indicates the value was below the practical quantitation limit.

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J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.

Well	Sampling Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH (su)
MW-118	9/27/2018	0.113(BJ)	80.6	1.33(B)	0.165(B)	17	375	6.3
(cont.)	5/15/2019	0.125(J)	76.4	1.44	0.185	16.5	286	6.0
	8/2/2019	n/a	n/a	n/a	n/a	n/a	n/a	6.1
	10/22/2019	0.0459(J)	91.6	1.45	0.162	17.5	335	6.4
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
	1/30/2018	0.0805(BJ)	99.3	2.07	0.259	35.5	380	6.4
	4/11/2018	0.095(BJ)	85.9	2.15	0.23	31.1	315	6.4
	9/27/2018	0.103(BJ)	99	2.3(B)	0.253(B)	41.6	290	6.7
	11/20/2018	0.0826(BJ)	94	1.96	0.271	33	343	6.8
	12/18/2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2/18/2019	0.11(J)	103	2.27	0.253	43	374	6.6
	5/16/2019	0.109(J)	135	2.86	0.252	47.4	487	6.4
	8/2/2019	n/a	97.4	n/a	n/a	n/a	n/a	6.4
	10/22/2019	0.048(J)	110	2.86	0.266	47.7	400	6.7

Asterisk indicates the value was below the practical quantitation limit.

B: Analyte was detected in an associated quality control blank.

J: Analyte was detected below the laboratory reporting detection limit; value is an estimate.

APPENDIX E

Background Used for Statistics

BACKGROUND DATA SETS

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

Initial background data sets for the wells installed prior to 2016 (MW-101 through MW-103, MW-108, and MW-115 through MW-118) were screened prior to the second half 2017 monitoring period. Monitoring well MW-119 was installed in October 2016, and background data sets were screened prior to the first half 2019 monitoring period. 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 were applied to all background data sets to identify potential excursions from normal. Plots for the MW-119 data sets are attached to this appendix.

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. At this time, no 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.

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 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 G. The Mann-Kendall test for trends and Theil-Sen trend line, discussed below, is a non-parametric test, and data evaluated with this test are not required to have a normal distribution.

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 when sufficient data are available.

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. At this time, none of the statistically evaluated well-parameter pairs contain statistically significant trends in their respective background data sets.

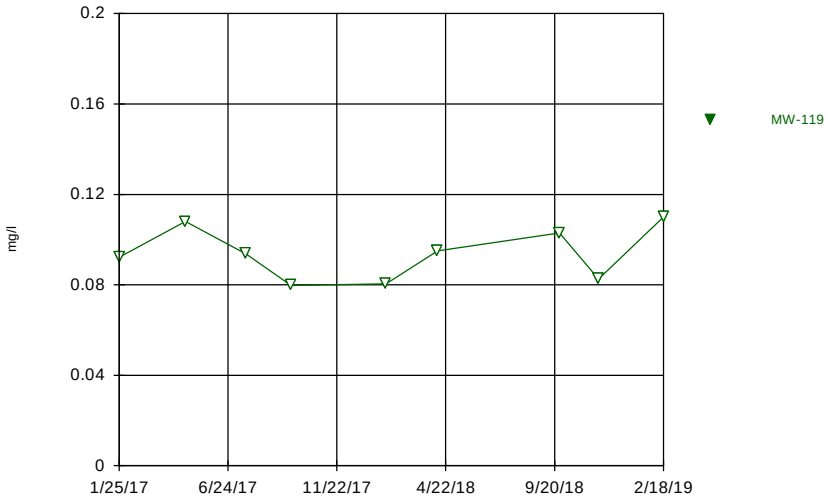
Prediction Limit Analysis

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

Time-Series Plots

Hollow symbols indicate censored values.

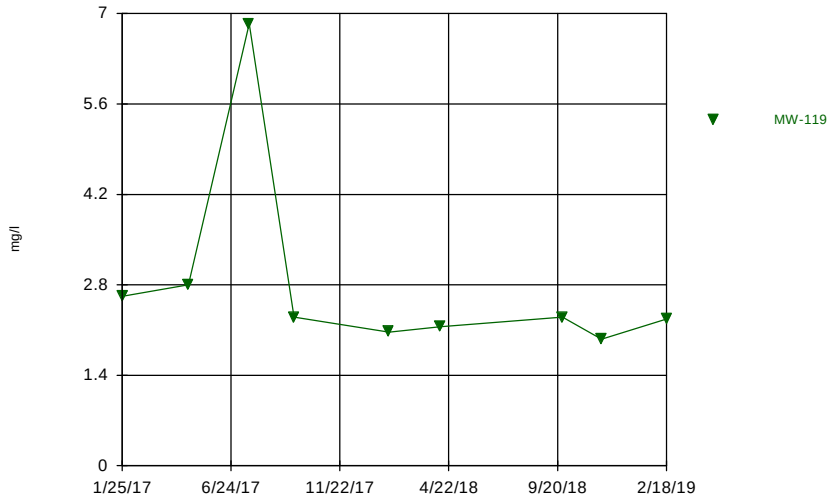
Time Series



Constituent: Boron Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

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

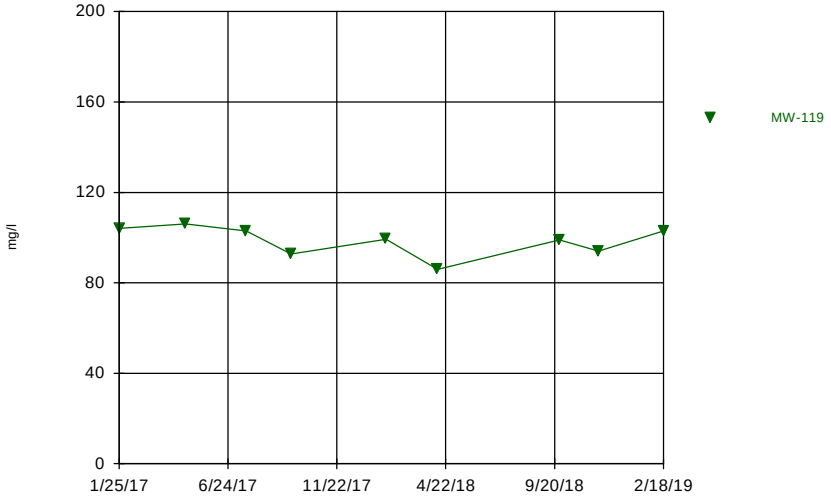
Time Series



Constituent: Chloride Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

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

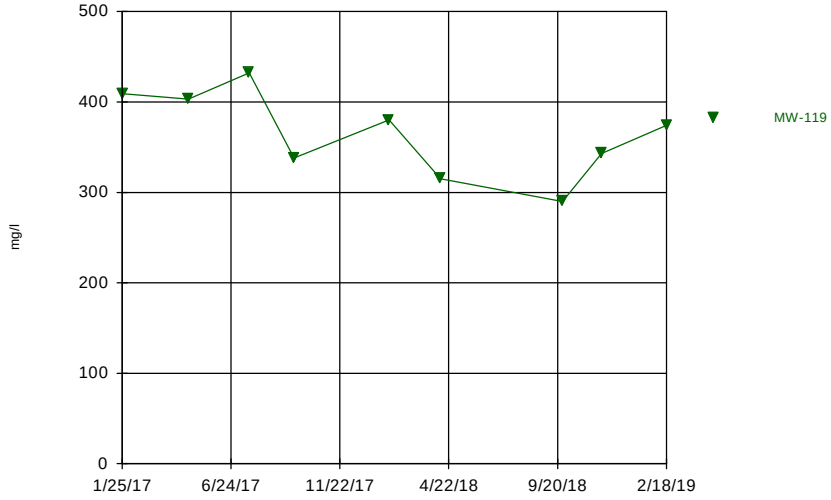
Time Series



Constituent: Calcium Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

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

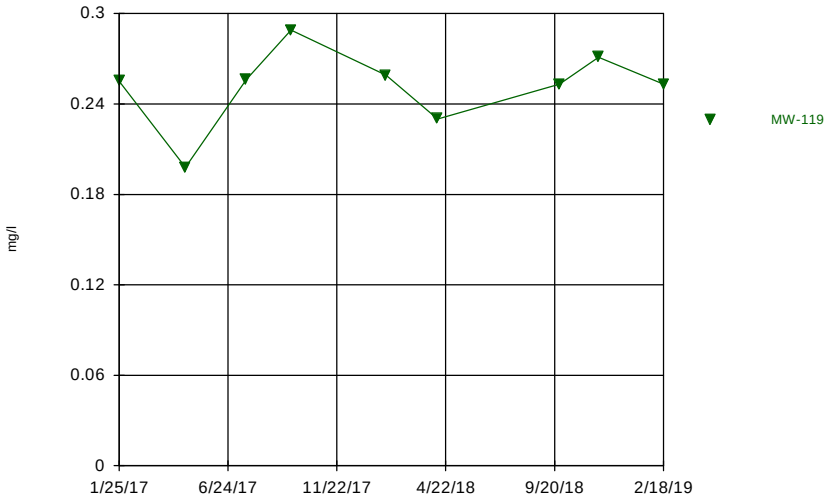
Time Series



Constituent: Dissolved Solids Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

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

Time Series

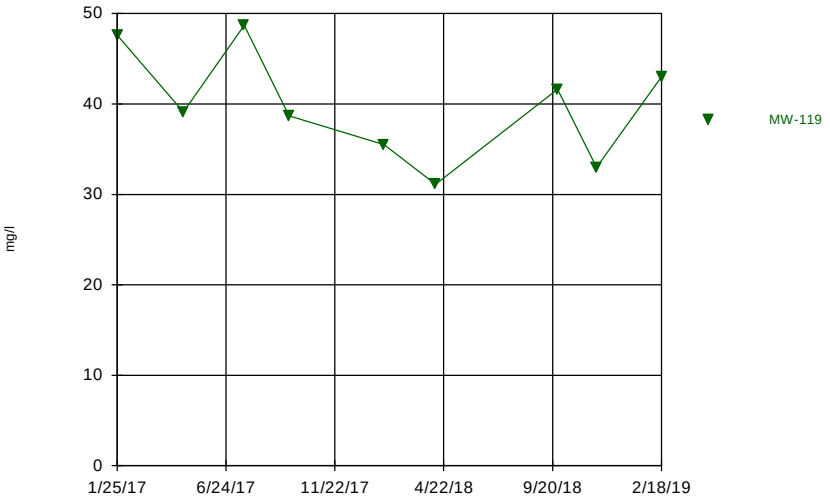


Constituent: Fluoride Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Time Series

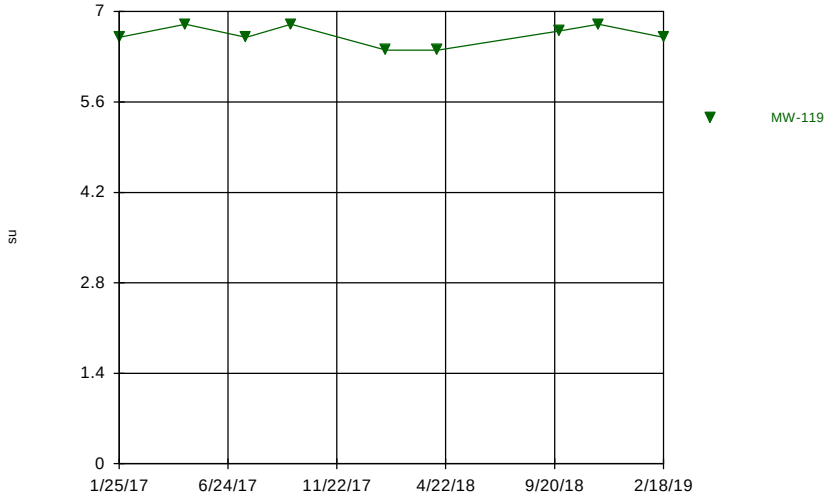


Constituent: Sulfate Analysis Run 6/7/2019 11:18 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Time Series

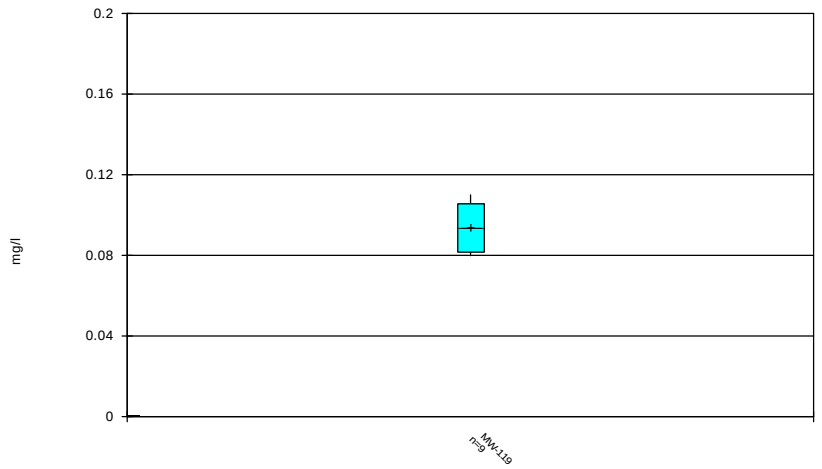


Constituent: pH Analysis Run 6/7/2019 11:24 AM View: 2019-1H MW-119 BG Evaluation

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

Box-and-Whiskers Plots

Box & Whiskers Plot

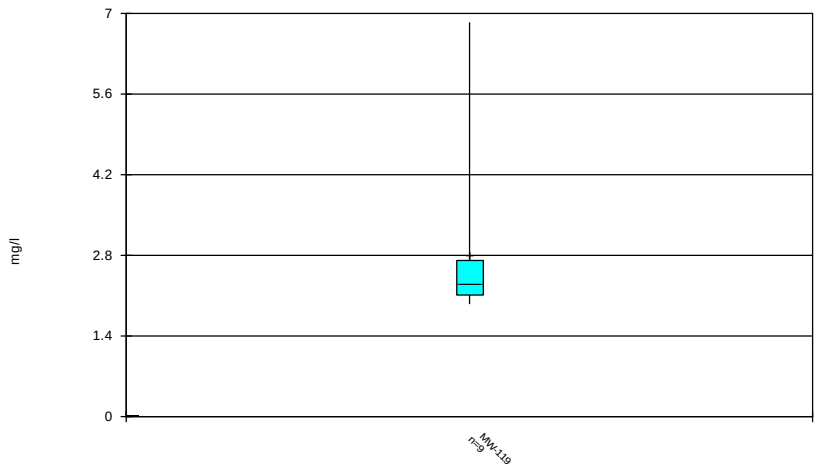


Constituent: Boron Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

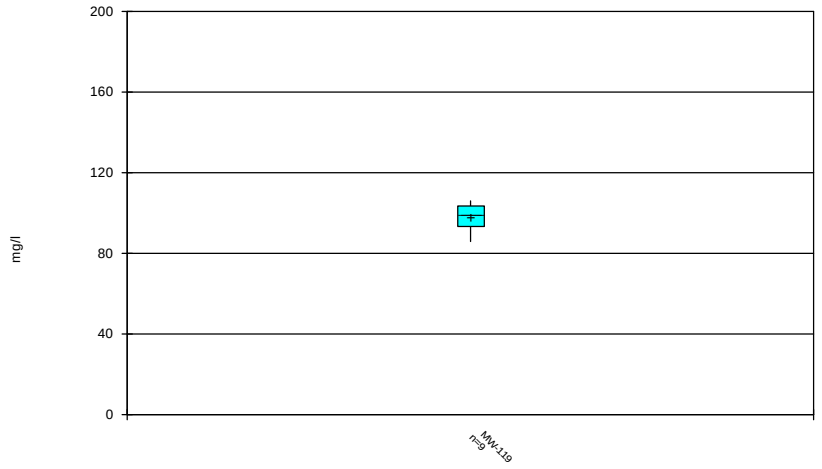


Constituent: Chloride Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

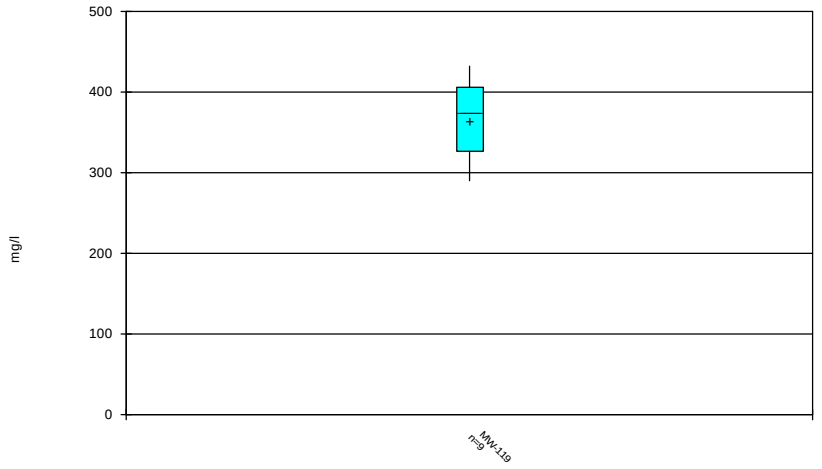


Constituent: Calcium Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

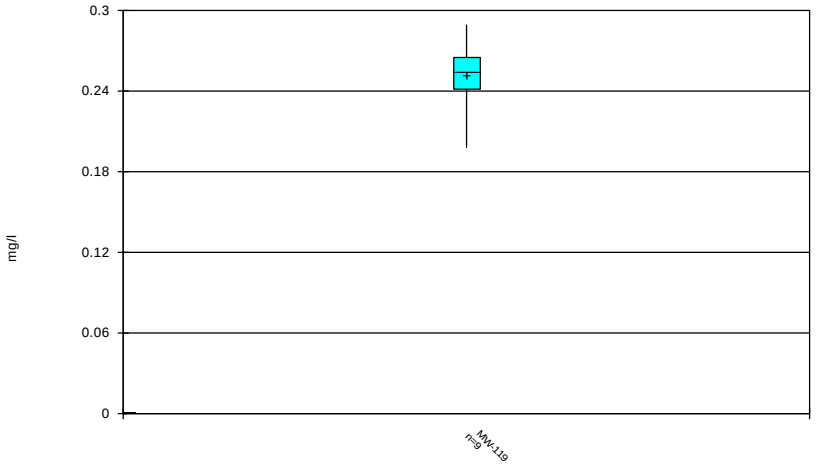
Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

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

Box & Whiskers Plot

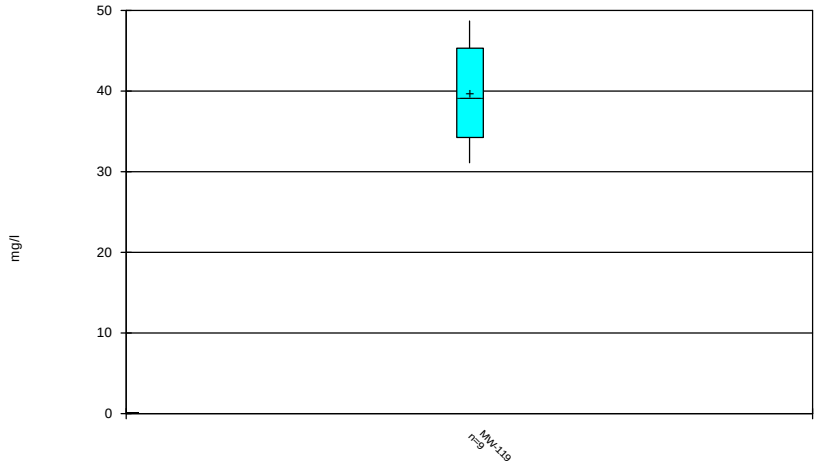


Constituent: Fluoride Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

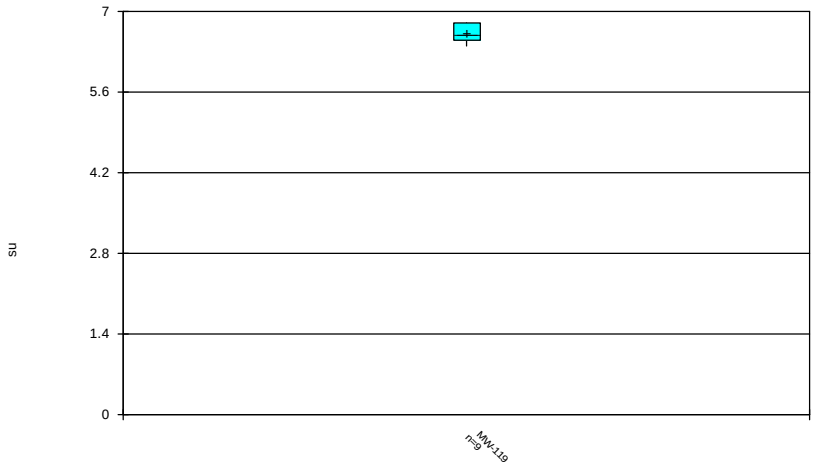


Constituent: Sulfate Analysis Run 6/7/2019 11:20 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot



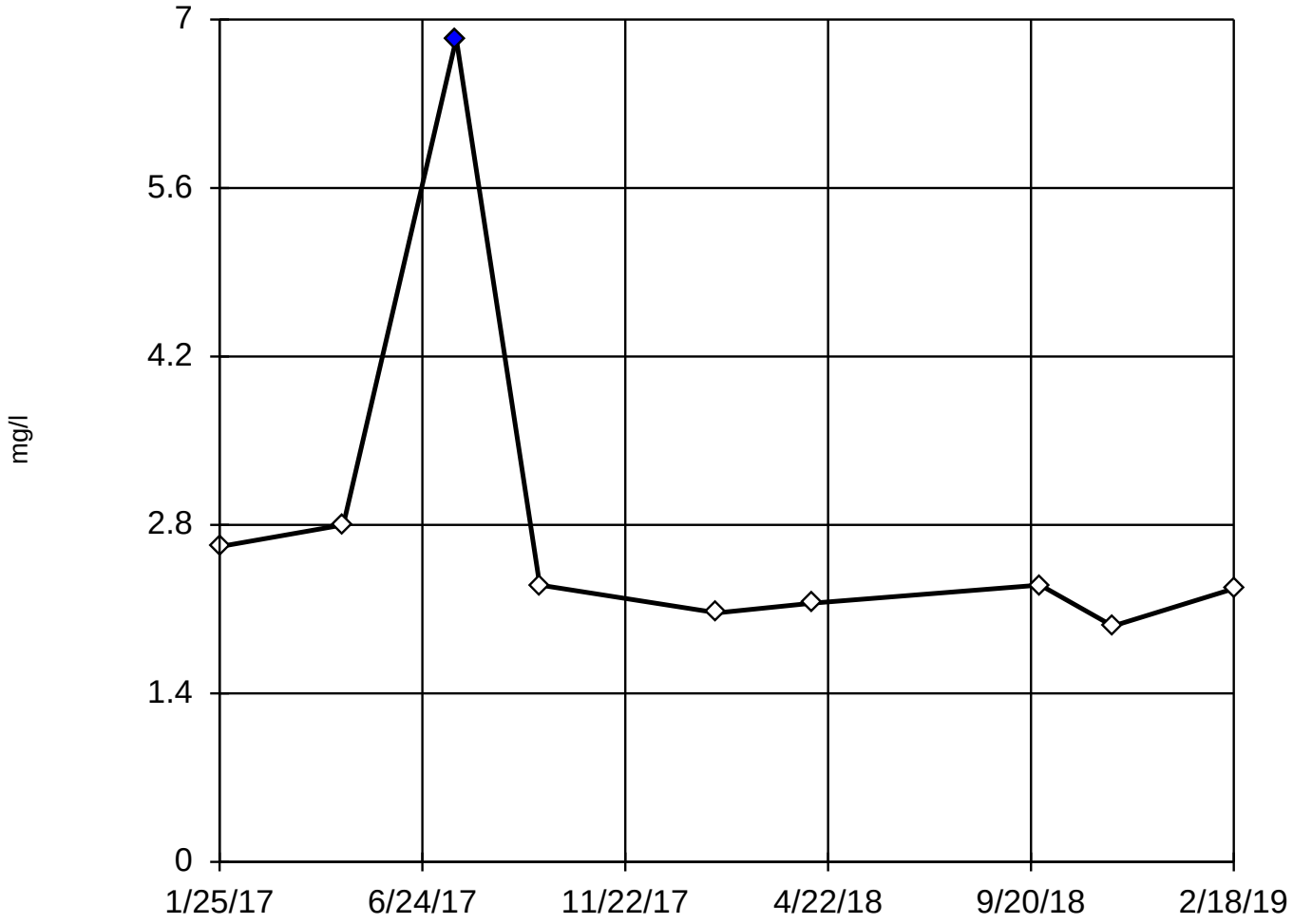
Constituent: pH Analysis Run 6/7/2019 11:25 AM View: 2019-1H MW-119 BG Evaluation

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

Outlier Plots

Dixon's Outlier Test

MW-119



n = 9

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 2.812.
Std. Dev. = 1.533.
6.84: c = 0.847
tabl = 0.512.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9278
Critical = 0.851
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Chloride Analysis Run 6/7/2019 11:21 AM View: 2019-1H MW-119 BG Evaluation

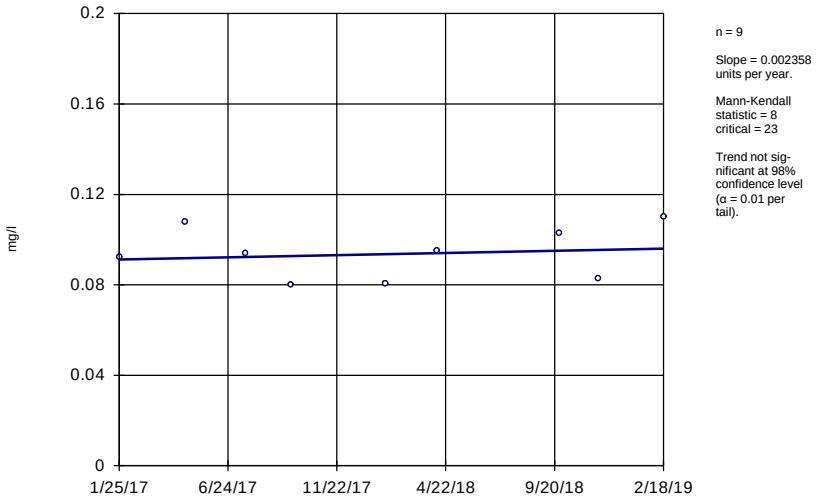
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Trend Test Plots

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-119



n = 9

Slope = 0.002358 units per year.

Mann-Kendall statistic = 8 critical = 23

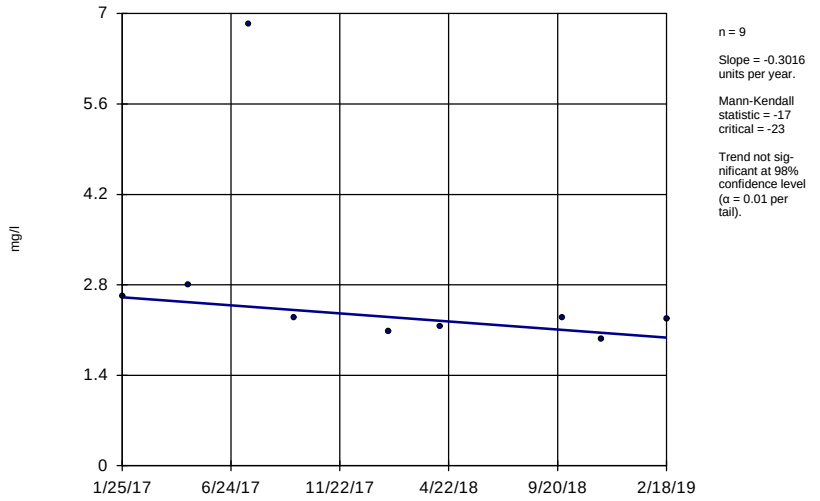
Trend not sig-nificant at 98% confidence level (α = 0.01 per tail).

Constituent: Boron Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

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

Sen's Slope Estimator

MW-119



n = 9

Slope = -0.3016 units per year.

Mann-Kendall statistic = -17 critical = -23

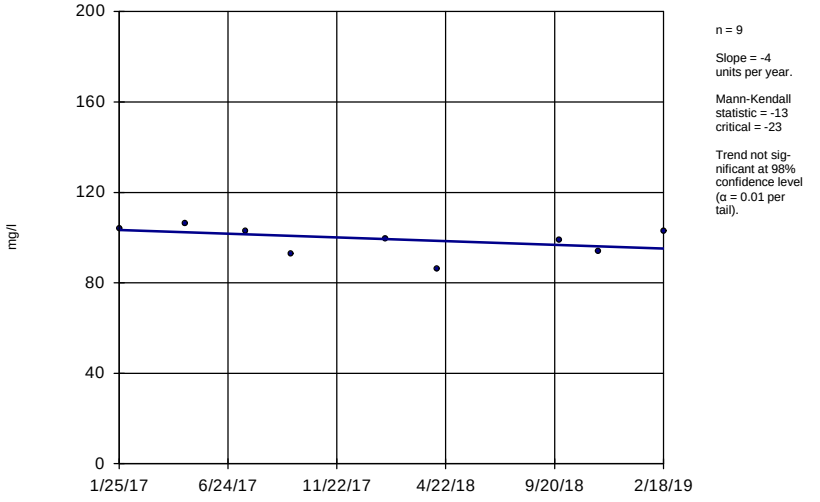
Trend not sig-nificant at 98% confidence level (α = 0.01 per tail).

Constituent: Chloride Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

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

Sen's Slope Estimator

MW-119



n = 9

Slope = -4 units per year.

Mann-Kendall statistic = -13 critical = -23

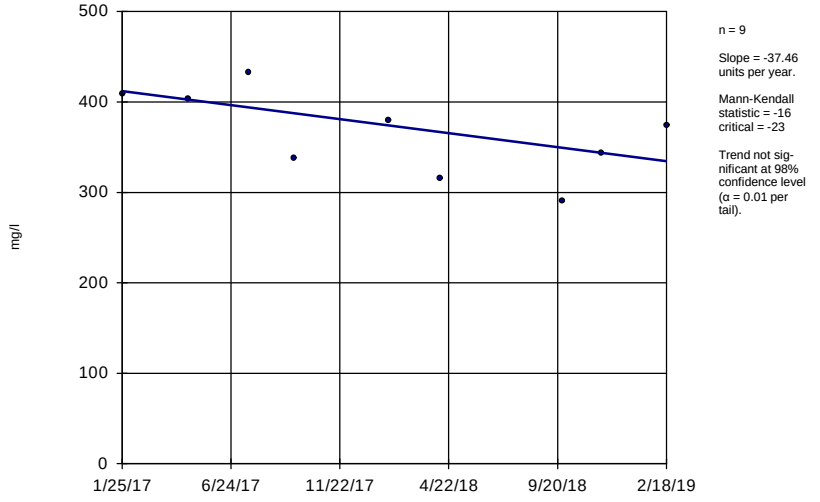
Trend not sig-nificant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

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

Sen's Slope Estimator

MW-119



n = 9

Slope = -37.46 units per year.

Mann-Kendall statistic = -16 critical = -23

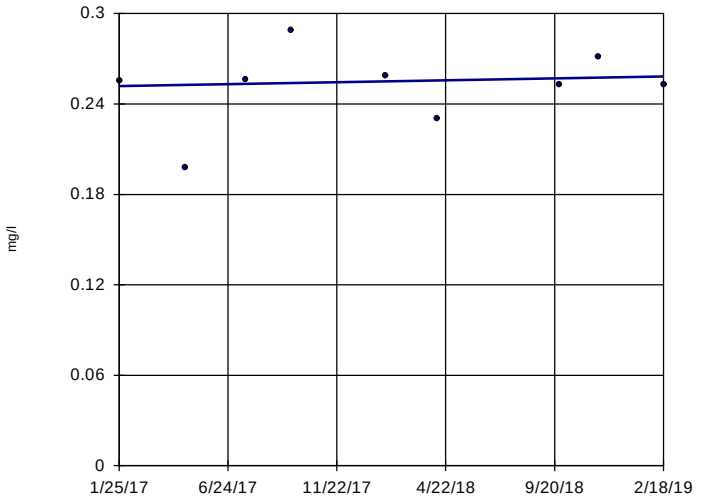
Trend not sig-nificant at 98% confidence level (α = 0.01 per tail).

Constituent: Dissolved Solids Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

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

Sen's Slope Estimator

MW-119



n = 9

Slope = 0.00301 units per year.

Mann-Kendall statistic = 3 critical = 23

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

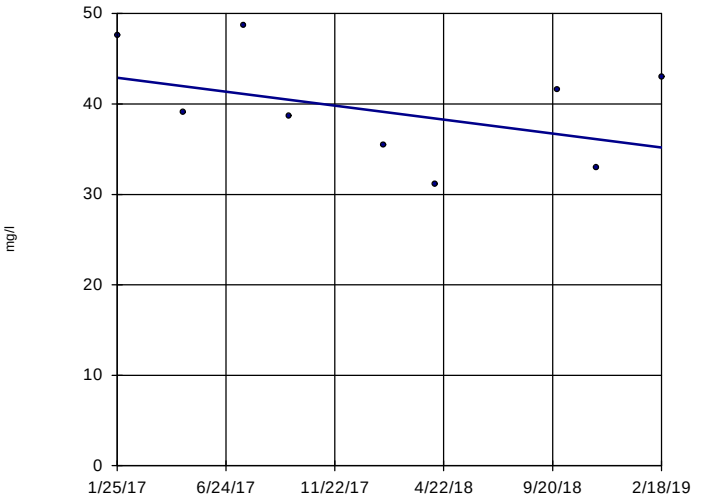
Constituent: Fluoride Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Sen's Slope Estimator

MW-119



n = 9

Slope = -3.746 units per year.

Mann-Kendall statistic = -10 critical = -23

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

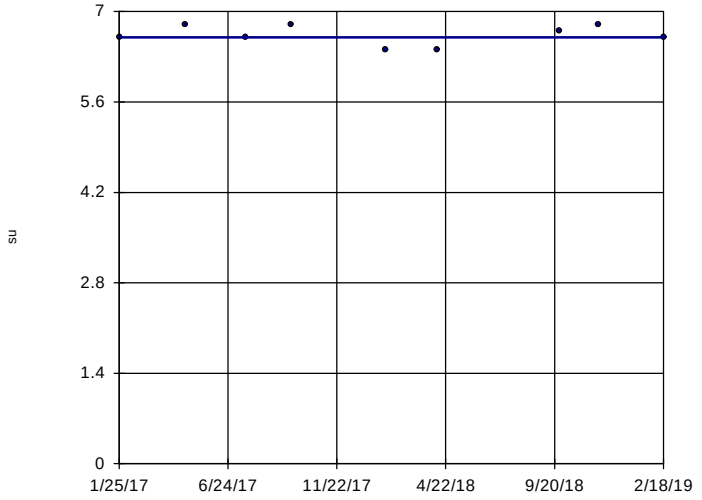
Constituent: Sulfate Analysis Run 6/7/2019 11:23 AM View: 2019-1H MW-119 BG Evaluation

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

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Sen's Slope Estimator

MW-119



n = 9

Slope = 0 units per year.

Mann-Kendall statistic = -1 critical = -23

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

Constituent: pH Analysis Run 6/7/2019 11:26 AM View: 2019-1H MW-119 BG Evaluation

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: 11/19/2019 4:24 PM

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

Boron (mg/l)
- MW-101 background:10/7/2015-7/20/2017
- MW-102 background:10/7/2015-7/20/2017
- MW-103 background:10/7/2015-7/20/2017
- MW-108 background:10/7/2015-9/20/2017
- MW-113 background:10/7/2015-9/20/2017
- MW-115 background:10/7/2015-7/20/2017
- MW-116 background:10/7/2015-7/20/2017
- MW-117 background:10/7/2015-7/20/2017
- MW-118 background:10/7/2015-7/20/2017
- MW-119 background:6/7/2011-2/18/2019

Calcium (mg/l)
- MW-101 background:10/7/2015-7/20/2017
- MW-102 background:10/7/2015-7/20/2017
- MW-103 background:10/7/2015-7/20/2017
- MW-108 background:10/7/2015-9/20/2017
- MW-113 background:10/7/2015-9/20/2017
- MW-115 background:10/7/2015-7/20/2017
- MW-116 background:10/7/2015-7/20/2017
- MW-117 background:10/7/2015-7/20/2017
- MW-118 background:10/7/2015-7/20/2017
- MW-119 background:6/7/2011-2/18/2019

Chloride (mg/l)
- MW-101 background:10/7/2015-7/20/2017
- MW-102 background:10/7/2015-7/20/2017
- MW-103 background:10/7/2015-7/20/2017
- MW-108 background:10/7/2015-9/20/2017
- MW-113 background:10/7/2015-9/20/2017
- MW-115 background:10/7/2015-7/20/2017
- MW-116 background:10/7/2015-7/20/2017
- MW-117 background:10/7/2015-7/20/2017
- MW-118 background:10/7/2015-7/20/2017
- MW-119 background:6/7/2011-2/18/2019

Dissolved Solids (mg/l)
- MW-101 background:10/7/2015-7/20/2017
- MW-102 background:10/7/2015-7/20/2017
- MW-103 background:10/7/2015-7/20/2017
- MW-108 background:10/7/2015-9/20/2017
- MW-113 background:10/7/2015-9/20/2017
- MW-115 background:10/7/2015-7/20/2017
- MW-116 background:10/7/2015-7/20/2017
- MW-117 background:10/7/2015-7/20/2017
- MW-118 background:10/7/2015-7/20/2017
- MW-119 background:6/7/2011-2/18/2019

Fluoride (mg/l)
- MW-101 background:10/7/2015-7/20/2017
- MW-102 background:10/7/2015-7/20/2017
- MW-103 background:10/7/2015-7/20/2017
- MW-108 background:10/7/2015-9/20/2017
- MW-113 background:10/7/2015-9/20/2017
- MW-115 background:10/7/2015-7/20/2017
- MW-116 background:10/7/2015-7/20/2017
- MW-117 background:10/7/2015-7/20/2017
- MW-118 background:10/7/2015-7/20/2017
- MW-119 background:6/7/2011-2/18/2019

pH (su)
- MW-101 background:10/7/2015-7/20/2017
- MW-102 background:10/7/2015-7/20/2017
- MW-103 background:10/7/2015-7/20/2017
- MW-108 background:10/7/2015-9/20/2017
- MW-113 background:10/7/2015-9/20/2017
- MW-115 background:10/7/2015-7/20/2017
- MW-116 background:10/7/2015-7/20/2017

Date Ranges

Date: 11/19/2019 4:24 PM

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

MW-117 background:10/7/2015-7/20/2017
MW-118 background:10/7/2015-7/20/2017
MW-119 background:6/7/2011-2/18/2019

Sulfate (mg/l)

MW-101 background:10/7/2015-7/20/2017
MW-102 background:10/7/2015-7/20/2017
MW-103 background:10/7/2015-7/20/2017
MW-108 background:10/7/2015-9/20/2017
MW-113 background:10/7/2015-9/20/2017
MW-115 background:10/7/2015-7/20/2017
MW-116 background:10/7/2015-1/30/2018
MW-117 background:10/7/2015-7/20/2017
MW-118 background:10/7/2015-7/20/2017
MW-119 background:6/7/2011-2/18/2019

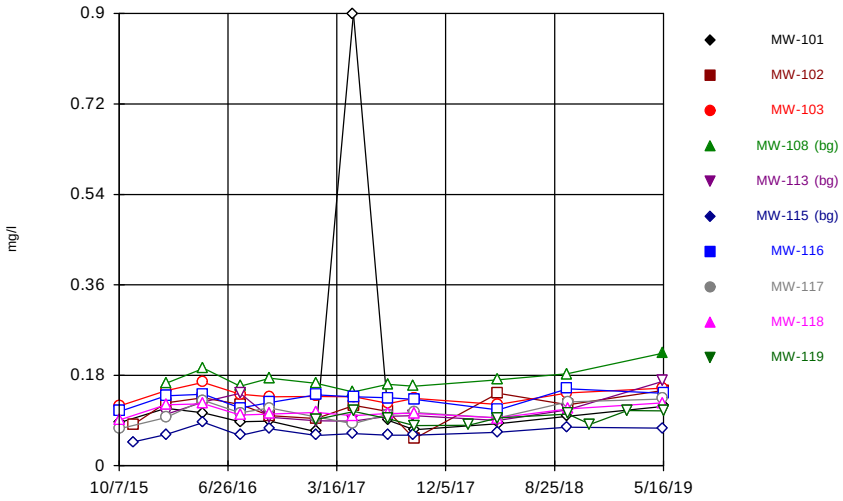
APPENDIX F

Exploratory Data Analysis Plots

Time-Series Plots, First Half of 2019 Data Set

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

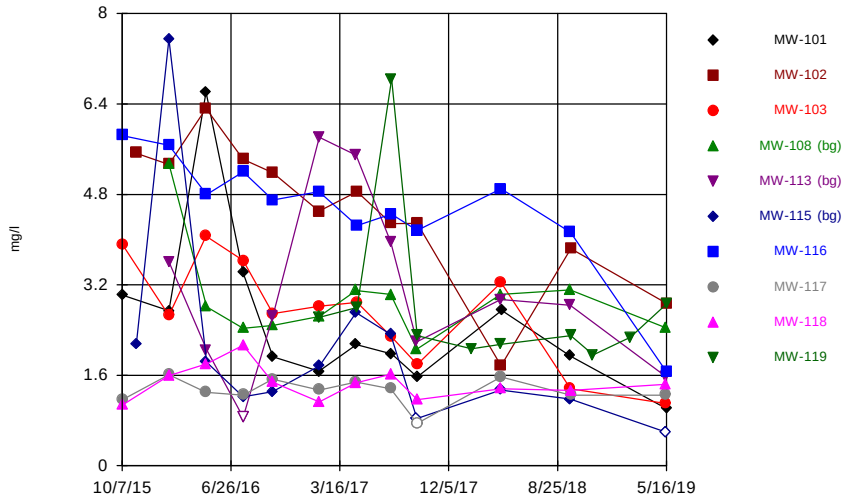


Constituent: Boron Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

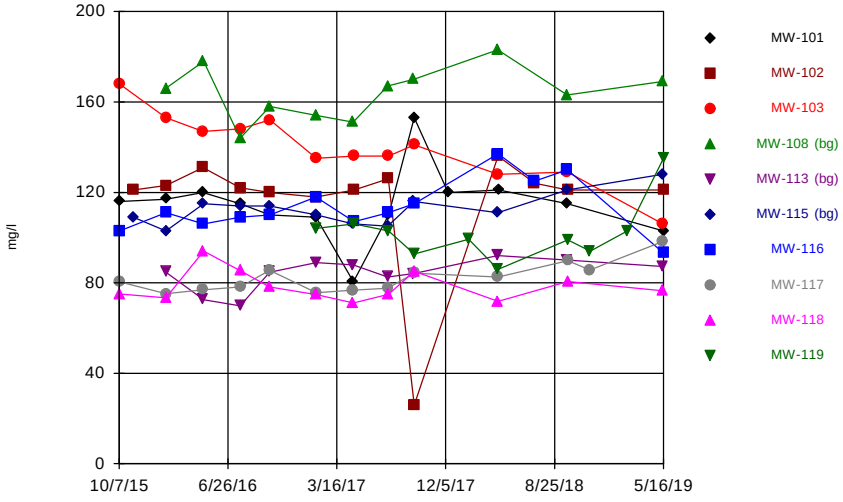


Constituent: Chloride Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Time Series

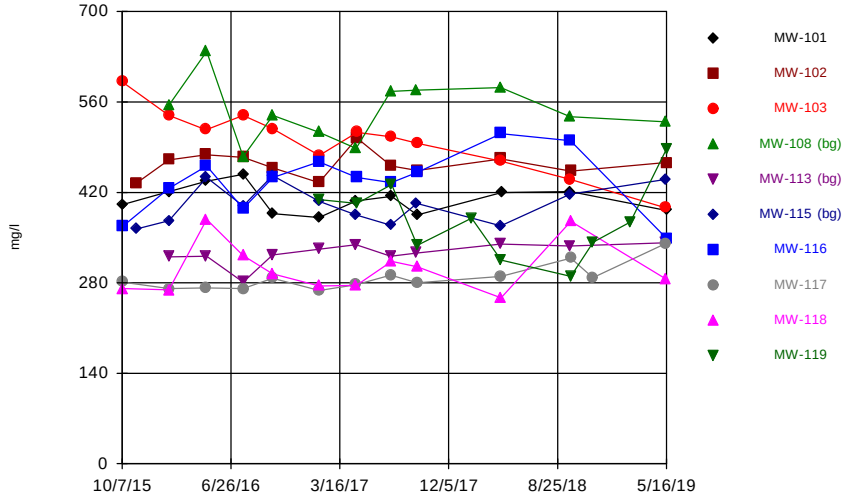


Constituent: Calcium Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Time Series

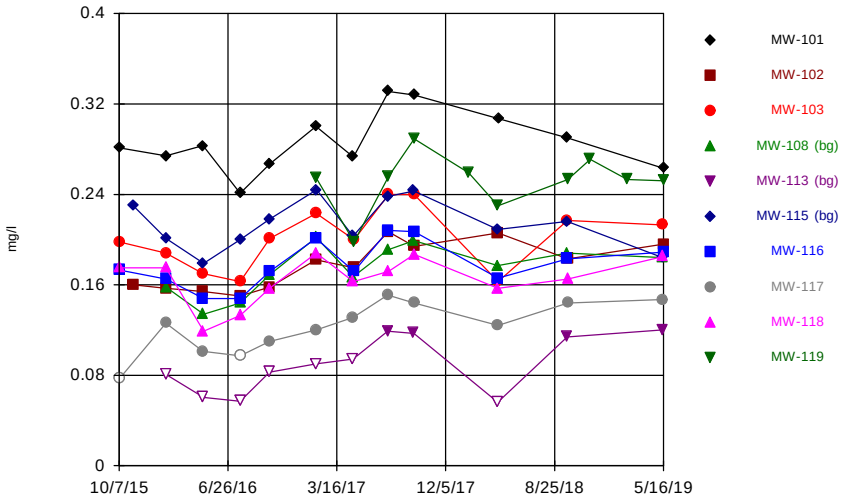


Constituent: Dissolved Solids Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

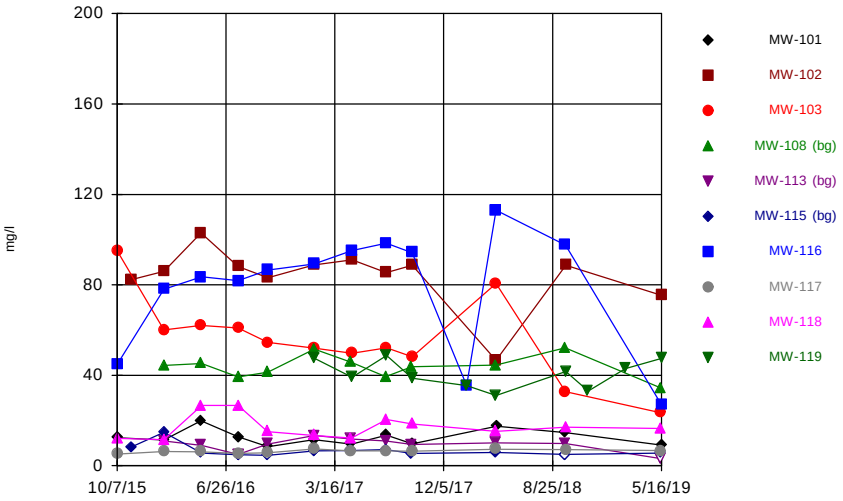


Constituent: Fluoride Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

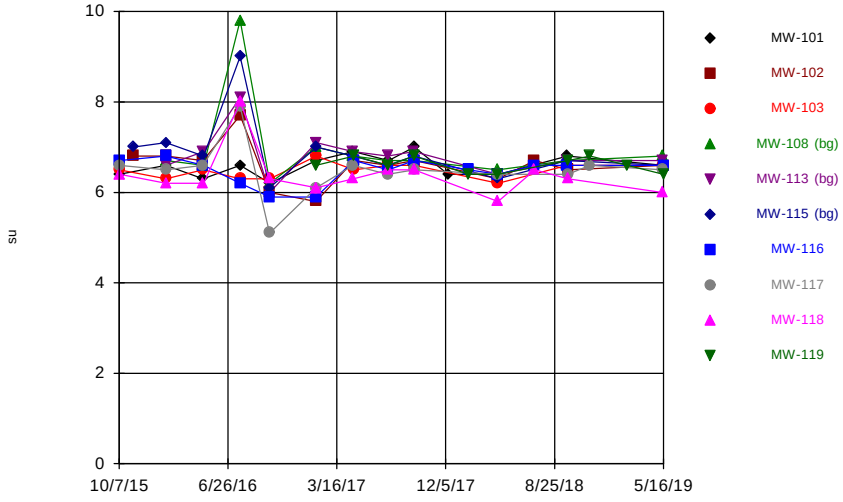


Constituent: Sulfate Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Time Series

