

# Annual Groundwater Monitoring Report

Southwestern Electric Power Company

Flint Creek Power Plant

Landfill CCR Management Unit

Gentry, Arkansas

January 2021

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An **AEP** Company

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## I. Overview

This *Annual Groundwater Monitoring Report* (Report) has been prepared to report the status of activities for the preceding year for an existing CCR unit at Southwestern Electric Power Company's, a wholly-owned subsidiary of American Electric Power Company (AEP), Flint Creek Power Plant. The USEPA's CCR rules require that the Annual Groundwater Monitoring Report be posted to the operating record for the preceding year no later than January 31, 2021.

The Flint Creek landfill remained in assessment monitoring throughout 2020. No exceedances of a groundwater protection standard (GWPS) occurred during the year.

In general, the following activities were completed:

- Groundwater samples were collected on March 23, 2020 and March 24, 2020 in accordance with 40 CFR 257.95(b) and analyzed for all Appendix IV constituents. Groundwater samples were collected on June 23, 2020 and June 24, 2020 in accordance with 40 CFR 257.95(d)(1), and analyzed for all Appendix III constituents and those Appendix IV constituents that were detected during the previous sampling in accordance with 40 CFR 257.95(b) in March 2020. As required by 40 CFR 257.95, a second semiannual groundwater sampling event in accordance with 40 CFR 257.95(d)(1) was conducted. This occurred on October 19, 2020 and October 20, 2020 with samples analyzed for all Appendix III constituents and those Appendix IV constituents that were detected during the previous sampling in accordance with 40 CFR 257.95(b) in March 2020. All sampling was performed in accordance with 40 CFR 257.95 *et seq.*, and AEP's *Groundwater Sampling and Analysis Plan (2016)*;
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units;
- Statistical analysis of the assessment monitoring samples collected in March and June 2020 was completed in October 2020. A statistical evaluation of the results from the October 2020 sampling will be completed in 2021.
- Statistical analysis of the assessment monitoring events of March and June 2020 determined that no statistically significant levels (SSLs) above the groundwater protection standards existed.
- Groundwater Monitoring Statistical Evaluation Reports to evaluate groundwater data were prepared and certified in accordance with 40 CFR 257.93. The statistical process was guided by USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* ("Unified Guidance", USEPA, 2009).

The major components of this annual report, to the extent applicable at this time, are presented in sections that follow:

- A map, aerial photograph or a drawing showing the CCR management unit(s), all groundwater monitoring wells and monitoring well identification numbers;
- All of the monitoring data collected, including the rate and direction of groundwater flow, plus a summary showing the number of samples collected per monitoring well, the dates the samples were collected and whether the sample was collected as part of detection monitoring or assessment monitoring programs is included in Appendix 1;
- Statistical comparison of monitoring data to determine if there have been SSLs above the groundwater protection standards (Attached as Appendix 2, where applicable);
- A discussion of whether any alternate source demonstrations were performed, and the conclusions (Attached as Appendix 3, where applicable);
- A summary of any transition between monitoring programs, for example the date and circumstances for transitioning from detection monitoring to assessment monitoring (Notices attached as Appendix 4, where applicable);
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a statement regarding the rationale for the installation/decommission (Attached as Appendix 5, where applicable); and
- Other information required to be included in the annual report such as an alternate monitoring frequency, or assessment of corrective measures, if applicable.

In addition, this report summarizes key actions completed, and where applicable, describes any problems encountered and actions taken to resolve those problems. The report includes a projection of key activities for the upcoming year.

## II. Groundwater Monitoring Well Locations and Identification Numbers

The figure that follows depicts the PE-certified groundwater monitoring network, the monitoring well locations and their corresponding identification numbers.

Landfill Monitoring Wells	
Upgradient	Downgradient
B-1B	B-2
B-4	B-6
B-5	B-9
B-7A	B-10
B-12	B-11
B-13	



### **III. Monitoring Wells Installed or Decommissioned**

There were no monitoring wells installed or decommissioned in 2020. The network design, as summarized in the *Groundwater Monitoring Network Design Report* (2017) and as posted at the CCR web site for the Flint Creek Plant, did not change. That design report, viewable on the AEP CCR web site, discusses the facility location, the hydrogeological setting, the hydrostratigraphic units, the uppermost aquifer, downgradient monitoring well locations and the upgradient monitoring well locations.

### **IV. Groundwater Quality Data and Static Water Elevation Data, With Flow Rate and Direction and Discussion**

Appendix 1 contains tables showing the groundwater quality data collected during the establishment of background quality, detection monitoring, and assessment monitoring. Static water elevation data from each monitoring event also are shown in Appendix 1, along with the groundwater velocities, groundwater flow direction, and potentiometric maps developed after each sampling event.

### **V. Groundwater Quality Data Statistical Analysis**

Statistical analysis of the assessment monitoring samples collected in March and June 2020 was completed on October 19, 2020. No SSLs above the groundwater protection standards were identified. The results of these statistical analyses are documented in the corresponding statistical analysis summary report, which is provided in Appendix 2.

As required by 40 CFR 257.95(d)(1), a second semiannual groundwater sampling event was performed in 2020. These samples were collected and analyzed for all Appendix III constituents and those Appendix IV constituents that were detected during the March 2020 sampling in accordance with 40 CFR 257.95(b). This sampling occurred on October 19, 2020 and October 20, 2020. Statistical analysis of this data is scheduled to be completed in February 2021.

### **VI. Alternate Source Demonstration**

ASDs relative to Appendix IV SSLs above the groundwater protection standard were not necessary because no SSLs above the groundwater protection standards were identified from the completed sampling events required by 40 CFR 257.95(d)(1). A statement to this effect is provided in Appendix 3.

### **VII. Discussion About Transition Between Monitoring Requirements or Alternate Monitoring Frequency**

No transition between monitoring requirements occurred in 2020; the CCR unit remained in assessment monitoring over the entire year. A statement to this effect is provided in Appendix 4.

The bottom ash pond would return to detection monitoring if all Appendix III and IV parameters are below background values for two consecutive monitoring events. If one or more Appendix IV

parameters exceed the corresponding groundwater protection standard due to a release from the bottom ash pond, and are not demonstrated to be caused by a source other than the CCR unit or resulting from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality by means of an ASD, an assessment of corrective measures will be undertaken as required by 40 CFR 257.96.

Regarding defining an alternate monitoring frequency, the groundwater velocity and monitoring well production is high enough at this facility that no modification of the assessment monitoring schedule is necessary.