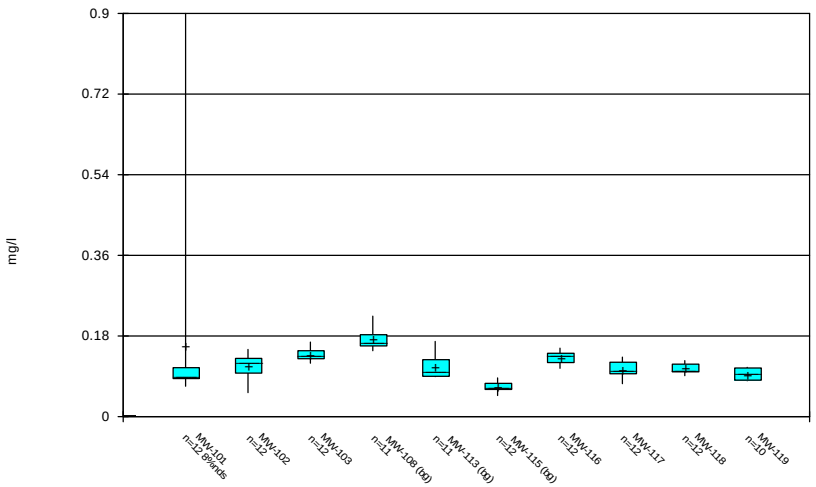


Constituent: pH Analysis Run 10/1/2019 10:16 AM View: 2019-1H Distributional

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

Box-and-Whisker Plots, First Half of 2019 Data Set

Box & Whiskers Plot

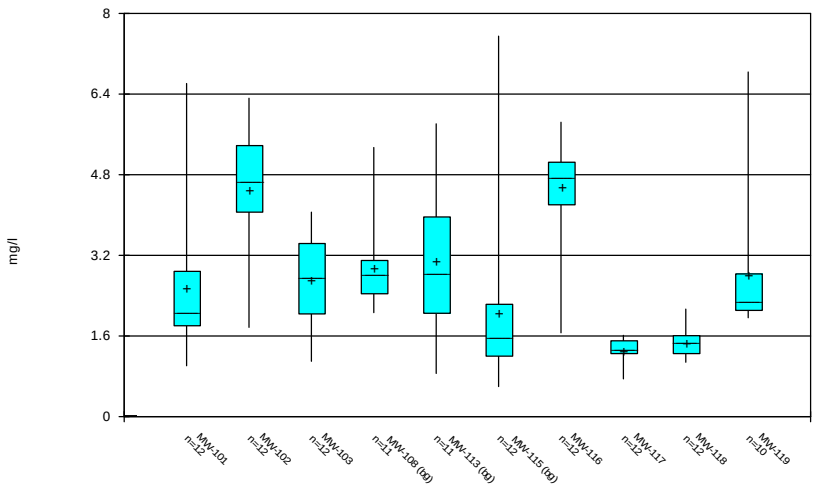


Constituent: Boron Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

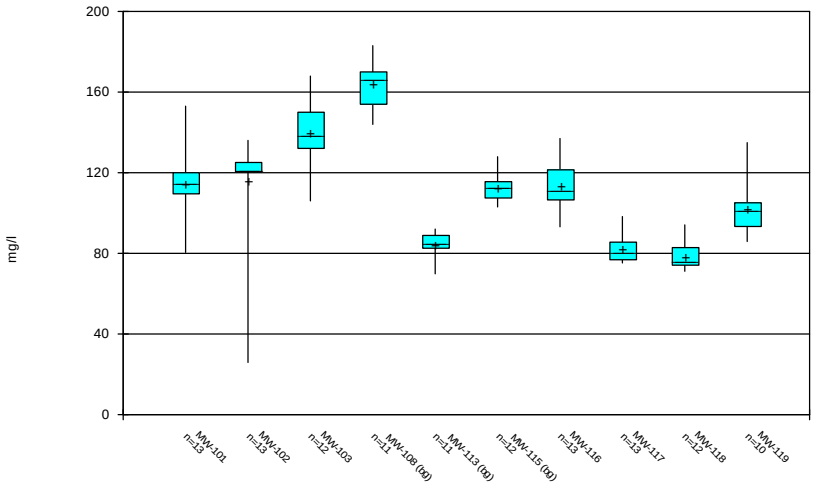


Constituent: Chloride Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

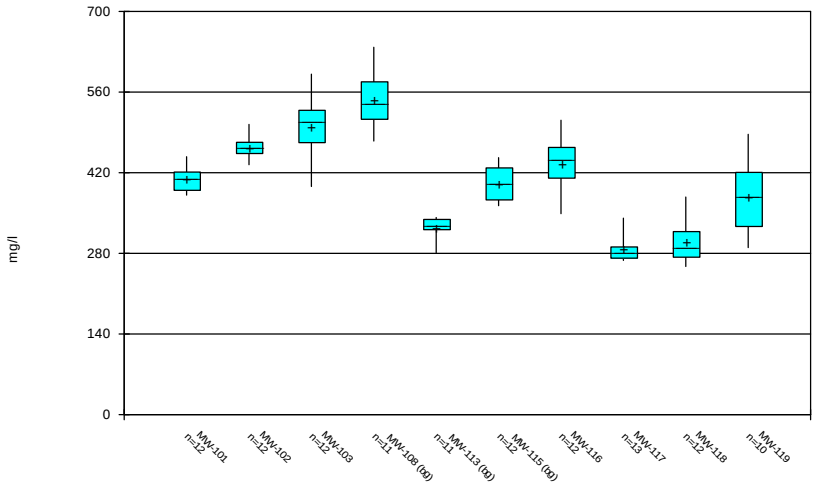


Constituent: Calcium Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

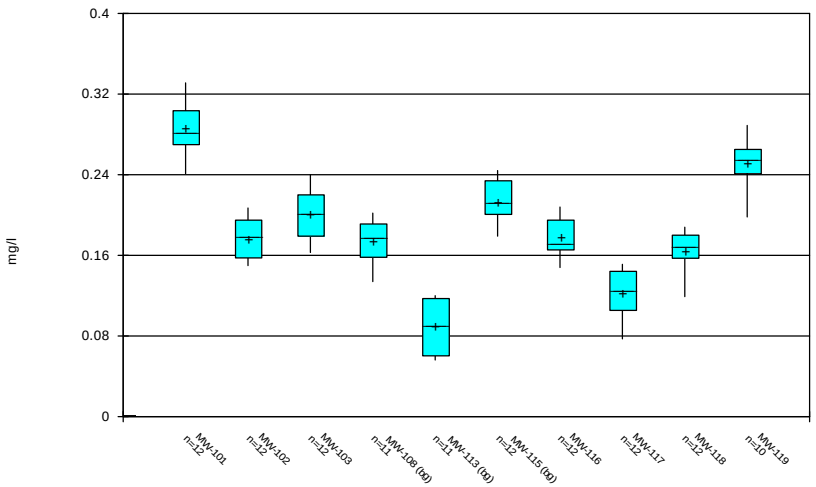
Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

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

Box & Whiskers Plot

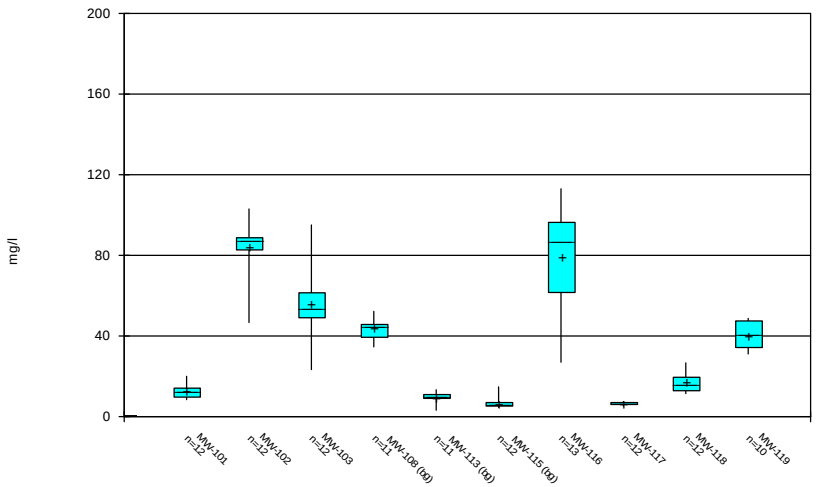


Constituent: Fluoride Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

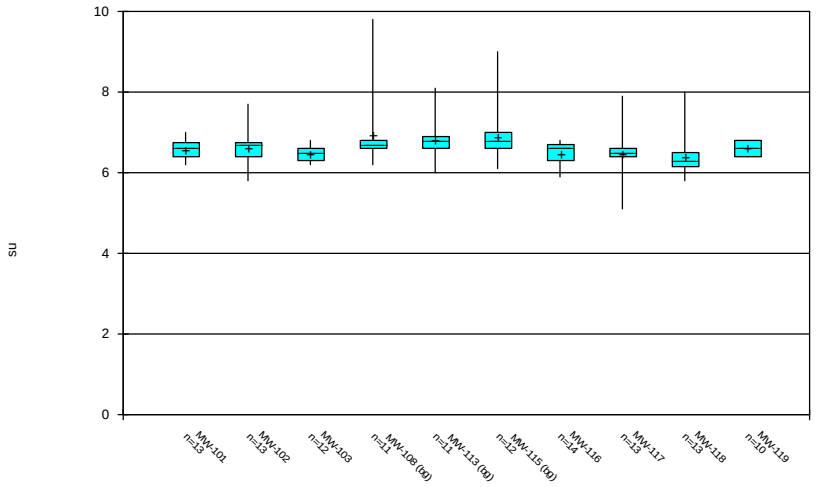


Constituent: Sulfate Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot



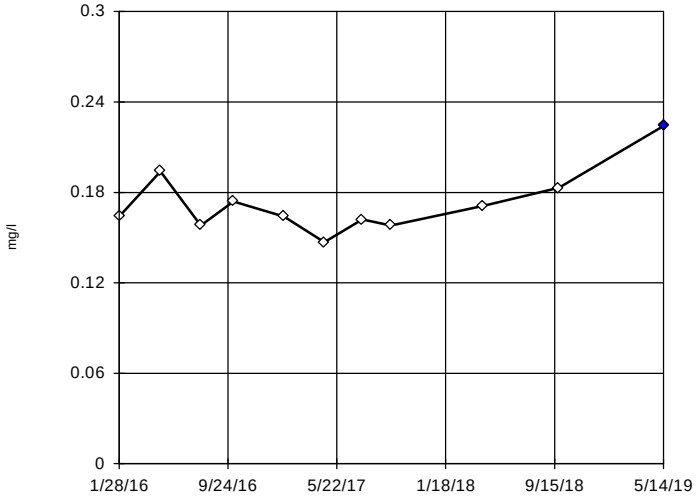
Constituent: pH Analysis Run 10/1/2019 10:23 AM View: 2019-1H Distributional

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

Statistically Significant Outliers, First Half of 2019 Data Set

Dixon's Outlier Test

MW-108 (bg)



n = 11

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 0.1726.
Std. Dev. = 0.02134.
0.224 (B): c = 0.6212
tabl = 0.576.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9551
Critical = 0.869
The distribution, after removal of suspect value, was found to be normally distributed.

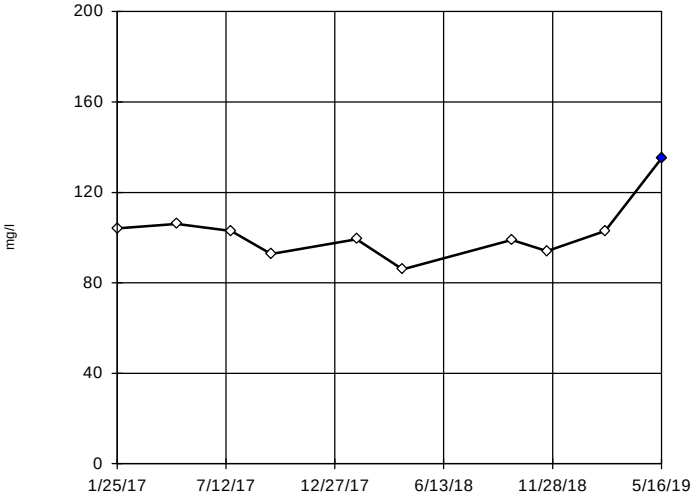
Constituent: Boron Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Dixon's Outlier Test

MW-119



n = 10

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 102.2.
Std. Dev. = 13.07.
135: c = 0.6856
tabl = 0.477.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9156
Critical = 0.859
The distribution, after removal of suspect value, was found to be normally distributed.

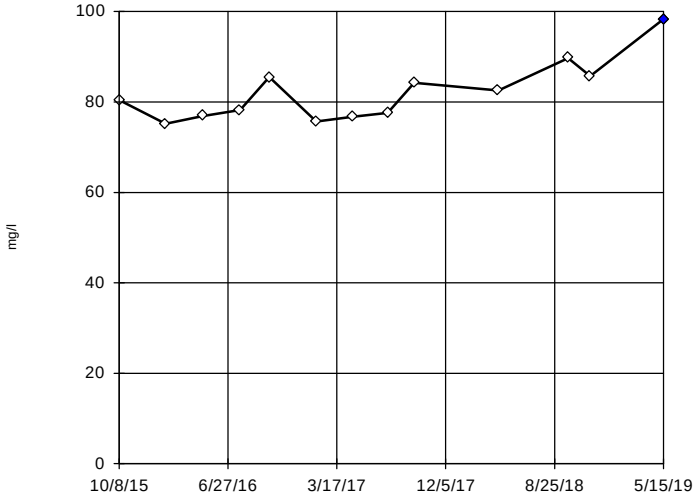
Constituent: Calcium Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Dixon's Outlier Test

MW-117



n = 13

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 82.05.
Std. Dev. = 6.661.
98.3: c = 0.5575
tabl = 0.521.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9147
Critical = 0.883
The distribution, after removal of suspect value, was found to be normally distributed.

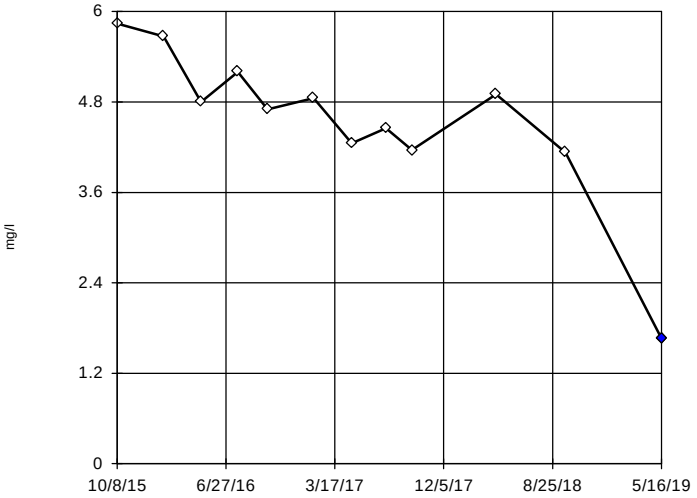
Constituent: Calcium Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Dixon's Outlier Test

MW-116



n = 12

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 4.551.
Std. Dev. = 1.063.
1.66: c = 0.6234
tabl = 0.546.
Alpha = 0.05.

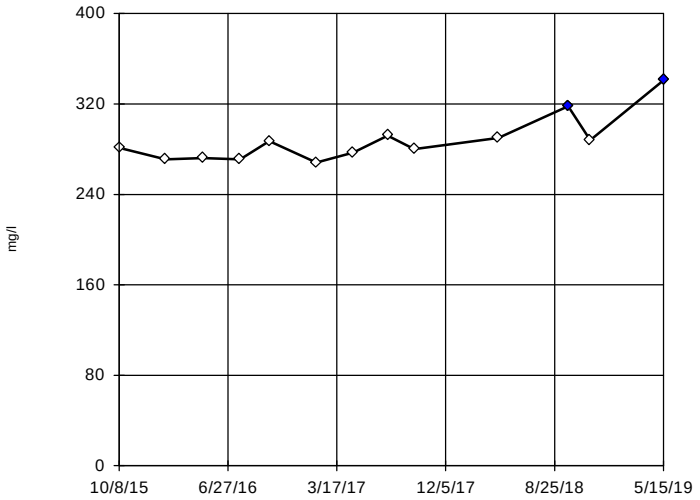
Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.925
Critical = 0.876
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Chloride Analysis Run 10/1/2019 10:31 AM View: 2019-1H Distributional

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

Dixon's Outlier Test

MW-117



n = 13

Statistical outliers are drawn as solid.
Testing for 2 high outliers.
Mean = 287.4.
Std. Dev. = 20.8.
318: c = 0.5957
tabl = 0.521.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9186
Critical = 0.876
The distribution, after removal of suspect values, was found to be normally distributed.

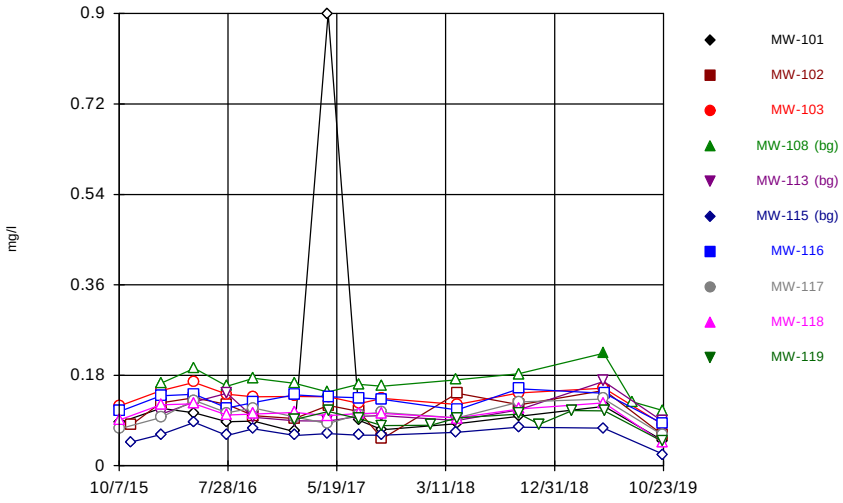
Constituent: Dissolved Solids Analysis Run 10/1/2019 10:32 AM View: 2019-1H Distributional

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

Time-Series Plots, Second Half of 2019 Data Set

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

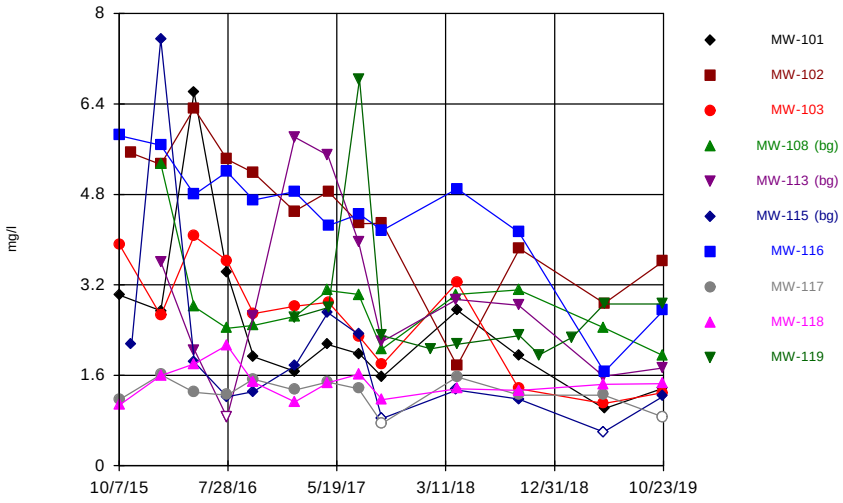


Constituent: Boron Analysis Run 11/8/2019 6:32 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

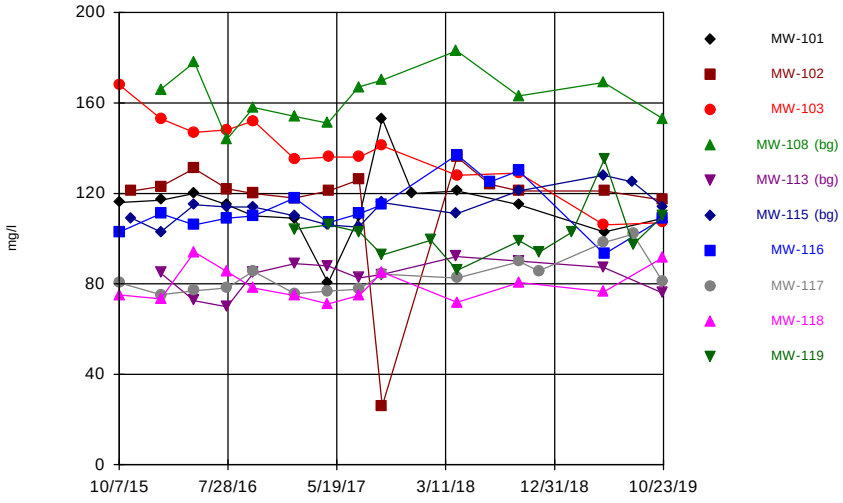


Constituent: Chloride Analysis Run 11/8/2019 6:32 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Time Series

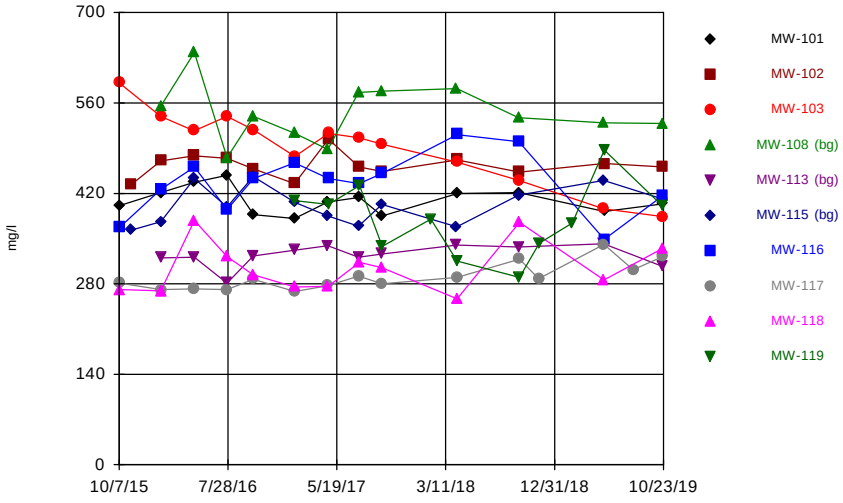


Constituent: Calcium Analysis Run 11/18/2019 11:28 AM View: 2019-2H Distributional

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Time Series

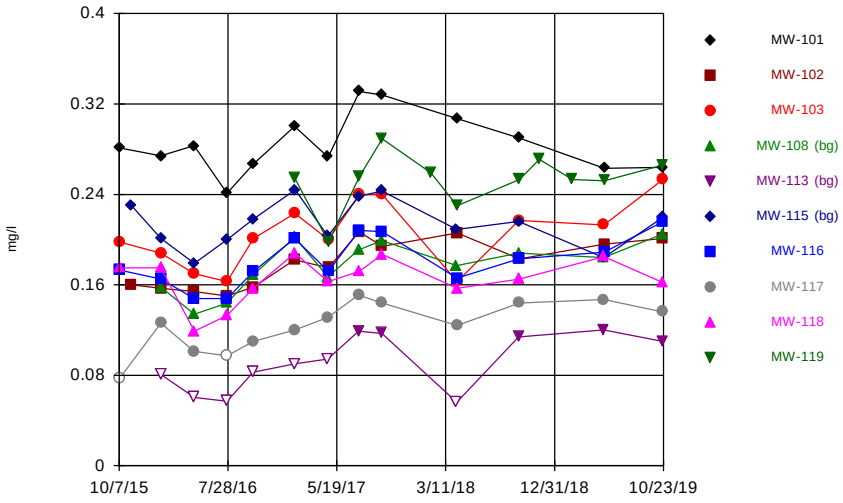


Constituent: Dissolved Solids Analysis Run 11/8/2019 6:32 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

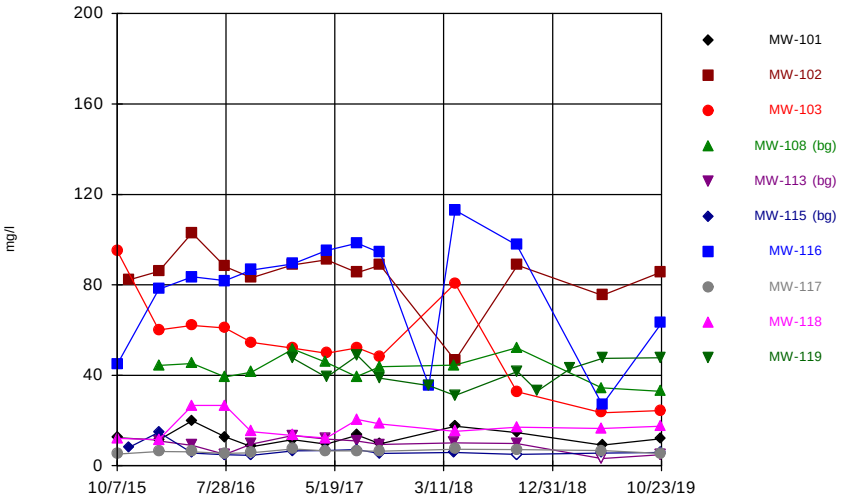


Constituent: Fluoride Analysis Run 11/8/2019 6:32 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG
Hollow symbols indicate censored values.

Time Series

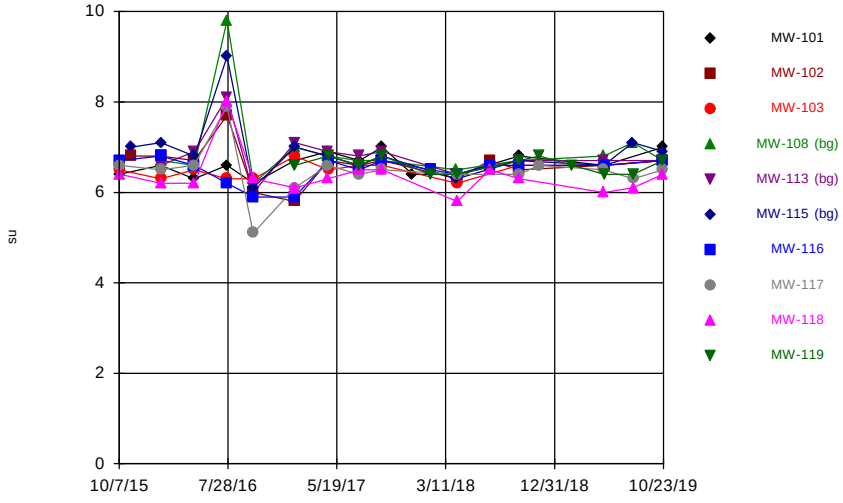


Constituent: Sulfate Analysis Run 11/8/2019 6:32 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Time Series

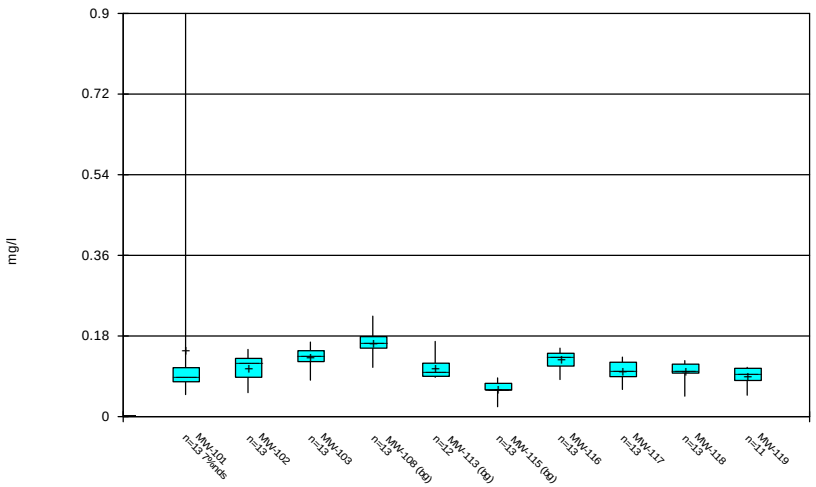


Constituent: pH Analysis Run 11/8/2019 6:32 PM

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

Box-and-Whisker Plots, Second Half of 2019 Data Set

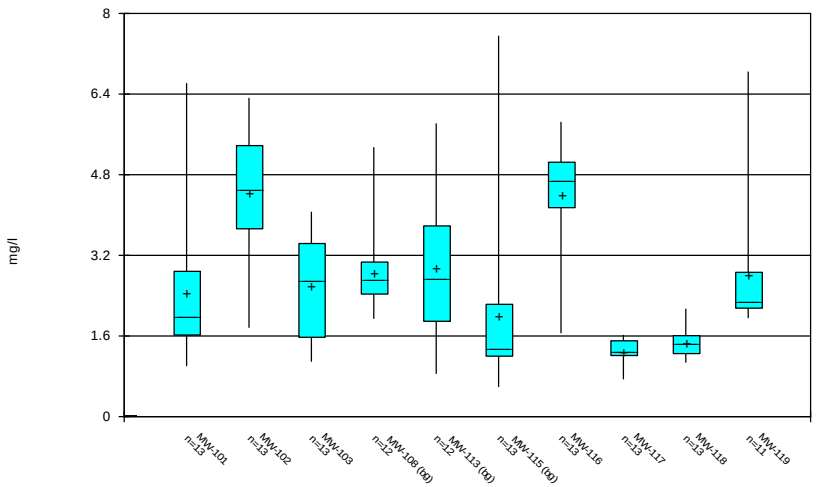
Box & Whiskers Plot



Constituent: Boron Analysis Run 11/8/2019 6:33 PM

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

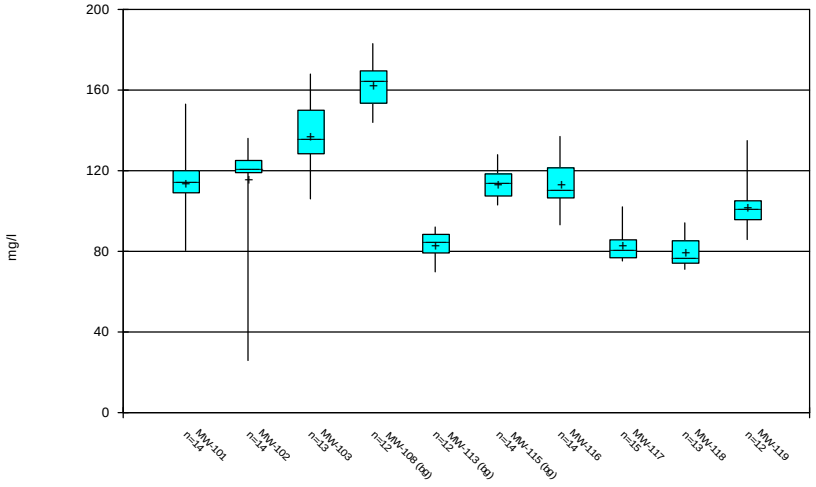
Box & Whiskers Plot



Constituent: Chloride Analysis Run 11/8/2019 6:33 PM

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

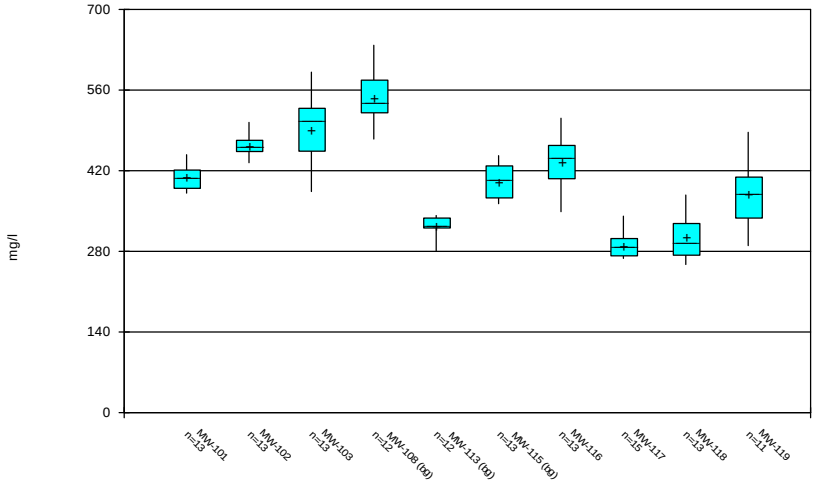
Box & Whiskers Plot



Constituent: Calcium Analysis Run 11/18/2019 11:29 AM View: 2019-2H Distributional

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

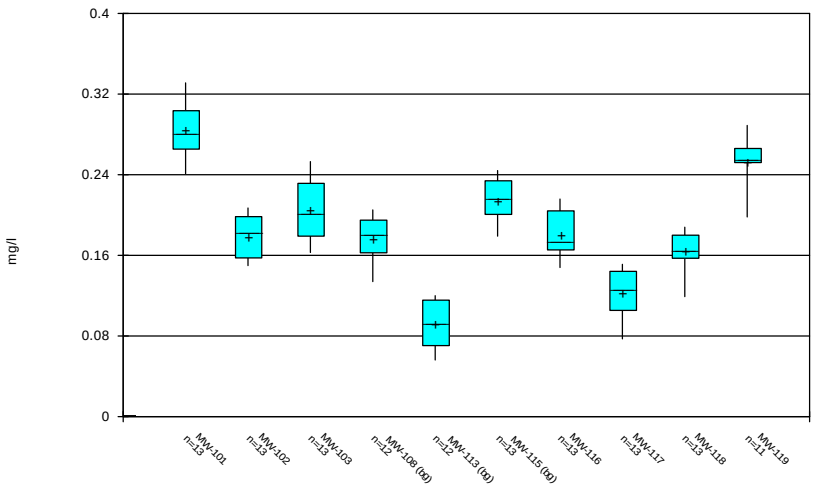
Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 11/8/2019 6:33 PM

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

Box & Whiskers Plot

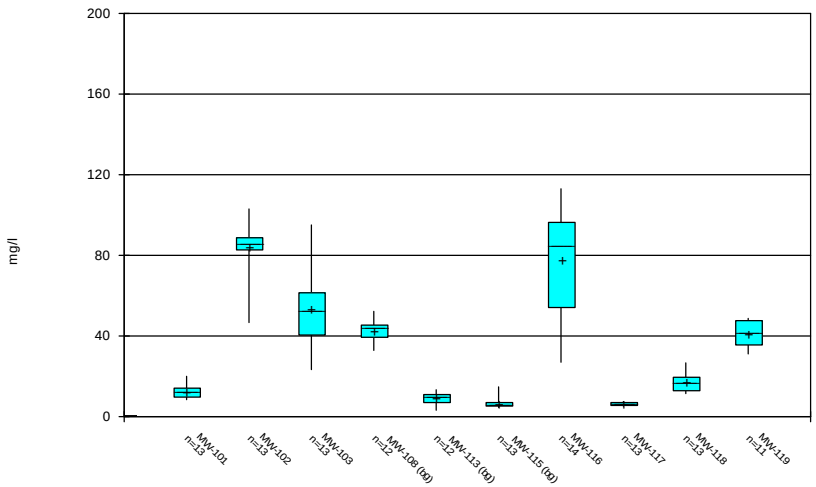


Constituent: Fluoride Analysis Run 11/8/2019 6:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot

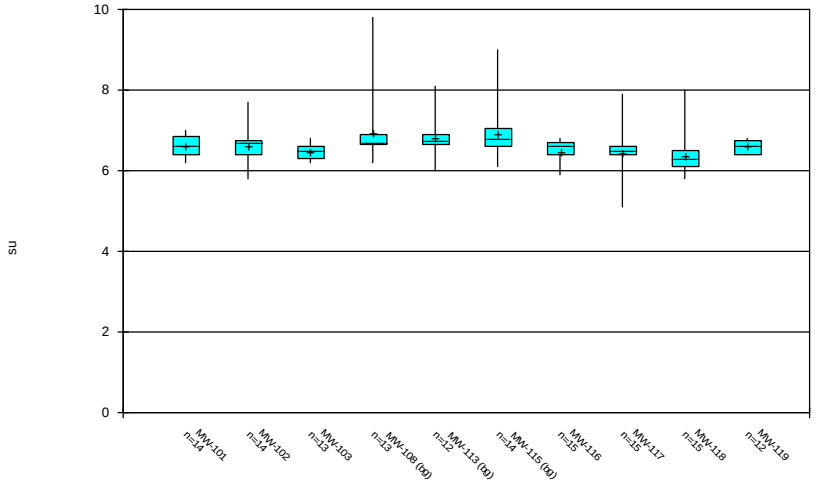


Constituent: Sulfate Analysis Run 11/8/2019 6:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Box & Whiskers Plot



Constituent: pH Analysis Run 11/8/2019 6:33 PM

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

APPENDIX G

Statistical Evaluation Results

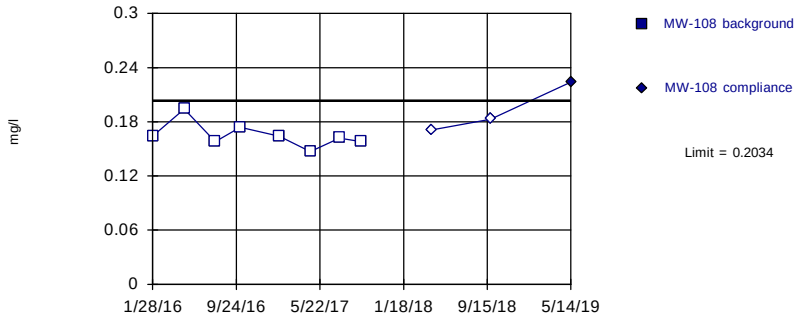
Prediction Limits, First Half 2019

Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1651, Std. Dev.=0.01391, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8869, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

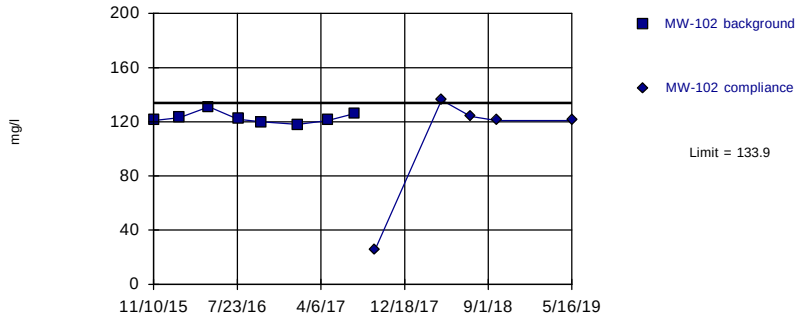
Constituent: Boron Analysis Run 6/14/2019 10:48 AM View: 2019-1H PL

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=122.8, Std. Dev.=4.062, n=8. Seasonality was not detected with 95% confidence. 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.

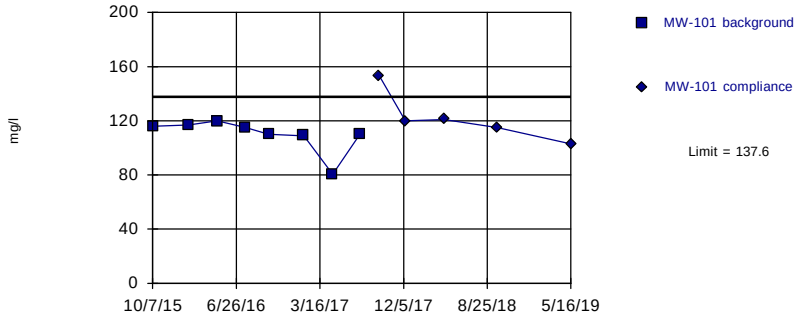
Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

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 (based on square transformation): Mean=12166, Std. Dev.=2464, n=8. Seasonality was not detected with 95% confidence. 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.

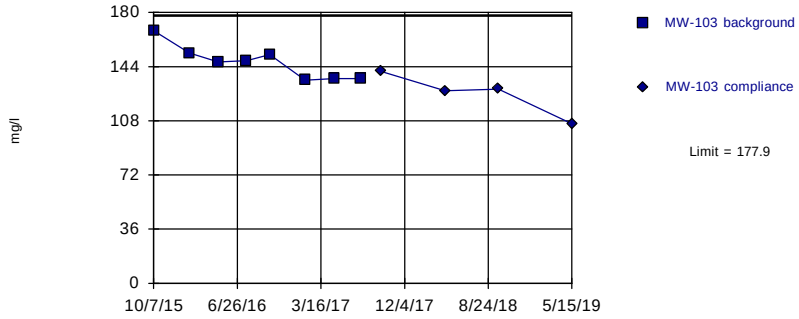
Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

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.

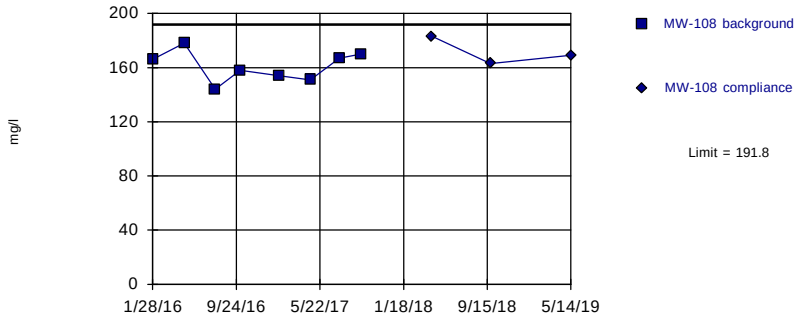
Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

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=161, Std. Dev.=11.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.978, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

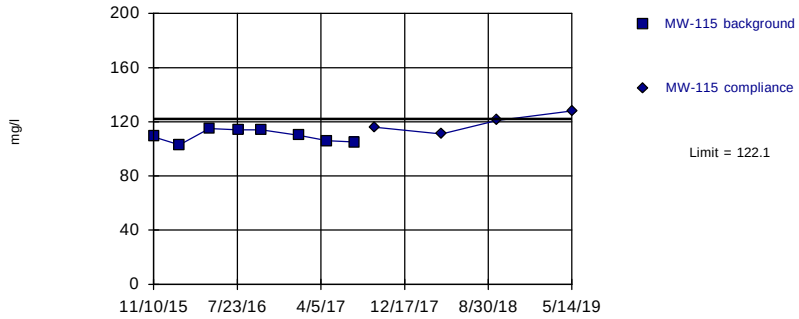
Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. 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.

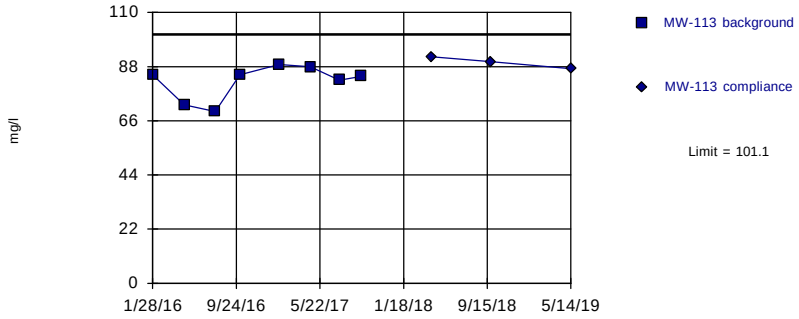
Constituent: Calcium Analysis Run 6/14/2019 10:48 AM View: 2019-1H PL

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=81.89, Std. Dev.=6.976, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8334, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

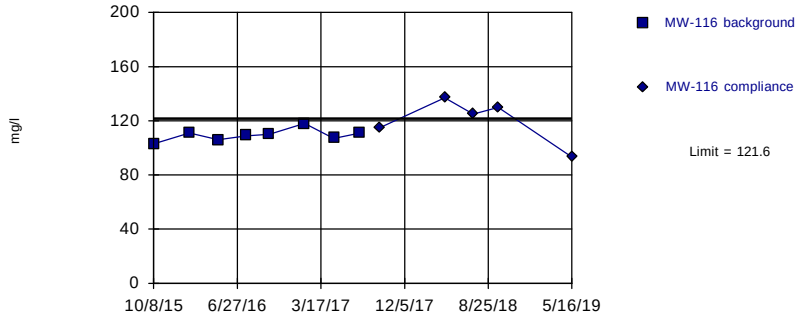
Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

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.

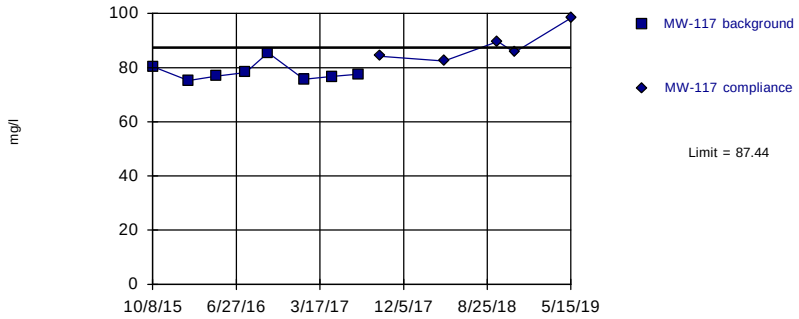
Constituent: Calcium Analysis Run 6/7/2019 11:44 AM View: 2019-1H PL

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. 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 6/14/2019 10:48 AM View: 2019-1H PL

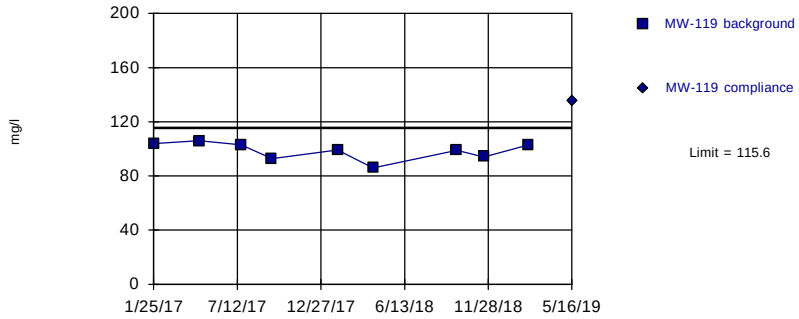
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=98.54, Std. Dev.=6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Calcium Analysis Run 6/14/2019 10:48 AM View: 2019-1H PL

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

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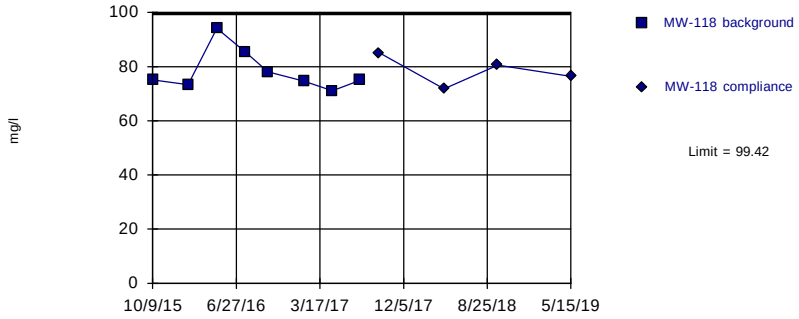
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.35, 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 6/7/2019 11:45 AM View: 2019-1H PL

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

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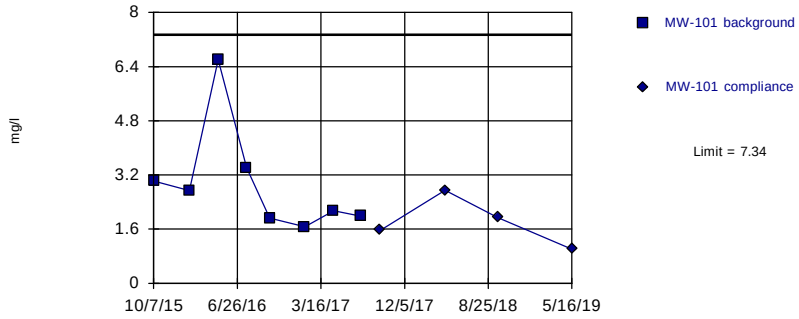
Within Limit

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.

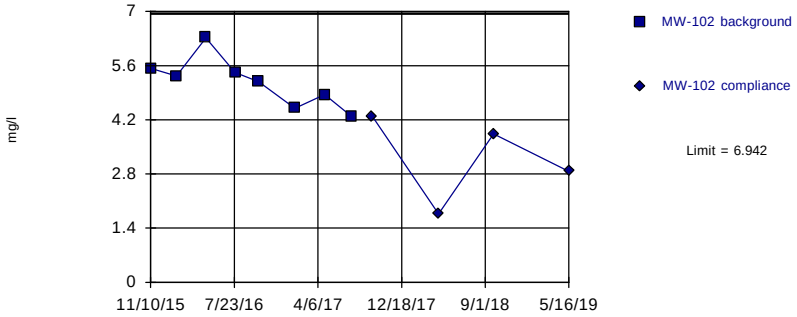
Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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. Seasonality was not detected with 95% confidence. 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.

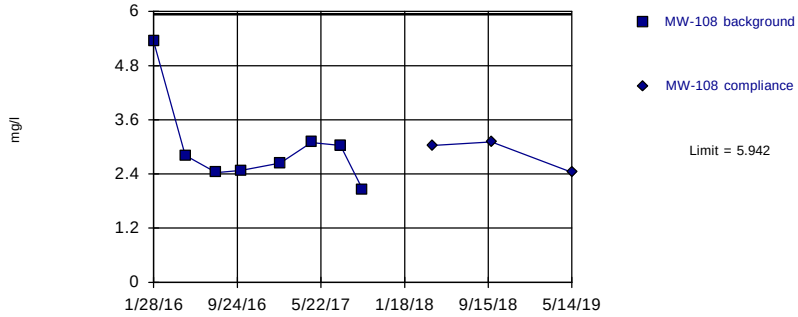
Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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 (based on square root transformation): Mean=1.71, Std. Dev.=0.2644, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7994, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

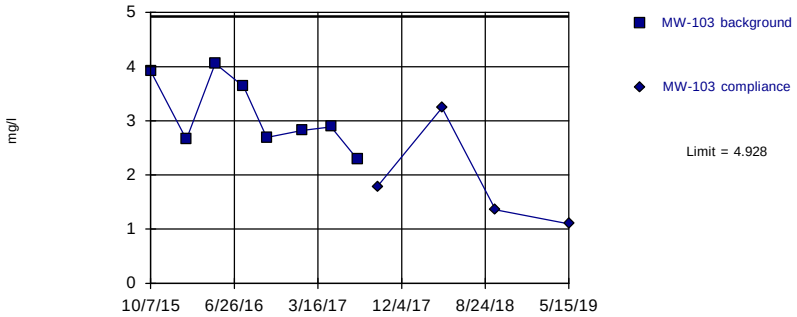
Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=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 6/7/2019 11:45 AM View: 2019-1H PL

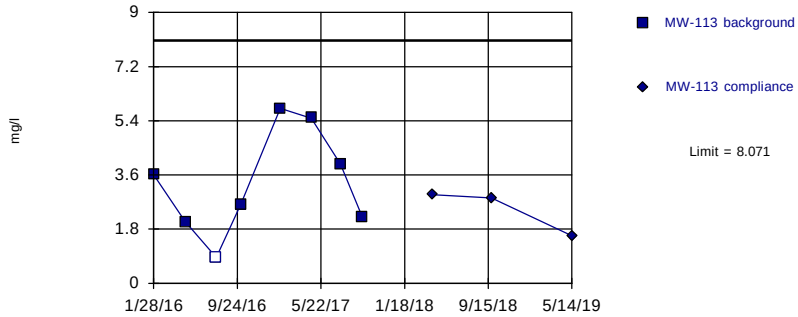
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.325, Std. Dev.=1.725, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

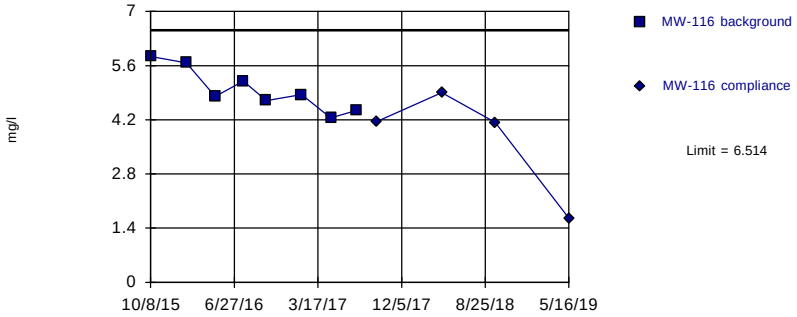
Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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 6/7/2019 11:45 AM View: 2019-1H PL

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

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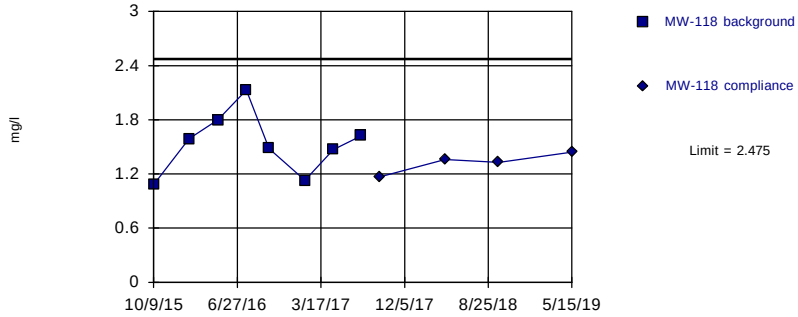
Within Limit

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 6/7/2019 11:45 AM View: 2019-1H PL

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

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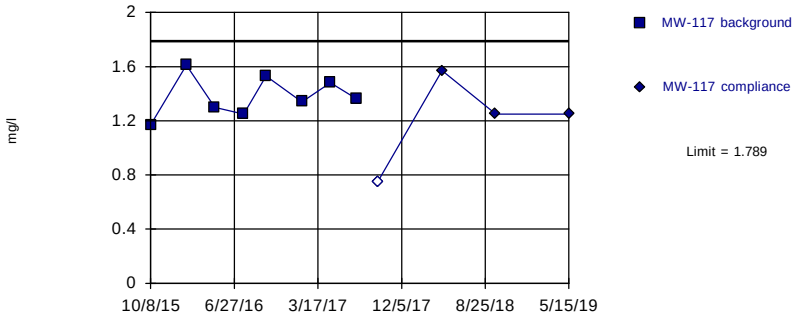
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.38, Std. Dev.=0.1487, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9694, 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 6/7/2019 11:45 AM View: 2019-1H PL

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

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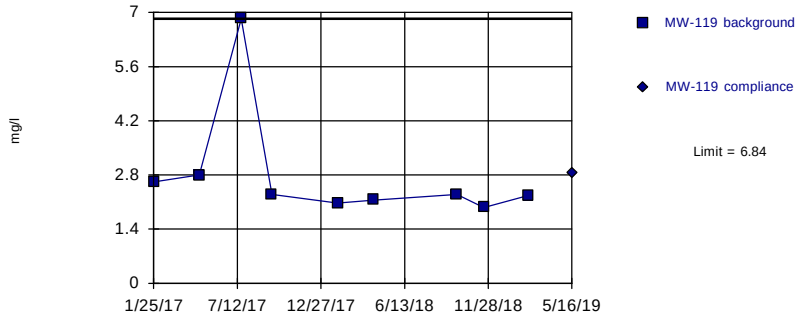
Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 9 background values. Well-constituent pair annual alpha = 0.03586. Individual comparison alpha = 0.01809 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

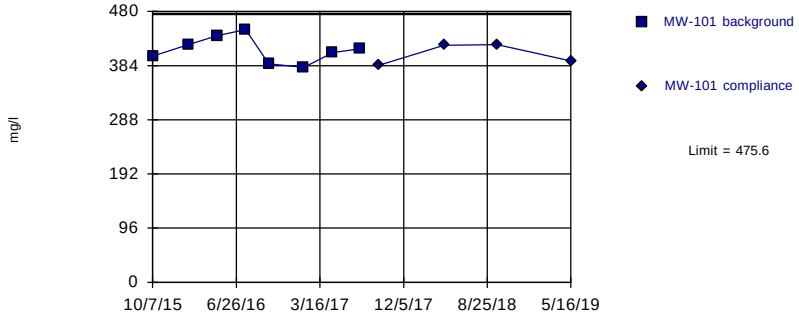
Constituent: Chloride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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 6/7/2019 11:45 AM View: 2019-1H PL

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

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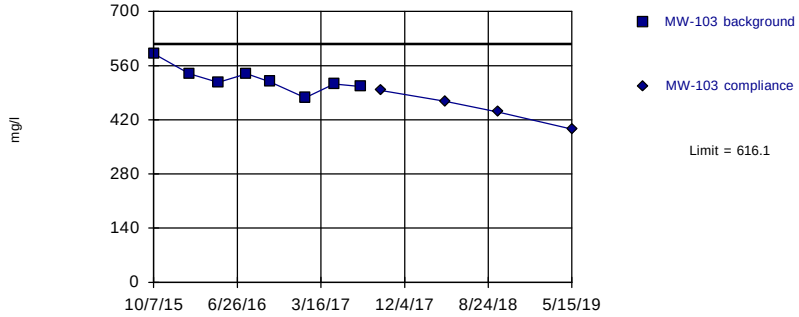
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=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 6/7/2019 11:45 AM View: 2019-1H PL

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

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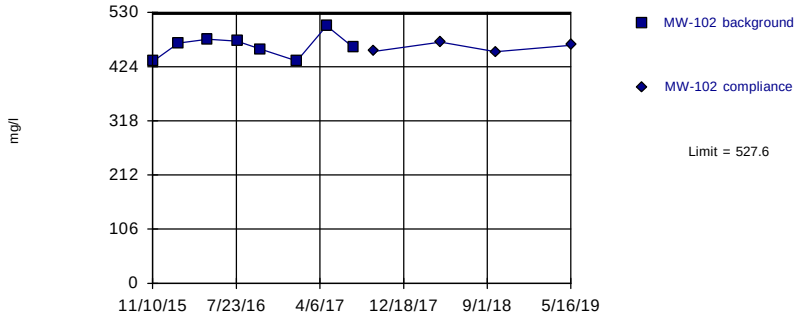
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=464.3, Std. Dev.=23.04, n=8. Seasonality was not detected with 95% confidence. 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 6/7/2019 11:45 AM View: 2019-1H PL

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

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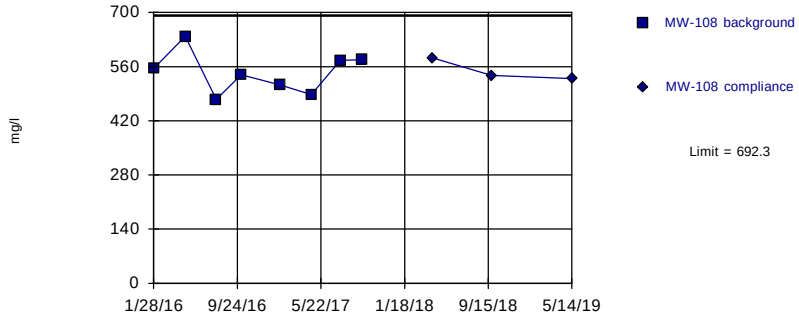
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=545.3, Std. Dev.=53.46, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9657, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

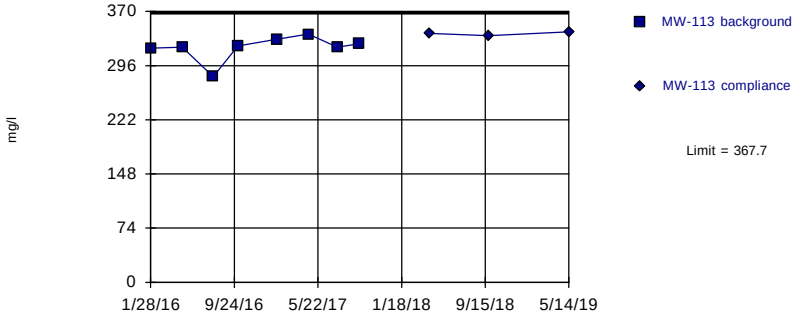
Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=320.4, Std. Dev.=17.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7677, 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 6/7/2019 11:45 AM View: 2019-1H PL

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

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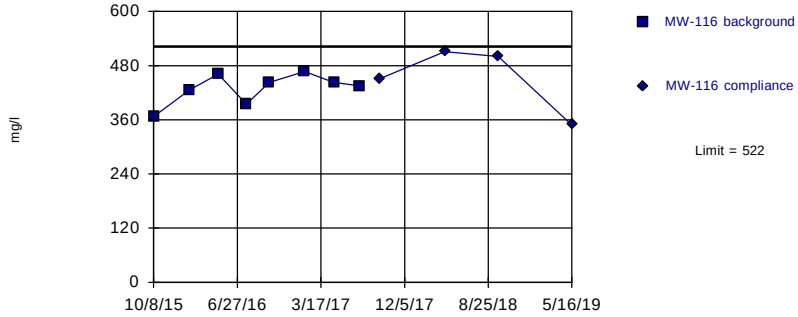
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=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 6/7/2019 11:45 AM View: 2019-1H PL

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

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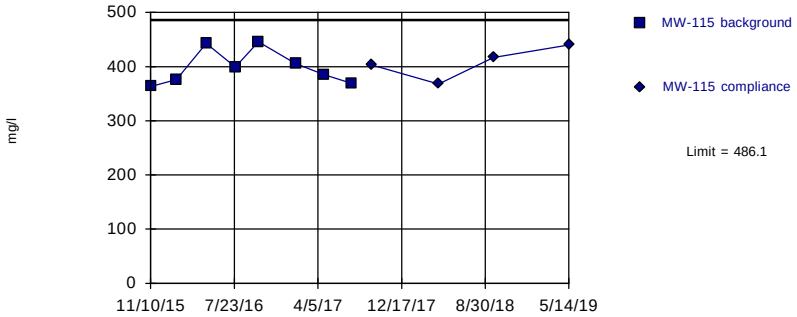
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=398.4, Std. Dev.=31.87, n=8. Seasonality was not detected with 95% confidence. 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 6/7/2019 11:45 AM View: 2019-1H PL

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

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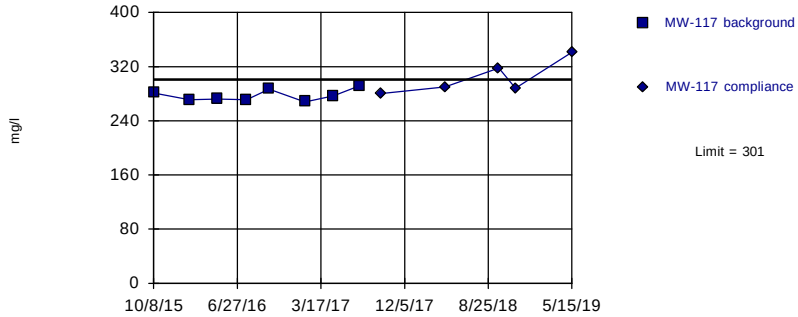
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. 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.

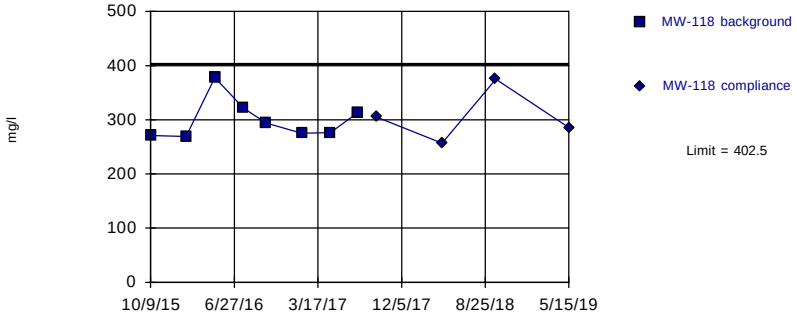
Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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 6/7/2019 11:45 AM View: 2019-1H PL

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

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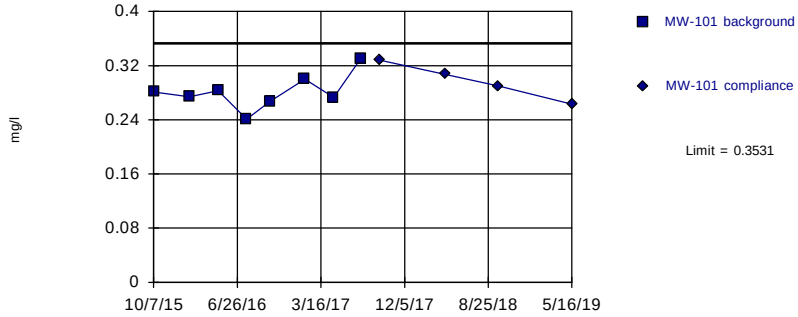
Within Limit

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 6/7/2019 11:45 AM View: 2019-1H PL

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

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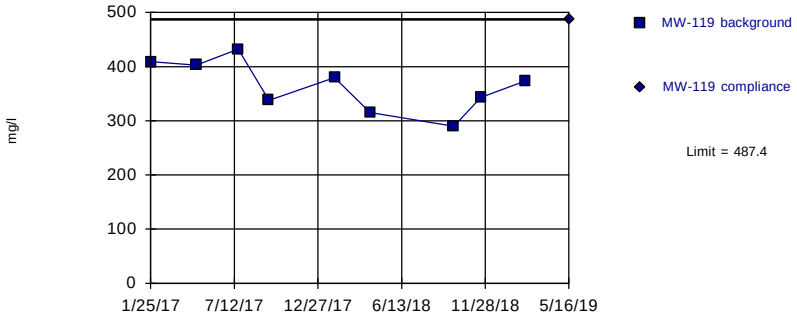
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=364.9, Std. Dev.=46.79, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9717, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Dissolved Solids Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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

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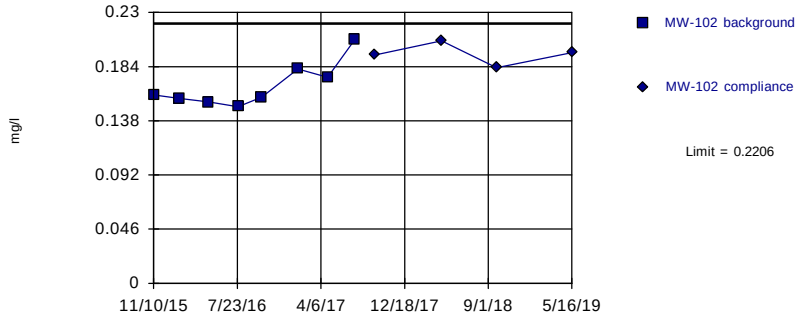
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1679, Std. Dev.=0.01916, n=8. Seasonality was not detected with 95% confidence. 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.

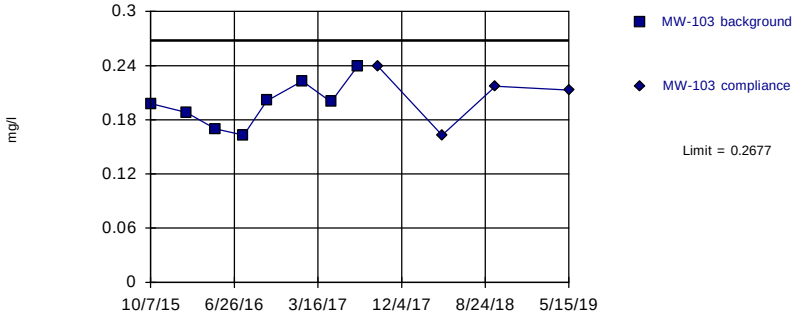
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=0.1979, 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 6/7/2019 11:45 AM View: 2019-1H PL

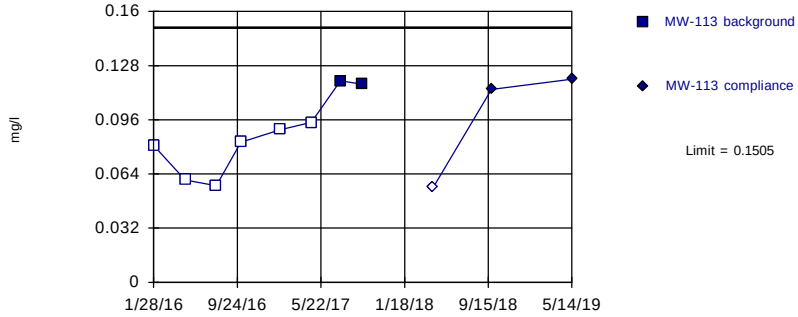
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.08768, Std. Dev.=0.02283, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9287, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

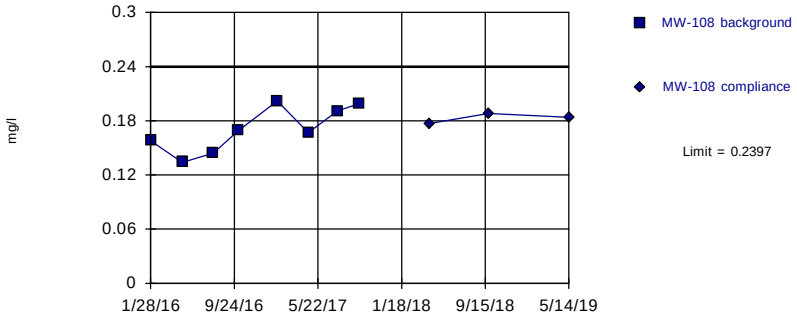
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=0.1705, Std. Dev.=0.02516, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9368, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

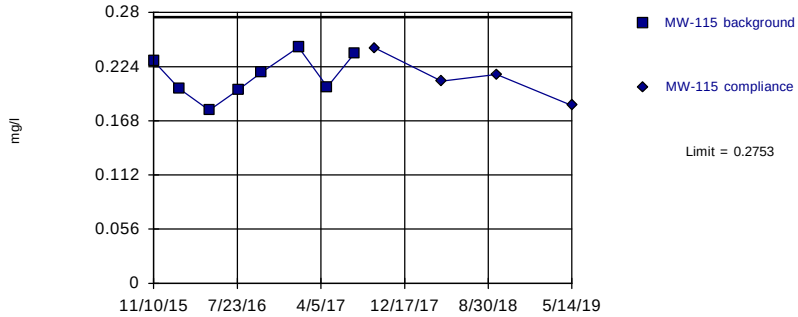
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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. Seasonality was not detected with 95% confidence. 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.

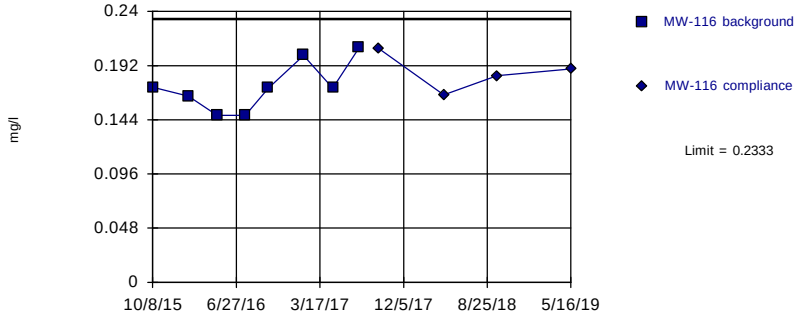
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=0.1734, 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.

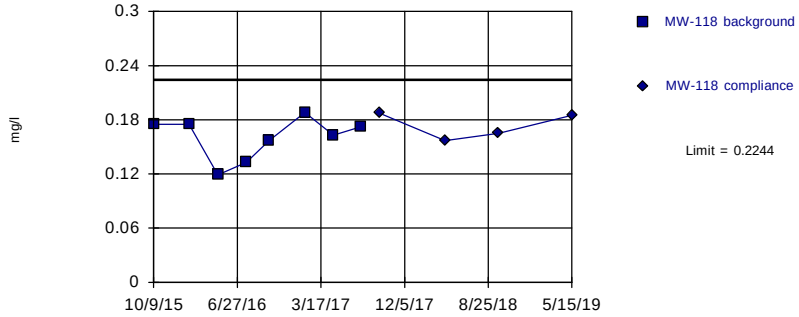
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=0.1603, 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 6/7/2019 11:45 AM View: 2019-1H PL

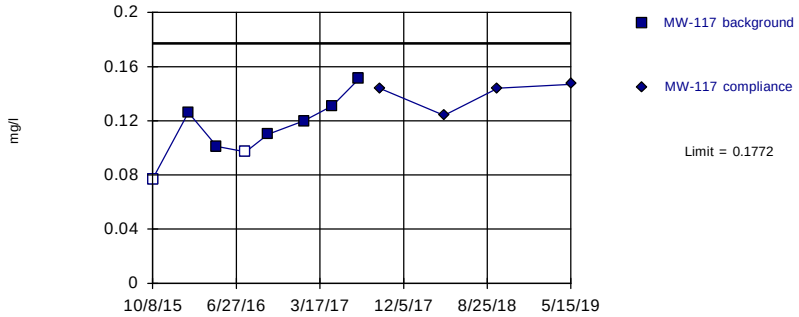
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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.

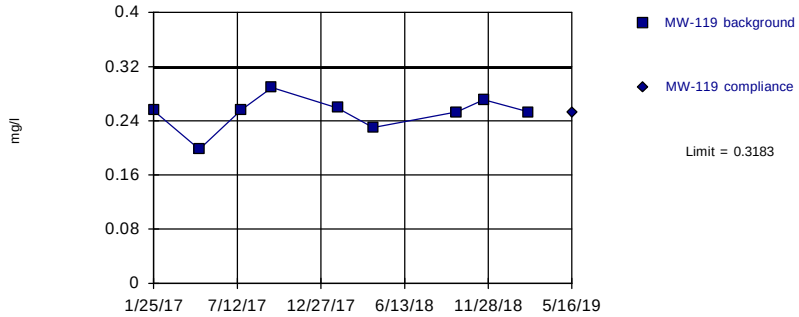
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=0.2516, Std. Dev.=0.02551, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8977, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

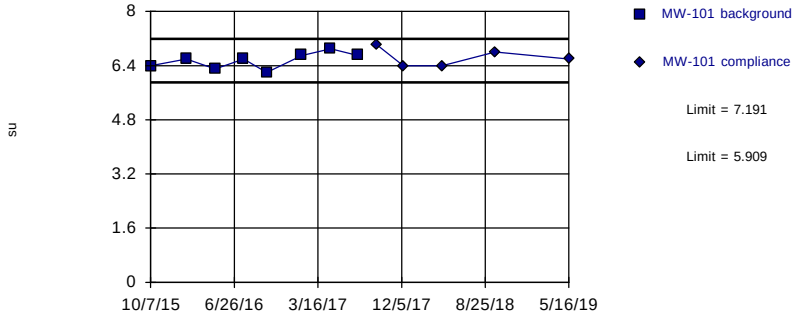
Constituent: Fluoride Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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. Seasonality was not detected with 95% confidence. 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 6/12/2019 4:24 PM View: 2019-1H PL

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

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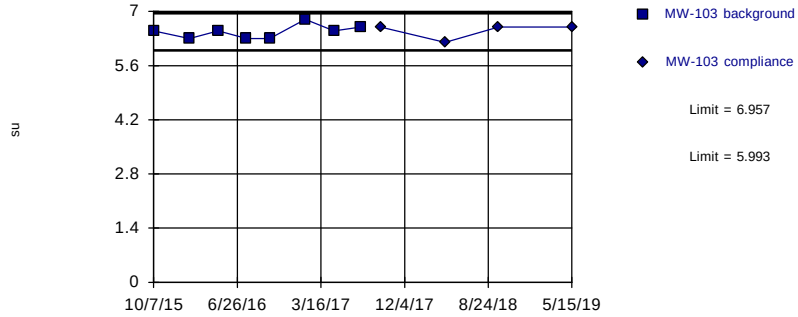
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.475, Std. Dev.=0.1753, 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 6/12/2019 4:24 PM View: 2019-1H PL

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

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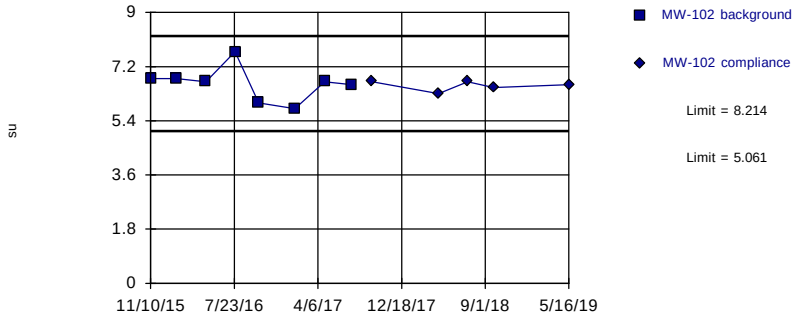
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.638, Std. Dev.=0.5731, n=8. Seasonality was not detected with 95% confidence. 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 6/12/2019 4:24 PM View: 2019-1H PL

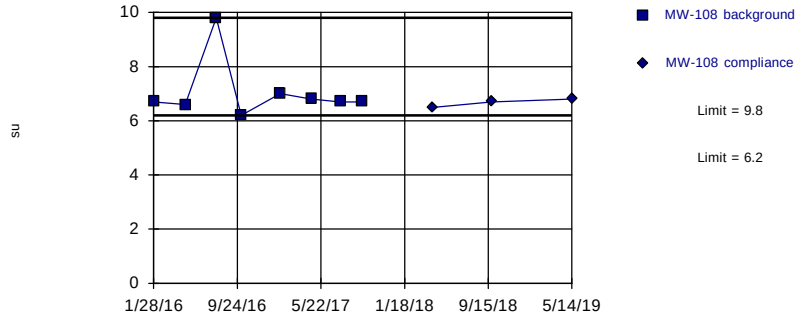
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

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.

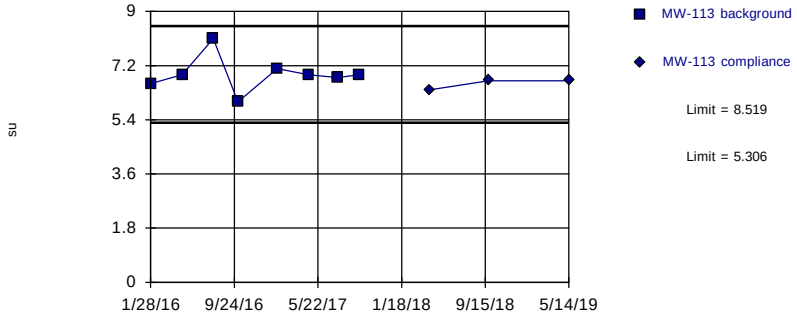
Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

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=6.913, Std. Dev.=0.5842, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.876, 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 6/12/2019 4:24 PM View: 2019-1H PL

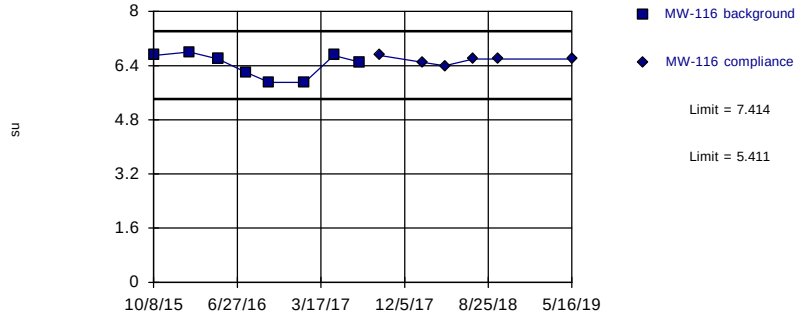
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.413, Std. Dev.=0.3643, n=8. Seasonality was not detected with 95% confidence. 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 6/12/2019 4:24 PM View: 2019-1H PL

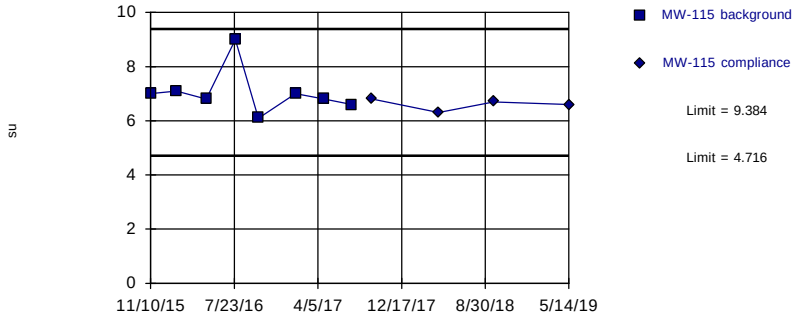
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.05, Std. Dev.=0.8485, n=8. Seasonality was not detected with 95% confidence. 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 6/12/2019 4:24 PM View: 2019-1H PL

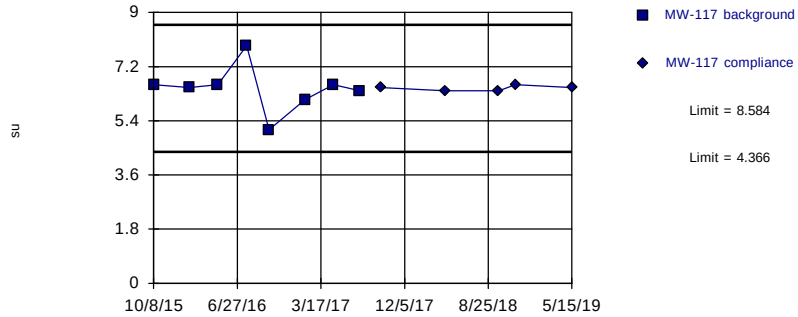
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.475, Std. Dev.=0.7667, n=8. Seasonality was not detected with 95% confidence. 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.

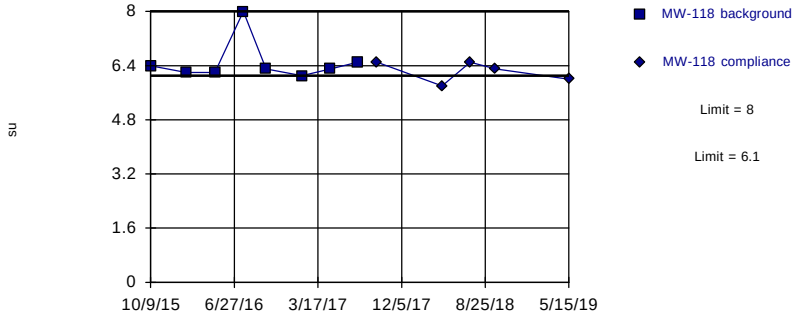
Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

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

Exceeds 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.

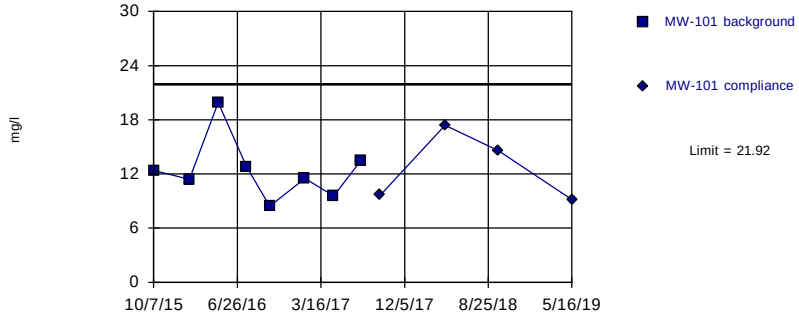
Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

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.

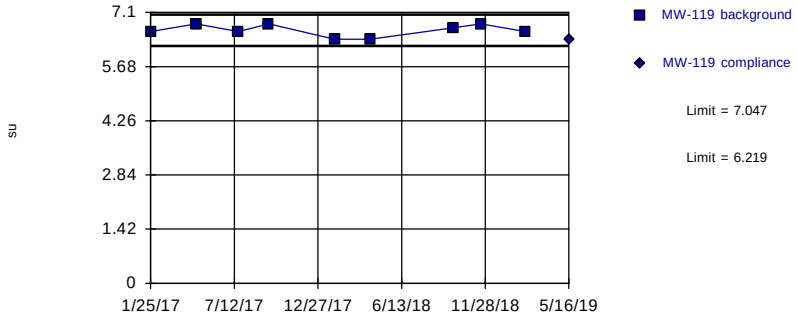
Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=6.633, Std. Dev.=0.1581, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8581, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

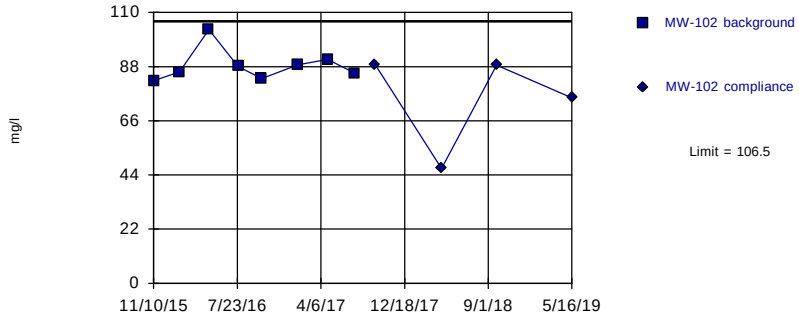
Constituent: pH Analysis Run 6/12/2019 4:24 PM View: 2019-1H PL

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. Seasonality was not detected with 95% confidence. 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.

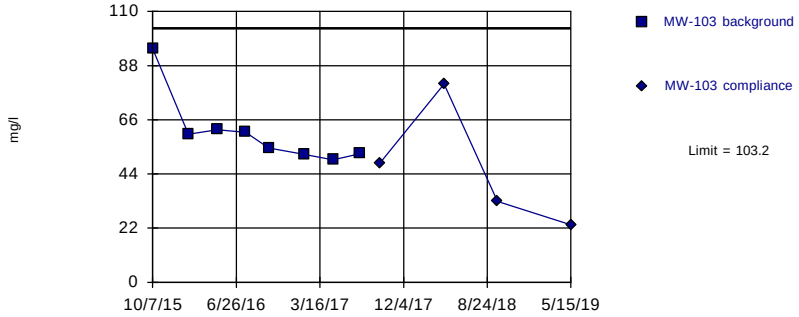
Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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 (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 6/7/2019 11:45 AM View: 2019-1H PL

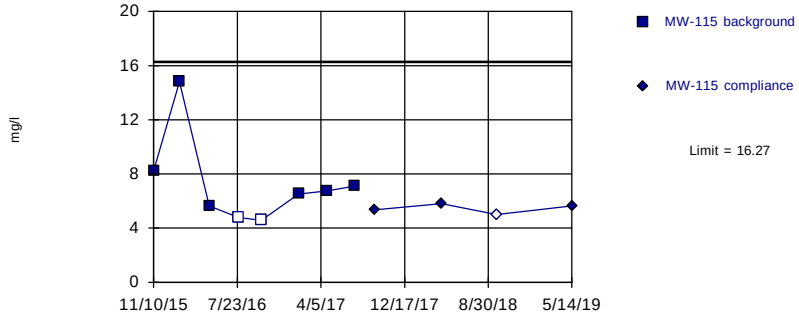
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.301, Std. Dev.=3.262, n=8. Seasonality was not detected with 95% confidence. 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.

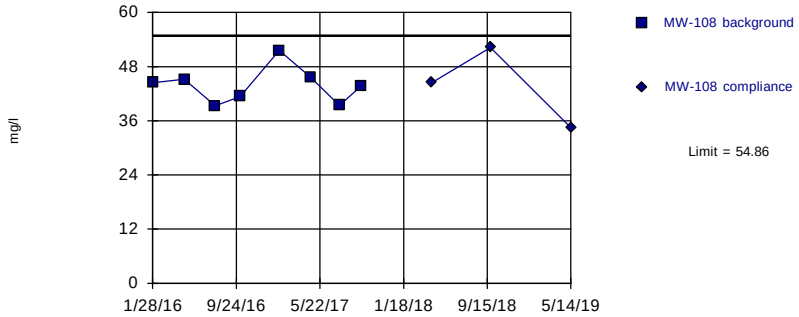
Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=43.85, Std. Dev.=4.002, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9158, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

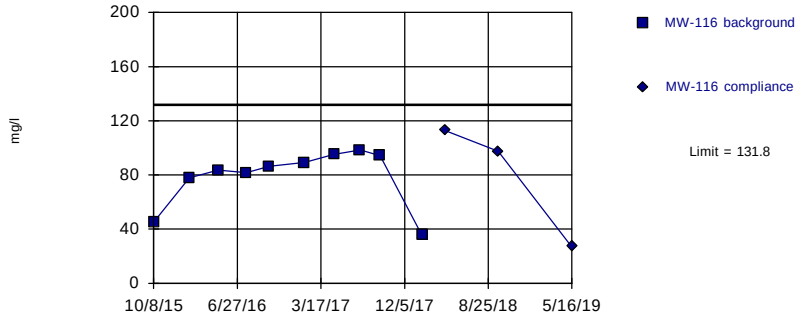
Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=78.74, Std. Dev.=21.34, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7947, critical = 0.781. Kappa = 2.485 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

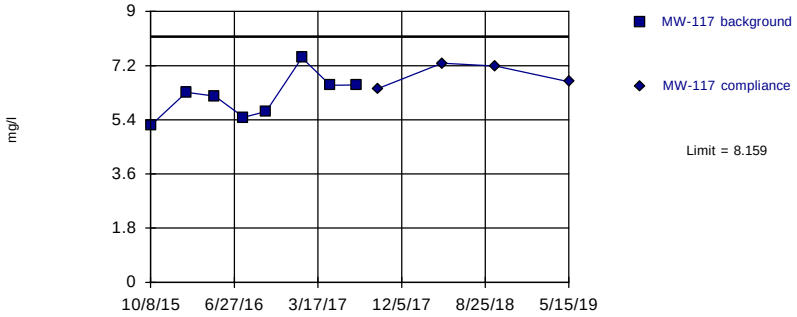
Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

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=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 6/7/2019 11:45 AM View: 2019-1H PL

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

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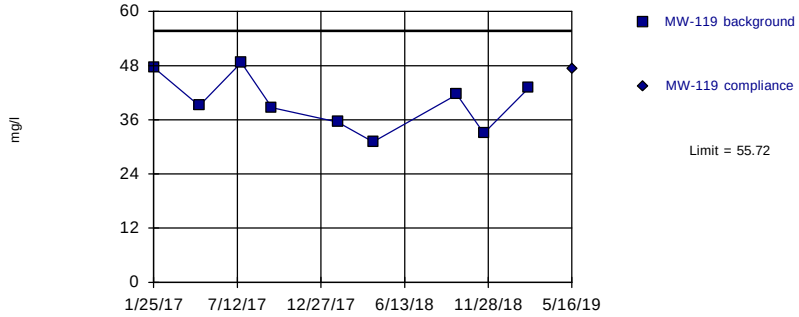
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=39.81, Std. Dev.=6.079, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.961, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

Constituent: Sulfate Analysis Run 6/7/2019 11:45 AM View: 2019-1H PL

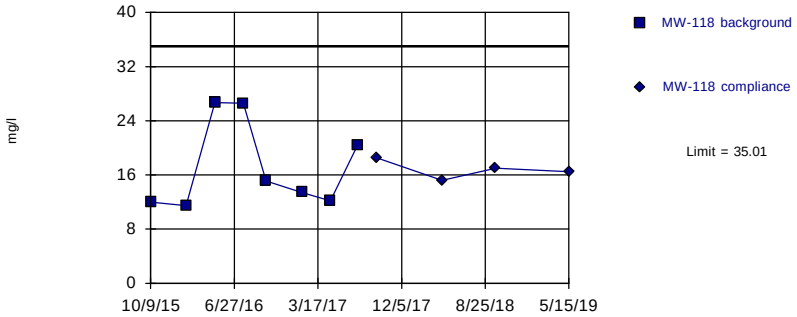
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.14 Sanitas software licensed to FTN Associates. UG

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 6/7/2019 11:45 AM View: 2019-1H PL

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

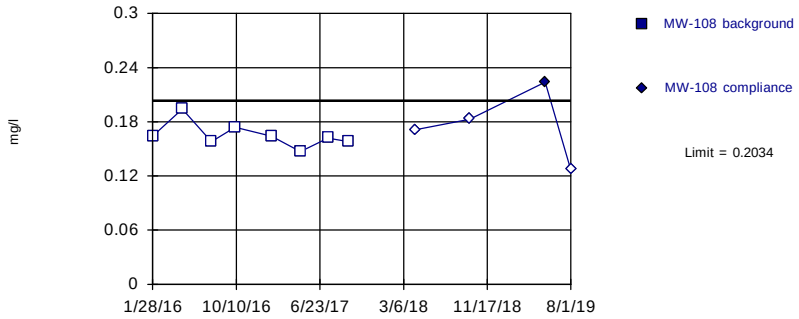
Prediction Limits, First Half 2019 Verification Sampling

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1651, Std. Dev.=0.01391, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8869, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

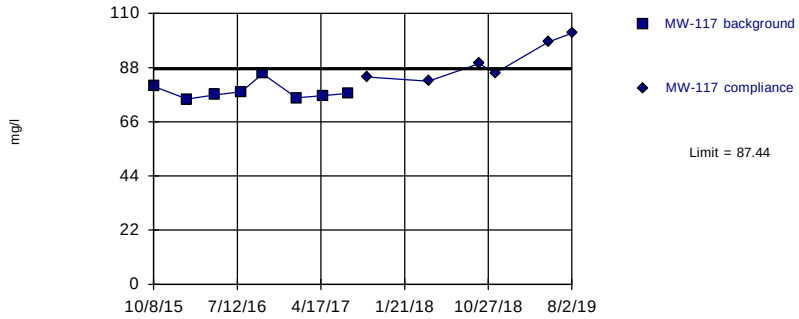
Constituent: Boron Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. 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.

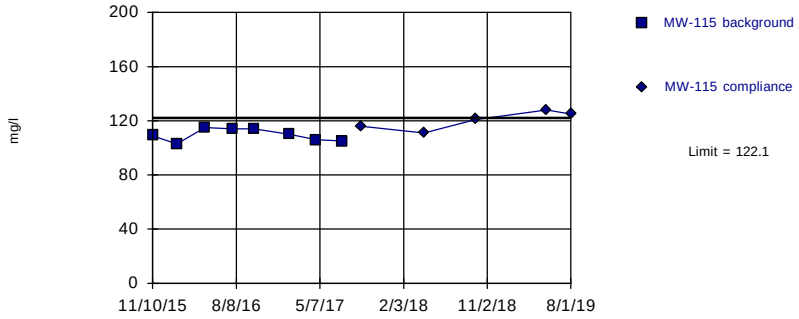
Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. 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.