### **VIII. Other Information Required**

The Flint Creek landfill has progressed from detection monitoring to its current status in assessment monitoring. All required information has been included in this annual groundwater monitoring report.

### **IX. Description of Any Problems Encountered in 2020 and Actions Taken**

No significant problems were encountered. Through the use of low-flow purging and sampling methodology, samples representative of uppermost aquifer groundwater were obtained and the schedule was met to support this annual groundwater report preparation..

### **X. A Projection of Key Activities for the Upcoming Year**

Key activities for 2021 include:

- Assessment monitoring on a semiannual schedule;
- Statistical evaluation of the assessment monitoring results to determine any statistically significant increases (or decreases with respect to pH) over an established groundwater protection standard, or whether the concentrations have returned below background concentrations;
- Responding to any new data received in light of CCR rule requirements;
- Preparation of the next annual groundwater report.

## **APPENDIX 1 - Groundwater Data Tables and Figures**

Tables follow showing the groundwater monitoring data collected, the rate of groundwater flow each time groundwater was sampled, the number of samples collected per monitoring well, dates that the samples were collected, and whether each sample was collected as part of a detection monitoring or an assessment monitoring program. Figures follow showing the PE-certified groundwater monitoring network with the corresponding well identifications along with static water elevation data and groundwater flow directions each time groundwater was sampled in the form of annotated satellite images.



**Table 1 - Groundwater Data Summary: B-1B****Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.02	90.8	3	0.5955 J	8.1	22	296
7/19/2016	Background	0.02	92.4	4	0.4424 J	7.1	25	281
9/14/2016	Background	0.02	96.3	3	0.4087 J	7.0	24	296
10/5/2016	Background	0.02	89.3	5	0.4557 J	7.5	25	294
11/8/2016	Background	0.02	86.5	4	< 0.083 U	7.2	24	270
1/24/2017	Background	0.02	85.9	2	< 0.083 U	7.7	22	276
3/7/2017	Background	0.02	88.7	2	< 0.083 U	7.4	23	272
4/26/2017	Background	0.02041	88.1	4	0.53 J	6.5	23	268
5/16/2017	Background	0.01982	85.5	3	0.4551 J	6.8	20	240
6/16/2017	Background	0.02962	85.1	4	< 0.083 U	6.3	21	276
8/29/2017	Detection	0.0579	83.3	3	0.416 J	7.9	20	264
3/26/2018	Detection	0.01493	89.6	2	0.098 J	7.5	22	268
8/28/2018	Assessment	0.026	87.6	--	--	7.3	--	288
10/23/2018	Detection	--	--	5.53	0.489 J	--	14.8	--
3/12/2019	Assessment	0.02 J	93.1	2.31	0.41	7.6	17.5	228
6/10/2019	Assessment	0.05 J	92.4	2.31	0.49	6.6	20.7	266
8/27/2019	Assessment	< 0.02 U	86.5	2	0.275 J	7.4	20	312
3/24/2020	Assessment	--	--	2.39	0.40	7.1	21.8	258
6/24/2020	Assessment	< 0.02 U	87.0	2.22	0.36	7.4	23.7	272
10/20/2020	Assessment	0.03 J	85.5	2.23	0.37	7.7	24.5	293

## Notes:

mg/L: milligrams per liter

SU: standard unit

&lt;: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

**Table 1 - Groundwater Data Summary: B-1B  
Flint Creek - LF  
Appendix IV Constituents**

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	112	0.0480724 J	< 0.07 U	0.801049 J	0.441945 J	3.583	0.5955 J	< 0.68 U	0.028	0.02301 J	2.01197 J	< 0.99 U	< 0.86 U
7/19/2016	Background	< 0.93 U	< 1.05 U	118	0.0361035 J	< 0.07 U	0.611765 J	0.527203 J	--	0.4424 J	1.03545 J	0.028	0.01793 J	0.869973 J	< 0.99 U	< 0.86 U
9/14/2016	Background	< 0.93 U	< 1.05 U	125	< 0.02 U	< 0.07 U	1	0.454131 J	8.375	0.4087 J	0.999779 J	0.028	< 0.005 U	0.612698 J	< 0.99 U	< 0.86 U
10/5/2016	Background	< 0.93 U	< 1.05 U	122	0.0372394 J	< 0.07 U	0.984649 J	0.750457 J	8.79	0.4557 J	1.03454 J	0.041	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
11/8/2016	Background	< 0.93 U	< 1.05 U	131	0.033331 J	0.0774505 J	2	0.917319 J	4.63	< 0.083 U	1.03555 J	0.027	0.00589 J	0.297867 J	< 0.99 U	< 0.86 U
1/24/2017	Background	< 0.93 U	1.26762 J	97	0.0223085 J	< 0.07 U	1	0.385362 J	3.178	< 0.083 U	< 0.68 U	0.026	0.00757 J	0.6452 J	< 0.99 U	< 0.86 U
3/7/2017	Background	< 0.93 U	< 1.05 U	123	< 0.02 U	< 0.07 U	< 0.23 U	0.325089 J	3.604	< 0.083 U	< 0.68 U	0.034	< 0.005 U	0.561767 J	< 0.99 U	< 0.86 U
4/26/2017	Background	1.27 J	< 1.05 U	112	0.04 J	< 0.07 U	0.85 J	0.49 J	3.841	0.53 J	< 0.68 U	0.02658	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
5/16/2017	Background	< 0.93 U	< 1.05 U	118	0.03 J	< 0.07 U	0.3 J	0.49 J	1.448	0.4551 J	< 0.68 U	0.02701	0.009 J	< 0.29 U	< 0.99 U	< 0.86 U
6/16/2017	Background	< 0.93 U	1.43 J	123	< 0.02 U	< 0.07 U	0.33 J	0.47 J	5.15	< 0.083 U	< 0.68 U	0.02717	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
8/28/2018	Assessment	0.08	0.33	112	0.02 J	0.07	0.263	0.102	6.51	--	0.247	0.0278	< 0.005 U	1.17	0.04 J	0.01 J
3/12/2019	Assessment	< 0.1 U	0.4 J	112	< 0.1 U	< 0.05 U	< 0.2 U	< 0.1 U	3.924	0.41	1.25	0.0264	< 0.005 U	< 2 U	< 0.2 U	< 0.5 U
6/10/2019	Assessment	0.03 J	0.62	112	0.02 J	0.02 J	0.368	0.051	5.96	0.49	0.530	< 0.02 U	< 0.005 U	0.8 J	< 0.03 U	< 0.1 U
8/27/2019	Assessment	0.11	0.57	114	< 0.02 U	0.06	0.278	0.05 J	4.73	0.275 J	0.395	0.0231	< 0.005 U	1 J	< 0.03 U	< 0.1 U
3/24/2020	Assessment	0.12	0.34	116	< 0.02 U	0.04 J	0.07 J	0.02 J	5.38	0.40	0.06 J	0.0242	< 0.002 U	1 J	0.08 J	< 0.1 U
6/24/2020	Assessment	0.03 J	0.77	113	< 0.02 U	0.02 J	0.273	0.05 J	4.558	0.36	0.07 J	0.0243	< 0.002 U	1 J	0.04 J	< 0.1 U
10/20/2020	Assessment	0.04 J	0.63	108	< 0.02 U	0.01 J	< 0.04 U	0.072	5.16	0.37	0.07 J	0.0229	< 0.002 U	2.29	0.05 J	0.1 J