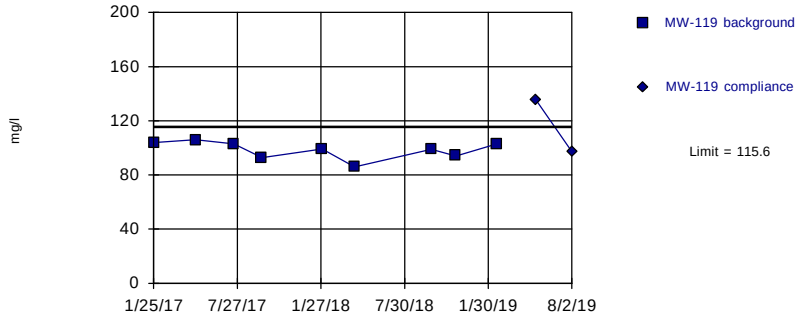
Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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=98.54, Std. Dev.=6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

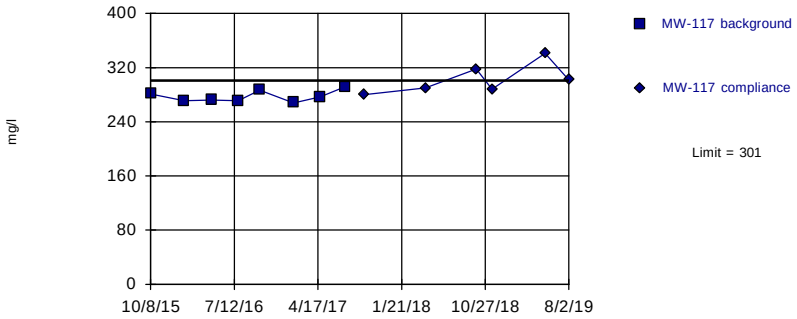
Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. 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.

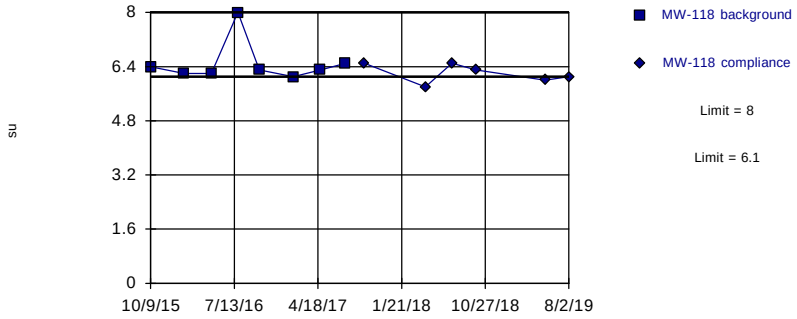
Constituent: Dissolved Solids Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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 8/14/2019 11:51 AM View: 2019-1H Verification

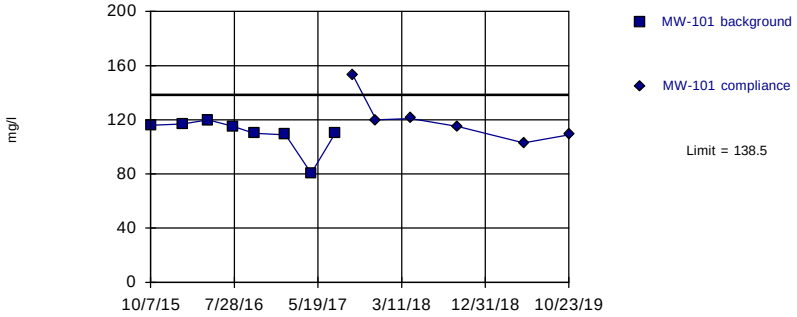
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Prediction Limits, Second Half 2019

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square transformation): Mean=12166, Std. Dev.=2464, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7547, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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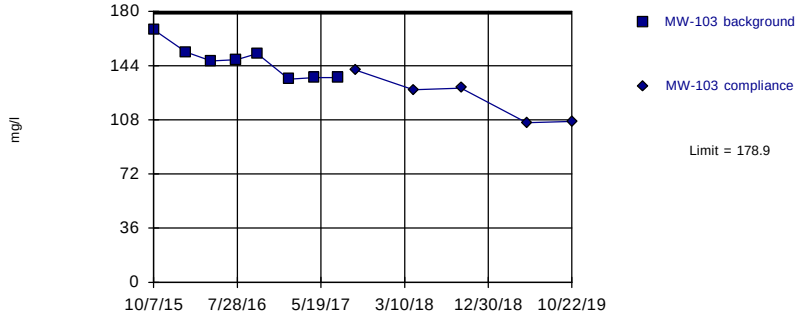
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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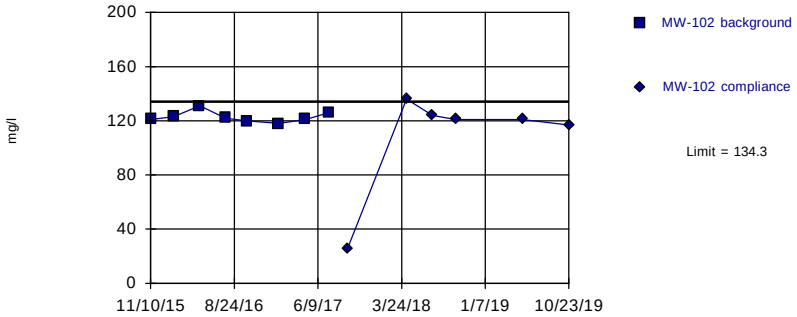
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=122.8, Std. Dev.=4.062, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8956, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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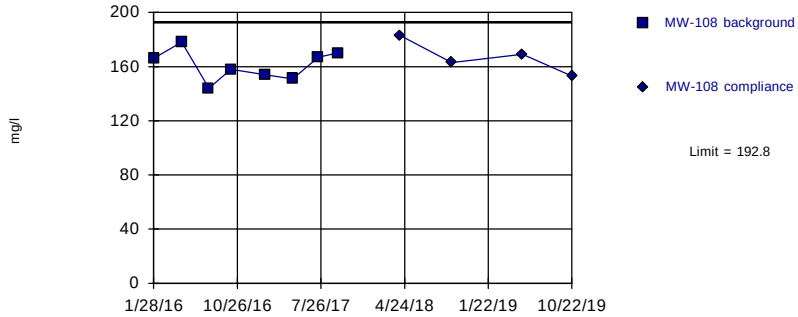
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=161, Std. Dev.=11.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.978, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

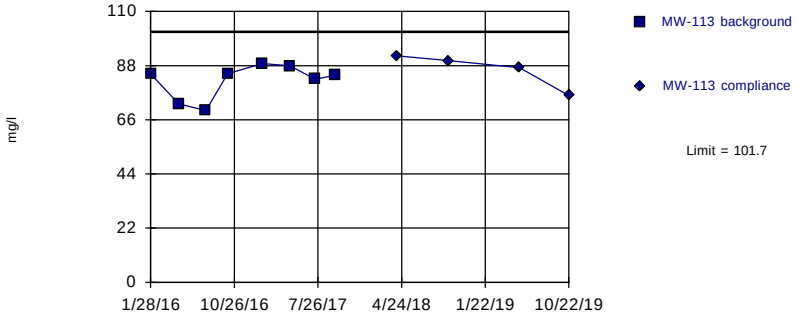
Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=81.89, Std. Dev.=6.976, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8334, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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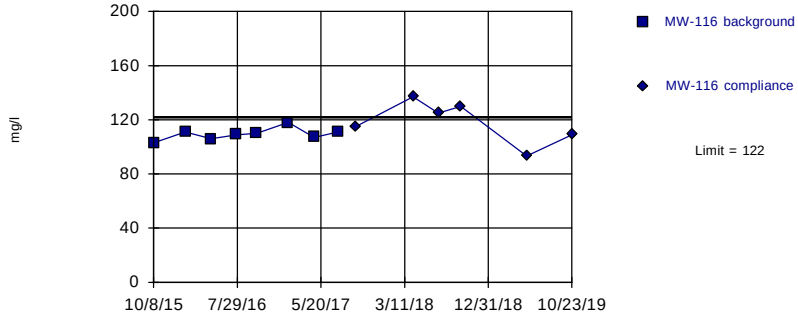
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=109.4, 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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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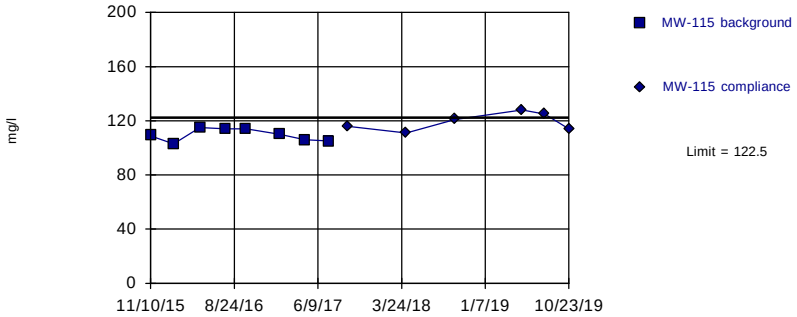
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9154, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

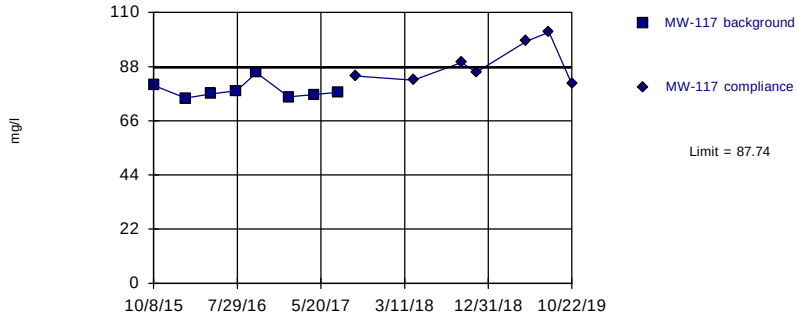
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8288, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

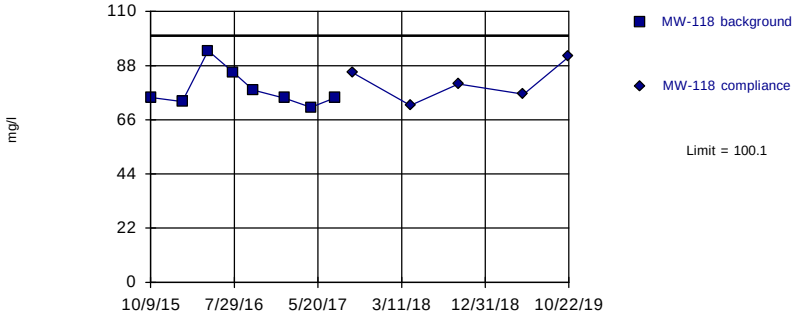
Constituent: Calcium Analysis Run 11/18/2019 11:24 AM View: 2019-2H PL

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

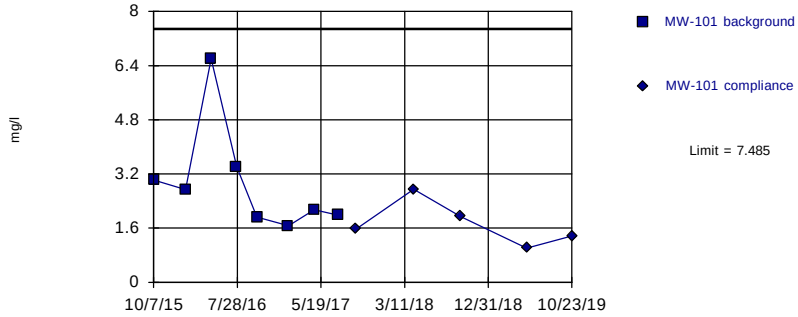
Constituent: Calcium Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

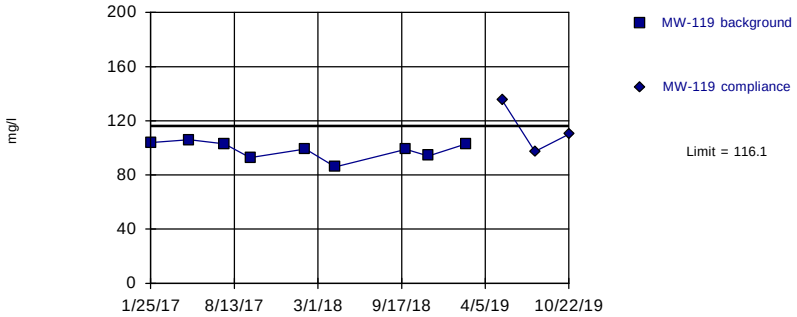
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=98.54, Std. Dev.=6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

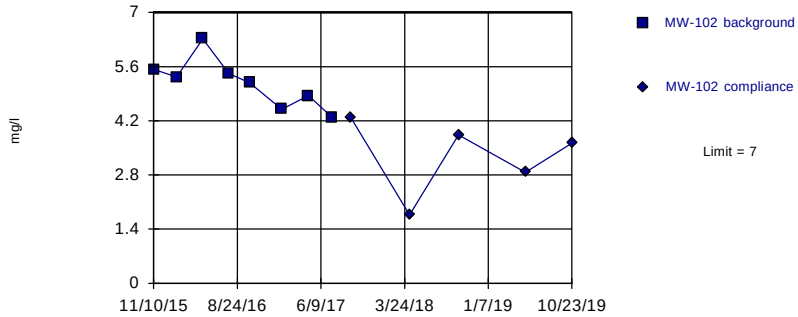
Constituent: Calcium Analysis Run 11/18/2019 11:24 AM View: 2019-2H PL

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. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9652, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

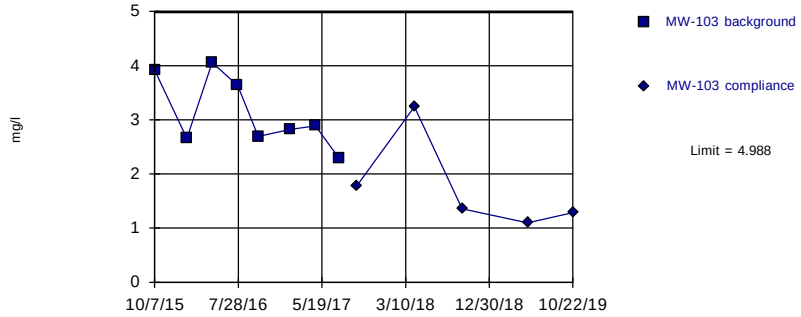
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

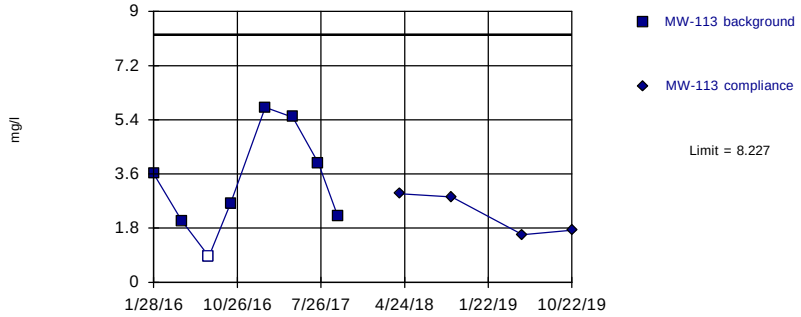
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=3.325, Std. Dev.=1.725, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

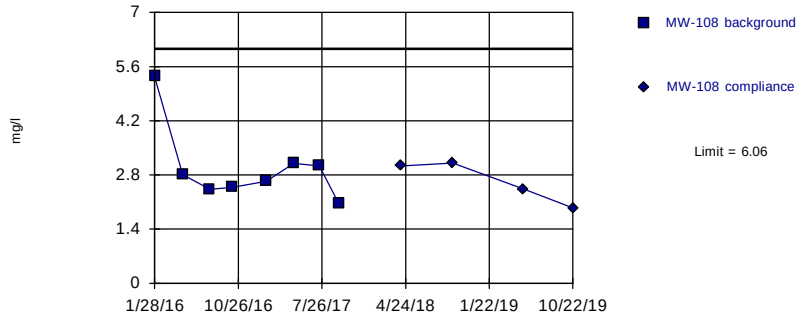
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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 (based on square root transformation): Mean=1.71, Std. Dev.=0.2644, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7994, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

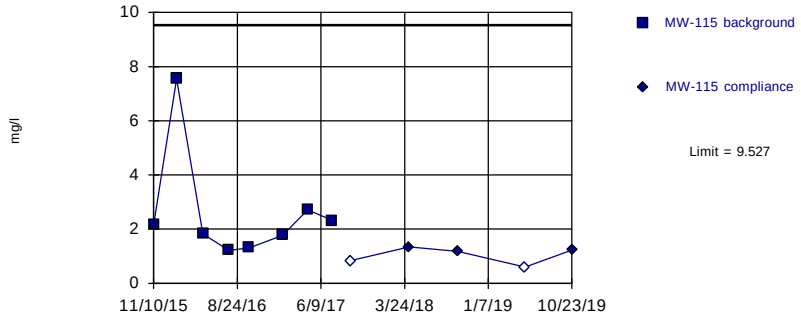
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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 (based on cube root transformation): Mean=1.32, Std. Dev.=0.2814, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7839, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

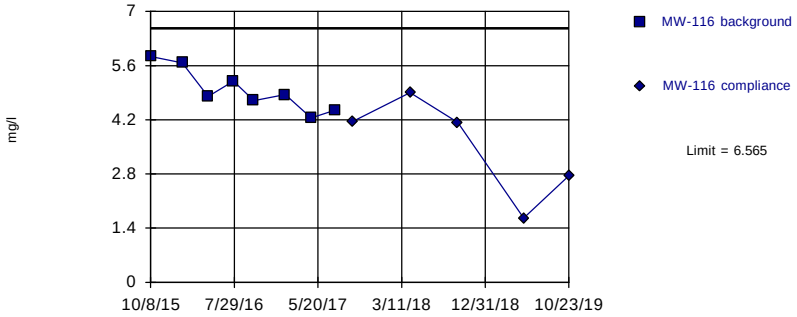
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

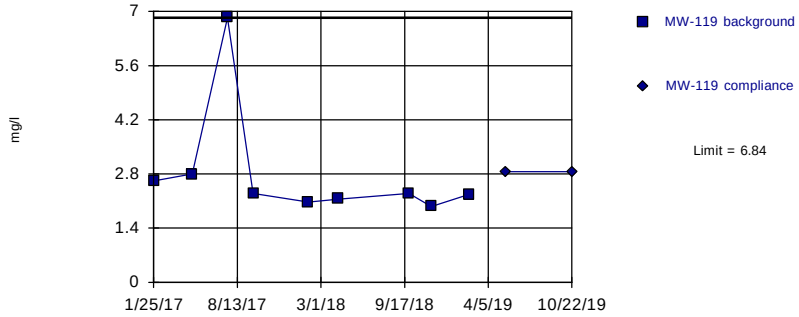
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 9 background values. Well-constituent pair annual alpha = 0.03586. Individual comparison alpha = 0.01809 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

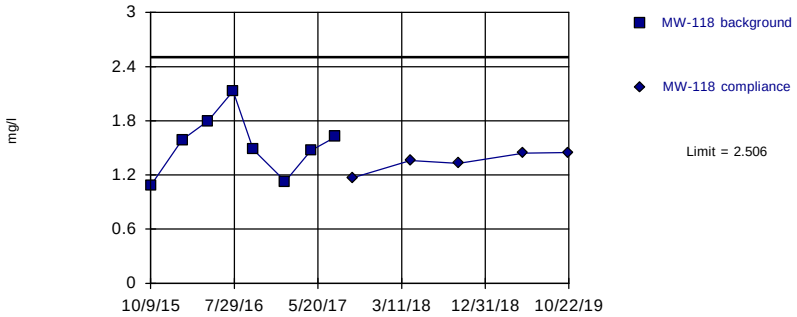
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

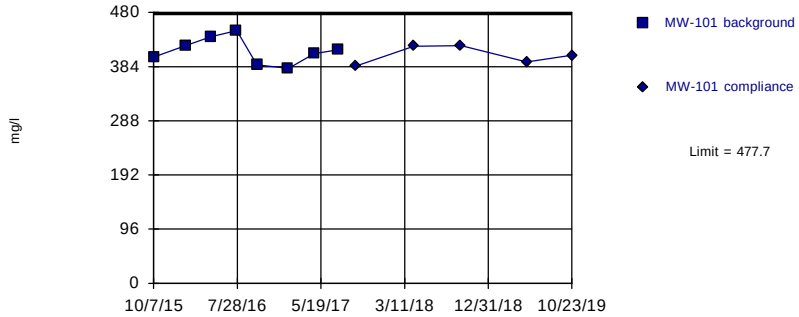
Constituent: Chloride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

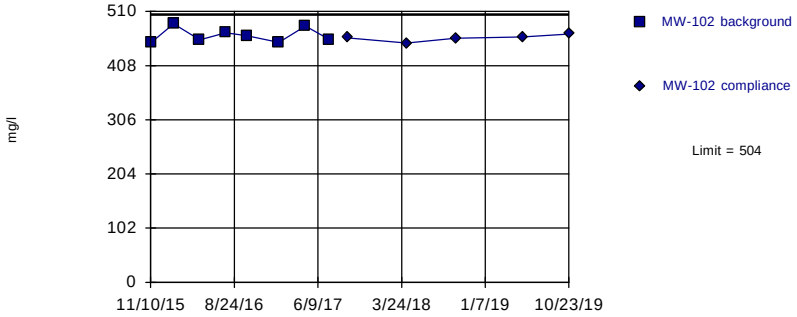
Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=465, Std. Dev.=13.72, n=8. Seasonality was detected with 95% confidence and data were deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8927, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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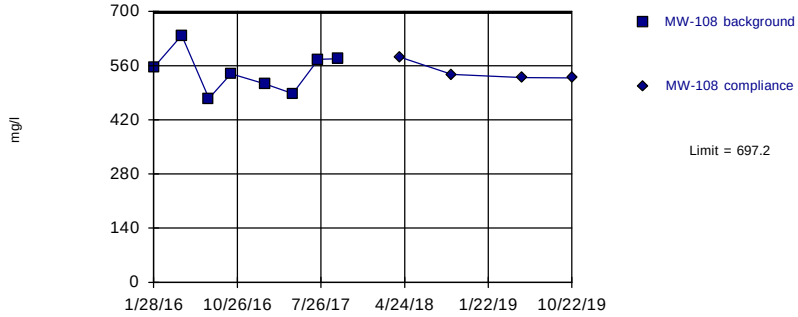
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=545.3, Std. Dev.=53.46, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9657, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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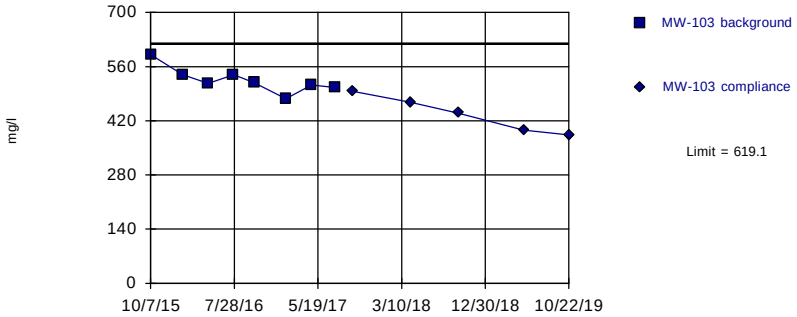
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

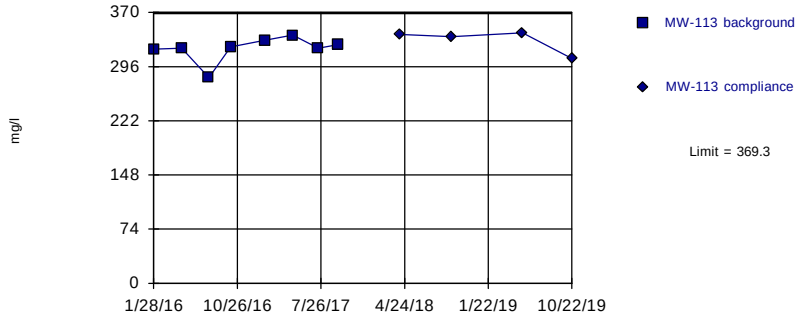
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=320.4, Std. Dev.=17.2, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7677, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

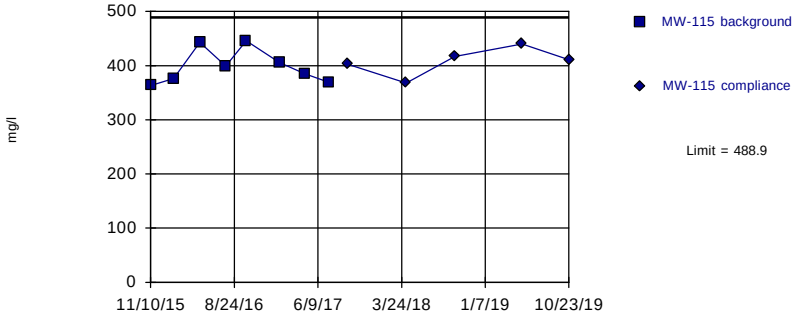
Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=398.4, Std. Dev.=31.87, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8923, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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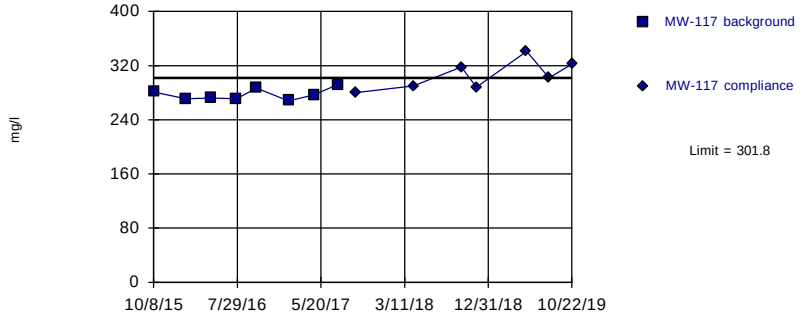
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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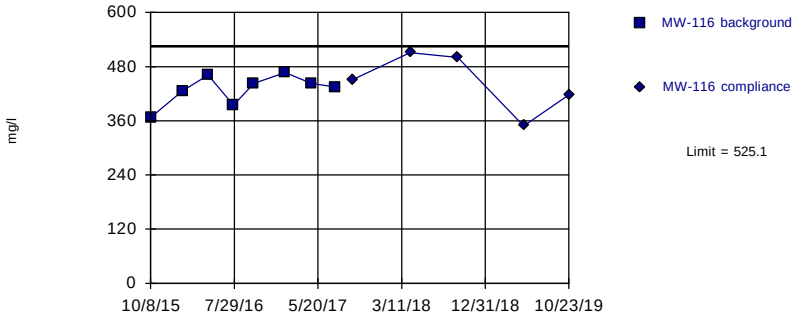
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

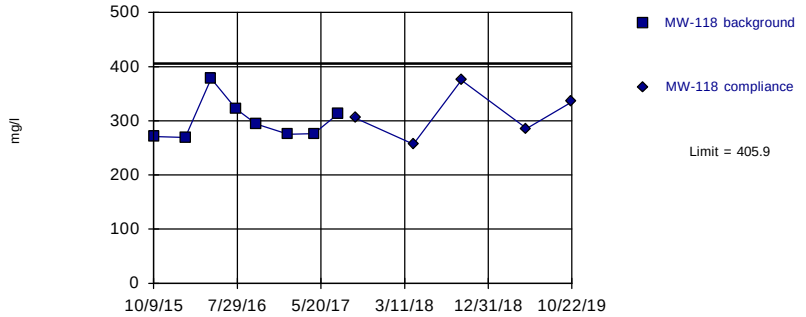
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

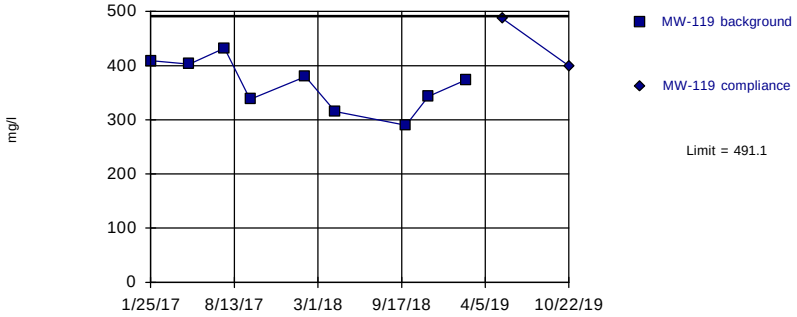
Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=364.9, Std. Dev.=46.79, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9717, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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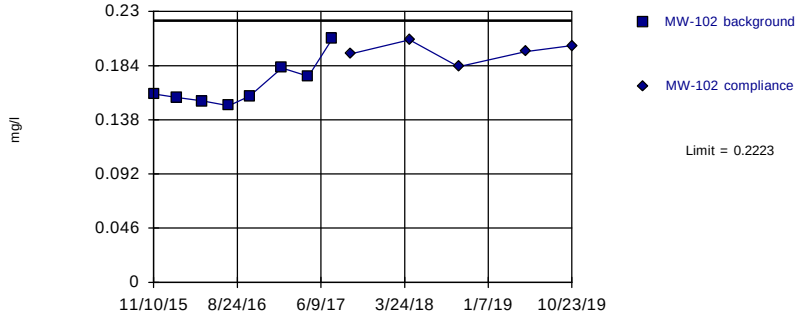
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1679, Std. Dev.=0.01916, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8449, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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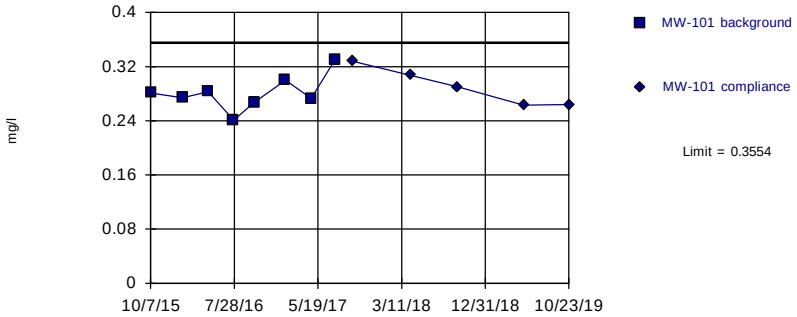
Within Limit

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

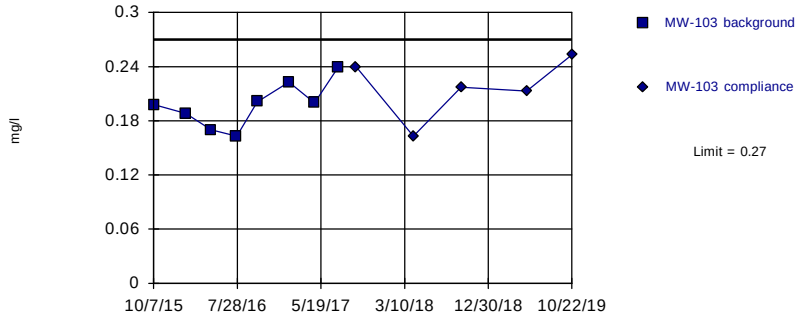
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

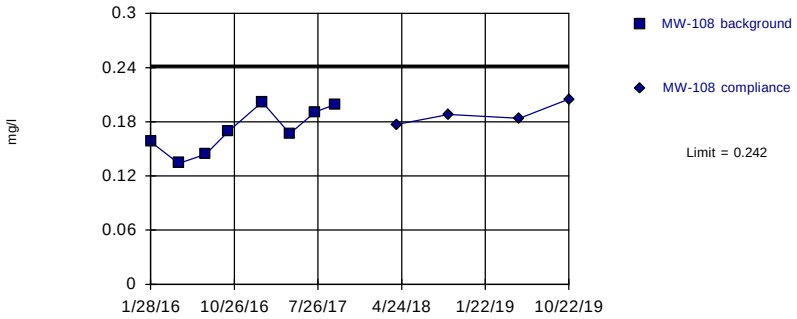
Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=0.1705, Std. Dev.=0.02516, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9368, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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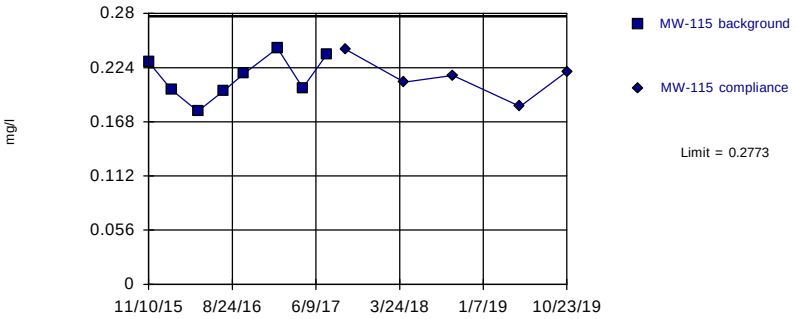
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2141, Std. Dev.=0.02223, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9478, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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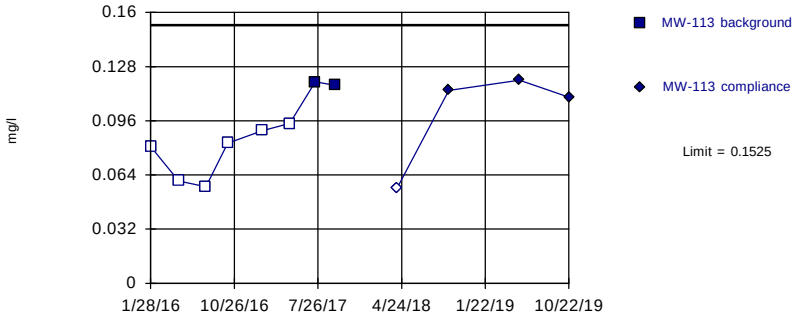
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.08768, Std. Dev.=0.02283, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9287, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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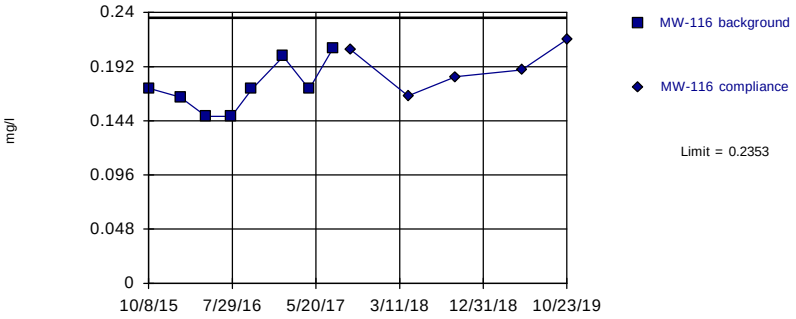
Within Limit

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

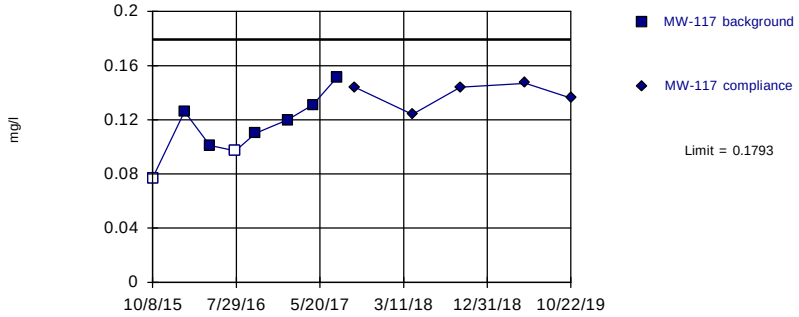
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

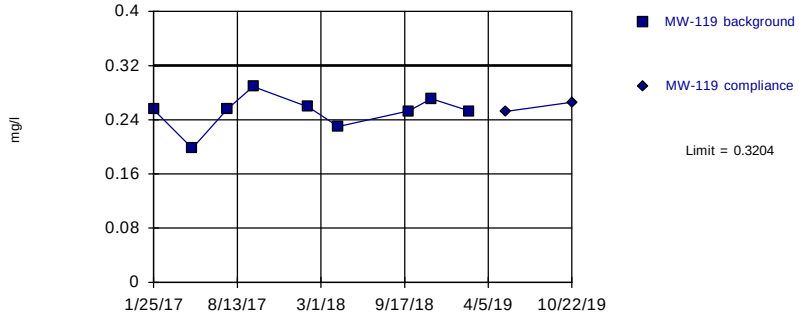
Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=0.2516, Std. Dev.=0.02551, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8977, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

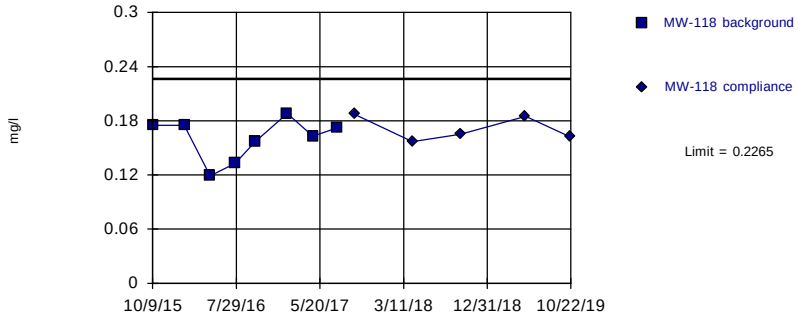
Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=0.1603, 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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

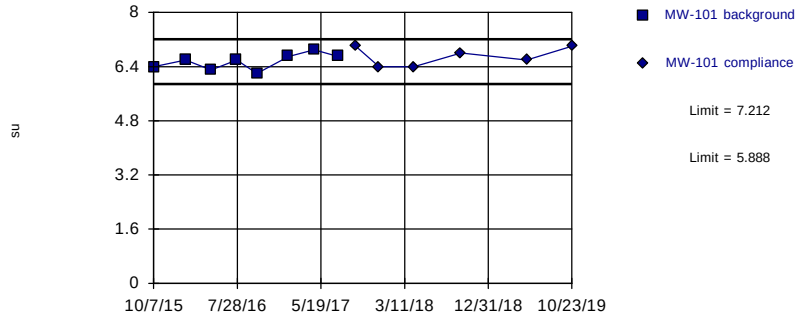
Constituent: Fluoride Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9552, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

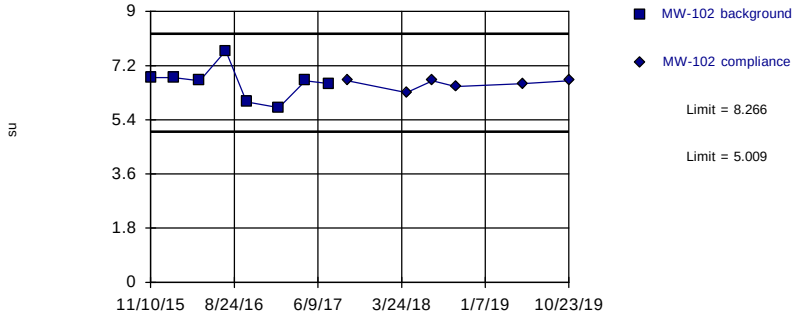
Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=6.638, Std. Dev.=0.5731, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8994, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

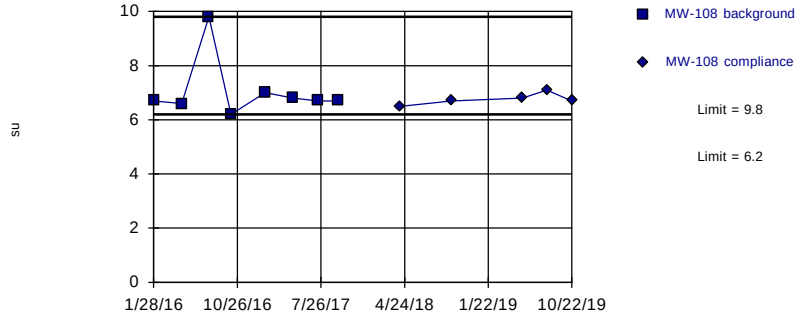
Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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.

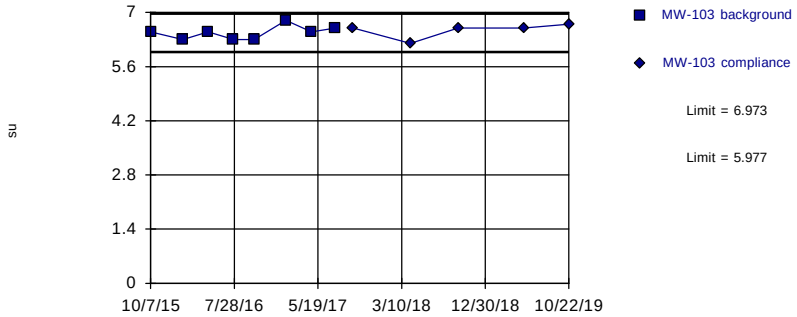
Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

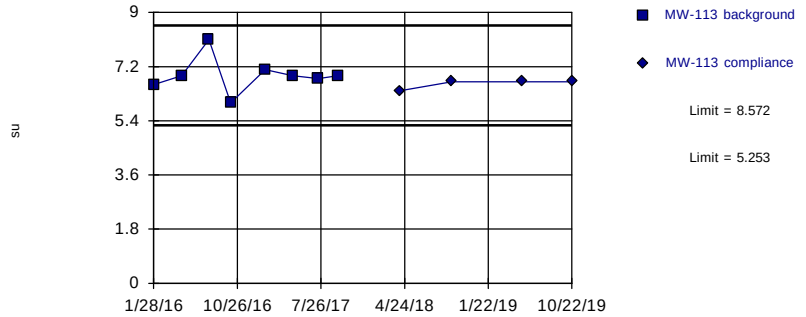
Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=6.913, Std. Dev.=0.5842, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.876, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

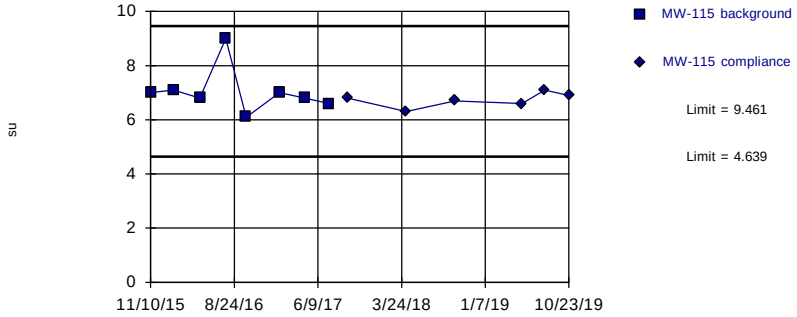
Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=7.05, Std. Dev.=0.8485, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7617, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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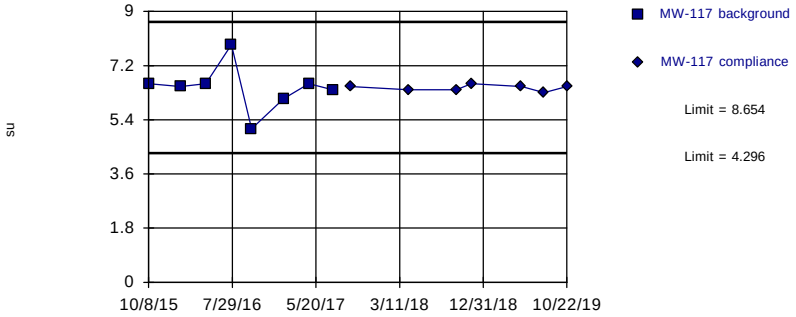
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.475, Std. Dev.=0.7667, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.871, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

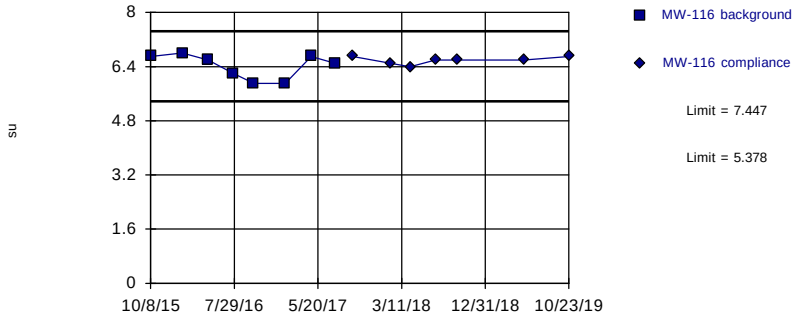
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.413, Std. Dev.=0.3643, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8539, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

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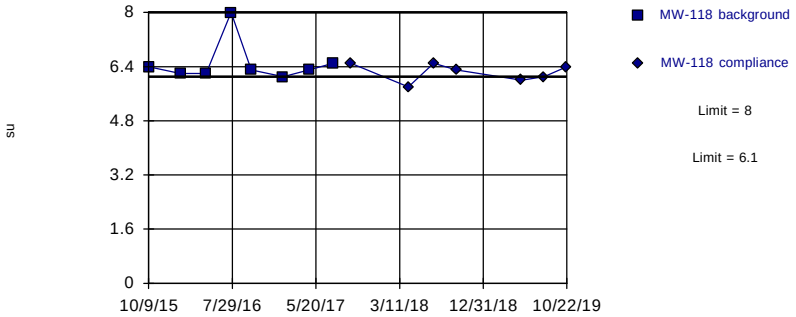
Within Limits

Prediction Limit

Intrawell 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.