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-2**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	1.13	91.9	6	< 0.083 U	7.0	619	1,212
7/19/2016	Background	1.33	59.9	7	0.3361 J	6.7	464	936
9/14/2016	Background	1.19	62.6	7	< 0.083 U	6.6	560	1,124
10/5/2016	Background	1.32	45.3	7	< 0.083 U	5.9	339	741
11/8/2016	Background	1.82	27.5	6	< 0.083 U	6.0	145	365
1/24/2017	Background	1.56	24	5	< 0.083 U	5.8	119	296
3/7/2017	Background	1.04	32.1	5	< 0.083 U	5.9	105	260
4/26/2017	Background	1.44	23.1	6	< 0.083 U	6.3	179	400
5/16/2017	Background	1.33	20.7	6	< 0.083 U	5.5	153	328
6/16/2017	Background	0.936	39.6	6	< 0.083 U	5.9	109	278
8/29/2017	Detection	1.07	18	6	< 0.083 U	6.0	116	270
12/21/2017	Detection	0.7	--	--	--	5.9	--	--
3/26/2018	Detection	0.851	15.3	4	< 0.083 U	6.7	138	324
8/27/2018	Detection	0.702	56.3	--	--	6.7	--	532
10/23/2018	Detection	--	--	10.8	< 0.083 U	--	198	--
3/12/2019	Assessment	0.634	34.5	5.88	0.1 J	6.9	129	376
6/11/2019	Assessment	0.697	14.2	4.16	0.06 J	6.4	80.9	246
8/27/2019	Assessment	0.735	15.4	3	< 0.083 U	5.9	65	230
3/24/2020	Assessment	--	--	2.81	0.07	5.7	68.1	168
6/24/2020	Assessment	0.355	30.7	5.36	0.09	6.2	84.9	252
10/19/2020	Assessment	0.504	33.9	4.10	0.07	5.5	110	304

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-2

Flint Creek - LF

Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	94	0.131152 J	< 0.07 U	4	0.952324 J	1.06	< 0.083 U	< 0.68 U	0.009	0.02106 J	6	82	< 0.86 U
7/19/2016	Background	< 0.93 U	< 1.05 U	114	0.297284 J	< 0.07 U	6	2.18888 J	--	0.3361 J	1.98005 J	0.005	0.00946 J	2.74335 J	50	< 0.86 U
9/14/2016	Background	1.81571 J	8	226	1	0.348046 J	26	15	1.752	< 0.083 U	13	0.021	0.027	2.59675 J	49	0.98925 J
10/5/2016	Background	< 0.93 U	< 1.05 U	73	0.168987 J	< 0.07 U	5	1.57645 J	4.1	< 0.083 U	1.52736 J	0.016	< 0.005 U	0.783837 J	35	< 0.86 U
11/8/2016	Background	1.15186 J	17	543	3	0.870406 J	37	31	3.87	< 0.083 U	26	0.027	0.05	2.69221 J	13	< 0.86 U
1/24/2017	Background	1.32054 J	2.57288 J	214	0.763757 J	< 0.07 U	10	6	1.408	< 0.083 U	4.36086 J	0.007	0.01252 J	0.832511 J	9	< 0.86 U
3/7/2017	Background	6	< 1.05 U	70	0.157872 J	< 0.07 U	2	0.632449 J	1.372	< 0.083 U	< 0.68 U	0.005	< 0.005 U	0.478127 J	20	< 0.86 U
4/26/2017	Background	< 0.93 U	1.39 J	97.47	0.22 J	0.08 J	3.44	1.24 J	1.881	< 0.083 U	1.32 J	0.00242	< 0.005 U	0.77 J	9.94	< 0.86 U
5/16/2017	Background	1.17 J	1.77 J	51.22	0.17 J	< 0.07 U	2.49	0.47 J	1.429	< 0.083 U	0.8 J	0.00161	< 0.005 U	0.34 J	9.52	< 0.86 U
6/16/2017	Background	< 0.93 U	1.08 J	79.45	0.17 J	0.09 J	3.76	1.67 J	1.839	< 0.083 U	0.8 J	0.00287	< 0.005 U	2.1 J	20.57	< 0.86 U
3/12/2019	Assessment	< 0.1 U	0.4 J	63.9	0.1 J	0.06 J	2.83	0.2 J	1.93	0.1 J	0.2 J	0.00188	< 0.005 U	< 2 U	14.3	< 0.5 U
6/11/2019	Assessment	< 0.02 U	0.18	38.5	0.208	0.04 J	1.57	0.069	0.959	0.06 J	< 0.05 U	< 0.02 U	< 0.005 U	0.4 J	6.7	< 0.1 U
8/27/2019	Assessment	< 0.02 U	0.22	41.3	0.149	0.03 J	1.75	0.105	0.888	< 0.083 U	0.08 J	0.00128	< 0.005 U	0.5 J	6.8	< 0.1 U
3/24/2020	Assessment	0.02 J	0.16	36.0	0.130	0.03 J	1.37	0.053	1.077	0.07	< 0.05 U	0.00109	< 0.002 U	0.8 J	5.2	< 0.1 U
6/24/2020	Assessment	< 0.02 U	0.21	71.6	0.07 J	0.03 J	1.74	0.055	1.974	0.09	< 0.05 U	0.00132	< 0.002 U	2 J	8.4	< 0.1 U
10/19/2020	Assessment	0.02 J	0.26	73.0	0.08 J	0.04 J	1.56	0.131	1.715	0.07	0.1 J	0.00126	< 0.002 U	1 J	12.3	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-4**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.03	8.23	8	< 0.083 U	7.0	14	92
7/19/2016	Background	0.03	8.86	9	< 0.083 U	6.7	12	75
9/14/2016	Background	0.03	19.4	8	< 0.083 U	6.8	8	128
10/5/2016	Background	0.02	8.22	10	< 0.083 U	6.2	13	78
11/8/2016	Background	0.04	13.3	9	< 0.083 U	6.7	10	72
1/24/2017	Background	0.04	23.6	8	< 0.083 U	6.8	5	84
3/7/2017	Background	0.02	22.8	8	< 0.083 U	7.1	5	52
4/26/2017	Background	0.0382	32.4	9	< 0.083 U	6.9	8	86
5/16/2017	Background	0.03844	15.5	8	< 0.083 U	7.2	10	88
6/16/2017	Background	0.0588	7.13	9	< 0.083 U	7.4	11	76
8/29/2017	Detection	0.04762	5.5	8	< 0.083 U	7.2	8	60
3/26/2018	Detection	0.03141	6.06	5	< 0.083 U	7.4	10	72
8/28/2018	Assessment	0.030	8.23	--	--	7.6	--	44
10/23/2018	Detection	--	--	9.61	< 0.083 U	--	13.6	--
3/12/2019	Assessment	0.036	3.37	4.58	0.02 J	7.5	12.1	68
6/11/2019	Assessment	0.07 J	3.50	3.74	0.02 J	7.5	13.4	60
8/28/2019	Assessment	0.056	2.92	3	< 0.083 U	6.0	11	66
3/23/2020	Assessment	--	--	2.14	0.02 J	6.7	15.4	58
6/24/2020	Assessment	0.107	2.93	1.92	0.02 J	6.6	15.3	57
10/19/2020	Assessment	0.070	2.61	2.33	0.02 J	6.2	11.2	64

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-4

Flint Creek - LF

Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	49	0.205178 J	< 0.07 U	1	0.36974 J	0.734	< 0.083 U	< 0.68 U	< 0.00013 U	0.01529 J	< 0.29 U	< 0.99 U	< 0.86 U
7/19/2016	Background	< 0.93 U	< 1.05 U	49	0.211526 J	< 0.07 U	1	0.15016 J	--	< 0.083 U	< 0.68 U	0.002	0.00738 J	< 0.29 U	< 0.99 U	< 0.86 U
9/14/2016	Background	< 0.93 U	< 1.05 U	65	0.037683 J	< 0.07 U	2	0.4142 J	8.344	< 0.083 U	1.16564 J	0.001	< 0.005 U	< 0.29 U	< 0.99 U	0.918935 J
10/5/2016	Background	< 0.93 U	< 1.05 U	71	0.439546 J	< 0.07 U	5	2.34157 J	3.969	< 0.083 U	1.65693 J	0.009	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
11/8/2016	Background	< 0.93 U	1.75787 J	62	0.382027 J	0.130549 J	4	1.2283 J	0.351	< 0.083 U	0.943091 J	0.003	0.00809 J	< 0.29 U	< 0.99 U	< 0.86 U
1/24/2017	Background	2.63622 J	< 1.05 U	60	0.210311 J	< 0.07 U	2	0.749001 J	0.945	< 0.083 U	< 0.68 U	0.001	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
3/7/2017	Background	1.09461 J	< 1.05 U	51	0.24192 J	< 0.07 U	1	0.605358 J	1.588	< 0.083 U	< 0.68 U	0.003	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
4/26/2017	Background	< 0.93 U	< 1.05 U	63.66	0.08 J	< 0.07 U	0.91 J	0.28 J	0.679	< 0.083 U	0.87 J	0.00083 J	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
5/16/2017	Background	< 0.93 U	< 1.05 U	70.02	0.09 J	< 0.07 U	0.99 J	< 0.14 U	2.89	< 0.083 U	< 0.68 U	0.00077 J	0.005 J	< 0.29 U	1.11 J	< 0.86 U
6/16/2017	Background	4.52 J	1.18 J	49.29	0.22 J	0.08 J	0.82 J	0.19 J	3.373	< 0.083 U	< 0.68 U	0.00119	< 0.005 U	< 0.29 U	< 0.99 U	0.9 J
8/28/2018	Assessment	0.01 J	0.17	40.5	0.208	0.13	1.03	0.184	0.3669	--	0.184	0.00110	< 0.005 U	0.07 J	0.8	0.03 J
3/12/2019	Assessment	< 0.1 U	< 0.2 U	34.3	0.2 J	0.1 J	1.26	< 0.1 U	0.2946	0.02 J	< 0.1 U	0.00123	< 0.005 U	< 2 U	0.6 J	< 0.5 U
6/11/2019	Assessment	< 0.02 U	0.06 J	31.2	0.215	0.05 J	1.03	0.04 J	0.68	0.02 J	< 0.05 U	< 0.02 U	< 0.005 U	< 0.4 U	0.7	< 0.1 U
8/28/2019	Assessment	< 0.02 U	0.06 J	31.1	0.204	0.04 J	1.11	0.084	1.053	< 0.083 U	< 0.05 U	0.000925	< 0.005 U	< 0.4 U	0.8	< 0.1 U
3/23/2020	Assessment	0.03 J	0.25	35.7	0.198	0.14	0.724	0.133	0.404	0.02 J	0.396	0.000877	< 0.002 U	< 0.4 U	0.5	< 0.1 U
6/24/2020	Assessment	< 0.02 U	0.06 J	38.7	0.169	0.04 J	0.805	0.059	0.646	0.02 J	< 0.05 U	0.000964	0.002 J	< 0.4 U	0.5	< 0.1 U
10/19/2020	Assessment	< 0.02 U	0.05 J	28.7	0.204	0.03 J	0.847	0.04 J	1.898	0.02 J	< 0.05 U	0.000934	< 0.002 U	< 0.4 U	0.5	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-5**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.01	17.4	6	< 0.083 U	5.1	189	424
7/19/2016	Background	0.01	16.2	7	< 0.083 U	5.2	205	424
9/14/2016	Background	0.01	17.6	7	< 0.083 U	6.4	187	372
10/5/2016	Background	0.01	18.7	12	0.2728 J	6.5	197	404
11/8/2016	Background	0.02	15.9	9	< 0.083 U	6.6	160	352.94
1/24/2017	Background	0.02	18	6	< 0.083 U	5.6	212	404
3/7/2017	Background	0.02	16.9	6	< 0.083 U	5.1	200	392
4/26/2017	Background	0.02255	17.6	7	< 0.083 U	5.9	226	422
5/16/2017	Background	0.01833	18.3	7	< 0.083 U	4.9	229	416
6/16/2017	Background	0.03663	17	8	< 0.083 U	5.0	206	410
8/29/2017	Detection	0.03455	16.4	8	< 0.083 U	5.4	199	376
3/28/2018	Detection	0.01591	15.5	6	< 0.083 U	5.4	169	372
8/28/2018	Assessment	0.014	16.5	--	--	5.5	--	396
10/23/2018	Detection	--	--	10	< 0.083 U	--	216	--
3/12/2019	Assessment	0.01 J	16.2	8.30	0.07 J	5.3	205	372
6/11/2019	Assessment	< 0.04 U	17.9	7.02	0.08	5.7	271	438
8/28/2019	Assessment	< 0.02 U	15.9	6	< 0.083 U	5.0	219	402
3/23/2020	Assessment	--	--	7.75	0.07	4.7	255	418
6/24/2020	Assessment	< 0.02 U	16.1	8.12	0.05 J	5.5	249	406
10/19/2020	Assessment	< 0.02 U	17.3	8.00	0.06	4.6	258	445