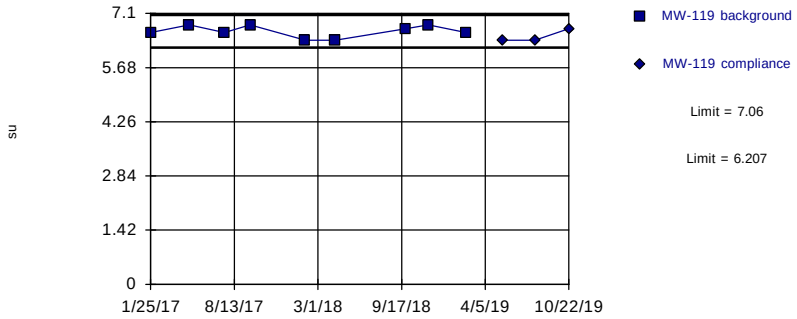
Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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=6.633, Std. Dev.=0.1581, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8581, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

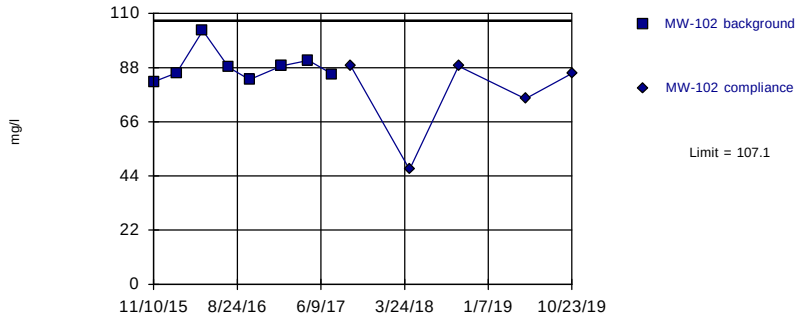
Constituent: pH Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8238, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

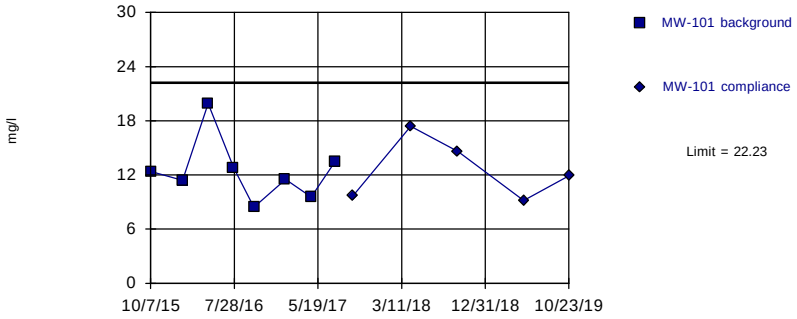
Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

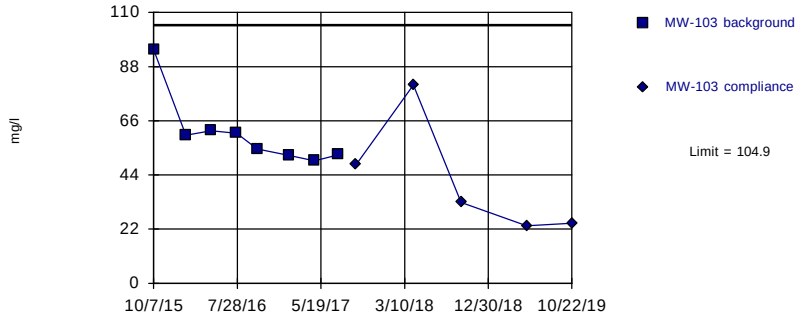
Constituent: Sulfate Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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 (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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

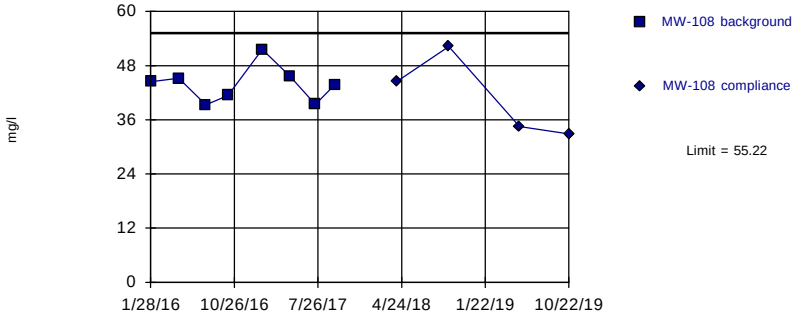
Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

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=43.85, Std. Dev.=4.002, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9158, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

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

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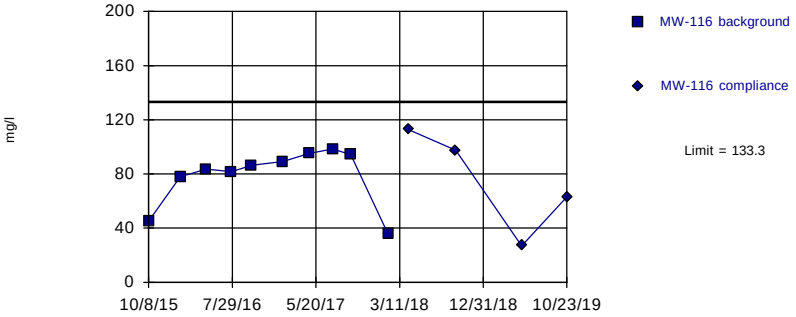
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.74, Std. Dev.=21.34, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7947, critical = 0.781. Kappa = 2.555 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

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

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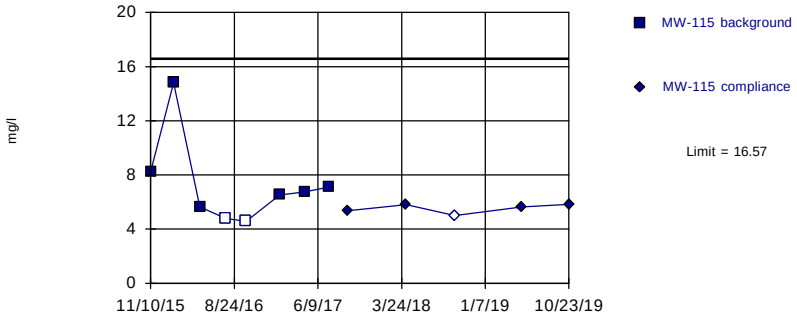
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.301, Std. Dev.=3.262, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7624, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

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

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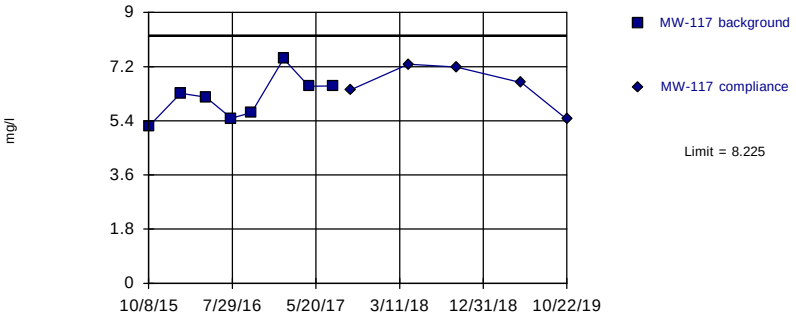
Within Limit

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

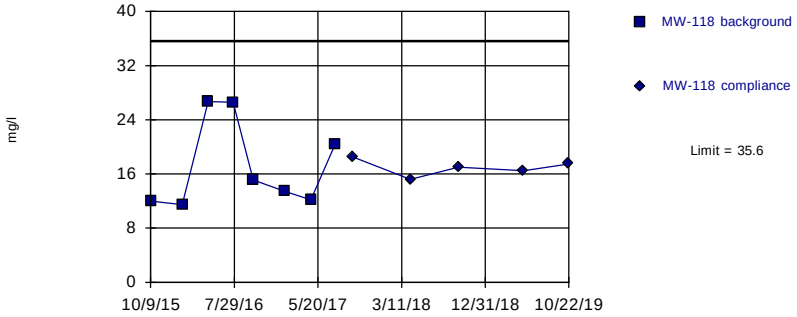
Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

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 = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

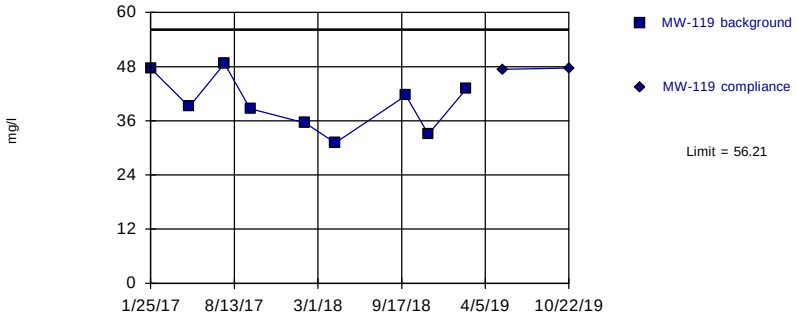
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=39.81, Std. Dev.=6.079, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.961, critical = 0.764. Kappa = 2.698 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 11/7/2019 10:50 AM View: 2019-2H PL

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

APPENDIX H

Alternate Source Demonstrations

Alternate Source Demonstration for Second Half 2018 Statistical Exceedances

water resources / environmental consultants
3 Innwood Circle, Suite 220 • Little Rock, AR 72211 • (501) 225-7779 • Fax (501) 225-6738

TECHNICAL MEMORANDUM

DATE: January 29, 2019

TO: **Matt Gray**
Plum Point Services Company, LLC

FROM: **Dana Derrington, PE, PG**
FTN Associates, Ltd.

SUBJECT: Alternate Source Demonstration for Statistically Significant Increase
Second Half of 2018 Monitoring Period, Plum Point Energy Station Landfill
FTN No. R14590-1766-001

FTN Associates, Ltd. (FTN) has prepared this technical memorandum for the Plum Point Services Company, LLC (PPSC) coal combustion residual (CCR) landfill, which is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated in Title 40 of the Code of Federal Regulations (40 CFR), Part 257. The landfill is also regulated by the Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 and permitted by the Arkansas Department of Environmental Quality (ADEQ) under Permit No. 0303-S3N-R1.

FTN was contracted to sample groundwater and statistically evaluate the data from the second half of 2018 monitoring event. Based on statistical evaluation of the data, one statistically significant increase (SSI) over background concentrations was identified. Pursuant to §257.94(e)(2), the landfill may demonstrate that a source other than the CCR unit caused the SSI over background levels for a constituent or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This memorandum, hereafter referred to as an alternate source demonstration (ASD), presents supporting evidence that the SSI was not caused by the CCR landfill.

1.0 BACKGROUND

FTN performed groundwater sampling for the second half 2018 semiannual groundwater monitoring period during September 2018. Sample collection, preservation, shipment, analytical procedures, chain-of-custody control, and data quality control for this sampling event followed protocol outlined in the landfill's groundwater sampling and analysis plan (GWSAP) (FTN 2017b). Statistical evaluation of the data set followed the most recent EPA guidance (EPA 2009) and the landfill's statistical analysis plan (SAP) (FTN 2017c). An intrawell prediction

limit evaluation identified that calcium at monitoring well MW-116, measured at level of 132 mg/L, exceeded the calculated limit of 121.6 mg/L. A site map showing the location of this well relative to the CCR landfill is included as Figure 1 (all figures are included in Attachment 1). The intrawell prediction limit plot is included as Figure 2.

At the request of FTN, the contracted third-party laboratory, Pace Analytical of Mount Juliet, Tennessee, re-analyzed the sample from MW-116 to rule out any laboratory-associated error. As shown in Table 1 (Attachment 2), the re-analyzed value was 130 mg/L, comparable to the value initially reported. The laboratory reports are included in Attachment 3.

The SSI for calcium at MW-116 was previously confirmed during the first half of 2018 monitoring period; therefore, verification sampling was not conducted. PPSC completed a successful ASD (FTN 2018) in response to the SSI in accordance with §257.94(e)(2). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on October 9, 2018. As required by §257.94(e)(2), a copy of the ASD was included in the 2018 annual report (FTN 2019).

2.0 DISCUSSION

A review of landfill leachate data, onsite background groundwater quality, and published literature was performed to determine if the SSI for calcium at MW-116 was indicative of influence from the CCR landfill. Findings from this review are discussed below within the context of groundwater quality at MW-116.

2.1 Comparison to Landfill Leachate

Landfill leachate samples are collected on a semiannual basis for the APCEC Regulation No. 22 program, as required by Permit No. 0303-S3N-R1. These data are publicly available on the ADEQ website[1]. Available data collected between 2011 and 2018 show calcium concentrations in leachate range from 7.6 to 23 mg/L. These data are co-plotted with measured calcium at MW-116 on the time-series plot attached as Figure 3, which shows that calcium levels in leachate are significantly lower than levels measured in groundwater at MW-116. Given the effects of dilution, this comparison demonstrates that the SSI for calcium is not due to leachate migration from the landfill.

2.2 Comparison to Onsite Background Groundwater Quality

Monitoring wells MW-108, MW-113, and MW-115 (Figure 1) are used to monitor onsite background groundwater water quality, as described in the landfill's groundwater monitoring system certification report (FTN 2017a). Calcium data collected at these locations are plotted on the attached time-series plot (Figure 4) and box-and-whiskers diagrams (Figure 5) along with

[1] https://www.adeq.state.ar.us/sw/permits/facility_data.aspx

calcium data from MW-116. As is evident from these figures, measured calcium at MW-116 is comparable to onsite background groundwater quality.

2.3 Comparison to Published Groundwater Quality for the Aquifer

Each landfill monitoring well is screened in the Mississippi River Valley alluvial aquifer, the uppermost aquifer in the vicinity of the landfill (FTN 2017b). The US Geological Survey published a study of groundwater quality of the aquifer, specifically with respect to that of Holocene alluvium and Pleistocene valley train deposits, which are two of the major hydrogeologic units within the aquifer (Gonthier 2003). The landfill is located in Holocene alluvium, as shown on Figure 6. According to this study, the reported respective median and maximum values for measured calcium in wells screened in Holocene alluvium were 77 mg/L and 130 mg/L. These levels are comparable to those measured at MW-116 and at background wells MW-108, MW-113, and MW-115, as shown on Figures 4 and 5.

3.0 CONCLUSIONS

In consideration of the information presented in this memorandum, FTN concludes that the SSI for calcium at MW-116 is not due to the migration of landfill leachate and that groundwater quality at MW-116 falls within the range of what can be expected in terms of natural fluctuations in groundwater quality.

This memorandum serves as the ASD prepared in accordance with §257.94(e)(2) and supports the position that the confirmed SSI identified for calcium at MW-116 was not due to a release from the landfill. Therefore, no further action is required and the landfill will remain in detection monitoring.

If you have questions or comments regarding this memorandum, please do not hesitate to call Dana Derrington, PE, PG, or Heather Ferguson at (501) 225-7779.

DLD/hlf

Attachments

R:\WP_FILES\14590-1766-001\CORRESPONDENCE\2019-01-29 TM-M GRAY EPA CCR 2H2018 ASD\2019-01-29 TM-M GRAY.DOCX

PROFESSIONAL ENGINEER'S CERTIFICATION

With this certification, I certify that I, as a Professional Engineer in the State of Arkansas, am a qualified professional engineer as defined in §257.53 of 40 CFR Part 257, that this technical memorandum has been prepared under my direction in accordance with generally accepted good engineering practices, that the findings are accurate to the best of my knowledge, and that the alternate source demonstration described herein meets the requirements of §257.94(e)(2) of 40 CFR Part 257.

Dana L. Derrington, Arkansas PE #16372

01/29/2019
Date

REFERENCES

EPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* [EPA 530-R-09-007]. Washington, DC: Office of Resource Conservation and Recovery, Program Implementation and Information Division, US Environmental Protection Agency. March 2009.

FTN. 2017a. *Groundwater Monitoring Network Evaluation, Plum Point Energy Station Landfill*. Little Rock, AR: FTN Associates, Ltd.

———. 2017b. *Groundwater Sampling and Analysis Plan, Plum Point Energy Station Landfill*. Little Rock, AR: FTN Associates, Ltd.

———. 2017c. *Statistical Analysis Plan, Plum Point Energy Station Landfill.* Little Rock, AR: FTN Associates, Ltd.

———. 2018. *Alternate Source Demonstration for Statistically Significant Increase, First Half of 2018 Monitoring Period, Plum Point Energy Station Landfill* [technical memorandum]. Little Rock, AR: FTN Associates, Ltd.

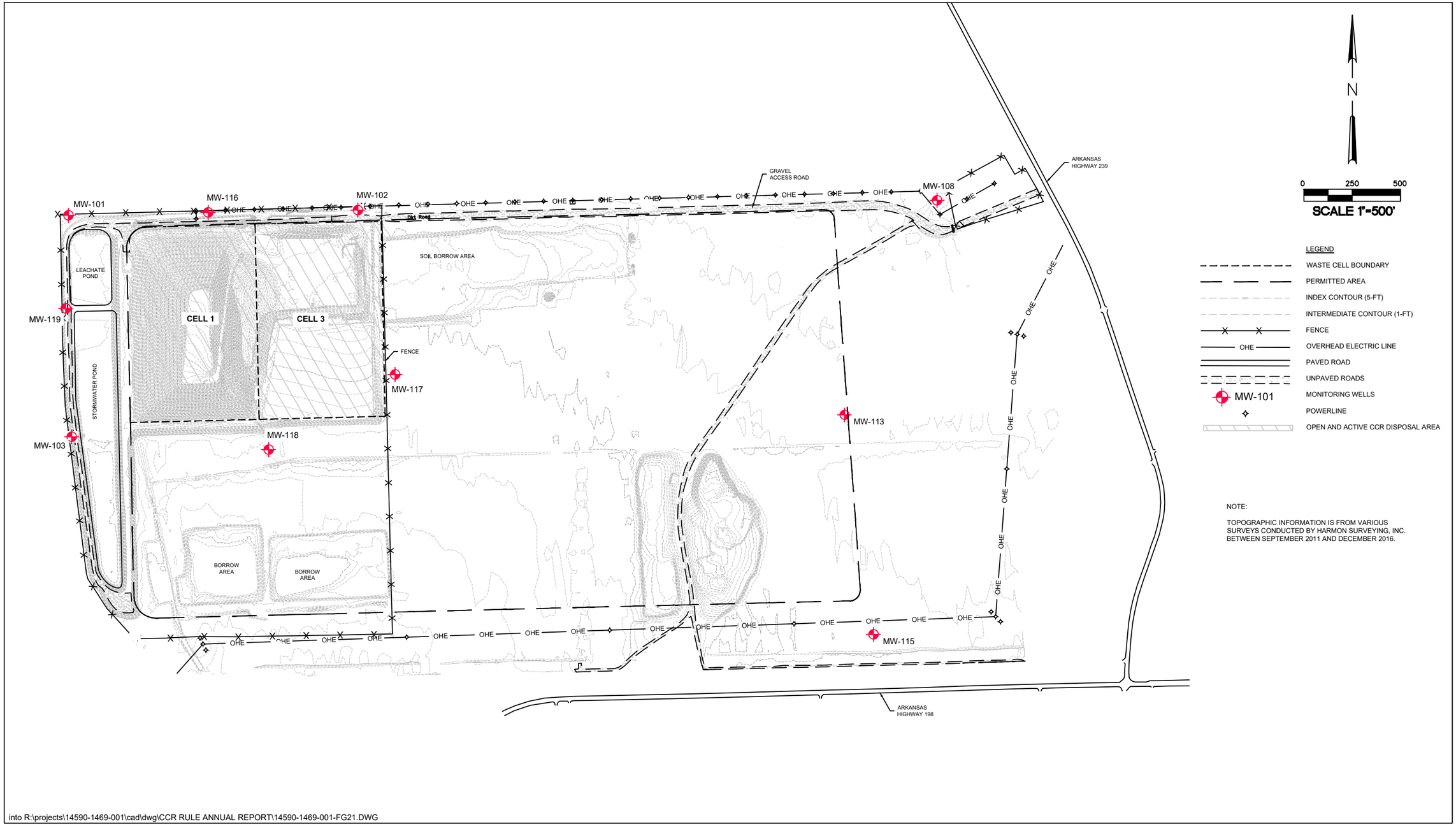
———. 2019. *Plum Point Energy Station Groundwater Monitoring and Corrective Action 2018 Annual Report.* Little Rock, AR: FTN Associates, Ltd.

Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: National Water-Quality Assessment Program, US Geological Survey.

Kresse, T.M., P.D. Hays, K.R. Merriman, J.A. Gillip, D.T. Fugitt, J.L. Spellman, A.M. Nottmeier, D.A. Westerman, J.M. Blackstock, and J.L. Battreal. 2014. *Aquifers of Arkansas—Protection, Management, and Hydrologic and Geochemical Characteristics of Groundwater Resources in Arkansas* [USGS Scientific Investigations Report 2014-5149]. Prepared in cooperation with the Arkansas Natural Resources Commission. Reston, VA: US Geological Survey. 334 pp. doi: http://dx.doi.org/10.3133/sir20145149.

ATTACHMENT 1

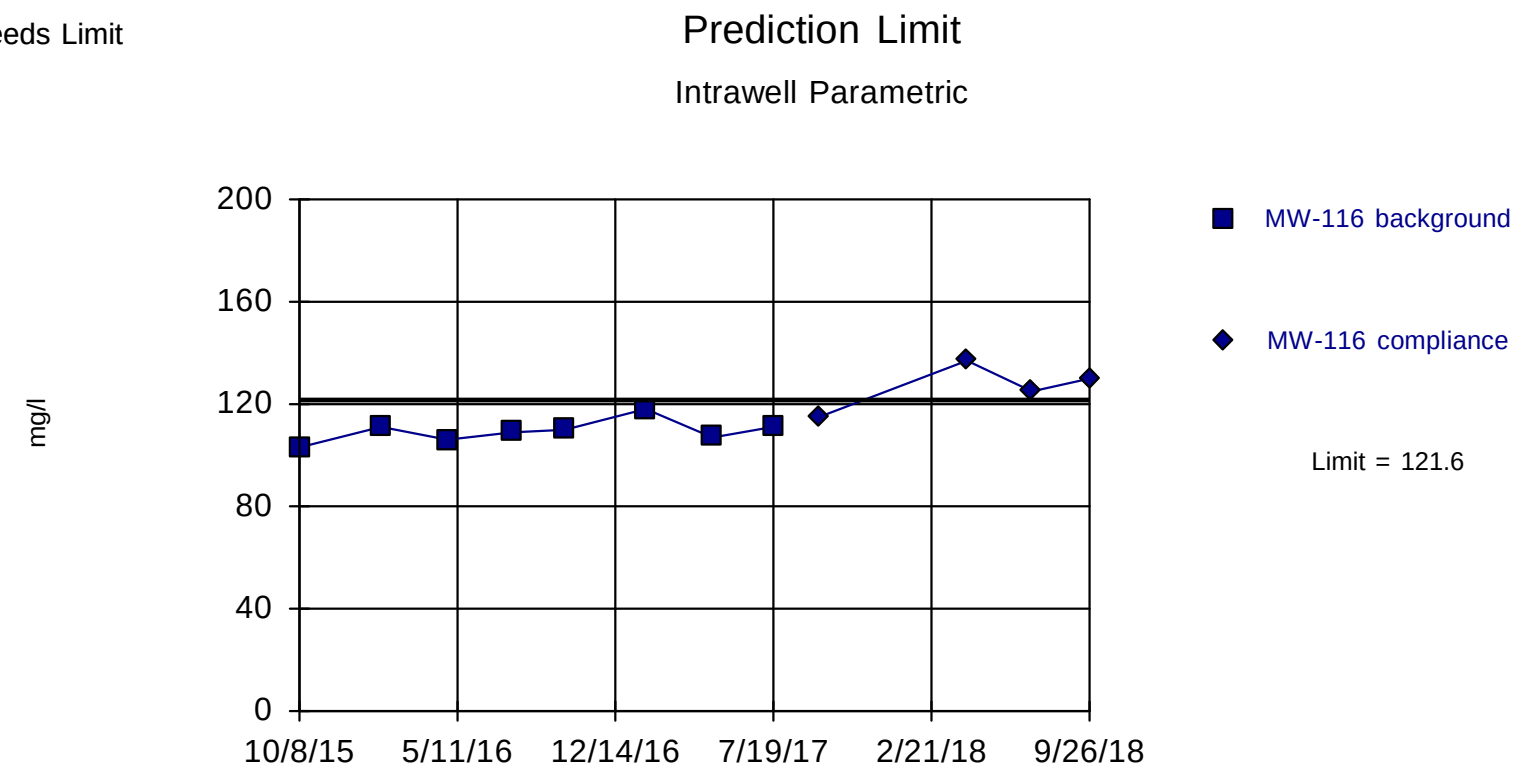
Figures



into R:\projects\14590-1469-001\cad\dwg\CCR RULE ANNUAL REPORT\14590-1469-001-FG21.DWG

Figure 1. Monitoring well locations, Plum Point Energy Station.

Exceeds Limit



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 10/31/2018 2:13 PM View: 2018-2H PL

Figure 2. Results of statistical analysis of calcium at MW-116 using prediction limits, second half of 2018.

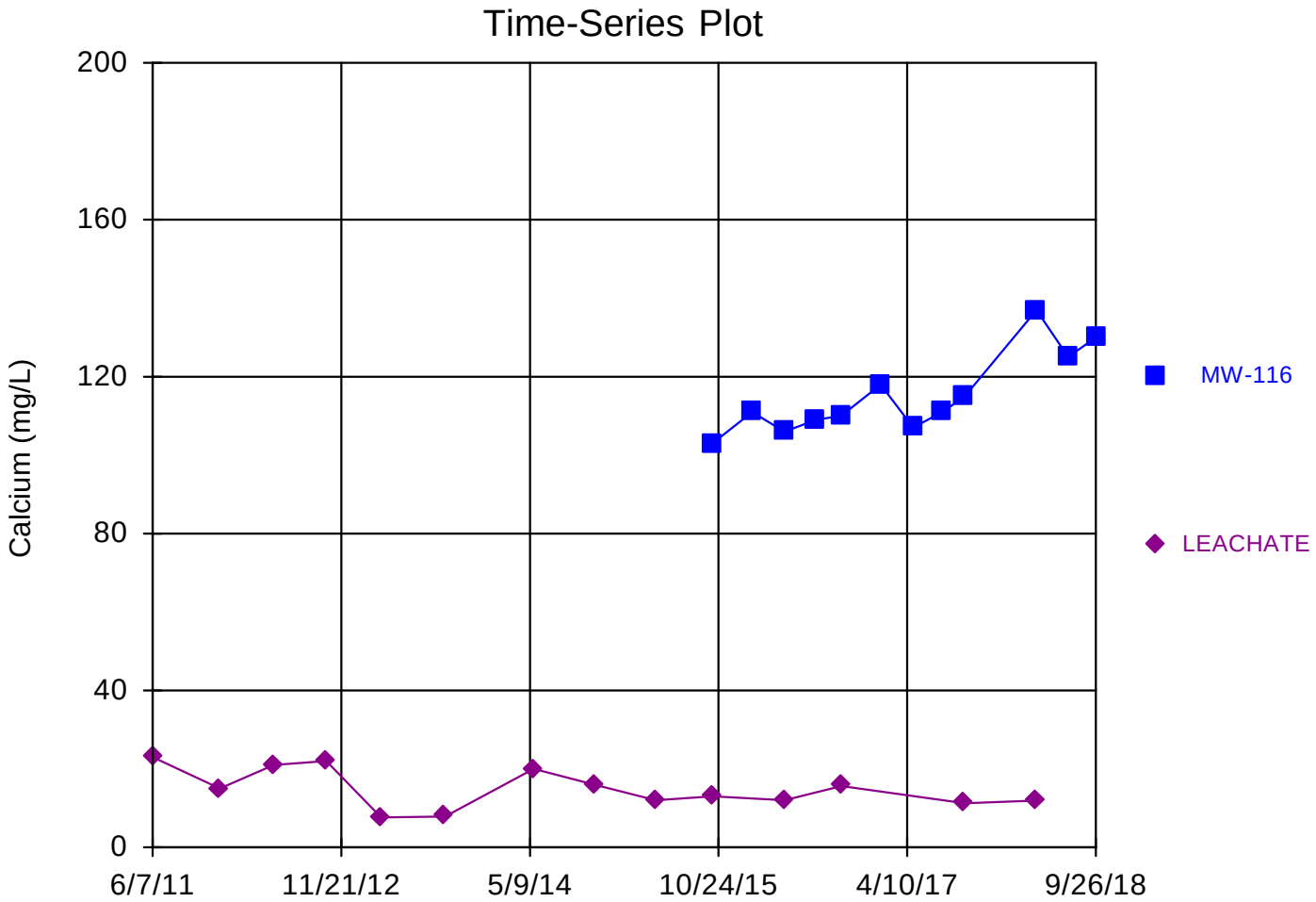


Figure 3. Time-series plot comparing measured calcium in landfill leachate to groundwater at MW-116.

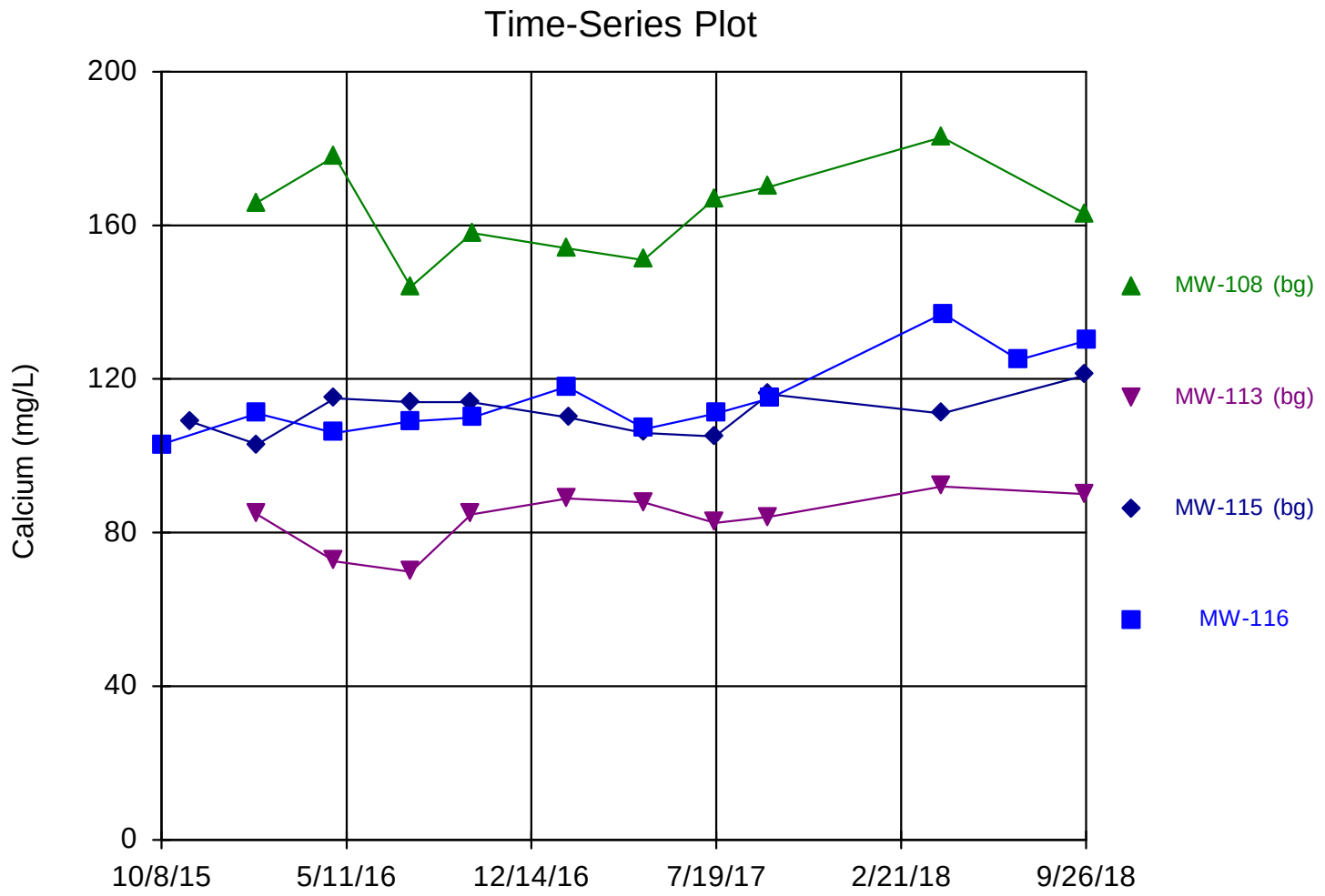


Figure 4. Time-series plot comparing measured calcium at MW-116 to onsite background groundwater quality.

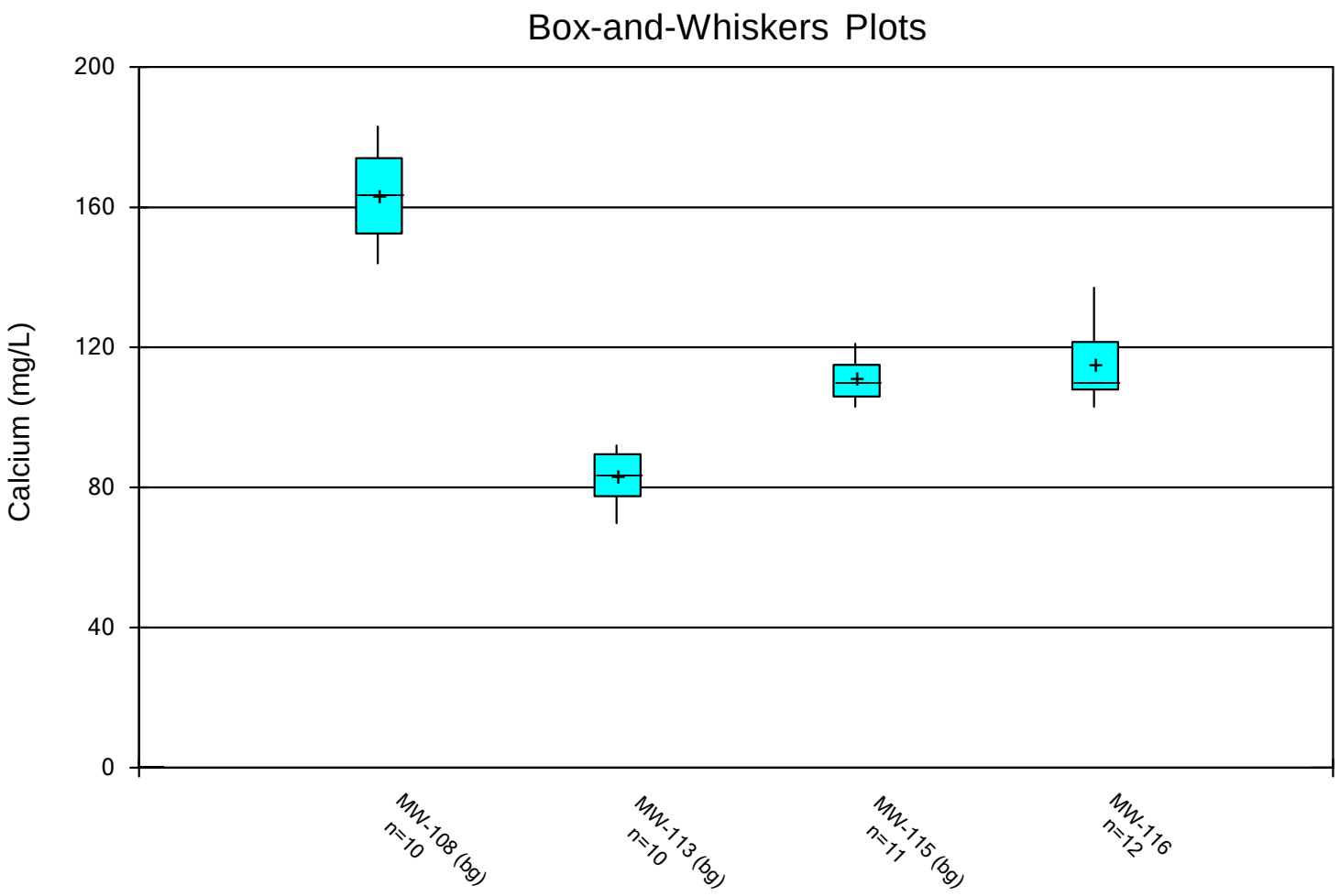


Figure 5. Box-and-whiskers plots comparing measured calcium at MW-116 to onsite background groundwater quality.

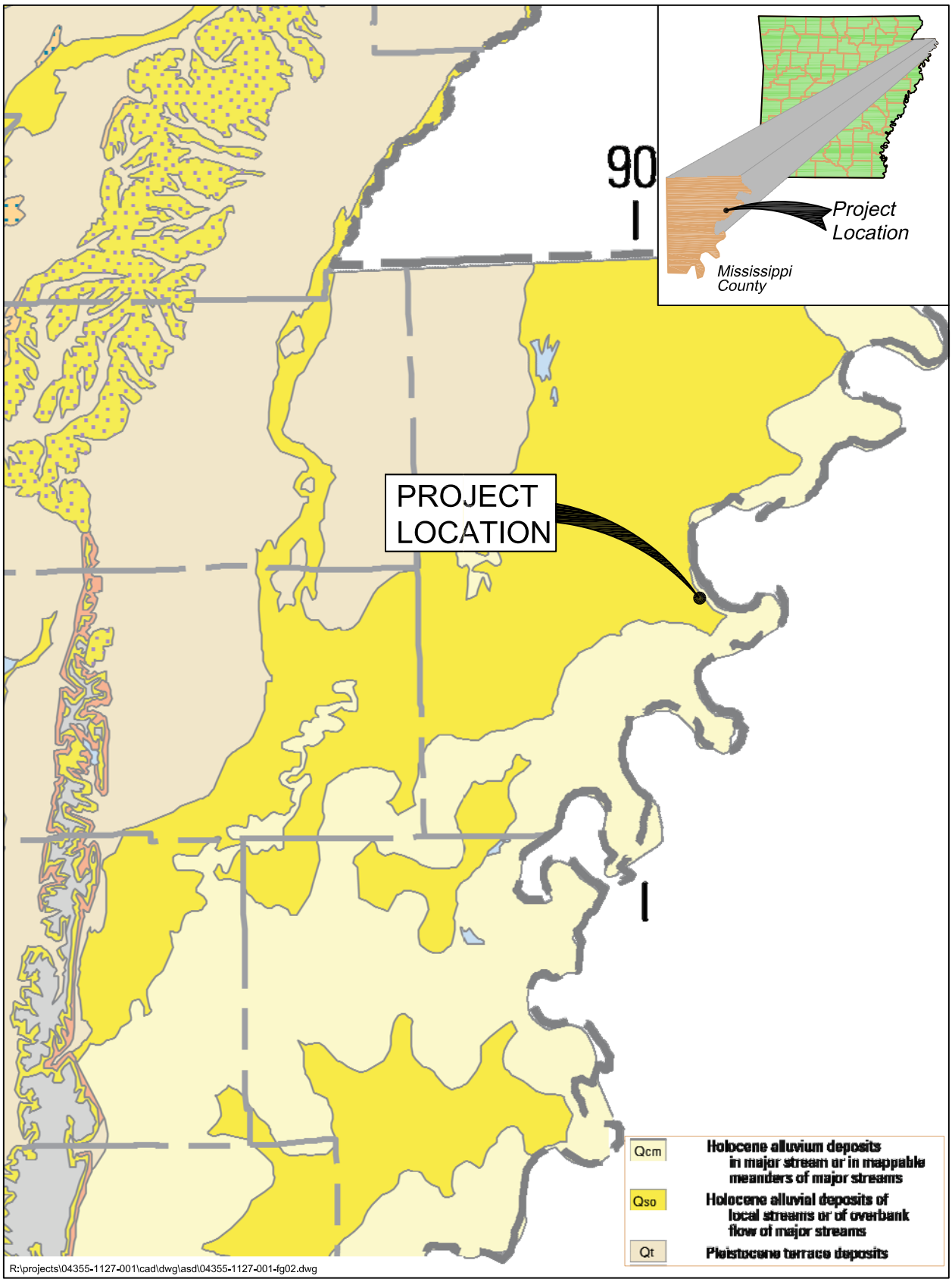


Figure 6. Surface geology of Mississippi County, Arkansas (adapted from Kresse et al. 2014).

ATTACHMENT 2

Summary of Statistically Significant Results and Maximum Background and Published Levels

Table 1. Summary of statistically significant results and maximum background and published levels.

Well ID	Parameter	Prediction Limit (mg/L)	September 2018 Observation (mg/L)	SSI Confirmed?	Maximum Background Level [(a)] (mg/L)	Maximum Published Level[(b)] (mg/L)
MW-116	Calcium	121.6	132 (initial) 130 (lab re-test)	Yes	183[(c)]	130

Notes:

a. Based on historical values at MW-108, MW-113, and MW-115.

b. Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: US Geological Survey, National Water-Quality Assessment Program.

c. Measured value at MW-108 during April 2018.

ATTACHMENT 3

Laboratory Reports

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 08, 2018

Plum Point Services Co., LLC

Sample Delivery Group:	L1030036
Samples Received:	09/28/2018
Project Number:	14590-1766-001
Description:	Plum Point Energy Station

Report To: Chris Lussier
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

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 Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

MW-101 L1030036-01 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/26/18 14:05	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1174315	1	10/03/18 19:24	10/03/18 19:56	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:14	10/03/18 10:14	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:11	ST

MW-102 L1030036-02 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/27/18 11:25	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1175129	1	10/04/18 18:55	10/04/18 19:27	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:28	10/03/18 10:28	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:14	ST

MW-103 L1030036-03 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/26/18 12:55	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1174315	1	10/03/18 19:24	10/03/18 19:56	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:42	10/03/18 10:42	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:17	ST

MW-108 L1030036-04 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/25/18 13:50	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1173809	1	10/02/18 15:57	10/02/18 16:41	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 10:56	10/03/18 10:56	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:25	ST

MW-113 L1030036-05 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/25/18 12:50	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1173809	1	10/02/18 15:57	10/02/18 16:41	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 11:09	10/03/18 11:09	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:28	ST

MW-115 L1030036-06 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/25/18 11:15	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1174254	1	10/02/18 17:45	10/02/18 18:17	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 11:23	10/03/18 11:23	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:31	ST

MW-116 L1030036-07 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/26/18 15:15	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1174318	1	10/03/18 19:58	10/03/18 20:45	AJS
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 12:05	10/03/18 12:05	MAJ
Metals (ICP) by Method 6010B	WG1175467	1	10/03/18 17:25	10/04/18 17:33	ST

MW-117 L1030036-08 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/27/18 13:05	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 13:01	10/03/18 13:01	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:42	ST

MW-118 L1030036-09 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/27/18 14:30	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 13:15	10/03/18 13:15	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:44	ST

MW-119 L1030036-10 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/27/18 09:55	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 13:29	10/03/18 13:29	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:47	ST

MW-116 DUP L1030036-11 GW

Collected by	Collected date/time	Received date/time
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Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1174318	1	10/03/18 19:58	10/03/18 20:45	AJS
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 13:43	10/03/18 13:43	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:55	ST

EB-2 L1030036-12 GW

Collected by	Collected date/time	Received date/time
Michael Clayton	09/27/18 15:05	09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG1175131	1	10/04/18 17:00	10/04/18 17:00	JER
Wet Chemistry by Method 9056A	WG1174175	1	10/03/18 14:52	10/03/18 14:52	MAJ
Metals (ICP) by Method 6010B	WG1173328	1	10/02/18 15:27	10/04/18 14:58	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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

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	421000		2820	10000	1	10/03/2018 19:56	WG1174315

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1940		51.9	1000	1	10/03/2018 10:14	WG1174175
Fluoride	290	B	9.90	100	1	10/03/2018 10:14	WG1174175
Sulfate	14600		77.4	5000	1	10/03/2018 10:14	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	98.1	J	12.6	200	1	10/04/2018 17:11	WG1175467
Calcium	115000		46.3	1000	1	10/04/2018 17:11	WG1175467

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	453000		2820	10000	1	10/04/2018 19:27	WG1175129

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	3840		51.9	1000	1	10/03/2018 10:28	WG1174175
Fluoride	183	B	9.90	100	1	10/03/2018 10:28	WG1174175
Sulfate	88600		77.4	5000	1	10/03/2018 10:28	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	121	J	12.6	200	1	10/04/2018 17:14	WG1175467
Calcium	121000		46.3	1000	1	10/04/2018 17:14	WG1175467

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	440000		2820	10000	1	10/03/2018 19:56	WG1174315

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1360		51.9	1000	1	10/03/2018 10:42	WG1174175
Fluoride	217	B	9.90	100	1	10/03/2018 10:42	WG1174175
Sulfate	32800		77.4	5000	1	10/03/2018 10:42	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	145	J	12.6	200	1	10/04/2018 17:17	WG1175467
Calcium	129000		46.3	1000	1	10/04/2018 17:17	WG1175467

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	537000		2820	10000	1	10/02/2018 16:41	WG1173809

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	3110		51.9	1000	1	10/03/2018 10:56	WG1174175
Fluoride	188	B	9.90	100	1	10/03/2018 10:56	WG1174175
Sulfate	52200		77.4	5000	1	10/03/2018 10:56	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	183	J	12.6	200	1	10/04/2018 17:25	WG1175467
Calcium	163000		46.3	1000	1	10/04/2018 17:25	WG1175467

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	337000		2820	10000	1	10/02/2018 16:41	WG1173809

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2840		51.9	1000	1	10/03/2018 11:09	WG1174175
Fluoride	114	B	9.90	100	1	10/03/2018 11:09	WG1174175
Sulfate	9810		77.4	5000	1	10/03/2018 11:09	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	111	J	12.6	200	1	10/04/2018 17:28	WG1175467
Calcium	90000		46.3	1000	1	10/04/2018 17:28	WG1175467

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	417000		2820	10000	1	10/02/2018 18:17	WG1174254

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1180		51.9	1000	1	10/03/2018 11:23	WG1174175
Fluoride	216	B	9.90	100	1	10/03/2018 11:23	WG1174175
Sulfate	5000	J	77.4	5000	1	10/03/2018 11:23	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	76.4	J	12.6	200	1	10/04/2018 17:31	WG1175467
Calcium	123000		46.3	1000	1	10/04/2018 17:31	WG1175467

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	500000		2820	10000	1	10/03/2018 20:45	WG1174318

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	4130		51.9	1000	1	10/03/2018 12:05	WG1174175
Fluoride	183	B J6	9.90	100	1	10/03/2018 12:05	WG1174175
Sulfate	97500	J6	77.4	5000	1	10/03/2018 12:05	WG1174175

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	10/04/2018 17:33	WG1175467
Calcium	132000		46.3	1000	1	10/04/2018 17:33	WG1175467

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	318000		2820	10000	1	10/04/2018 17:00	WG1175131

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1250		51.9	1000	1	10/03/2018 13:01	WG1174175
Fluoride	144	B	9.90	100	1	10/03/2018 13:01	WG1174175
Sulfate	7190		77.4	5000	1	10/03/2018 13:01	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	127	J	12.6	200	1	10/04/2018 14:42	WG1173328
Calcium	89800		46.3	1000	1	10/04/2018 14:42	WG1173328

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	375000		2820	10000	1	10/04/2018 17:00	WG1175131

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1330		51.9	1000	1	10/03/2018 13:15	WG1174175
Fluoride	165	B	9.90	100	1	10/03/2018 13:15	WG1174175
Sulfate	17000		77.4	5000	1	10/03/2018 13:15	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	113	J	12.6	200	1	10/04/2018 14:44	WG1173328
Calcium	80600		46.3	1000	1	10/04/2018 14:44	WG1173328

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	290000		2820	10000	1	10/04/2018 17:00	WG1175131

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	10/03/2018 13:29	WG1174175
Fluoride	253	B	9.90	100	1	10/03/2018 13:29	WG1174175
Sulfate	41600		77.4	5000	1	10/03/2018 13:29	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	103	J	12.6	200	1	10/04/2018 14:47	WG1173328
Calcium	99000		46.3	1000	1	10/04/2018 14:47	WG1173328

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	512000		2820	10000	1	10/03/2018 20:45	WG1174318

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	4140		51.9	1000	1	10/03/2018 13:43	WG1174175
Fluoride	189	B	9.90	100	1	10/03/2018 13:43	WG1174175
Sulfate	98400		77.4	5000	1	10/03/2018 13:43	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	121	J	12.6	200	1	10/04/2018 14:55	WG1173328
Calcium	130000		46.3	1000	1	10/04/2018 14:55	WG1173328

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	U		2820	10000	1	10/04/2018 17:00	WG1175131

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	311	J	51.9	1000	1	10/03/2018 14:52	WG1174175
Fluoride	U		9.90	100	1	10/03/2018 14:52	WG1174175
Sulfate	U		77.4	5000	1	10/03/2018 14:52	WG1174175

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	53.3	J	12.6	200	1	10/04/2018 14:58	WG1173328
Calcium	500	J	46.3	1000	1	10/04/2018 14:58	WG1173328

Method Blank (MB)

(MB) R3347436-1 10/02/18 16:41

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	3000	J	2820	10000

L1030012-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1030012-09 10/02/18 16:41 • (DUP) R3347436-4 10/02/18 16:41

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	653000	677000	1	3.61		5

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

(LCS) R3347436-2 10/02/18 16:41 • (LCSD) R3347436-3 10/02/18 16:41

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800000	8660000	8670000	98.4	98.5	85.0-115			0.115	5

Method Blank (MB)

(MB) R3347430-1 10/02/18 18:17

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

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

(LCS) R3347430-2 10/02/18 18:17 • (LCSD) R3347430-3 10/02/18 18:17

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	8740000	8940000	99.3	102	85.0-115			2.26	5

Method Blank (MB)

(MB) R3347808-1 10/03/18 19:56

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

L1030012-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1030012-03 10/03/18 19:56 • (DUP) R3347808-4 10/03/18 19:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	396000	401000	1	1.25		5

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

(LCS) R3347808-2 10/03/18 19:56 • (LCSD) R3347808-3 10/03/18 19:56

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	8560000	8530000	97.3	96.9	85.0-115			0.351	5

Method Blank (MB)

(MB) R3347801-1 10/03/18 20:45

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

L1030003-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1030003-04 10/03/18 20:45 • (DUP) R3347801-4 10/03/18 20:45

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	338000	343000	1	1.47		5

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

(LCS) R3347801-2 10/03/18 20:45 • (LCSD) R3347801-3 10/03/18 20:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800000	8580000	8680000	97.5	98.6	85.0-115			1.16	5

Method Blank (MB)

(MB) R3348180-1 10/04/18 19:27

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

L1030003-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1030003-02 10/04/18 19:27 • (DUP) R3348180-4 10/04/18 19:27

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	437000	453000	1	3.60		5

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

(LCS) R3348180-2 10/04/18 19:27 • (LCSD) R3348180-3 10/04/18 19:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800000	8620000	8620000	98.0	98.0	85.0-115			0.000	5

Method Blank (MB)

(MB) R3348179-1 10/04/18 17:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	3000	J	2820	10000