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-5

Flint Creek - LF

## Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	49	0.538281 J	0.130546 J	3	0.63546 J	0.7	< 0.083 U	< 0.68 U	0003225069333	0.035	< 0.29 U	36	1.07783 J
7/19/2016	Background	< 0.93 U	1.09501 J	53	0.578371 J	< 0.07 U	2	0.670288 J	--	< 0.083 U	0.951208 J	0.003	0.01341 J	< 0.29 U	37	< 0.86 U
9/14/2016	Background	< 0.93 U	< 1.05 U	59	0.421905 J	0.107531 J	3	0.632453 J	0.7219	< 0.083 U	< 0.68 U	0.003	0.01083 J	< 0.29 U	37	< 0.86 U
10/5/2016	Background	< 0.93 U	< 1.05 U	70	0.70802 J	0.0937694 J	6	2.24689 J	4.38	0.2728 J	2.22182 J	0.014	0.049	< 0.29 U	39	< 0.86 U
11/8/2016	Background	< 0.93 U	< 1.05 U	64	0.556725 J	1	4	0.96226 J	0.673	< 0.083 U	< 0.68 U	0.003	0.02149 J	< 0.29 U	33	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	60	0.634776 J	0.136621 J	5	1.12636 J	1.222	< 0.083 U	< 0.68 U	0.003	0.053	< 0.29 U	38	1.02071 J
3/7/2017	Background	< 0.93 U	< 1.05 U	42	0.548248 J	< 0.07 U	3	0.601941 J	0.557	< 0.083 U	< 0.68 U	0.002	0.0138 J	< 0.29 U	36	< 0.86 U
4/26/2017	Background	1.24 J	1.87 J	36.3	0.56 J	0.15 J	3.27	0.92 J	0.698	< 0.083 U	< 0.68 U	0.003	0.013 J	< 0.29 U	37.33	< 0.86 U
5/16/2017	Background	< 0.93 U	1.16 J	38.38	0.65 J	0.08 J	3.63	0.84 J	4.934	< 0.083 U	< 0.68 U	0.00348	0.013 J	< 0.29 U	39.1	< 0.86 U
6/16/2017	Background	< 0.93 U	< 1.05 U	37.52	0.6 J	0.07 J	3.33	0.63 J	8.709	< 0.083 U	< 0.68 U	0.00323	0.008 J	< 0.29 U	36.88	< 0.86 U
8/28/2018	Assessment	0.04 J	0.88	45.0	0.525	0.19	3.01	0.414	1.501	--	0.482	0.00223	0.096	0.06 J	38.7	0.070
3/12/2019	Assessment	0.2 J	0.62	80.5	0.638	0.56	2.89	0.477	0.969	0.07 J	0.833	0.00274	0.028	< 2 U	39.2	< 0.5 U
6/11/2019	Assessment	< 0.02 U	0.67	26.0	0.376	0.18	3.00	0.349	1.27	0.08	0.203	< 0.02 U	0.007 J	< 0.4 U	39.0	< 0.1 U
8/28/2019	Assessment	< 0.02 U	0.44	33.7	0.487	0.18	2.40	0.331	0.717	< 0.083 U	0.1 J	0.00215	0.006 J	< 0.4 U	37.5	< 0.1 U
3/23/2020	Assessment	< 0.02 U	0.33	22.4	0.491	0.16	2.35	0.271	0.6329	0.07	0.1 J	0.00235	0.003 J	< 0.4 U	35.0	< 0.1 U
6/24/2020	Assessment	< 0.02 U	0.38	20.1	0.473	0.15	2.42	0.259	0.821	0.05 J	0.1 J	0.00232	0.004 J	< 0.4 U	35.0	< 0.1 U
10/19/2020	Assessment	0.02 J	0.43	19.1	0.502	0.16	2.41	0.291	2.622	0.06	0.2 J	0.00226	0.005	< 0.4 U	37.4	< 0.1 U

## Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

&lt;: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter



**Table 1 - Groundwater Data Summary: B-6  
Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.05	36.9	6	< 0.083 U	6.7	19	180
7/19/2016	Background	0.06	49.5	8	< 0.083 U	7.2	24	208
9/14/2016	Background	0.06	52.3	8	< 0.083 U	6.6	38	232
10/5/2016	Background	0.06	44.7	8	< 0.083 U	7.0	29	220
11/8/2016	Background	0.06	40	7	< 0.083 U	6.9	29	208
1/24/2017	Background	0.08	51.9	7	< 0.083 U	7.0	34	244
3/7/2017	Background	0.06	43	6	< 0.083 U	7.0	24	178
4/26/2017	Background	0.05207	56.5	8	< 0.083 U	6.2	37	238
5/16/2017	Background	0.04277	48.6	7	< 0.083 U	6.5	24	206
6/16/2017	Background	0.05859	53.8	8	< 0.083 U	6.6	26	252
8/28/2017	Detection	0.06251	37	8	0.2066 J	7.0	16	162
12/21/2017	Detection	0.06498	--	--	--	7.0	--	--
3/26/2018	Detection	0.04773	34	6	< 0.083 U	6.4	13	156
8/28/2018	Assessment	0.050	34.6	--	--	6.4	--	144
10/23/2018	Detection	--	--	12.2	< 0.083 U	--	24.6	--
3/12/2019	Assessment	0.037	41.9	8.16	< 0.04 U	6.9	17.1	100
6/10/2019	Assessment	0.05 J	49.7	7.78	0.03 J	6.8	21.7	188
8/27/2019	Assessment	0.03 J	44.8	6	< 0.083 U	6.6	36	250
3/24/2020	Assessment	--	--	7.31	0.02 J	6.6	16.9	202
6/23/2020	Assessment	0.02 J	37.8	7.25	0.02 J	6.8	10.8	140
10/19/2020	Assessment	0.03 J	43.8	7.52	0.02 J	6.3	16.5	201

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

**Table 1 - Groundwater Data Summary: B-6  
Flint Creek - LF  
Appendix IV Constituents**

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	42	0.0329713 J	< 0.07 U	2	0.5336 J	0.625	< 0.083 U	< 0.68 U	0.000846322 J	0.0121 J	< 0.29 U	1.38371 J	< 0.86 U
7/19/2016	Background	< 0.93 U	< 1.05 U	60	0.169224 J	< 0.07 U	3	1.23508 J	--	< 0.083 U	0.848543 J	0.002	0.00953 J	0.863908 J	3.30254 J	< 0.86 U
9/14/2016	Background	< 0.93 U	< 1.05 U	65	< 0.02 U	< 0.07 U	4	1.26649 J	1.556	< 0.083 U	1.53065 J	0.002	< 0.005 U	< 0.29 U	3.35098 J	< 0.86 U
10/5/2016	Background	< 0.93 U	3.63583 J	87	0.559451 J	0.268209 J	11	4.75063 J	7.58	< 0.083 U	4.70003 J	0.016	0.01261 J	0.732328 J	3.04012 J	< 0.86 U
11/8/2016	Background	< 0.93 U	< 1.05 U	58	0.134729 J	0.116659 J	5	1.68272 J	0.846	< 0.083 U	1.07347 J	0.002	0.01235 J	< 0.29 U	2.02161 J	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	76	0.216535 J	< 0.07 U	6	2.57434 J	1.415	< 0.083 U	1.31013 J	0.003	0.00759 J	0.868445 J	1.16358 J	< 0.86 U
3/7/2017	Background	< 0.93 U	< 1.05 U	55	0.140509 J	< 0.07 U	4	1.95733 J	0.705	< 0.083 U	2.18218 J	0.004	0.00738 J	0.328653 J	1.0391 J	< 0.86 U
4/26/2017	Background	< 0.93 U	1.89 J	75.05	0.26 J	0.16 J	6.35	2.74 J	0.671	< 0.083 U	2.44 J	0.0038	0.008 J	0.62 J	4.5 J	< 0.86 U
5/16/2017	Background	< 0.93 U	1.49 J	59.86	0.12 J	< 0.07 U	3.12	1.16 J	13.943	< 0.083 U	1.16 J	0.00182	< 0.005 U	0.43 J	1.04 J	< 0.86 U
6/16/2017	Background	< 0.93 U	1.5 J	65.93	0.16 J	< 0.07 U	4.2	1.58 J	1.14	< 0.083 U	1.03 J	0.00238	< 0.005 U	0.5 J	< 0.99 U	1.16 J
8/28/2018	Assessment	0.01 J	0.14	41.3	0.007 J	0.02 J	1.73	0.022	0.567	--	0.005 J	0.000415	0.007 J	0.54	1.7	0.03 J
3/12/2019	Assessment	< 0.1 U	0.61	48.3	< 0.1 U	< 0.05 U	2.32	0.597	0.571	< 0.04 U	0.748	0.0009 J	< 0.005 U	< 2 U	2.2	< 0.5 U
6/10/2019	Assessment	0.08 J	0.51	49.8	0.08 J	0.08 J	2.18	0.537	0.8101	0.03 J	0.697	< 0.02 U	< 0.005 U	< 0.8 U	2.4	< 0.2 U
8/27/2019	Assessment	0.05 J	0.36	48.6	0.04 J	0.04 J	1.96	0.387	0.347	< 0.083 U	0.509	0.000518	< 0.005 U	< 0.4 U	2.4	< 0.1 U
3/24/2020	Assessment	0.03 J	0.37	47.3	0.04 J	0.02 J	1.53	0.291	3.448	0.02 J	0.403	0.000636	0.002 J	< 0.4 U	1.6	< 0.1 U
6/23/2020	Assessment	< 0.02 U	0.15	41.6	< 0.02 U	0.01 J	1.19	0.053	0.457	0.02 J	0.06 J	0.000456	< 0.002 U	< 0.4 U	0.9	< 0.1 U
10/19/2020	Assessment	< 0.02 U	0.16	45.4	< 0.02 U	0.01 J	1.60	0.054	1.203	0.02 J	0.06 J	0.000407	< 0.002 U	< 0.4 U	1.6	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-7A**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.02	95.1	3	< 0.083 U	6.7	29	320
7/19/2016	Background	0.02	98.1	4	0.3892 J	7.2	34	314
9/14/2016	Background	0.02	100	4	< 0.083 U	7.2	33	304
10/5/2016	Background	0.02	97.1	5	0.3235 J	7.6	33	312
11/8/2016	Background	0.02	100	4	< 0.083 U	7.5	32	332
1/24/2017	Background	0.02	102	3	< 0.083 U	7.3	34	314
3/7/2017	Background	0.02	105	3	< 0.083 U	7.1	33	296
4/26/2017	Background	0.01786	101	5	< 0.083 U	7.0	34	298
5/16/2017	Background	0.01605	107	4	< 0.083 U	6.9	35	306
6/16/2017	Background	0.03032	106	5	< 0.083 U	6.8	35	320
8/28/2017	Detection	0.03116	102	5	0.274 J	--	33	304
3/26/2018	Detection	0.01576	100	3	< 0.083 U	7.1	33	300
8/28/2018	Assessment	0.018	105	--	--	7.7	--	314
10/23/2018	Detection	--	--	7.28	< 0.083 U	--	35.6	--
3/11/2019	Assessment	0.02 J	99.6	3.43	0.24	7.5	30.7	336
6/10/2019	Assessment	< 0.04 U	105	3.12	0.24	7.1	35.4	312
8/27/2019	Assessment	< 0.02 U	102	2	0.144 J	8.3	36	378
3/24/2020	Assessment	--	--	3.17	0.22	8.4	34.8	304
6/23/2020	Assessment	< 0.02 U	93.4	3.13	0.19	8.2	35.5	286
10/19/2020	Assessment	< 0.02 U	97.0	3.03	0.21	8.5	33.9	320