L1029872-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1029872-01 10/04/18 17:00 • (DUP) R3348179-4 10/04/18 17:00

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	170000	174000	1	2.33		5

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

(LCS) R3348179-2 10/04/18 17:00 • (LCSD) R3348179-3 10/04/18 17:00

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800000	8650000	8640000	98.3	98.2	85.0-115			0.116	5

Method Blank (MB)

(MB) R3347403-1 10/03/18 08:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		51.9	1000
Fluoride	67.7	J	9.90	100
Sulfate	U		77.4	5000

L1030036-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1030036-07 10/03/18 12:05 • (DUP) R3347403-4 10/03/18 12:19

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	4130	3980	1	3.69		15
Fluoride	183	207	1	12.3		15
Sulfate	97500	97500	1	0.00379		15

L1030036-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1030036-11 10/03/18 13:43 • (DUP) R3347403-7 10/03/18 13:56

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	4140	4080	1	1.59		15
Fluoride	189	196	1	3.49		15
Sulfate	98400	98200	1	0.134		15

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

(LCS) R3347403-2 10/03/18 09:04 • (LCSD) R3347403-3 10/03/18 09:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	40000	39300	39400	98.2	98.5	80.0-120			0.307	15
Fluoride	8000	8020	8040	100	101	80.0-120			0.298	15
Sulfate	40000	39500	39900	98.7	99.6	80.0-120			0.911	15

L1030036-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1030036-07 10/03/18 12:05 • (MS) R3347403-5 10/03/18 12:33 • (MSD) R3347403-6 10/03/18 12:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	4130	44800	45900	81.4	83.5	1	80.0-120			2.30	15
Fluoride	5000	183	4020	4380	76.6	83.9	1	80.0-120	J6		8.66	15
Sulfate	50000	97500	132000	133000	69.4	71.0	1	80.0-120	E J6	E J6	0.607	15

L1030036-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1030036-11 10/03/18 13:43 • (MS) R3347403-8 10/03/18 14:10

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	4140	54500	101	1	80.0-120	
Fluoride	5000	189	4940	95.0	1	80.0-120	
Sulfate	50000	98400	141000	84.9	1	80.0-120	E

Method Blank (MB)

(MB) R3347817-1 10/04/18 14:24

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) R3347817-2 10/04/18 14:26 • (LCSD) R3347817-3 10/04/18 14:29

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	986	1010	98.6	101	80.0-120			1.96	20
Calcium	10000	9810	9950	98.1	99.5	80.0-120			1.41	20

L1030040-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1030040-01 10/04/18 14:31 • (MS) R3347817-5 10/04/18 14:37 • (MSD) R3347817-6 10/04/18 14:39

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	ND	1110	1080	101	97.7	1	75.0-125			2.62	20
Calcium	10000	418000	422000	422000	41.2	43.7	1	75.0-125	V	V	0.0602	20

Method Blank (MB)

(MB) R3347811-1 10/04/18 16:20

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) R3347811-2 10/04/18 16:22 • (LCSD) R3347811-3 10/04/18 16:25

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	1040	1030	104	103	80.0-120			0.820	20
Calcium	10000	10100	9950	101	99.5	80.0-120			1.34	20

L1030003-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1030003-05 10/04/18 16:28 • (MS) R3347811-5 10/04/18 16:33 • (MSD) R3347811-6 10/04/18 16:35

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	109	1150	1140	104	103	1	75.0-125			1.20	20
Calcium	10000	20800	32700	32700	119	119	1	75.0-125			0.103	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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
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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
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

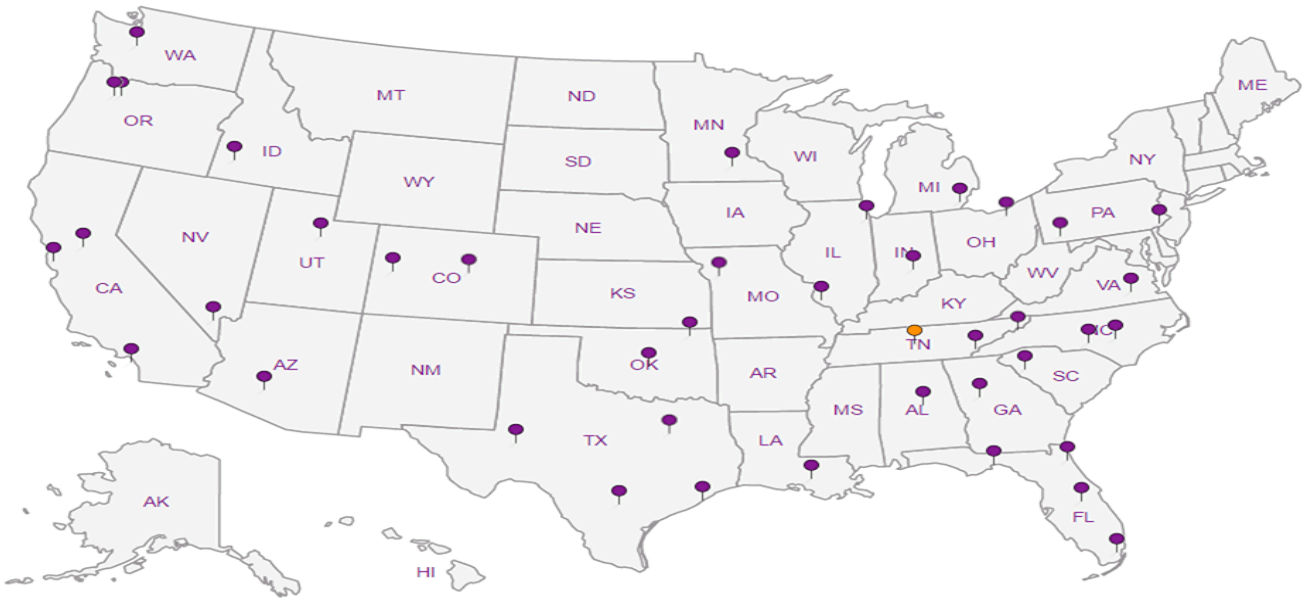
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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: Chris Lussier

Email To: Christopher.Lussier@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 # 14590-1766-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Michael Clayton

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	Total B, Ca 250mlHDPE-HNO3									Remarks	Sample # (lab only)
								22										
MW-101	Grab	GW		9/26/18	1405	2	X	X										01
MW-102		GW		9/27/18	1125	2	X	X										02
MW-103		GW		9/26/18	1255	2	X	X										03
MW-108		GW		9/25/18	1350	2	X	X										04
MW-113		GW		9/25/18	1250	2	X	X										05
MW-115		GW		9/25/18	1115	2	X	X										06
MW-116		GW		9/26/18	1515	2	X	X										07
MW-117		GW		9/27/18	1305	2	X	X										08
MW-118		GW		9/27/18	1430	2	X	X										09
MW-119		GW		9/27/18	955	2	X	X										10

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

Pace Analytical®
National Center for Testing & Innovation

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

L# 1030036
G142

Acctnum: NAESOAR
Template: T134757
Prelogin: P672602
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

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

Remarks:

RAD SCREEN: <0.5 mR/hr

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 499262320613

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)
	9/27/18	1800	
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: 4.4°C Bottles Received: 24

Date: 9/28/18 Time: 0945

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: **Chris Lussier**

Email To: **Christopher.Lussier@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 # **14590-1766-001**

Lab Project # **NAESOAR-PLUMPOINT**

Collected by (print):

Site/Facility ID #

P.O. #

Collected by (signature):

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3								Remarks	Sample # (lab only)
MW-116 DUP		GW		9/26/18	1520	2	X	X									-11
EB-2		GW		9/27/18	1505	2	X	X									-12
		GW				2	X	X									
		GW				2	X	X									
		GW				2	X	X									

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

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

L# 1030036

Table #

Acctnum: **NAESOAR**
Template: **T134757**
Prelogin: **P672602**
TSR: **134 - Mark W. Beasley**
PB:

Shipped Via: **FedEX Ground**

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

Remarks:

RAD SCREEN: <0.5 mR/hr

pH _____ Temp _____

Flow _____ Other _____

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

Tracking #

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	If preservation required by Login: Date/Time
Michael C Gee	9/27/18	1600			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.4 °C Bottles Received: 24	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 9/28/18 Time: 0945	Hold: Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 31, 2018

Plum Point Services Co., LLC

Sample Delivery Group:	L1039096
Samples Received:	09/28/2018
Project Number:	14590-1766-001
Description:	Plum Point Energy Station

Report To: Chris Lussier
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

TABLE OF CONTENTS

MW-115 L1039096-01 GW

Collected by: Michael Clayton
Collected date/time: 09/25/18 11:15
Received date/time: 09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1188395	1	10/30/18 13:37	10/30/18 19:48	ST

MW-116 L1039096-02 GW

Collected by: Michael Clayton
Collected date/time: 09/26/18 15:15
Received date/time: 09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1188395	1	10/30/18 13:37	10/30/18 19:51	ST

MW-117 L1039096-03 GW

Collected by: Michael Clayton
Collected date/time: 09/27/18 13:05
Received date/time: 09/28/18 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1188395	1	10/30/18 13:37	10/30/18 19:54	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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	121000		46.3	1000	1	10/30/2018 19:48	WG1188395

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	130000		46.3	1000	1	10/30/2018 19:51	WG1188395

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	89700		46.3	1000	1	10/30/2018 19:54	WG1188395

Method Blank (MB)

(MB) R3355367-1 10/30/18 18:41

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) R3355367-2 10/30/18 18:43 • (LCSD) R3355367-3 10/30/18 18:46

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	9760	9640	97.6	96.4	80.0-120			1.25	20

L1039094-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039094-02 10/30/18 18:48 • (MS) R3355367-5 10/30/18 18:53 • (MSD) R3355367-6 10/30/18 18:56

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	53600	67400	67400	137	137	1	75.0-125	V	V	0.00416	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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
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Minnesota	047-999-395	Washington	C847
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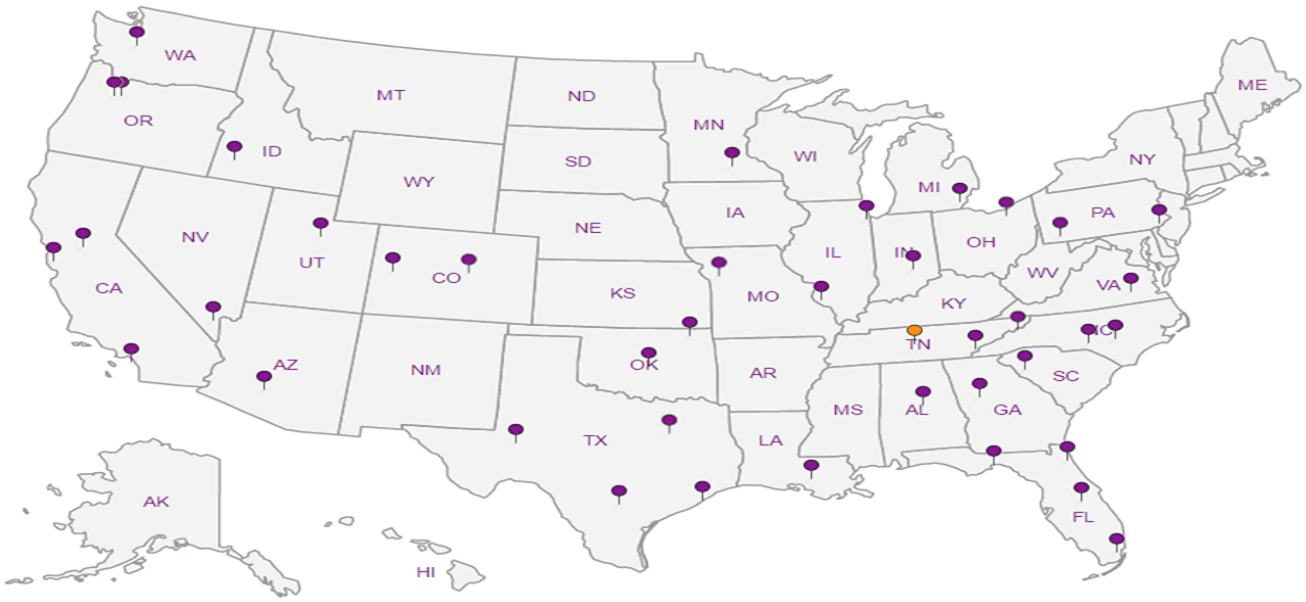

Plum Point Services Co., LLC

2739 SCR 623
Osceola, AR 72370

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

Report to: Chris Lussier

Email To: Christopher.Lussier@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 # 14590-1766-001

Lab Project # NAESOAR-PLUMPOINT

Collected by (print): Mikhail Clayton

Site/Facility ID #

P.O. #

Collected by (signature):

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

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3	42								Remarks	Sample # (lab only)
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MW-115		GW		9/25/18	1115	2	X	X										06 -01
MW-116		GW		9/26/18	1515	2	X	X										07 -02
MW-117		GW		9/27/18	1305	2	X	X										08 -03
MW-118		GW		9/27/18	1430	2	X	X										09
MW-119		GW		9/27/18	955	2	X	X										10

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

Remarks:

RAD SCREEN: <0.5 mR/hr

pH ____ Temp ____
Flow ____ Other ____

Samples returned via:
__ UPS [FedEx __ Courier ____

Tracking # 999262320613

Relinquished by: (Signature) — Date: 9/27/18 — Time: 1800 — Received by: (Signature)

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: 4.4°C Bottles Received: 24

Date: 9/27/18 Time: 1800

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

If preservation required by Login: Date/Time

Hold: Condition NCF / OK

Chain of Custody Page 1 of 2

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

L# 1030036 AW 10/30/18
G142
L1039096

Acctnum: NAESOAR
Template: T134757
Prelogin: P672602
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

Andy Vann

From: Mark Beasley
Sent: Tuesday, October 30, 2018 8:28 AM
To: Login; Sample Storage
Subject: L1030036 *FTNLRAR* relog

Relog L1030036-06, -07, & -08 for CAICP. Log as EX due 11/1.

Thanks
Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]
Sent: Monday, October 29, 2018 5:03 PM
To: Mark Beasley
Cc: Dana Derrington
Subject: FW: Pace National Report for 14590-1766-001 Plum Point Energy Station L1030036
Importance: High

Good afternoon Mark,

If it's still possible, could you ask the lab to verify/re-run the following samples from the attached SDG to confirm their values?

Calcium (mg/l)	MW-115
Calcium (mg/l)	MW-116
Calcium (mg/l)	MW-117

Thanks so much!
Heather

Heather Ferguson
FTN Associates, Ltd.
3 Innwood Circle, Suite 220 ◆ Little Rock, AR 72211 (501) 225-7779 ◆ fax (501) 225-6738
hlf@ftn-assoc.com http://www.ftn-assoc.com

Alternate Source Demonstration for First Half 2019 Statistical Exceedances

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water resources / environmental consultants
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TECHNICAL MEMORANDUM

DATE: October 24, 2019

TO: **Matt Gray**
Plum Point Services Company, LLC

FROM: **Dana Derrington, PE, PG**
FTN Associates, Ltd.

SUBJECT: Alternate Source Demonstration for Statistically Significant Increases
First Half of 2019 Monitoring Period, Plum Point Energy Station Landfill
FTN No. R14590-1992-001

FTN Associates, Ltd. (FTN), has prepared this technical memorandum for the Plum Point Services Company, LLC (PPSC), coal combustion residual (CCR) landfill, which is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated in Title 40 of the Code of Federal Regulations (40 CFR), Part 257. The landfill is also regulated by the Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 and permitted by the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ), under Permit No. 0303-S3N-R1.

FTN was contracted to sample groundwater and to statistically evaluate the data from the first half of 2019 monitoring event. Based on statistical evaluation of the data, three confirmed statistically significant increases (SSIs) over background concentrations were identified. Pursuant to §257.94(e)(2), the landfill may demonstrate that a source other than the CCR unit caused an SSI over background levels for a constituent or that an SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This memorandum, hereafter referred to as an alternate source demonstration (ASD), presents evidence that the confirmed SSIs are the result of off-site influence and/or natural fluctuations in groundwater quality.

1.0 BACKGROUND

FTN performed groundwater sampling for the first half 2019 semiannual groundwater monitoring period during May 2019. Sample collection, preservation, shipment, analytical procedures, chain-of-custody control, and data quality control for this sampling event followed protocol outlined in the landfill's groundwater sampling and analysis plan (GWSAP) (FTN 2017b). Statistical evaluation of the data set followed the most recent EPA guidance (EPA 2009) and the landfill's statistical analysis plan (SAP) (FTN 2017c). An intrawell prediction limit evaluation identified potential SSIs for boron at background well MW-108; calcium at background well MW-115 and at compliance wells MW-117 and MW-119; pH at MW-118; and total dissolved solids (TDS) at compliance well MW-117. A site

map showing the locations of these wells relative to the CCR unit (cells 1 and 3) is included as Figure 1 (all figures are included in Attachment 1). Intrawell prediction limit plots are included in Attachment 2.

At the request of FTN, the contracted third-party laboratory, Pace Analytical of Mount Juliet, Tennessee, re-analyzed the calcium samples to rule out any laboratory-associated error. The TDS sample at MW-117 was not re-analyzed because the sample was outside its 10-day holding time. As shown in Table 1 (Attachment 3), the re-analyzed values were the same or comparable to the values initially reported.

In accordance with the landfill's SAP and EPA guidance (EPA 2009), verification sampling was performed during August 2019 to confirm or disconfirm the potential SSIs. As shown in Table 1, the verification sampling results for boron at background well MW-108 and calcium at MW-119 were below their respective intrawell prediction limits, and the verification sampling result for pH at MW-118 was within the range of the upper and lower prediction limits. In accordance with landfill's SAP and EPA guidance (EPA 2009), the potential SSIs for these well-parameter pairs are disconfirmed. The remaining potential SSIs for calcium at background well MW-115 and for calcium and TDS at compliance well MW-117 were confirmed by the August 2019 verification sampling event, as shown in Table 1. Laboratory reports are included in Attachment 4.

2.0 DISCUSSION

A review of the monitoring system with respect to onsite background wells, background groundwater quality, published literature, and landfill leachate was performed to determine if the confirmed SSIs for calcium at background well MW-115 and for calcium and TDS at compliance well MW-117 were indicative of a release from the CCR unit. Findings from this review are discussed below.

2.1 Monitoring System Background Wells

As required by §257.91(c)(1), the groundwater monitoring network is required to contain a minimum of one monitoring well that is hydraulically upgradient of the CCR management area for the purpose of monitoring background water quality. However, there is not a hydraulically upgradient location at this facility because the direction of groundwater flow is seasonably variable. As allowed by §257.91(a)(1), a facility may utilize wells for background water quality that are not hydraulically upgradient of the CCR unit. For this reason, the facility incorporated monitoring wells MW-108, MW-113, and MW-115 (Figure 1) to monitor background water quality because those wells are positioned outside the potential zone of impact from the CCR unit. 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 unit. Specifically:

- MW-108, MW-113, and MW-115 are located more than 2,300 ft from the eastern edge of cell 3,
- Groundwater at the landfill has historically exhibited a maximum flow rate of 40 ft/year, and
- The landfill became active during March 2010.

Using the information available above, a potential leachate plume would not be expected to have migrated more than 380 ft from the CCR unit as of the time of this evaluation. This estimate is conservative for the following reasons:

1. It assumes impact to groundwater occurred at the same time cell 1 was activated (March 2010) and does not account for travel time through the confining unit soils;
2. It assumes that groundwater flows in one direction; however, it is well-documented that groundwater flow at the landfill is multidirectional and reverses flow on a seasonal basis (FTN 2017a); and
3. It does not account for any physical or chemical properties of the constituents of concern that would cause them to travel at rates slower than groundwater (e.g., adsorption).

The position of MW-115 as a background well provides a key line of evidence that the SSI for calcium at this well (Table 1) is the result of off-site influence and/or natural fluctuation in groundwater quality.

2.2 Comparison to Onsite Background Groundwater Quality

Calcium and TDS data collected at compliance well MW-117 and background wells MW-108, MW-113, and MW-115 are plotted on the time-series plots and box-and-whiskers diagrams included in Attachment 2. As is evident from these figures, measured calcium and TDS at MW-117 are generally lower than values measured at the onsite background wells. This comparison provides supporting evidence that the currently measured values for these parameters reflect natural fluctuations in groundwater quality.

2.3 Comparison to Published Groundwater Quality for the Aquifer

Each monitoring well is screened in the Mississippi River Valley alluvial aquifer, the uppermost aquifer in the vicinity of the landfill (FTN 2017b). The US Geological Survey published a study of groundwater quality of the aquifer, specifically with respect to that of Holocene alluvium and Pleistocene valley train deposits, which are two of the major hydrogeologic units within the aquifer (Gonthier 2003). The landfill is located in Holocene alluvium, as shown on Figure 2. According to this study, the reported median and maximum calcium values in wells screened in Holocene alluvium were 77 mg/L and 130 mg/L, respectively. The reported median and maximum TDS values were 355 mg/L and 728 mg/L, respectively. As shown in Table 1, these levels are comparable to those measured at MW-117 and at background wells MW-108, MW-113, and MW-115. This comparison provides supporting evidence that the currently measured values of calcium and TDS at MW-117 reflect natural fluctuations in groundwater quality.

2.4 Comparison to Landfill Leachate

Landfill leachate samples are collected on a semiannual basis for the APCEC Regulation No. 22 program, as required by Permit No. 0303-S3N-R1. These data are publicly available on the DEQ

website[1]. Available data collected between 2011 and 2019 show calcium concentrations in leachate range from 7.6 to 23 mg/L. The calcium data from leachate are co-plotted with measured calcium at MW-117 on the time-series plot in Attachment 2, which shows that calcium levels in leachate are significantly lower than levels measured in groundwater at MW-117. This comparison provides a key line of evidence that the SSI for calcium at MW-117 is not due to a release from the CCR unit.

Another key line of evidence that the SSIs at MW-117 are not due to a release from the CCR unit is demonstrated by the Stiff and Piper diagrams included in Attachment 2. These graphs show the ionic composition of leachate versus groundwater quality at compliance well MW-117 and background wells MW-108, MW-113, and MW-115. As shown by the Stiff diagrams, the ionic composition of groundwater at MW-117 is similar to that of background groundwater quality, as is evident from the similarly shaped diagrams. In contrast, the Stiff diagrams for all monitoring wells are dissimilar to the leachate diagram, showing that leachate has not impacted groundwater quality. This is further demonstrated by the Piper diagram, which shows that data from MW-117 are plotted very closely to the data from background wells MW-108, MW-113, and MW-115. If leachate were impacting groundwater at MW-117, the plotted data for MW-117 would be positioned closer to the plotted data for leachate.

3.0 CONCLUSIONS

In consideration of the information presented in this memorandum, FTN concludes that the SSIs for calcium and TDS at MW-117 and for calcium at background well MW-115 are the result of off-site influence and/or natural fluctuations in groundwater quality.

This memorandum serves as the ASD prepared in accordance with §257.94(e)(2) and supports the position that the confirmed SSIs identified for calcium and TDS at MW-117 and for calcium at background well MW-115 are not due to a release from the CCR unit. Therefore, no further action is required and the landfill will remain in detection monitoring.

If you have questions or comments regarding this memorandum, please do not hesitate to call Dana Derrington, PE, PG, or Heather Ferguson at (501) 225-7779.

DLD/hlf

Attachments

R:\WP_FILES\14590-1992-001\CORRESPONDENCE\2019-10-24 FTN TO M. GRAY - 1H2019 ASD (EPA CCR)\2019-10-24 TM-M GRAY (EPA 1H2019 ASD).DOCX

[1] https://www.adeq.state.ar.us/sw/permits/facility_data.aspx

PROFESSIONAL ENGINEER'S CERTIFICATION

With this certification, I certify that I, as a Professional Engineer in the State of Arkansas, am a qualified professional engineer as defined in §257.53 of Title 40 of the Code of Federal Regulations (CFR), Part 257, that this technical memorandum has been prepared under my direction in accordance with generally accepted good engineering practices, that the findings are accurate to the best of my knowledge, and that the alternate source demonstration described herein meets the requirements of §257.94(e)(2) of 40 CFR Part 257.

Dana L. Derrington, Arkansas PE #16372

10/24/2019
Date

REFERENCES

EPA [US Environmental Protection Agency]. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* [EPA 530-R-09-007]. Washington, DC: Office of Resource Conservation and Recovery, Program Implementation and Information Division, US Environmental Protection Agency. March 2009.

FTN [FTN Associates, Ltd.]. 2017a. *Groundwater Monitoring Network Evaluation, Plum Point Energy Station Landfill*. Little Rock, AR: FTN Associates, Ltd.

———. 2017b. *Groundwater Sampling and Analysis Plan, Plum Point Energy Station Landfill*. Little Rock, AR: FTN Associates, Ltd.

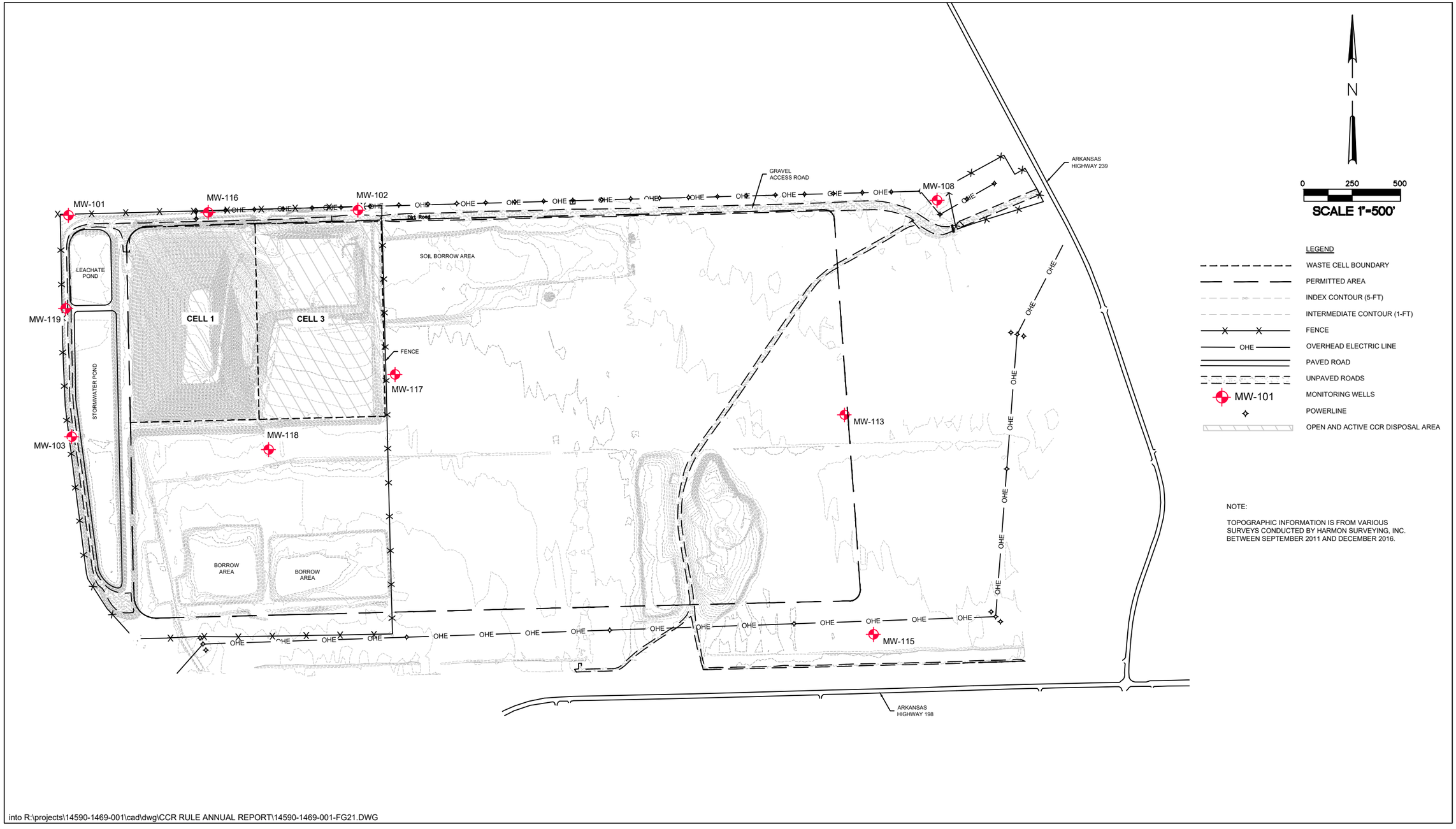
———. 2017c. *Statistical Analysis Plan, Plum Point Energy Station Landfill.* Little Rock, AR: FTN Associates, Ltd.

Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: National Water-Quality Assessment Program, US Geological Survey.

Kresse, T.M., P.D. Hays, K.R. Merriman, J.A. Gillip, D.T. Fugitt, J.L. Spellman, A.M. Nottmeier, D.A. Westerman, J.M. Blackstock, and J.L. Battreal. 2014. *Aquifers of Arkansas—Protection, Management, and Hydrologic and Geochemical Characteristics of Groundwater Resources in Arkansas* [USGS Scientific Investigations Report 2014-5149]. Prepared in cooperation with the Arkansas Natural Resources Commission. Reston, VA: US Geological Survey. 334 pp. doi: http://dx.doi.org/10.3133/sir20145149.

ATTACHMENT 1

Figures



into R:\projects\14590-1469-001\cad\dwg\CCR RULE ANNUAL REPORT\14590-1469-001-FG21.DWG

Figure 1. Monitoring well locations, Plum Point Energy Station.

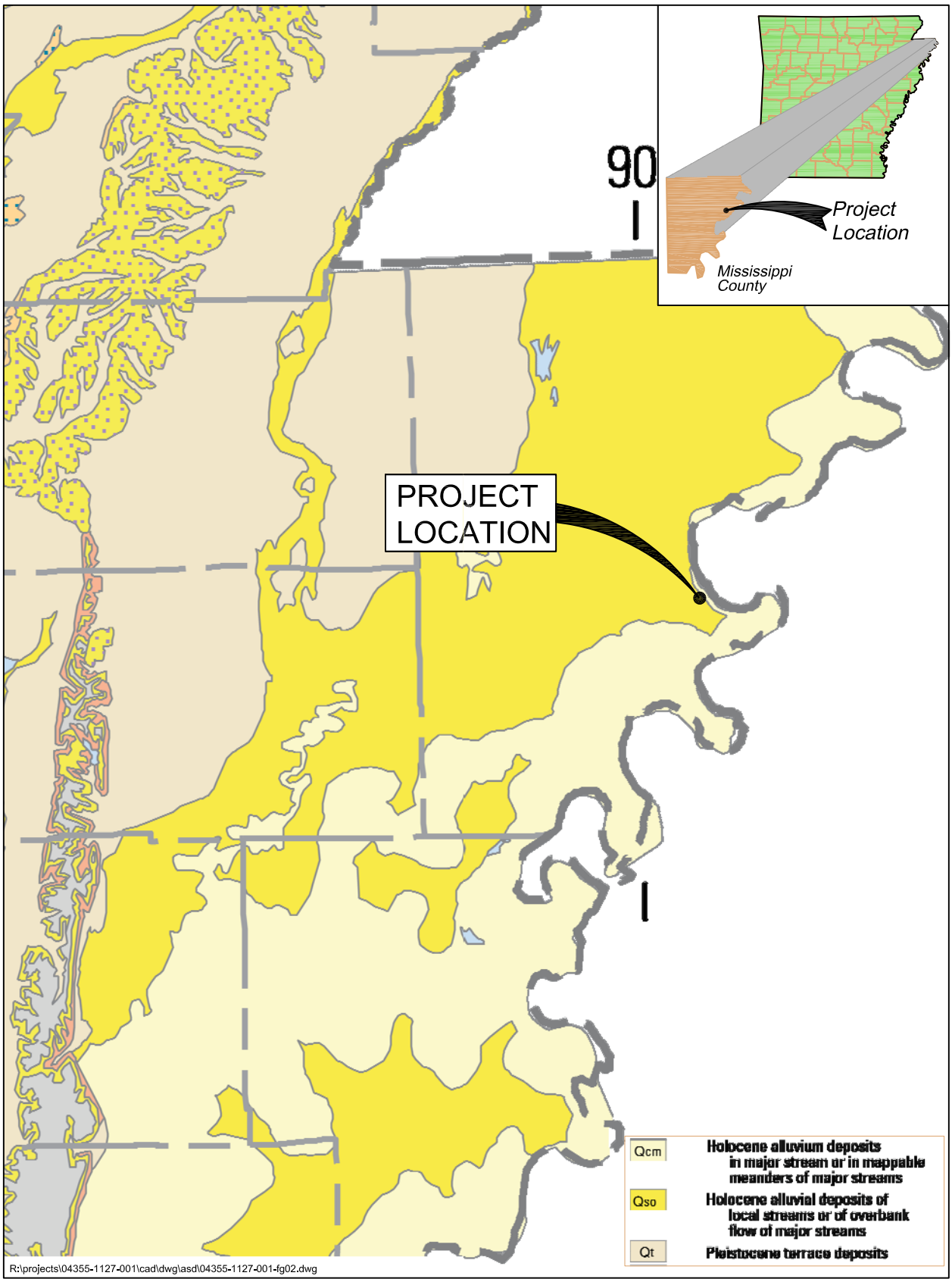


Figure 2. Surface geology of Mississippi County, Arkansas (adapted from Kresse et al. 2014).

ATTACHMENT 2

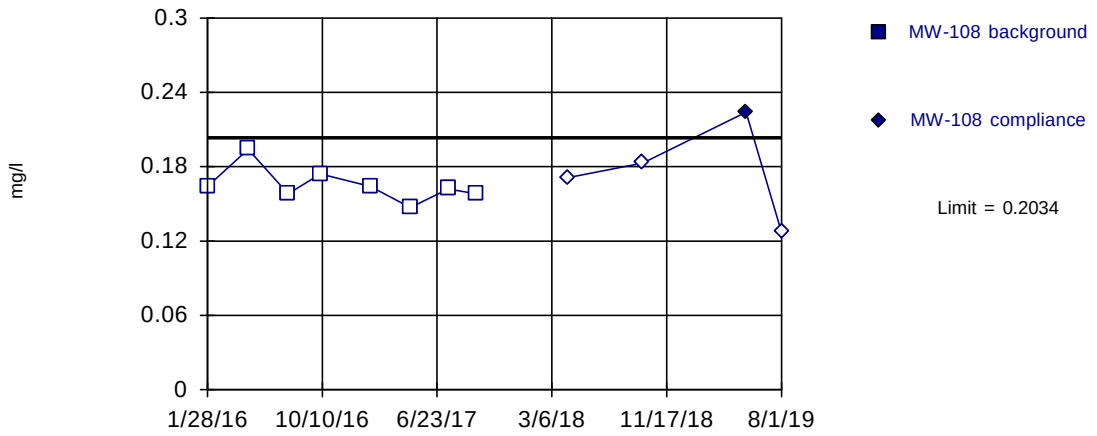
Statistical Plots

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1651, Std. Dev.=0.01391, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8869, critical = 0.749. Kappa = 2.751 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

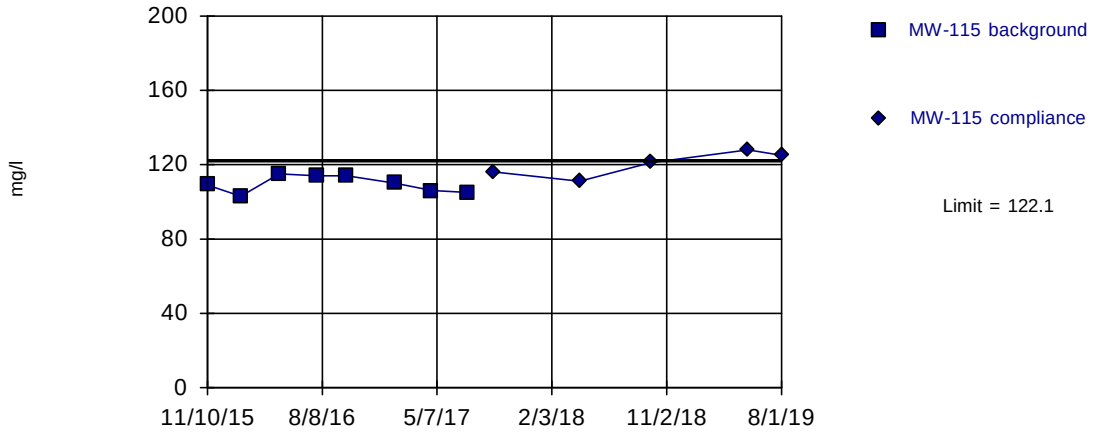
Constituent: Boron Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=109.5, Std. Dev.=4.567, n=8. Seasonality was not detected with 95% confidence. 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.

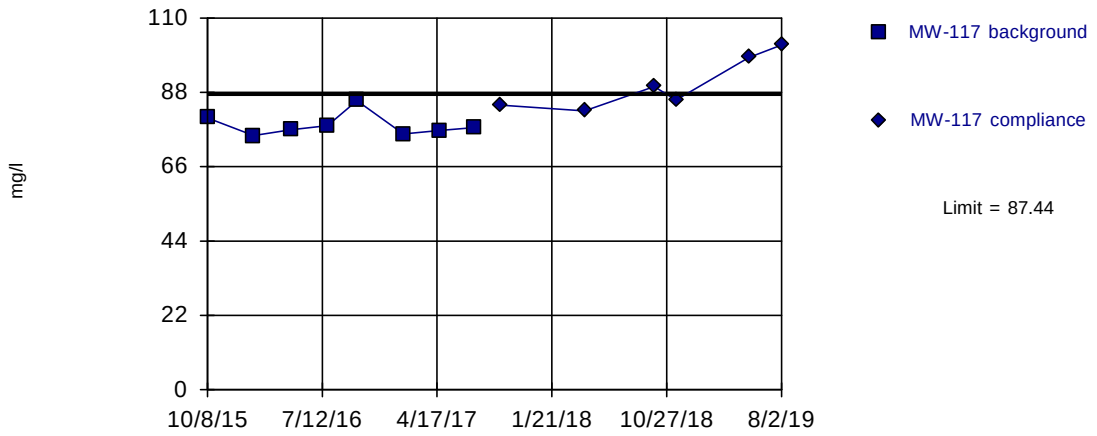
Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=78.28, Std. Dev.=3.33, n=8. Seasonality was not detected with 95% confidence. 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 8/14/2019 11:51 AM View: 2019-1H Verification

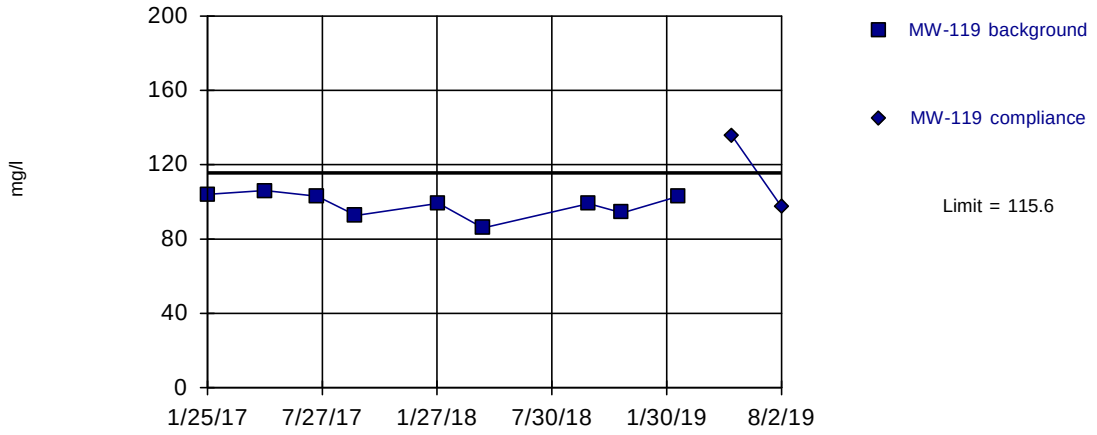
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Sanitas™ v.9.6.20 Sanitas software licensed to FTN Associates. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=98.54, Std. Dev.=6.524, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9156, critical = 0.764. Kappa = 2.618 (c=6, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.001462.

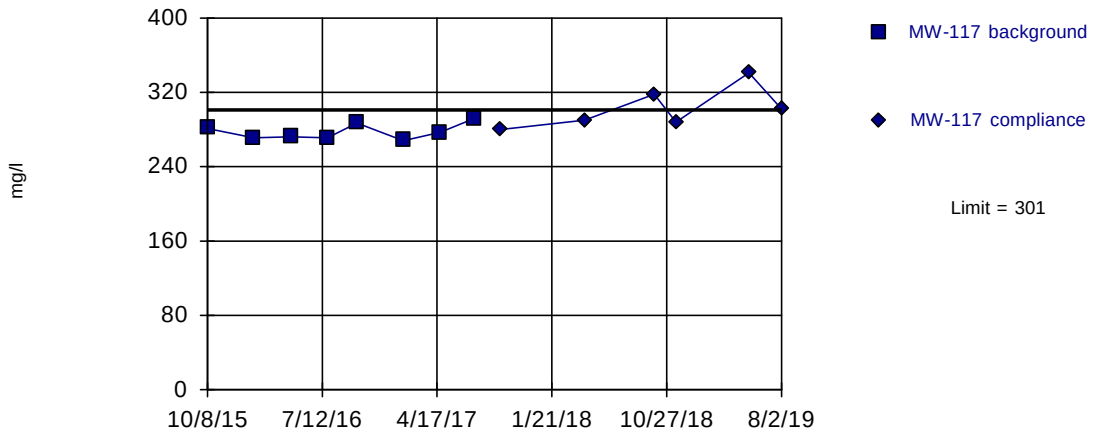
Constituent: Calcium Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. 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.