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-7A

## Flint Creek - LF

## Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	60	< 0.02 U	< 0.07 U	< 0.23 U	0.648714 J	2.556	< 0.083 U	< 0.68 U	0.021	0.033	0.838425 J	< 0.99 U	< 0.86 U
7/19/2016	Background	< 0.93 U	1.33211 J	60	0.0763658 J	< 0.07 U	0.240969 J	0.345176 J	--	0.3892 J	0.791157 J	0.022	0.034	0.619545 J	< 0.99 U	1.98498 J
9/14/2016	Background	< 0.93 U	< 1.05 U	69	< 0.02 U	< 0.07 U	0.354374 J	0.39525 J	3.54	< 0.083 U	< 0.68 U	0.021	0.00796 J	0.476503 J	< 0.99 U	< 0.86 U
10/5/2016	Background	< 0.93 U	< 1.05 U	66	< 0.02 U	< 0.07 U	< 0.23 U	0.842911 J	7.97	0.3235 J	< 0.68 U	0.034	< 0.005 U	0.68021 J	< 0.99 U	< 0.86 U
11/8/2016	Background	< 0.93 U	1.1401 J	65	< 0.02 U	< 0.07 U	0.28162 J	0.667484 J	2.247	< 0.083 U	< 0.68 U	0.017	0.00705 J	< 0.29 U	< 0.99 U	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	65	< 0.02 U	< 0.07 U	< 0.23 U	0.352624 J	2.311	< 0.083 U	< 0.68 U	0.015	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
3/7/2017	Background	< 0.93 U	< 1.05 U	62	< 0.02 U	< 0.07 U	0.432618 J	0.458003 J	3.154	< 0.083 U	< 0.68 U	0.022	0.00621 J	< 0.29 U	< 0.99 U	< 0.86 U
4/26/2017	Background	< 0.93 U	< 1.05 U	68.64	< 0.02 U	< 0.07 U	< 0.23 U	0.64 J	1.934	< 0.083 U	< 0.68 U	0.01501	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
5/16/2017	Background	< 0.93 U	1.25 J	59.92	< 0.02 U	< 0.07 U	0.24 J	0.56 J	2.714	< 0.083 U	< 0.68 U	0.01509	0.008 J	< 0.29 U	< 0.99 U	< 0.86 U
6/16/2017	Background	< 0.93 U	< 1.05 U	56.32	< 0.02 U	< 0.07 U	< 0.23 U	0.43 J	3.072	< 0.083 U	1.74 J	0.01452	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
8/28/2018	Assessment	0.02 J	1.59	52.4	0.01 J	0.03	0.071	0.400	2.861	--	0.156	0.0158	< 0.005 U	0.63	0.04 J	0.03 J
3/11/2019	Assessment	< 0.1 U	3.15	74.8	< 0.1 U	0.05 J	1.95	0.351	1.962	0.24	0.2 J	0.0200	< 0.005 U	< 2 U	< 0.2 U	< 0.5 U
6/10/2019	Assessment	0.06 J	2.35	42.9	< 0.02 U	0.02 J	< 0.04 U	0.074	2.561	0.24	0.1 J	< 0.02 U	< 0.005 U	0.5 J	< 0.03 U	< 0.1 U
8/27/2019	Assessment	0.15	2.93	49.0	< 0.02 U	0.03 J	0.2 J	0.134	1.853	0.144 J	0.1 J	0.0164	< 0.005 U	0.6 J	0.04 J	< 0.1 U
3/24/2020	Assessment	0.07 J	2.13	50.1	< 0.02 U	0.17	0.09 J	0.237	2.876	0.22	0.1 J	0.0181	< 0.002 U	0.7 J	0.1 J	< 0.1 U
6/23/2020	Assessment	0.09 J	3.75	48.5	< 0.02 U	0.03 J	0.1 J	0.057	1.706	0.19	< 0.05 U	0.0186	0.013	0.7 J	0.07 J	< 0.1 U
10/19/2020	Assessment	0.08 J	3.45	48.4	< 0.02 U	0.05	0.1 J	0.445	3.281	0.21	0.426	0.0180	0.004 J	0.6 J	< 0.03 U	< 0.1 U

## Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

&lt;: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-9**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.01	81	5	< 0.083 U	7.2	14	234
7/19/2016	Background	0.00947041 J	83	5	0.3556 J	7.4	14	204
9/14/2016	Background	0.00711941 J	99.6	7	< 0.083 U	7.6	18	239
10/5/2016	Background	0.00768136 J	98.6	8	0.1884 J	7.4	21	246
11/8/2016	Background	0.01	94.3	6	< 0.083 U	7.9	25	240
1/24/2017	Background	0.02	99.8	5	< 0.083 U	6.6	19	234
3/7/2017	Background	0.01	88.5	6	< 0.083 U	6.4	21	228
4/26/2017	Background	0.01036	87.7	6	0.31 J	6.8	19	224
5/16/2017	Background	0.009500 J	98.5	6	< 0.083 U	7.5	21	198
6/16/2017	Background	0.02369	124	6	< 0.083 U	7.0	22	270
8/28/2017	Detection	0.02463	106	6	0.2389 J	7.2	25	224
3/28/2018	Detection	0.00998 J	86.1	6	< 0.083 U	7.9	28	260
8/27/2018	Detection	0.010	144	--	--	7.7	--	272
10/23/2018	Detection	--	--	7.22	< 0.083 U	--	36.7	--
3/12/2019	Assessment	0.01 J	97.3	3.68	0.1 J	8.1	34.3	278
6/11/2019	Assessment	< 0.04 U	99.7	3.69	0.13	7.7	37.6	248
8/27/2019	Assessment	< 0.02 U	128	3	< 0.083 U	7.2	37	310
3/24/2020	Assessment	--	--	3.70	0.09	6.9	29.8	264
6/24/2020	Assessment	< 0.02 U	91.0	4.04	0.07	7.6	30.7	274
10/20/2020	Assessment	< 0.02 U	88.7	5.39	0.07	6.9	26.2	279