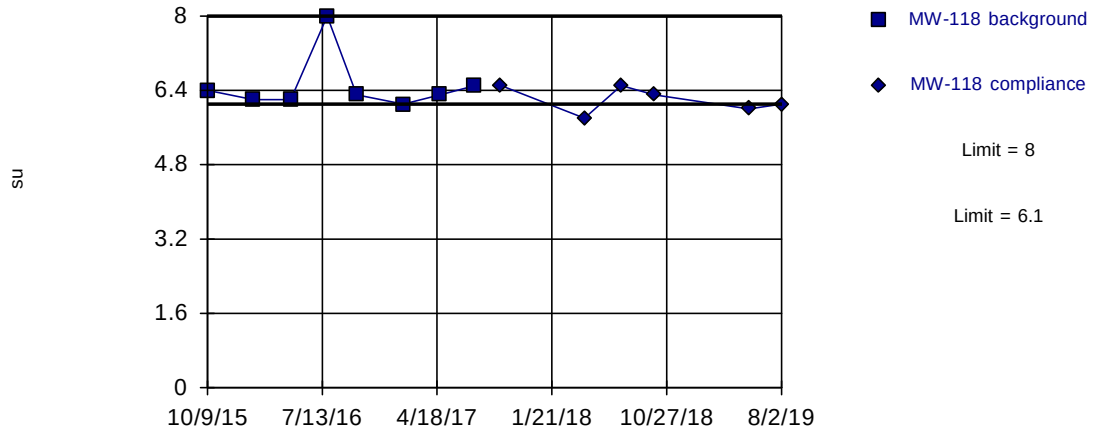
Constituent: Dissolved Solids Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Within Limits

Prediction Limit

Intrawell Non-parametric

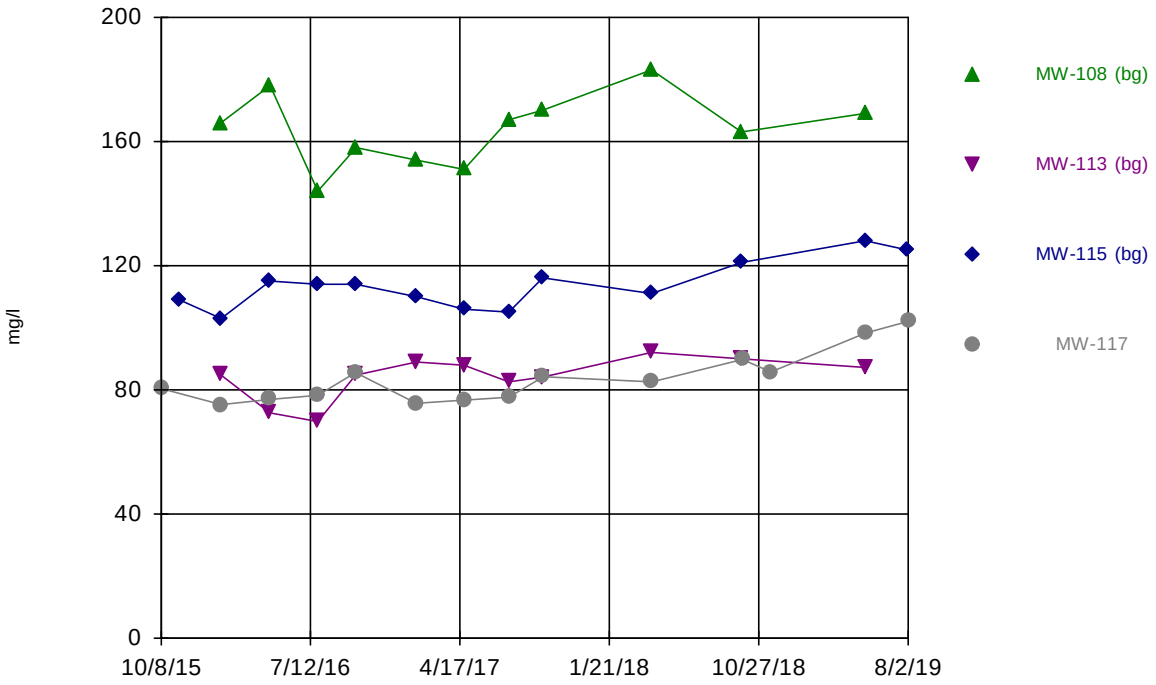


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 8/14/2019 11:51 AM View: 2019-1H Verification

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

Time Series

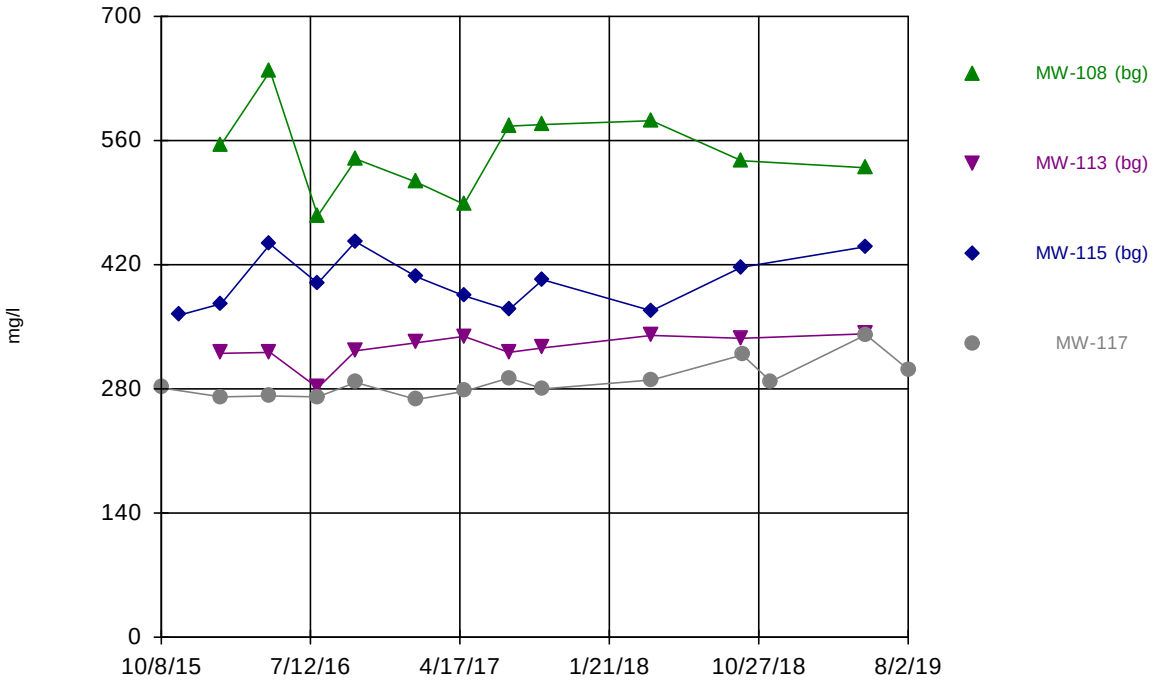


Constituent: Calcium Analysis Run 10/9/2019 12:40 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to FTN Associates. UG

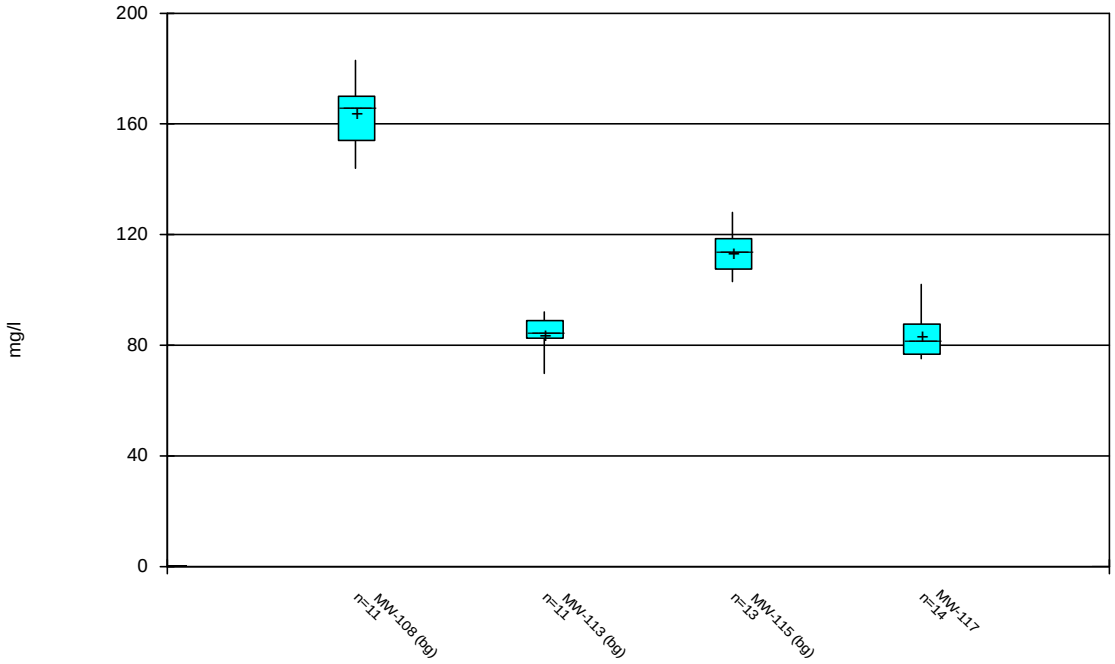
Time Series



Constituent: Dissolved Solids Analysis Run 10/9/2019 12:40 PM

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

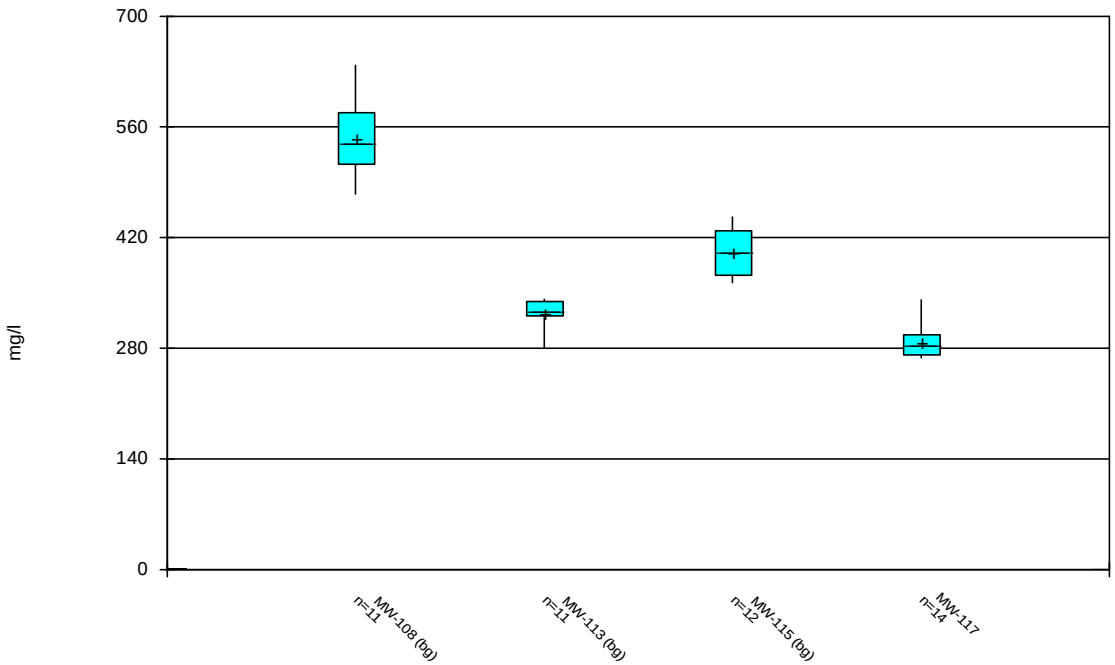
Box & Whiskers Plot



Constituent: Calcium Analysis Run 10/9/2019 12:41 PM

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

Box & Whiskers Plot



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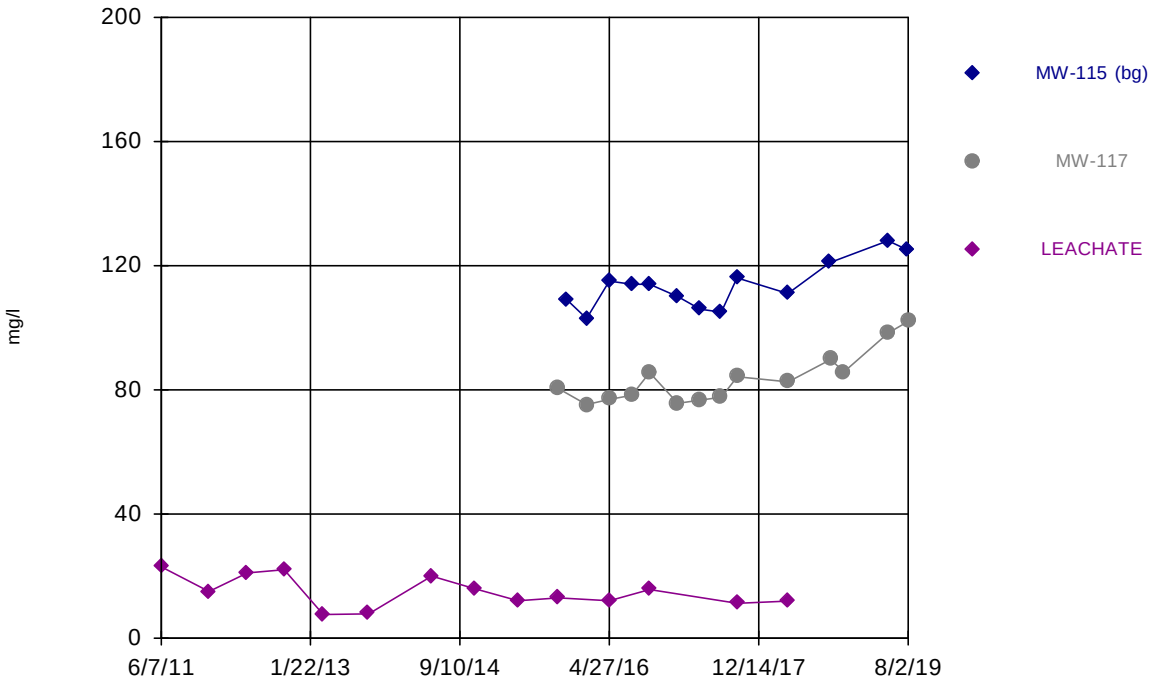
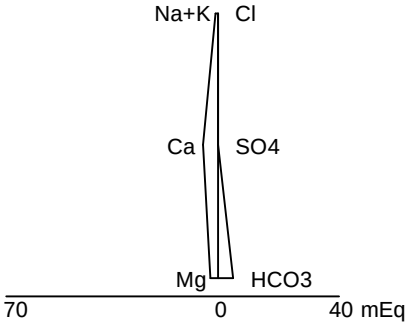
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Time Series

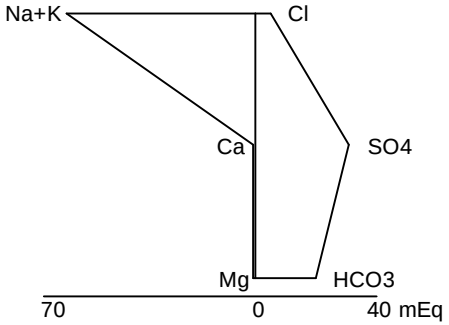


Constituent: Calcium Analysis Run 10/9/2019 12:45 PM

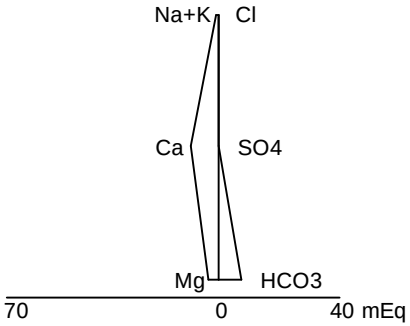
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



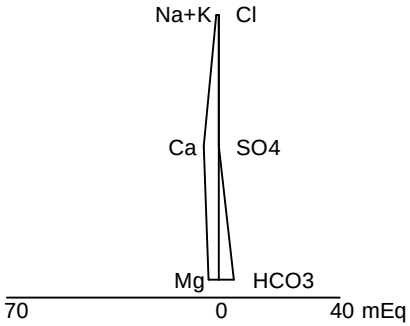
MW-117 5/15/2019



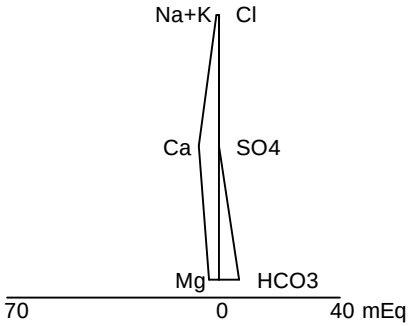
LEACHATE 5/16/2019



MW-108* 5/14/2019



MW-113* 5/14/2019



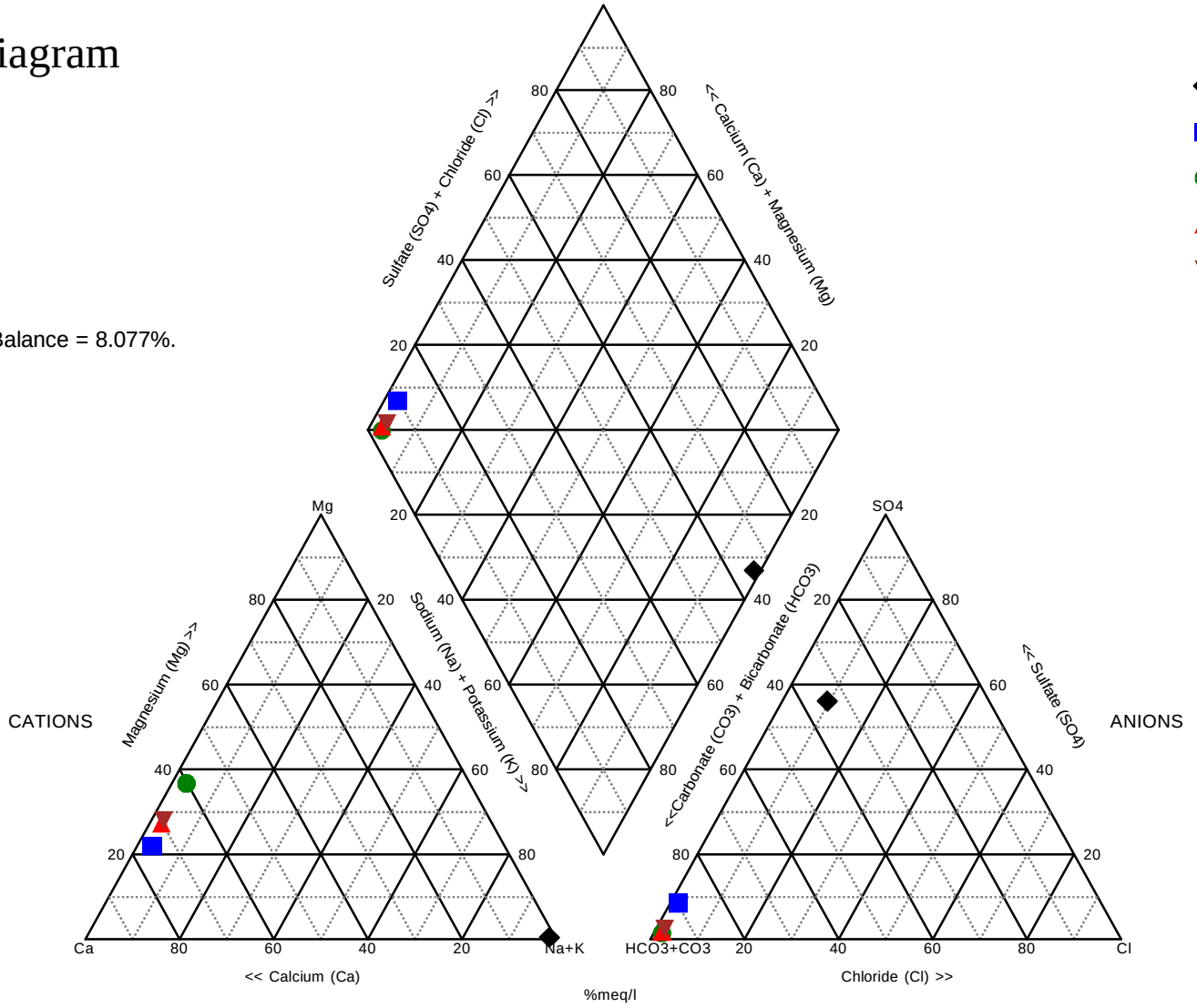
MW-115* 5/14/2019

Stiff Diagram Analysis Run 10/21/2019 1:44 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES Investigational Database

Piper Diagram

Cation-Anion Balance = 8.077%.



Analysis Run 10/21/2019 1:42 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES Investigational Database

ATTACHMENT 3

Summary Table

Table 1. Summary of statistically significant results and maximum background and published levels.

Well ID	Parameter	Prediction Limit	May 2019 Observation		August 2019 Verification	SSI Confirmed?	Maximum Background Level[a]	Maximum Published Level[b]
			Initial	Lab Retest				
MW-108[c]	Boron	0.2034 mg/L	0.222 mg/L	0.224 mg/L	0.127 mg/L	No	N/A[d]	N/A[d]
MW-115[c]	Calcium	122.1 mg/L	128 mg/L	128 mg/L	125 mg/L	Yes	183 mg/L (MW-108, April 2018)	130 mg/L
MW-117	Calcium	87.44 mg/L	95.3 mg/L	98.3 mg/L	102 mg/L	Yes		
MW-119	Calcium	115.6 mg/L	131 mg/L	135 mg/L	97.4 mg/L	No		
MW-118	pH	6.1 su[e]	6.0 su	N/A[f]	6.1 su	No	N/A[d]	N/A[d]
MW-117	TDS	301 mg/L	341 mg/L	N/A[f]	302 mg/L	Yes	638 mg/L (MW-108, April 2016)	728 mg/L

Notes:

a. Based on historical values at MW-108, MW-113, and MW-115.

b. From Gonthier 2003.

c. Background well.

d. Not applicable; SSI was not confirmed.

e. Lower prediction limit.

f. Not applicable; parameter was not eligible for retesting by the laboratory.

REFERENCES

Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: US Geological Survey, National Water-Quality Assessment Program.

ATTACHMENT 4

Laboratory Reports

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

May 29, 2019

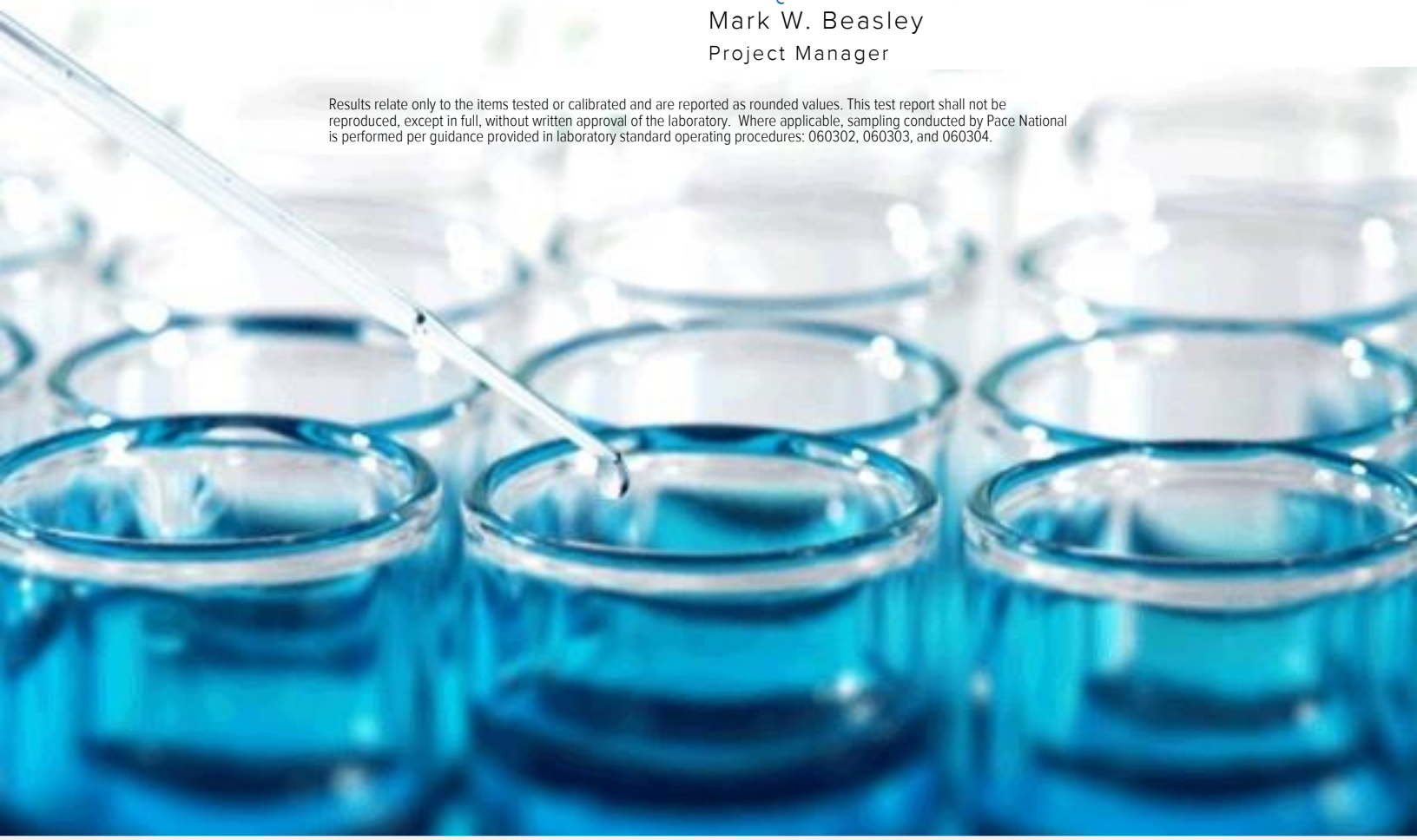
Plum Point Services Co., LLC

Sample Delivery Group:	L1100588
Samples Received:	05/18/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



MW-101 L1100588-01 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 10:30 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:19	05/25/19 20:19	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:23	CCE	Mt. Juliet, TN

MW-102 L1100588-02 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 12:35 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:30	05/25/19 20:30	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:25	CCE	Mt. Juliet, TN

MW-103 L1100588-03 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 14:55 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:41	05/25/19 20:41	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:28	CCE	Mt. Juliet, TN

MW-108 L1100588-04 GW

Collected by: Michael Clayton | Collected date/time: 05/14/19 14:40 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 20:52	05/25/19 20:52	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:31	CCE	Mt. Juliet, TN

MW-113 L1100588-05 GW

Collected by: Michael Clayton | Collected date/time: 05/14/19 13:45 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:03	05/25/19 21:03	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284387	1	05/24/19 11:33	05/25/19 11:33	CCE	Mt. Juliet, TN

MW-115 L1100588-06 GW

Collected by: Michael Clayton | Collected date/time: 05/14/19 12:35 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1283769	1	05/21/19 11:21	05/21/19 12:08	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:14	05/25/19 21:14	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284390	1	05/23/19 11:06	05/24/19 18:40	TRB	Mt. Juliet, TN

MW-116 L1100588-07 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 11:30 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:25	05/25/19 21:25	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:14	TRB	Mt. Juliet, TN

MW-117 L1100588-08 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 16:25 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286592	1	05/25/19 21:35	05/25/19 21:35	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:16	TRB	Mt. Juliet, TN

MW-118 L1100588-09 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 13:50 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:29	05/25/19 16:29	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:19	TRB	Mt. Juliet, TN

MW-119 L1100588-10 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 09:15 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:44	05/25/19 16:44	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:21	TRB	Mt. Juliet, TN

MW-117 DUP L1100588-11 GW

Collected by: Michael Clayton | Collected date/time: 05/15/19 16:30 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284166	1	05/21/19 13:45	05/21/19 14:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 16:59	05/25/19 16:59	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:24	TRB	Mt. Juliet, TN

EB-2 L1100588-12 GW

Collected by: Michael Clayton | Collected date/time: 05/16/19 13:05 | Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1284879	1	05/23/19 16:15	05/23/19 23:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 17:14	05/25/19 17:14	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284393	1	05/24/19 10:25	05/25/19 11:27	TRB	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

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	392000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1010		51.9	1000	1	05/25/2019 20:19	WG1286592
Fluoride	263	B	9.90	100	1	05/25/2019 20:19	WG1286592
Sulfate	9170		77.4	5000	1	05/25/2019 20:19	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	118	J	12.6	200	1	05/25/2019 11:23	WG1284387
Calcium	103000		46.3	1000	1	05/25/2019 11:23	WG1284387

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	466000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2870		51.9	1000	1	05/25/2019 20:30	WG1286592
Fluoride	196	B	9.90	100	1	05/25/2019 20:30	WG1286592
Sulfate	75400		77.4	5000	1	05/25/2019 20:30	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	150	J	12.6	200	1	05/25/2019 11:25	WG1284387
Calcium	121000		46.3	1000	1	05/25/2019 11:25	WG1284387

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	396000		2820	10000	1	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1100		51.9	1000	1	05/25/2019 20:41	WG1286592
Fluoride	213	B	9.90	100	1	05/25/2019 20:41	WG1286592
Sulfate	23400		77.4	5000	1	05/25/2019 20:41	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	154	J	12.6	200	1	05/25/2019 11:28	WG1284387
Calcium	106000		46.3	1000	1	05/25/2019 11:28	WG1284387

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	529000		2820	10000	1	05/21/2019 12:08	WG1283769

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2440		51.9	1000	1	05/25/2019 20:52	WG1286592
Fluoride	184	B	9.90	100	1	05/25/2019 20:52	WG1286592
Sulfate	34500		77.4	5000	1	05/25/2019 20:52	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	222		12.6	200	1	05/25/2019 11:31	WG1284387
Calcium	169000		46.3	1000	1	05/25/2019 11:31	WG1284387

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	342000		2820	10000	1	05/21/2019 12:08	WG1283769

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1580		51.9	1000	1	05/25/2019 21:03	WG1286592
Fluoride	120	B	9.90	100	1	05/25/2019 21:03	WG1286592
Sulfate	3150	J	77.4	5000	1	05/25/2019 21:03	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	168	J	12.6	200	1	05/25/2019 11:33	WG1284387
Calcium	87200		46.3	1000	1	05/25/2019 11:33	WG1284387

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	440000		2820	10000	1	05/21/2019 12:08	WG1283769

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	598	J	51.9	1000	1	05/25/2019 21:14	WG1286592
Fluoride	184	B	9.90	100	1	05/25/2019 21:14	WG1286592
Sulfate	5630		77.4	5000	1	05/25/2019 21:14	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	75.1	J	12.6	200	1	05/24/2019 18:40	WG1284390
Calcium	128000	O1 V	46.3	1000	1	05/24/2019 18:40	WG1284390

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	349000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1660		51.9	1000	1	05/25/2019 21:25	WG1286592
Fluoride	189	B	9.90	100	1	05/25/2019 21:25	WG1286592
Sulfate	27000		77.4	5000	1	05/25/2019 21:25	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	144	J	12.6	200	1	05/25/2019 11:14	WG1284393
Calcium	93200		46.3	1000	1	05/25/2019 11:14	WG1284393

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	341000		2820	10000	1	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1250		51.9	1000	1	05/25/2019 21:35	WG1286592
Fluoride	147	B	9.90	100	1	05/25/2019 21:35	WG1286592
Sulfate	6660		77.4	5000	1	05/25/2019 21:35	WG1286592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	133	J	12.6	200	1	05/25/2019 11:16	WG1284393
Calcium	95300		46.3	1000	1	05/25/2019 11:16	WG1284393

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	286000		2820	10000	1	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1440		51.9	1000	1	05/25/2019 16:29	WG1286607
Fluoride	185		9.90	100	1	05/25/2019 16:29	WG1286607
Sulfate	16500		77.4	5000	1	05/25/2019 16:29	WG1286607

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	125	J	12.6	200	1	05/25/2019 11:19	WG1284393
Calcium	76400		46.3	1000	1	05/25/2019 11:19	WG1284393

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	487000		2820	10000	1	05/23/2019 23:16	WG1284879

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	2860		51.9	1000	1	05/25/2019 16:44	WG1286607
Fluoride	252		9.90	100	1	05/25/2019 16:44	WG1286607
Sulfate	47400		77.4	5000	1	05/25/2019 16:44	WG1286607

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	109	J	12.6	200	1	05/25/2019 11:21	WG1284393
Calcium	131000		46.3	1000	1	05/25/2019 11:21	WG1284393

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	05/21/2019 14:27	WG1284166

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	1130		51.9	1000	1	05/25/2019 16:59	WG1286607
Fluoride	149		9.90	100	1	05/25/2019 16:59	WG1286607
Sulfate	6960		77.4	5000	1	05/25/2019 16:59	WG1286607

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	05/25/2019 11:24	WG1284393
Calcium	95000		46.3	1000	1	05/25/2019 11:24	WG1284393

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	U		2820	10000	1	05/23/2019 23:16	WG1284879

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	05/25/2019 17:14	WG1286607
Fluoride	U		9.90	100	1	05/25/2019 17:14	WG1286607
Sulfate	U		77.4	5000	1	05/25/2019 17:14	WG1286607

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	55.7	J	12.6	200	1	05/25/2019 11:27	WG1284393
Calcium	66.4	B J	46.3	1000	1	05/25/2019 11:27	WG1284393

Method Blank (MB)

(MB) R3413844-1 05/21/19 12:08

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

L1100588-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1100588-06 05/21/19 12:08 • (DUP) R3413844-3 05/21/19 12:08

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	440000	445000	1	1.13		5

Laboratory Control Sample (LCS)

(LCS) R3413844-2 05/21/19 12:08

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8660000	98.4	85.0-115	

Method Blank (MB)

(MB) R3413851-1 05/21/19 14:27

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

L1100588-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1100588-11 05/21/19 14:27 • (DUP) R3413851-3 05/21/19 14:27

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	338000	343000	1	1.47		5

Laboratory Control Sample (LCS)

(LCS) R3413851-2 05/21/19 14:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8810000	100	85.0-115	

Method Blank (MB)

(MB) R3415426-1 05/23/19 23:16

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

L1100588-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1100588-10 05/23/19 23:16 • (DUP) R3415426-3 05/23/19 23:16

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	487000	481000	1	1.24		5

Laboratory Control Sample (LCS)

(LCS) R3415426-2 05/23/19 23:16

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8860000	101	85.0-115	

Method Blank (MB)

(MB) R3415072-1 05/25/19 14:18

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		51.9	1000
Fluoride	56.4	J	9.90	100
Sulfate	U		77.4	5000

L1100485-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-07 05/25/19 15:59 • (DUP) R3415072-3 05/25/19 16:10

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	3800	3730	1	1.86		15
Fluoride	189	185	1	2.20		15
Sulfate	10100	9850	1	2.26		15

L1100485-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1100485-14 05/25/19 18:09 • (DUP) R3415072-6 05/25/19 18:20

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

Laboratory Control Sample (LCS)

(LCS) R3415072-2 05/25/19 14:29

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40900	102	80.0-120	
Fluoride	8000	8450	106	80.0-120	
Sulfate	40000	41500	104	80.0-120	

L1100485-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100485-07 05/25/19 15:59 • (MS) R3415072-4 05/25/19 16:20 • (MSD) R3415072-5 05/25/19 16:31

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	3800	53800	53600	100	99.6	1	80.0-120			0.482	15
Fluoride	5000	189	5270	5220	102	101	1	80.0-120			0.983	15
Sulfate	50000	10100	59000	58900	97.8	97.7	1	80.0-120			0.132	15

L1100485-14 Original Sample (OS) • Matrix Spike (MS)

(OS) L1100485-14 05/25/19 18:09 • (MS) R3415072-7 05/25/19 18:31

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	U	50200	100	1	80.0-120	
Fluoride	5000	U	5110	102	1	80.0-120	
Sulfate	50000	U	50200	100	1	80.0-120	

Method Blank (MB)

(MB) R3415074-1 05/25/19 08:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77.4	5000

L1100662-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1100662-02 05/25/19 17:44 • (DUP) R3415074-6 05/25/19 18:28

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	23300	23400	1	0.484		15
Fluoride	777	780	1	0.475		15
Sulfate	56100	56200	1	0.340		15

Laboratory Control Sample (LCS)

(LCS) R3415074-2 05/25/19 08:46

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40500	101	80.0-120	
Fluoride	8000	8190	102	80.0-120	
Sulfate	40000	41500	104	80.0-120	

L1100662-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1100662-02 05/25/19 17:44 • (MS) R3415074-7 05/25/19 18:43

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	23300	72700	98.8	1	80.0-120	
Fluoride	5000	777	5760	99.7	1	80.0-120	
Sulfate	50000	56100	104000	95.6	1	80.0-120	E

Method Blank (MB)

(MB) R3415216-1 05/26/19 12:14

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) R3415216-2 05/26/19 12:17 • (LCSD) R3415216-3 05/26/19 12:19

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	998	986	99.8	98.6	80.0-120			1.26	20
Calcium	10000	9380	9480	93.8	94.8	80.0-120			0.996	20

L1100383-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100383-01 05/25/19 10:23 • (MS) R3415228-2 05/25/19 10:28 • (MSD) R3415228-3 05/25/19 10:31

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	ND	1040	1060	97.5	99.9	1	75.0-125			2.35	20
Calcium	10000	11300	20500	21000	92.3	97.1	1	75.0-125			2.30	20

Method Blank (MB)

(MB) R3414882-1 05/24/19 18:32

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) R3414882-2 05/24/19 18:34 • (LCSD) R3414882-3 05/24/19 18:37

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	981	938	98.1	93.8	80.0-120			4.47	20
Calcium	10000	9930	9690	99.3	96.9	80.0-120			2.49	20

L1100588-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100588-06 05/24/19 18:40 • (MS) R3414882-5 05/24/19 18:45 • (MSD) R3414882-6 05/24/19 18:48

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	75.1	1070	1040	99.5	96.3	1	75.0-125			3.06	20
Calcium	10000	128000	134000	135000	63.5	74.0	1	75.0-125	V	V	0.777	20

Method Blank (MB)

(MB) R3415021-1 05/25/19 10:45

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	293	J	46.3	1000

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

(LCS) R3415021-2 05/25/19 10:47 • (LCSD) R3415021-3 05/25/19 10:49

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	974	951	97.4	95.1	80.0-120			2.35	20
Calcium	10000	9930	9690	99.3	96.9	80.0-120			2.46	20

L1100809-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100809-02 05/25/19 10:52 • (MS) R3415021-5 05/25/19 10:57 • (MSD) R3415021-6 05/25/19 10:59

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	ND	1120	1140	95.3	97.3	1	75.0-125			1.76	20
Calcium	10000	167000	175000	174000	81.4	71.7	1	75.0-125		V	0.560	20

L1100823-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100823-01 05/25/19 11:02 • (MS) R3415021-7 05/25/19 11:04 • (MSD) R3415021-8 05/25/19 11:06

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	2130	3040	3070	91.5	94.3	1	75.0-125			0.916	20
Calcium	10000	66800	75900	75400	91.9	86.6	1	75.0-125			0.692	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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

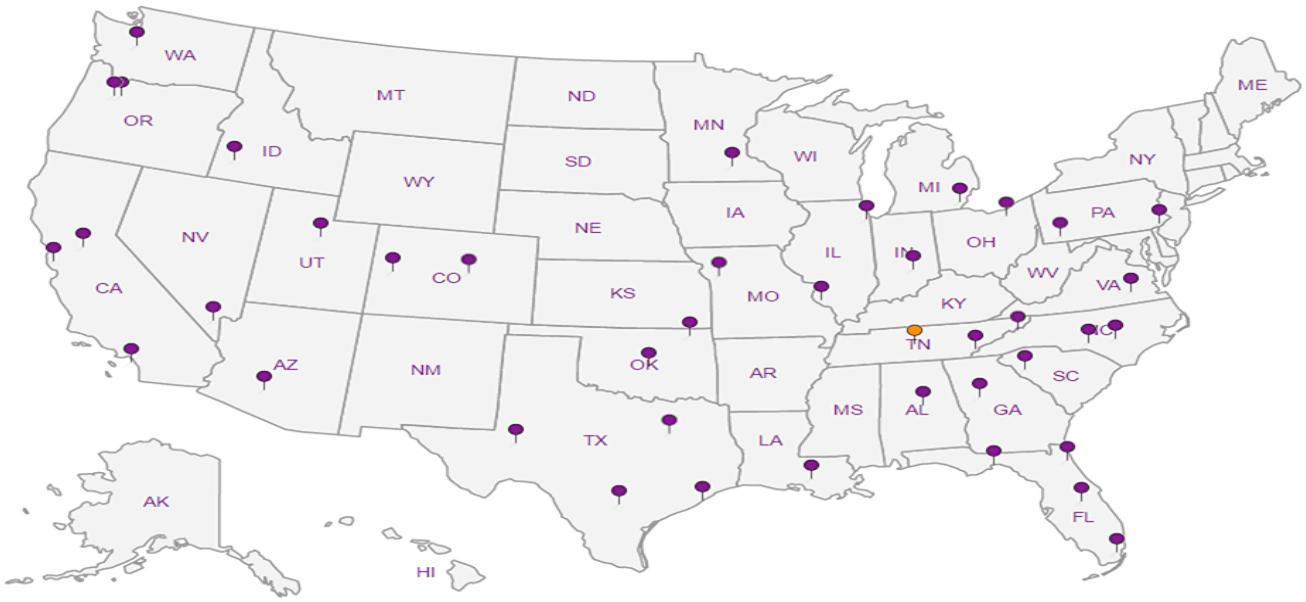
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3								Remarks	Sample # (lab only)
							42										
MW-101	Grab	GW		5-16-19	1030	2	X	X									-01
MW-102		GW		5-16-19	1235	2	X	X									02
MW-103		GW		5-15-19	1455	2	X	X									03
MW-108		GW		5-14-19	1440	2	X	X									04
MW-113		GW		5-14-19	1345	2	X	X									05
MW-115		GW		5-14-19	1235	2	X	X									06
MW-116		GW		5-16-19	1130	2	X	X									07
MW-117		GW		5-15-19	1625	2	X	X									08
MW-118		GW		5-15-19	1350	2	X	X									09
MW-119		GW		5-16-19	915	2	X	X									10

RAD SCREEN: <0.5 mR/hr

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

Pace Analytical®
National Center for Testing & Innovation

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

L# L1160588
J009

Acctnum: NAESOAR
Template: T134757
Prelogin: P708148
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

* 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 # 4794 8837 0400

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)
Michael Clayton	5-17-19	1300	
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: 4.1 °C Bottles Received: 24

Date: 5/18/19 Time: 0800

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: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Chain of Custody Page 2 of 2

Pace Analytical®
National Center for Testing & Innovation

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

L# L1160589

Table #

Acctnum: NAESOAR
Template: T134757
Prelogin: P708148
TSR: 134 - Mark W. Beasley
PB:

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3	Remarks	Sample # (lab only)
MW-117 DUP	Grab	GW		5-15-19	1630	2	X	X		-11
EB-2	↓	GW		5-16-19	1305	2	X	X		12
		GW				2	X	X		
		GW				2	X	X		
		GW				2	X	X		

RAD SCREEN: <0.5 mR/hr

* 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 # Same

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

	Date:	Time:		
Relinquished by : (Signature) Michael Clayton	5-17-19	1300	Received by: (Signature)	
Relinquished by : (Signature)			Received by: (Signature)	
Relinquished by : (Signature)			Received for lab by: (Signature)	

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

Temp: 4.1 °C Bottles Received: 24

Date: 5/8/19 Time: 0800

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 14, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1106577
Samples Received:	05/18/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

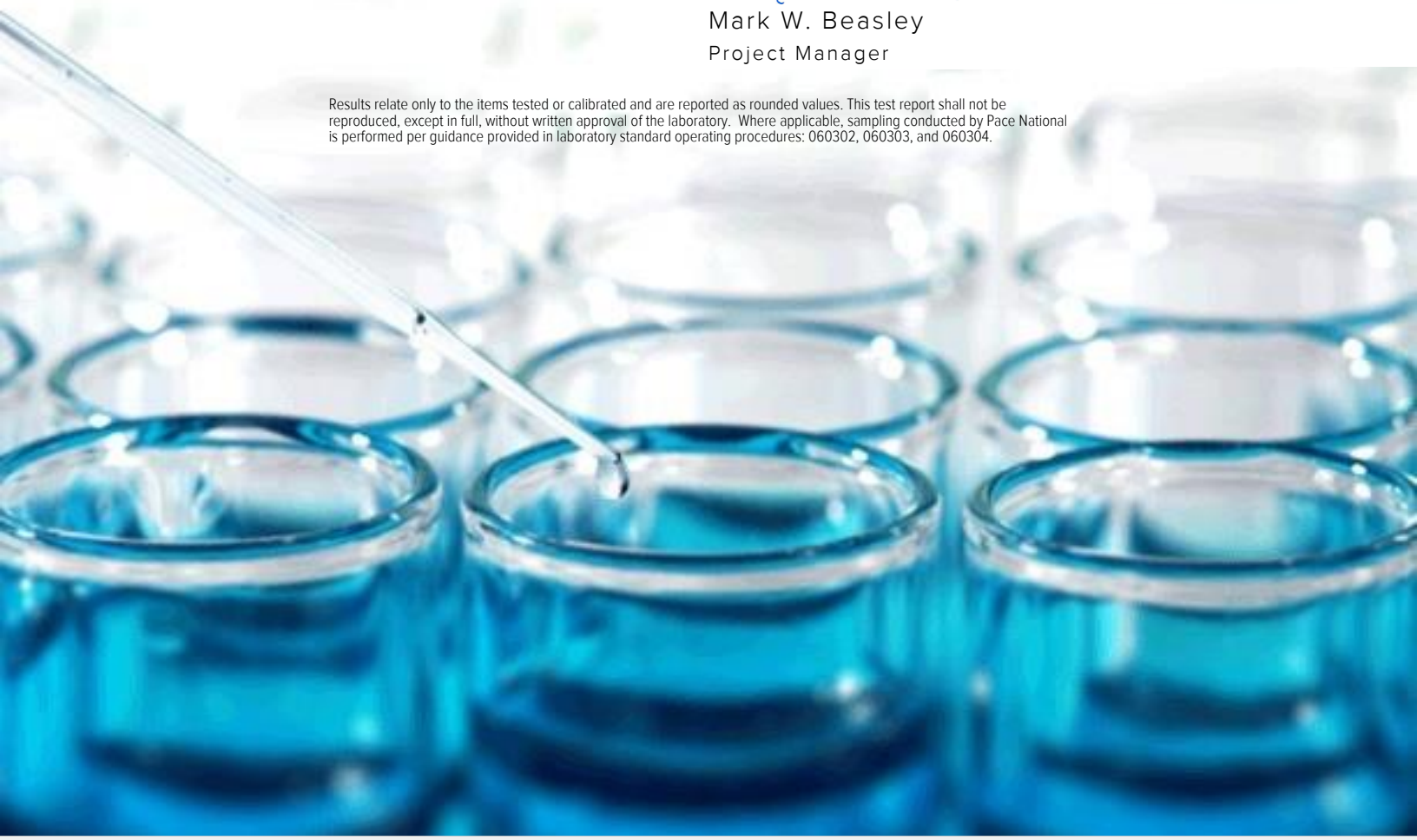


TABLE OF CONTENTS

MW-108 L1106577-01 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 14:40
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:24	CCE	Mt. Juliet, TN

MW-115 L1106577-02 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 12:35
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:27	CCE	Mt. Juliet, TN

MW-117 L1106577-03 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 16:25
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:30	CCE	Mt. Juliet, TN

MW-119 L1106577-04 GW

Collected by: Michael Clayton
Collected date/time: 05/14/19 09:15
Received date/time: 05/18/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1294030	1	06/11/19 15:06	06/12/19 09:32	CCE	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	224	B	12.6	200	1	06/12/2019 09:24	WG1294030

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	128000		46.3	1000	1	06/12/2019 09:27	WG1294030

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	98300		46.3	1000	1	06/12/2019 09:30	WG1294030

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	135000		46.3	1000	1	06/12/2019 09:32	WG1294030

Method Blank (MB)

(MB) R3420383-1 06/12/19 08:47

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	51.0	J	12.6	200
Calcium	U		46.3	1000

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

(LCS) R3420383-2 06/12/19 08:49 • (LCSD) R3420383-3 06/12/19 08:52

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Boron	1000	1040	1010	104	101	80.0-120			2.24	20
Calcium	10000	9720	9690	97.2	96.9	80.0-120			0.230	20

L1106433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106433-01 06/12/19 08:55 • (MS) R3420383-5 06/12/19 09:01 • (MSD) R3420383-6 06/12/19 09:03

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	ND	1080	1090	97.9	99.0	1	75.0-125			1.05	20
Calcium	10000	49100	59000	58700	98.7	96.1	1	75.0-125			0.454	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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

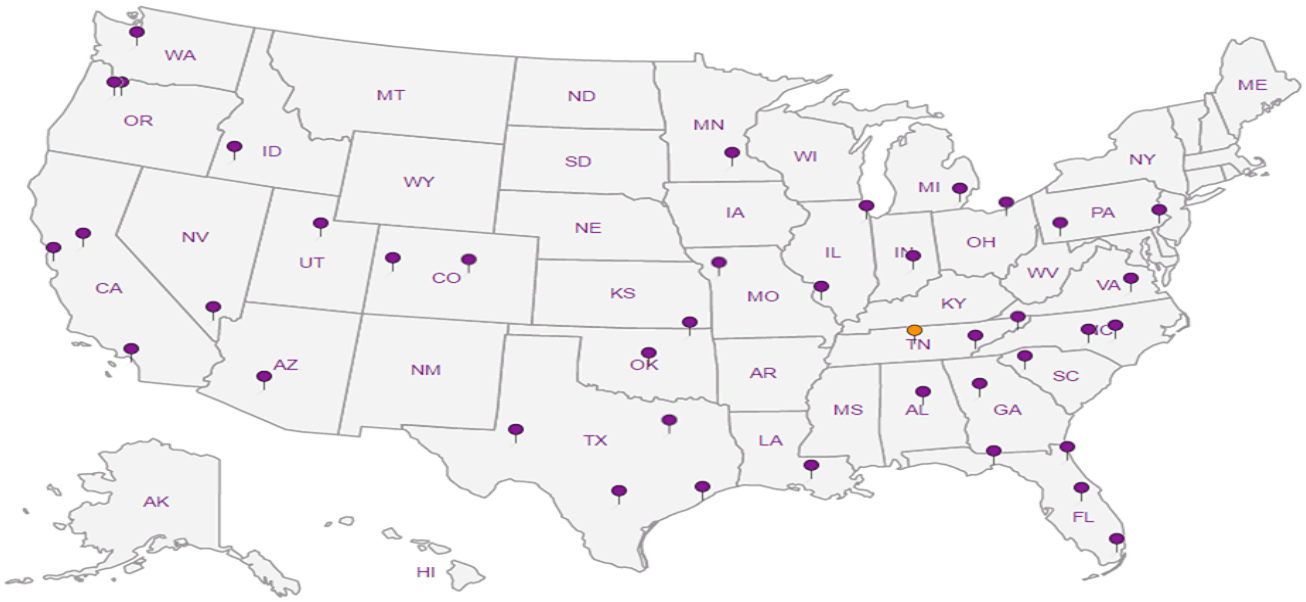
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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: Dana Derrington

Email To: Christopher.Lussier@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 # 14590-1992-001

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

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntr	Cl, F, SO4, TDS 250mlHDPE-NoPres	Total B, Ca 250mlHDPE-HNO3	42	Remarks	Sample # (lab only)
MW-101	Grab	GW		5-16-19	1030	2	X	X			~~01~~
MW-102		GW		5-16-19	1235	2	X	X			~~02~~
MW-103		GW		5-15-19	1455	2	X	X			~~03~~
MW-108		GW		5-14-19	1440	2	X	X			~~04~~ -01
MW-113		GW		5-14-19	1345	2	X	X			~~05~~
MW-115		GW		5-14-19	1235	2	X	X			~~06~~ -02
MW-116		GW		5-16-19	1130	2	X	X			~~07~~
MW-117		GW		5-15-19	1625	2	X	X			~~08~~ -03
MW-118		GW		5-15-19	1350	2	X	X			~~09~~
MW-119		GW		5-16-19	915	2	X	X			~~10~~ -04

RAD SCREEN: <0.5 mR/hr

Chain of Custody Page 2 of 2

Pace Analytical
National Center for Testing & Innovation

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

L# ~~L1160588~~
J009
L1106577

NV 6/4/19

Acctnum: NAESOAR
Template: T134757
Prelogin: P708148
TSR: 134 - Mark W. Beasley
PB:
Shipped Via: FedEX Ground

* 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 # 4794 8837 0408

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)
Michael Clayton	5-17-19	1300	
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: 4.1 +0 -1.1 °C Bottles Received: 24

Date: 5/18/19 Time: 0800

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

Andy Vann

From: Mark Beasley
Sent: Friday, June 07, 2019 2:07 PM
To: Project Service; Sample Storage
Subject: L1100588 *FTNLRAR* relog

Relog the following as R5 due 6/14:

L1100588-04 BICP
L1100588-06 CAICP
L1100588-08 CAICP
L1100588-10 CAICP

Thanks
Mark

From: Heather Ferguson [mailto:hlf@ftn-assoc.com]
Sent: Friday, June 07, 2019 1:35 PM
To: Mark Beasley
Cc: Dana Derrington
Subject: Lab Re-runs for SDG L1100588 (Plum Point EPA Program)

Hi Mark,

Could you verify the results for the samples below from the attached report and if correct, ask the lab to re-run the samples? Please do not re-run the sample for dissolved solids; the re-run result will be out of hold so we won't be able to use it anyway.

Well ID	Analyte	Result	Flag	RDL	Units
MW-108	BORON	0.222		0.2	mg/l
MW-115	CALCIUM	128		1	mg/l
MW-117	CALCIUM	95.3		1	mg/l
MW-119	CALCIUM	131		1	mg/l
MW-117	DISSOLVED SOLIDS	341		10	mg/l

← *verify only; please do not include in re-runs.*

Thank you!

Heather

Heather Ferguson
FTN Associates, Ltd.
3 Innwood Circle, Suite 220 ⬙ Little Rock, AR 72211 (501) 225-7779 ⬙ fax (501) 225-6738
hlf@ftn-assoc.com http://www.ftn-assoc.com

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 09, 2019

Plum Point Services Co., LLC

Sample Delivery Group:	L1125145
Samples Received:	08/03/2019
Project Number:	14590-1992-001
Description:	Plum Point Energy Station

Report To: Dana Derrington
2739 SCR 623
Osceola, AR 72370

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

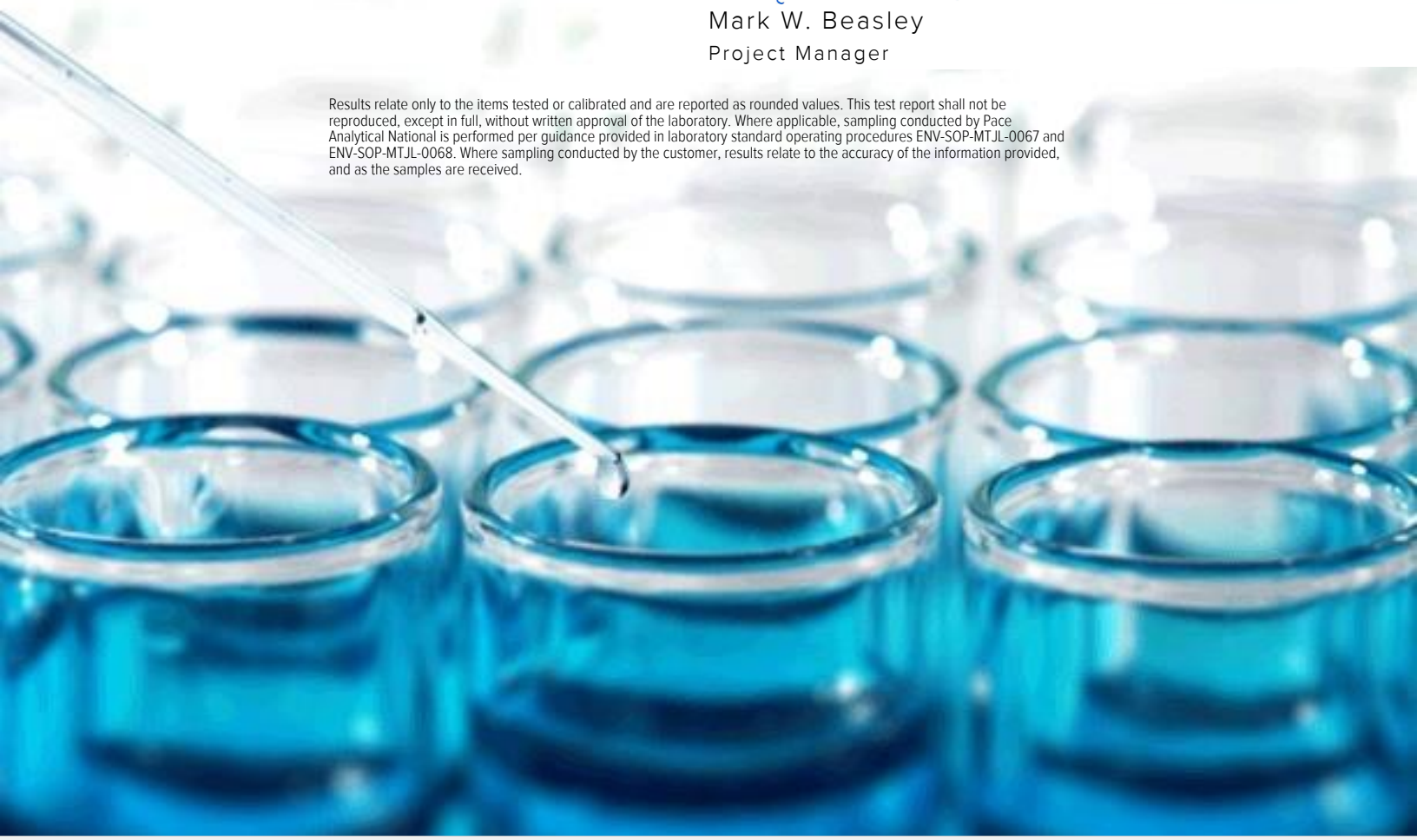


TABLE OF CONTENTS

MW-108 L1125145-01 GW

Collected by: Michael Clayton | Collected date/time: 08/01/19 11:55 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:06	TRB	Mt. Juliet, TN

MW-115 L1125145-02 GW

Collected by: Michael Clayton | Collected date/time: 08/01/19 09:40 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:09	TRB	Mt. Juliet, TN

MW-117 L1125145-03 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 12:20 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:11	TRB	Mt. Juliet, TN

MW-117 DUP L1125145-04 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 12:25 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:14	TRB	Mt. Juliet, TN

MW-119 L1125145-05 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 09:20 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:17	TRB	Mt. Juliet, TN

EPA EB-1 L1125145-06 GW

Collected by: Michael Clayton | Collected date/time: 08/02/19 12:40 | Received date/time: 08/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1322631	1	08/06/19 14:30	08/06/19 15:12	MMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1322637	1	08/04/19 14:03	08/06/19 11:19	TRB	Mt. Juliet, TN

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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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
Project Manager

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	127	B J	12.6	200	1	08/06/2019 11:06	WG1322637

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	125000		46.3	1000	1	08/06/2019 11:09	WG1322637

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	302000		2820	10000	1	08/06/2019 15:12	WG1322631

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	102000		46.3	1000	1	08/06/2019 11:11	WG1322637

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	339000		2820	10000	1	08/06/2019 15:12	WG1322631

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	102000		46.3	1000	1	08/06/2019 11:14	WG1322637

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Calcium	97400		46.3	1000	1	08/06/2019 11:17	WG1322637

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	U		2820	10000	1	08/06/2019 15:12	WG1322631

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Boron	18.7	B J	12.6	200	1	08/06/2019 11:19	WG1322637
Calcium	U		46.3	1000	1	08/06/2019 11:19	WG1322637

Method Blank (MB)

(MB) R3438618-1 08/06/19 15:12

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

L1125145-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1125145-03 08/06/19 15:12 • (DUP) R3438618-3 08/06/19 15:12

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	302000	306000	1	1.32		5

Laboratory Control Sample (LCS)

(LCS) R3438618-2 08/06/19 15:12

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8540000	97.0	85.0-115	

Method Blank (MB)

(MB) R3437811-1 08/06/19 10:25

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	12.8	J	12.6	200
Calcium	U		46.3	1000

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

(LCS) R3437811-2 08/06/19 10:28 • (LCSD) R3437811-3 08/06/19 10:30

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Boron	1000	990	999	99.0	99.9	80.0-120			0.934	20
Calcium	10000	10300	10500	103	105	80.0-120			2.43	20

L1125119-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1125119-01 08/06/19 10:33 • (MS) R3437811-5 08/06/19 10:38 • (MSD) R3437811-6 08/06/19 10:40

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	242	1030	1020	79.0	77.9	1	75.0-125			1.10	20
Calcium	10000	2330	34600	34700	323	323	1	75.0-125	J5	J5	0.159	20

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Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

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, the sample preparation volume or weight values differ from the standard, 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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
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Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

Pace National 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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

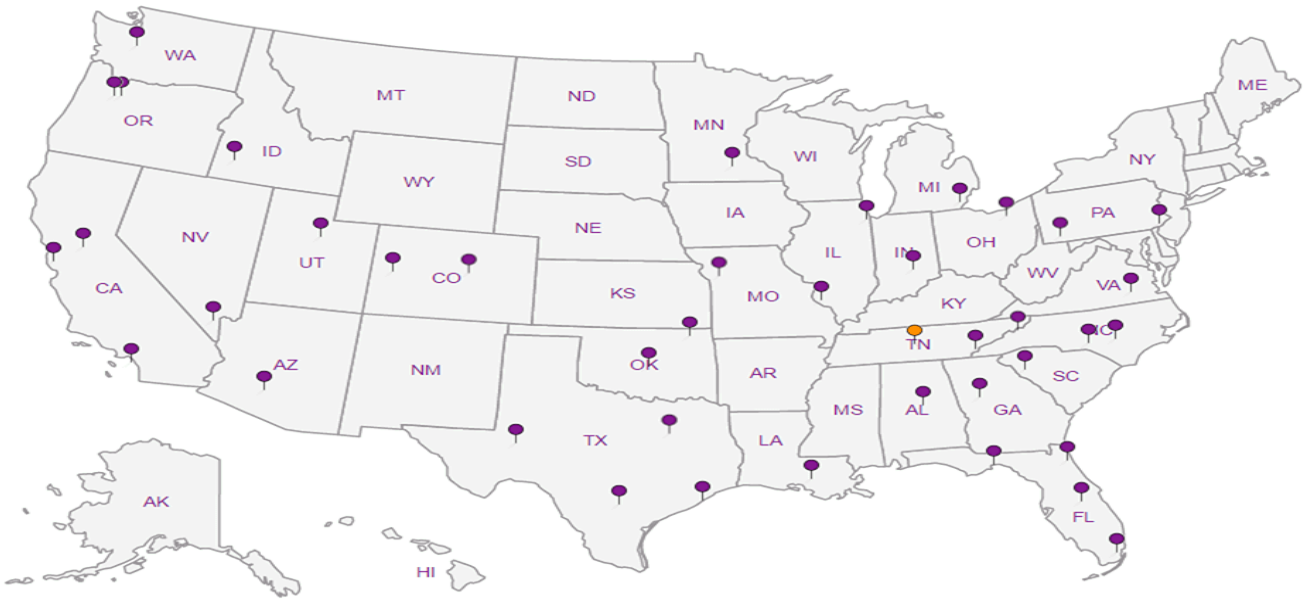
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National 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

Report to: **Dana Derrington**

Email To: Christopher.Lussier@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 # **14590-1992-001**

Lab Project # **NAESOAR-PLUMPOINT**

Collected by (print): Michael Clayton

Site/Facility ID #

P.O. # **2019-00325**

Collected by (signature):

Immediately Packed on Ice N ___ Y U

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

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TDS 250mlHDPE-NoPres	Total B 250mlHDPE-HNO3	Total B, Ca 250mlHDPE-HNO3	Total Ca 250mlHDPE-HNO3	Remarks	Sample # (lab only)
MW-108	Grab	GW		8/1/19	1155	1		X				-01
MW-115		GW		8/1/19	0940	1				X		02
MW-117		GW		8/2/19	1220	2	X			X		03
MW-117 DUP		GW		8/2/19	1225	2	X			X		04
MW-119		GW		8/2/19	0920	1				X		05
EPA EB-1		GW		8/2/19	1240	2	X		X			06
		GW				2	X		X			

Chain of Custody Page 1 of 1

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L# 1125115
H207

Acctnum: **NAESOAR**
Template: **T130326**
Prelogin: **P720961**
TSR: **134 - Mark W. Beasley**
PB:
Shipped Via: **FedEX Ground**

* 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 # 1082 5993 1483 50

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

RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	8/2/19	1500	
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
Ø

Temp: 2.6-1-2.5 °C AS 2 Bottles Received: 9

Date: 8-3-19 Time: 8:45

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Alternate Source Demonstration for Second Half 2019 Statistical Exceedance

ftn Associates Ltd.
water resources / environmental consultants
3 Innwood Circle, Suite 220 • Little Rock, AR 72211 • (501) 225-7779 • Fax (501) 225-6738

TECHNICAL MEMORANDUM

DATE: December 17, 2019

TO: **Matt Gray**
Plum Point Services Company, LLC

FROM: **Dana Derrington, PE, PG**
FTN Associates, Ltd.

SUBJECT: Alternate Source Demonstration for Statistically Significant Increases
Second Half of 2019 Monitoring Period, Plum Point Energy Station Landfill
FTN No. R14590-1992-001

FTN Associates, Ltd. (FTN), has prepared this technical memorandum for the Plum Point Services Company, LLC (PPSC), coal combustion residual (CCR) landfill, which is regulated by the Environmental Protection Agency (EPA) Coal Combustion Residuals Rule, promulgated in Title 40 of the Code of Federal Regulations (40 CFR), Part 257. The landfill is also regulated by the Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 22 and permitted by the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ), under Permit No. 0303-S3N-R1.

FTN was contracted to sample groundwater and to statistically evaluate the data from the second half of 2019 monitoring event. Based on statistical evaluation of the data, one confirmed statistically significant increase (SSI) over background concentrations was identified. Pursuant to §257.94(e)(2), the landfill may demonstrate that a source other than the CCR unit caused an SSI over background levels for a constituent or that an SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This memorandum, hereafter referred to as an alternate source demonstration (ASD), presents evidence that the confirmed SSI is the result of natural fluctuations in groundwater quality and/or offsite influence.

1.0 BACKGROUND

FTN performed groundwater sampling for the second half 2019 semiannual groundwater monitoring period during October 2019. Sample collection, preservation, shipment, analytical procedures, chain-of-custody control, and data quality control for this sampling event followed protocol outlined in the landfill's groundwater sampling and analysis plan (GWSAP) (FTN 2017b). Statistical evaluation of the data set followed the most recent EPA guidance (EPA 2009) and the landfill's statistical analysis plan (SAP) (FTN 2017c). An intrawell prediction

limit evaluation identified one confirmed SSI for total dissolved solids (TDS) at compliance well MW-117. This SSI was previously identified as confirmed during the first half of 2019 monitoring period and as such, verification sampling was not performed. PPSC completed a successful ASD for this SSI (and others) in accordance with §257.94(e)(2) (FTN 2019). The ASD was certified by an Arkansas-registered professional engineer and was posted to the facility's operating record on October 24, 2019.

A site map showing the location of MW-117 relative to the CCR unit (active landfill cells 1 and 3) is included as Figure 1 (all figures are included in Attachment 1). The second half of 2019 intrawell prediction limit plot for TDS at MW-117 is included in Attachment 2.

2.0 DISCUSSION

A review of the monitoring system with respect to onsite background wells, background groundwater quality, published literature, and landfill leachate was performed to determine if the confirmed SSI for TDS at compliance well MW-117 was indicative of a release from the CCR unit. Findings from this review are discussed below.

2.1 Monitoring System Background Wells

As required by §257.91(c)(1), the groundwater monitoring system is required to contain a minimum of one monitoring well that is hydraulically upgradient of the CCR management area for the purpose of monitoring background water quality. However, there is not a hydraulically upgradient location at this facility because the direction of groundwater flow is seasonably variable. As allowed by §257.91(a)(1), a facility may utilize wells for background water quality that are not hydraulically upgradient of the CCR unit. For this reason, the facility incorporated monitoring wells MW-108, MW-113, and MW-115 (Figure 1) to monitor background water quality because those wells are positioned outside the potential zone of impact from the CCR unit. 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 unit. Specifically:

- MW-108, MW-113, and MW-115 are located more than 2,300 ft from the eastern edge of cell 3,
- Groundwater at the landfill has historically exhibited a maximum flow rate of 40 ft/year, and
- The landfill became active during March 2010.

Using the information available above, a potential leachate plume would not be expected to have migrated more than 390 ft from the CCR unit as of the time of this evaluation. This estimate is conservative for the following reasons:

1. It assumes impact to groundwater occurred at the same time cell 1 was activated (March 2010) and does not account for travel time through the confining unit soils;
2. It assumes that groundwater flows in one direction; however, it is well-documented that groundwater flow at the landfill is multidirectional and reverses flow on a seasonal basis (FTN 2017a); and
3. It does not account for any physical or chemical properties of the constituents of concern that would cause them to travel at rates slower than groundwater (e.g., adsorption).

2.2 Comparison to Onsite Background Groundwater Quality

The TDS data collected at compliance well MW-117 and background wells MW-108, MW-113, and MW-115 are plotted on the time-series plots and box-and-whiskers diagrams included in Attachment 2. As is evident from these figures, measured TDS at MW-117 is generally lower than values measured at the onsite background wells. This comparison provides supporting evidence that the currently measured value for TDS at MW-117 reflects natural fluctuations in groundwater quality and/or offsite influence.

2.3 Comparison to Published Groundwater Quality for the Aquifer

Each well in the monitoring system is screened in the Mississippi River Valley alluvial aquifer, the uppermost aquifer in the vicinity of the landfill (FTN 2017b). The US Geological Survey published a study of groundwater quality of the aquifer, specifically with respect to that of Holocene alluvium and Pleistocene valley train deposits, which are two of the major hydrogeologic units within the aquifer (Gonthier 2003). The landfill is located in Holocene alluvium, as shown on Figure 2. According to this study, the reported median and maximum TDS values were 355 mg/L and 728 mg/L, respectively. As shown in Table 1, these levels are comparable to those measured at MW-117 and at background wells MW-108, MW-113, and MW-115. This comparison provides supporting evidence that the currently measured value of TDS at MW-117 reflects natural fluctuations in groundwater quality and/or offsite influence.

2.4 Comparison to Landfill Leachate

Landfill leachate samples are collected on a semiannual basis for the APCEC Regulation No. 22 program, as required by Permit No. 0303-S3N-R1. These data are publicly available on the DEQ website[1]. These data were used in combination with groundwater data to construct the Stiff and Piper diagrams (included in Attachment 2), which provide a key line of evidence that the SSI for TDS at MW-117 is not due to a release from the CCR unit. These diagrams show the ionic composition of leachate versus groundwater quality at compliance well MW-117 and background wells MW-108, MW-113, and MW-115. As shown by the Stiff diagrams, the ionic composition

[1] https://www.adeq.state.ar.us/sw/permits/facility_data.aspx

of groundwater at MW-117 is similar to that of background groundwater quality, as is evident from the similarly shaped diagrams. In contrast, the Stiff diagrams for all monitoring wells are dissimilar to the leachate diagram, showing that leachate has not impacted groundwater quality at these well locations. This is further demonstrated by the Piper diagram, which shows that data from MW-117 are plotted very closely to the data from background wells MW-108, MW-113, and MW-115. If leachate were impacting groundwater at MW-117, the plotted data for MW-117 would be positioned closer to the plotted data for leachate.

3.0 CONCLUSIONS

In consideration of the information presented in this memorandum, FTN concludes that the SSI for TDS at MW-117 is the result of natural fluctuations in groundwater quality and/or offsite influence.

This memorandum serves as the ASD prepared in accordance with §257.94(e)(2) and supports the position that the confirmed SSI identified for TDS at MW-117 is not due to a release from the CCR unit. Therefore, no further action is required and the landfill will remain in detection monitoring.

If you have questions or comments regarding this memorandum, please do not hesitate to call Dana Derrington, PE, PG, at (314) 786-5855 or Heather Ferguson at (501) 225-7779.

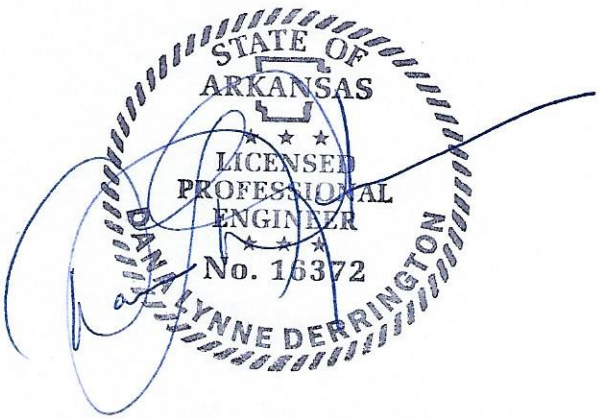
DLD/hlf

Attachments

R:\WP_FILES\14590-1992-001\CORRESPONDENCE\2019-12-17 FTN TO M. GRAY - 2H2019 ASD (EPA CCR)\2019-12-17 TM-M GRAY.DOCX HLF

PROFESSIONAL ENGINEER'S CERTIFICATION

With this certification, I certify that I, as a Professional Engineer in the State of Arkansas, am a qualified professional engineer as defined in §257.53 of Title 40 of the Code of Federal Regulations (CFR), Part 257, that this technical memorandum has been prepared under my direction in accordance with generally accepted good engineering practices, that the findings are accurate to the best of my knowledge, and that the alternate source demonstration described herein meets the requirements of §257.94(e)(2) of 40 CFR Part 257.



Dana L. Derrington, Arkansas PE #16372

12/17/2019
Date

REFERENCES

EPA [US Environmental Protection Agency]. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* [EPA 530-R-09-007]. Washington, DC: Office of Resource Conservation and Recovery, Program Implementation and Information Division, US Environmental Protection Agency. March 2009.

FTN [FTN Associates, Ltd.]. 2017a. *Groundwater Monitoring Network Evaluation, Plum Point Energy Station Landfill*. Little Rock, AR: FTN Associates, Ltd.

———. 2017b. *Groundwater Sampling and Analysis Plan, Plum Point Energy Station Landfill*. Little Rock, AR: FTN Associates, Ltd.

———. 2017c. *Statistical Analysis Plan, Plum Point Energy Station Landfill.* Little Rock, AR: FTN Associates, Ltd.

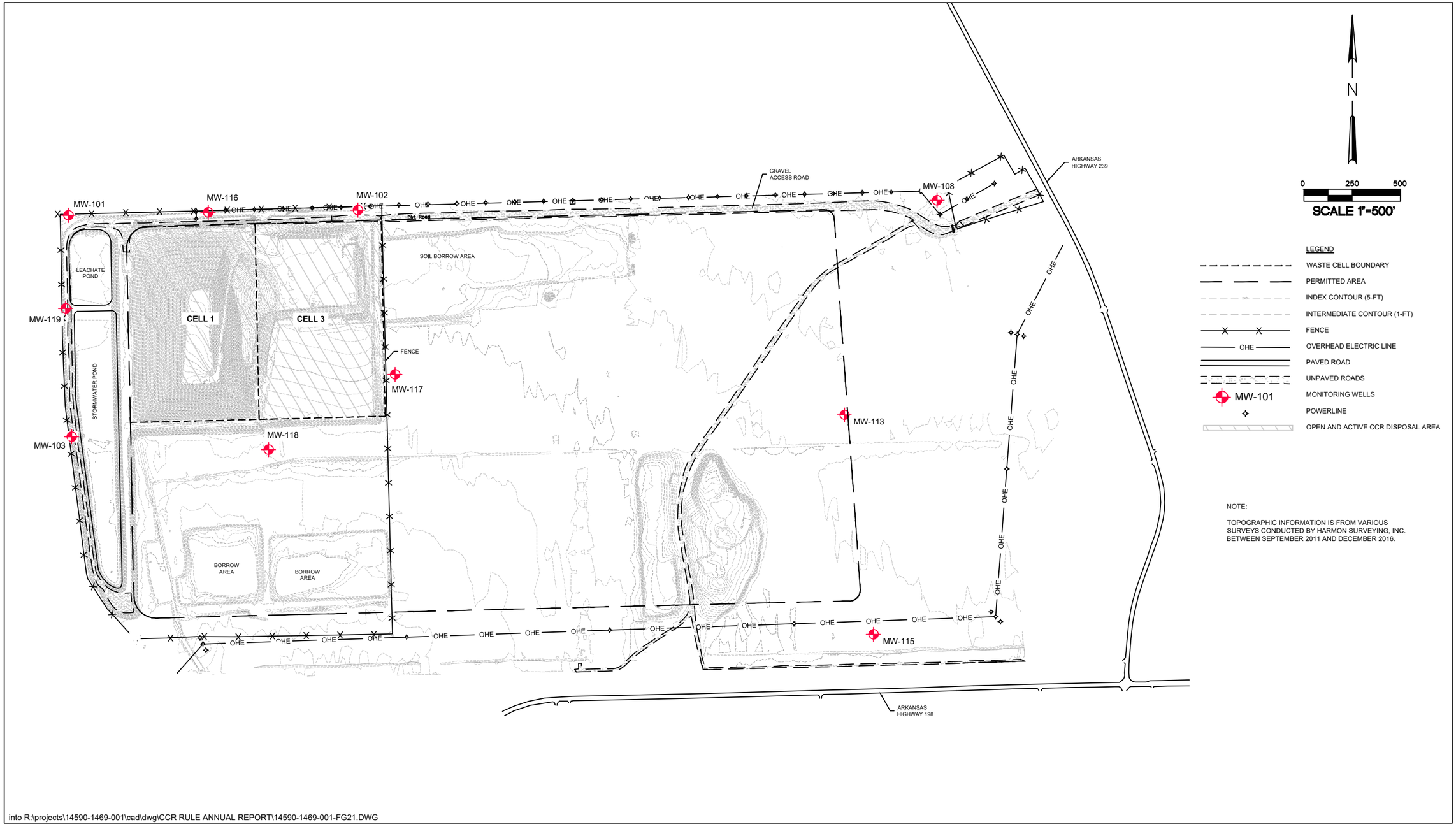
———. 2019. *Alternate Source Demonstration for Statistically Significant Increases, First Half of 2019 Monitoring Period, Plum Point Energy Station Landfill.* Little Rock, AR: FTN Associates, Ltd.

Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: National Water-Quality Assessment Program, US Geological Survey.

Kresse, T.M., P.D. Hays, K.R. Merriman, J.A. Gillip, D.T. Fugitt, J.L. Spellman, A.M. Nottmeier, D.A. Westerman, J.M. Blackstock, and J.L. Battreal. 2014. *Aquifers of Arkansas—Protection, Management, and Hydrologic and Geochemical Characteristics of Groundwater Resources in Arkansas* [USGS Scientific Investigations Report 2014-5149]. Prepared in cooperation with the Arkansas Natural Resources Commission. Reston, VA: US Geological Survey. 334 pp. doi: http://dx.doi.org/10.3133/sir20145149.

ATTACHMENT 1

Figures



into R:\projects\14590-1469-001\cad\dwg\CCR RULE ANNUAL REPORT\14590-1469-001-FG21.DWG

Figure 1. Monitoring well locations, Plum Point Energy Station.

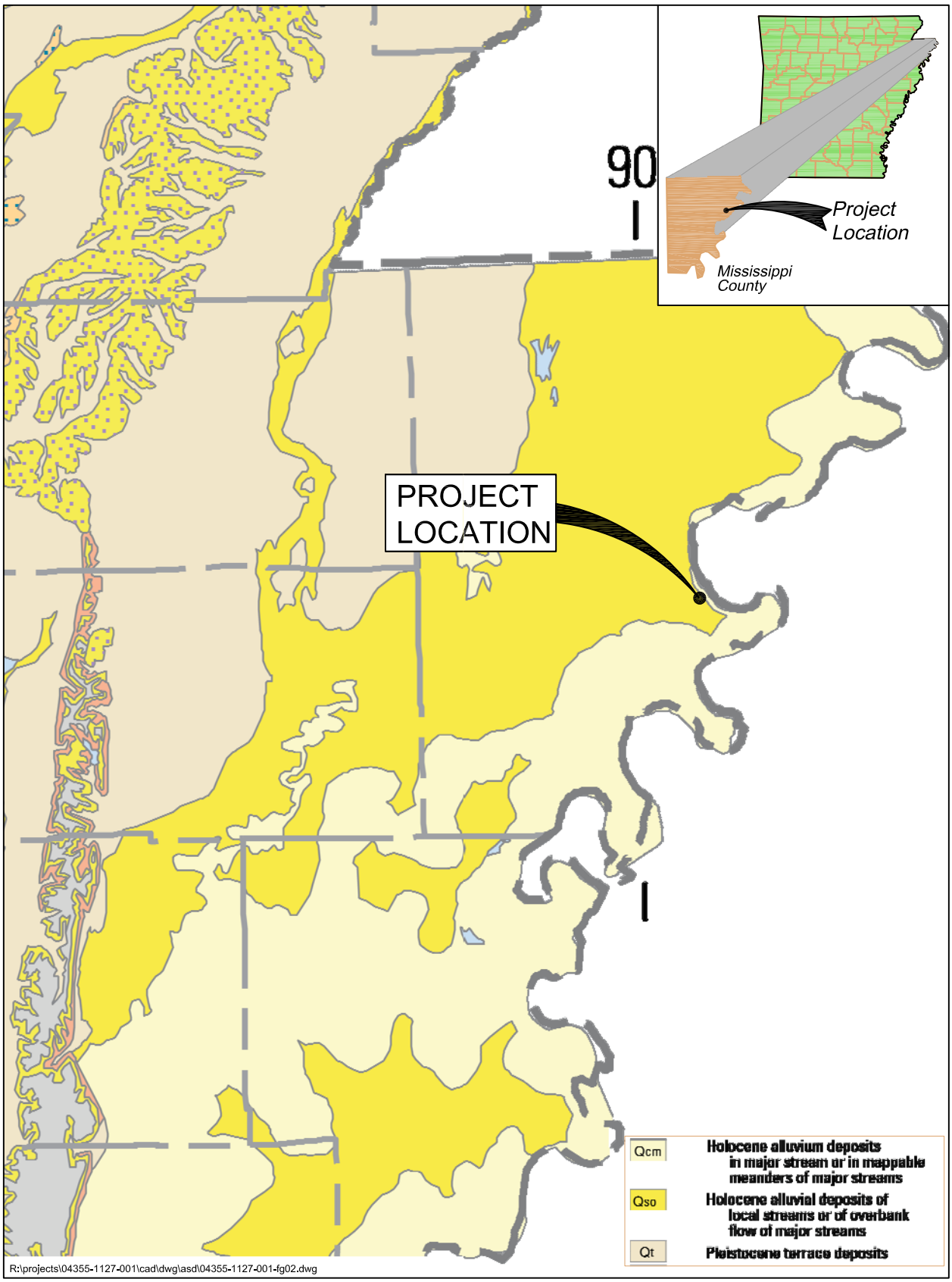


Figure 2. Surface geology of Mississippi County, Arkansas (adapted from Kresse et al. 2014).

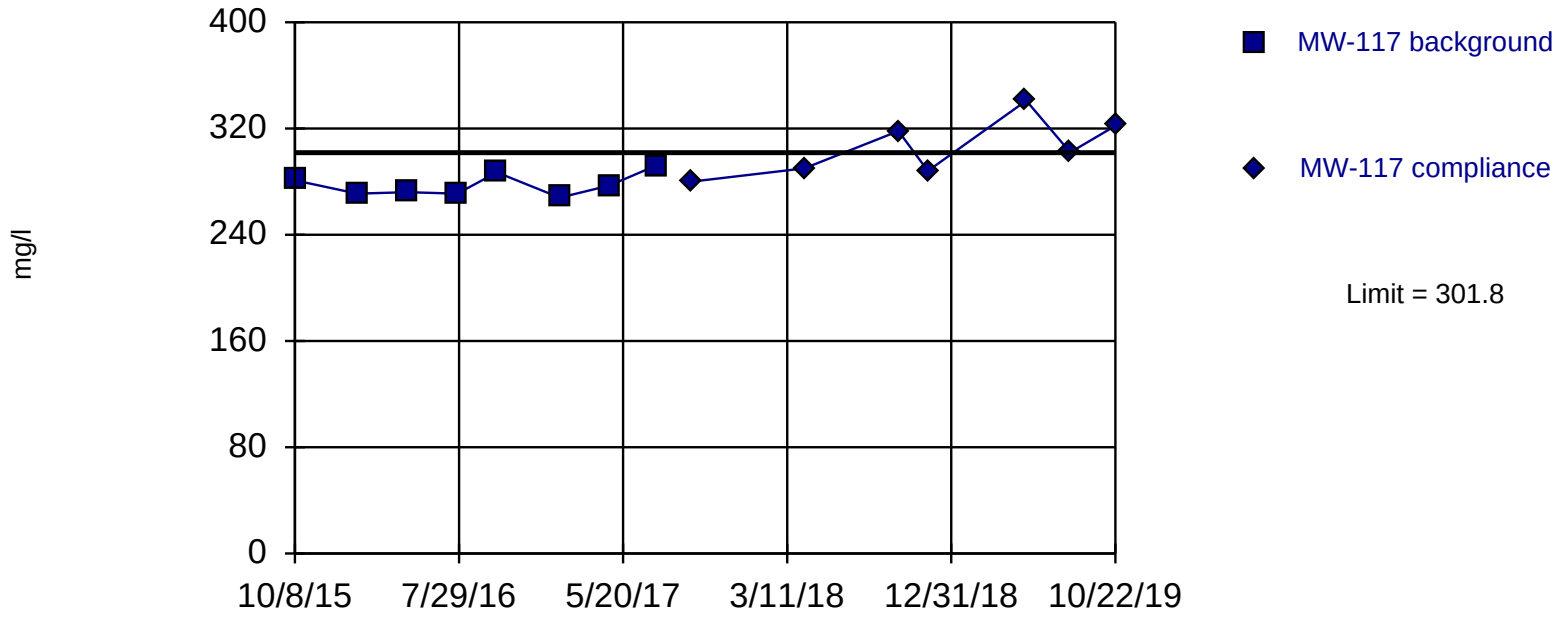
ATTACHMENT 2

Statistical Plots

Exceeds Limit

Prediction Limit

Intrawell Parametric

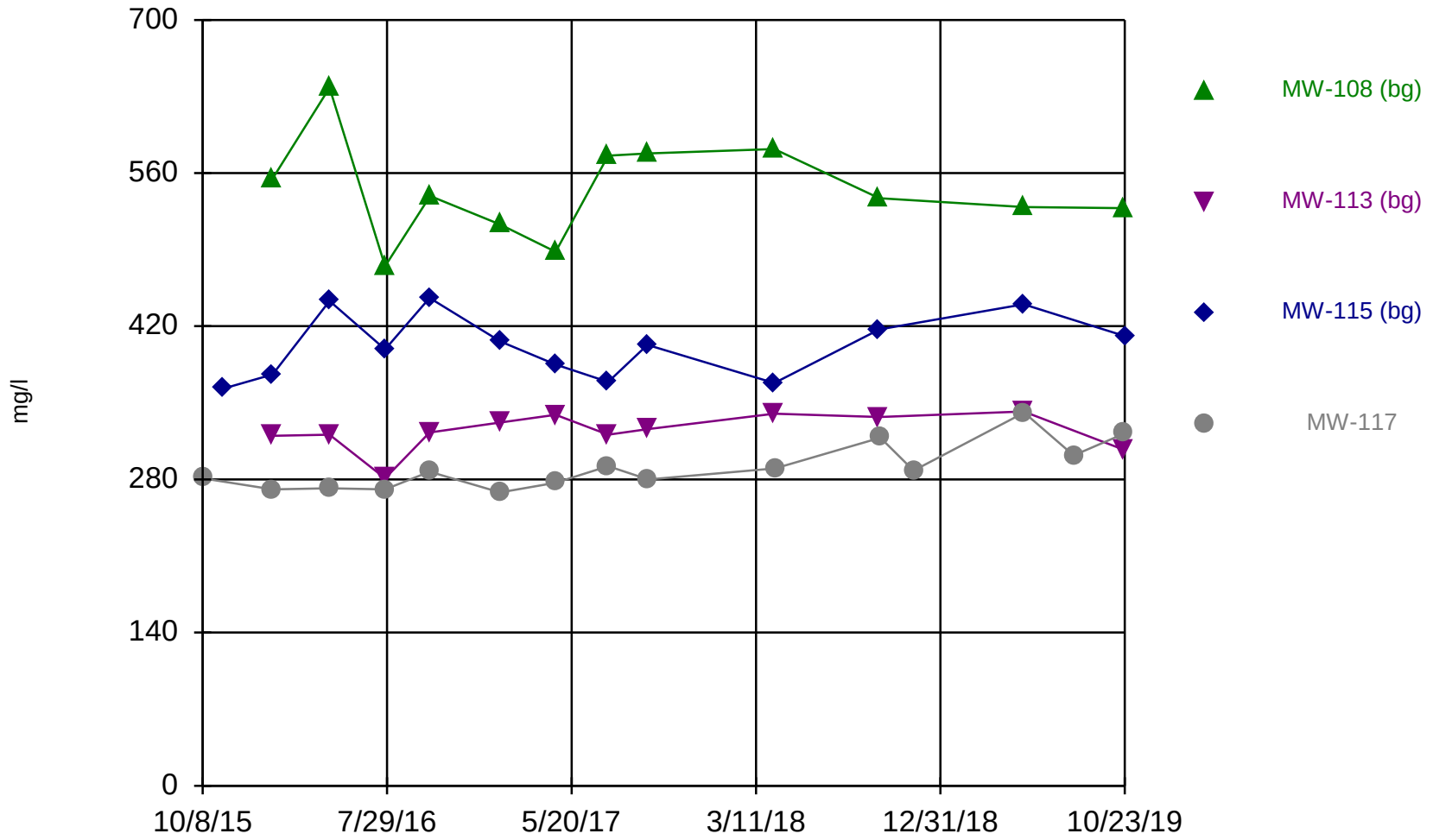


Background Data Summary: Mean=277.4, Std. Dev.=8.601, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9018, critical = 0.749. Kappa = 2.841 (c=6, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 11/7/2019 10:49 AM View: 2019-2H PL

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

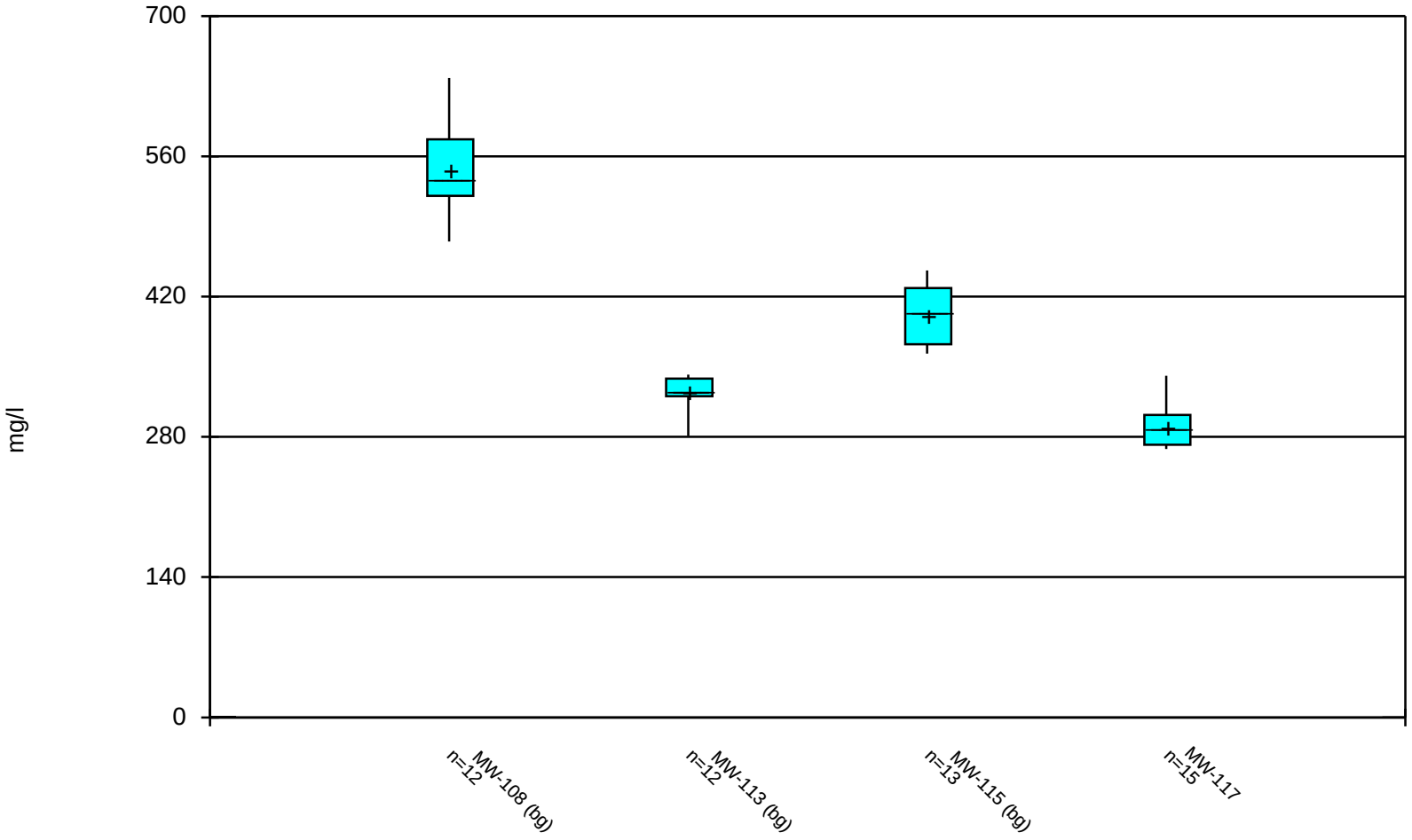
Time Series



Constituent: Dissolved Solids Analysis Run 12/11/2019 10:23 AM View: 2019-2H Distributional

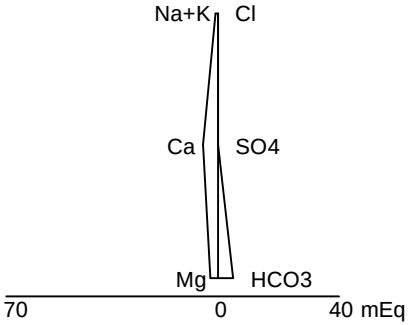
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database

Box & Whiskers Plot

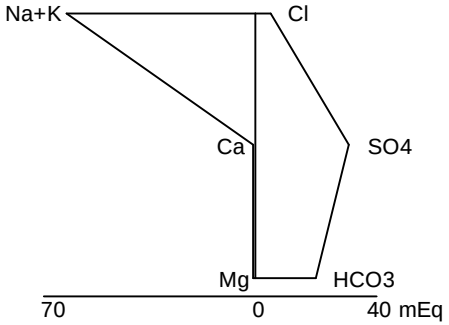


Constituent: Dissolved Solids Analysis Run 12/11/2019 10:25 AM View: 2019-2H Distributional

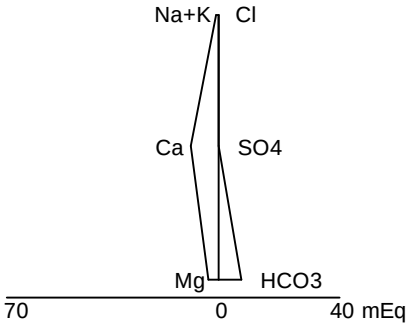
Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES EPA CCR Rule Groundwater Database



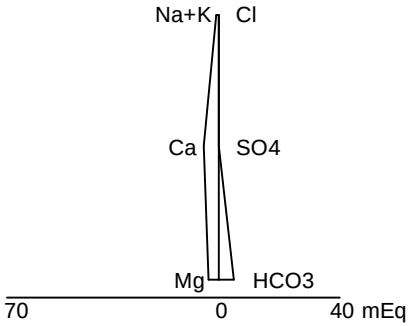
MW-117 5/15/2019



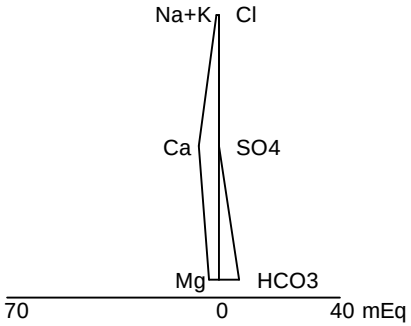
LEACHATE 5/16/2019



MW-108* 5/14/2019



MW-113* 5/14/2019



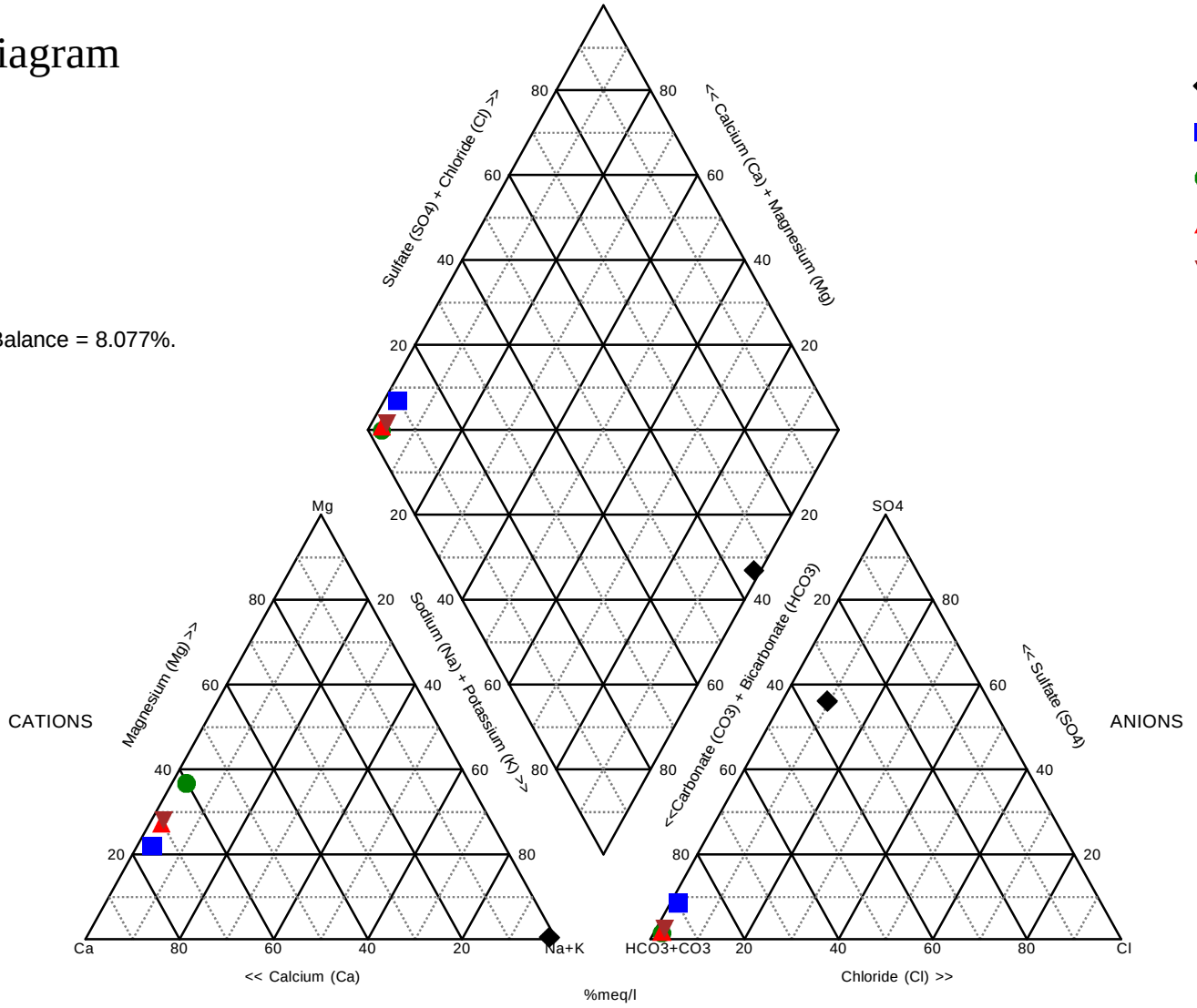
MW-115* 5/14/2019

Stiff Diagram Analysis Run 10/21/2019 1:44 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES Investigational Database

Piper Diagram

Cation-Anion Balance = 8.077%.



Analysis Run 10/21/2019 1:42 PM

Plum Point Energy Station Client: Plum Point Services Company, LLC Data: PPES Investigational Database

ATTACHMENT 3

Summary Table

Table 1. Summary of statistically significant results and maximum background and published levels.

Well ID	Parameter	Prediction Limit	October 2019 Observation	SSI Confirmed?	Maximum Background Level[(a)]	Maximum Published Level[(b)]
MW-117	TDS	301.8 mg/L	322 mg/L	Yes	638 mg/L (MW-108, April 2016)	728 mg/L

Notes:

a. Based on historical values at MW-108, MW-113, and MW-115.

b. From Gonthier 2003.

REFERENCES

Gonthier, G.J. 2003. *Quality of Groundwater in Pleistocene and Holocene Subunits of the Mississippi River Alluvial Aquifer, 1998* [Water-Resources Investigations Report 03-4202]. Jackson, MS: US Geological Survey, National Water-Quality Assessment Program.