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

**Table 1 - Groundwater Data Summary: B-9  
Flint Creek - LF  
Appendix IV Constituents**

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	128	0.0475927 J	< 0.07 U	2	0.648715 J	0.25	< 0.083 U	< 0.68 U	0.005	0.01472 J	0.871853 J	< 0.99 U	1.51586 J
7/19/2016	Background	< 0.93 U	< 1.05 U	139	0.0706417 J	< 0.07 U	2	0.520418 J	--	0.3556 J	0.756023 J	0.003	0.01407 J	< 0.29 U	< 0.99 U	1.04447 J
9/14/2016	Background	< 0.93 U	< 1.05 U	143	< 0.02 U	< 0.07 U	3	1.03431 J	3.039	< 0.083 U	< 0.68 U	0.002	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
10/5/2016	Background	< 0.93 U	< 1.05 U	135	< 0.02 U	< 0.07 U	4	1.7825 J	0.893	0.1884 J	0.693028 J	0.016	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
11/8/2016	Background	< 0.93 U	< 1.05 U	136	0.0202009 J	< 0.07 U	3	1.48231 J	0.569	< 0.083 U	< 0.68 U	0.003	0.00774 J	< 0.29 U	< 0.99 U	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	154	0.03324 J	< 0.07 U	3	1.21896 J	0.618	< 0.083 U	< 0.68 U	0.003	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
3/7/2017	Background	1.39106 J	< 1.05 U	142	< 0.02 U	< 0.07 U	2	0.886686 J	2.009	< 0.083 U	< 0.68 U	0.009	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
4/26/2017	Background	< 0.93 U	1.13 J	144	< 0.02 U	< 0.07 U	2.52	0.93 J	0.989	0.31 J	0.79 J	0.00316	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
5/16/2017	Background	< 0.93 U	1.68 J	142	0.03 J	< 0.07 U	2.56	0.83 J	9.472	< 0.083 U	< 0.68 U	0.00311	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
6/16/2017	Background	< 0.93 U	1.11 J	150	0.04 J	< 0.07 U	4.01	1.32 J	1.795	< 0.083 U	< 0.68 U	0.00343	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
3/12/2019	Assessment	< 0.1 U	0.85	175	< 0.1 U	< 0.05 U	0.6 J	0.2 J	0.629	0.1 J	0.2 J	0.00528	< 0.005 U	< 2 U	< 0.2 U	< 0.5 U
6/11/2019	Assessment	< 0.1 U	0.90	166	< 0.1 U	< 0.05 U	1.11	0.2 J	0.1572	0.13	< 0.2 U	< 0.02 U	< 0.005 U	36.1	0.4 J	< 0.5 U
8/27/2019	Assessment	0.09 J	1.67	188	0.02 J	0.08	1.61	0.827	1.258	< 0.083 U	0.509	0.00409	< 0.005 U	0.4 J	0.5	< 0.1 U
3/24/2020	Assessment	0.03 J	0.77	151	< 0.02 U	0.01 J	0.932	0.411	1.696	0.09	0.08 J	0.00356	< 0.002 U	< 0.4 U	0.4	< 0.1 U
6/24/2020	Assessment	0.05 J	1.04	147	< 0.02 U	0.01 J	1.35	0.362	0.843	0.07	0.242	0.00264	< 0.002 U	< 0.4 U	0.5	< 0.1 U
10/20/2020	Assessment	0.03 J	0.56	154	< 0.02 U	< 0.01 U	0.436	0.133	1.204	0.07	0.06 J	0.00257	< 0.002 U	< 0.4 U	0.4	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-10**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.02	77.6	7	< 0.083 U	8.4	30	275
7/19/2016	Background	0.01	82.5	8	< 0.083 U	7.4	30	252
9/14/2016	Background	0.02	104	8	< 0.083 U	7.3	31	275
10/5/2016	Background	0.02	82.9	9	0.2319 J	7.0	39	308
11/8/2016	Background	0.03	116	8	< 0.083 U	8.0	30	268
1/24/2017	Background	0.03	77.1	7	< 0.083 U	7.1	33	276
3/7/2017	Background	0.02	84.8	6	< 0.083 U	6.6	29	268
4/26/2017	Background	0.01728	77.4	8	0.3 J	6.6	26	266
5/16/2017	Background	0.03169	80.6	8	< 0.083 U	6.8	35	284
6/16/2017	Background	0.04007	75.6	9	< 0.083 U	6.5	31	296
8/28/2017	Detection	0.0448	72.8	9	0.3304 J	7.4	28	256
3/26/2018	Detection	0.00862 J	76.6	6	< 0.083 U	8.0	25	244
8/27/2018	Detection	0.028	64.4	--	--	7.6	--	254
10/23/2018	Detection	--	--	11.7	< 0.083 U	--	26.4	--
3/12/2019	Assessment	0.028	72.4	9.68	0.1 J	8.4	21.4	226
6/10/2019	Assessment	< 0.04 U	80.4	9.24	0.11	7.4	26.1	260
8/27/2019	Assessment	< 0.02 U	70.8	7	< 0.083 U	7.3	26	268
3/24/2020	Assessment	--	--	9.41	0.10	7.2	26.1	252
6/24/2020	Assessment	< 0.02 U	76.5	10.1	0.08	7.8	27.8	234
10/20/2020	Assessment	< 0.02 U	86.0	10.3	0.08	6.6	26.8	257

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-10

Flint Creek - LF  
Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	77	0.0283721 J	< 0.07 U	2	0.567956 J	0.3279	< 0.083 U	< 0.68 U	0.004	0.01767 J	1.07659 J	< 0.99 U	< 0.86 U
7/19/2016	Background	< 0.93 U	< 1.05 U	78	0.0513816 J	< 0.07 U	2	0.487304 J	--	< 0.083 U	< 0.68 U	0.002	0.02255 J	< 0.29 U	< 0.99 U	< 0.86 U
9/14/2016	Background	< 0.93 U	1.73638 J	102	< 0.02 U	< 0.07 U	16	1.45899 J	0.625	< 0.083 U	1.5658 J	0.003	< 0.005 U	0.405665 J	< 0.99 U	< 0.86 U
10/5/2016	Background	< 0.93 U	< 1.05 U	76	< 0.02 U	< 0.07 U	1	0.616894 J	1.305	0.2319 J	< 0.68 U	0.016	< 0.005 U	0.98229 J	< 0.99 U	< 0.86 U
11/8/2016	Background	< 0.93 U	6	103	0.350438 J	0.413058 J	37	5	1.066	< 0.083 U	2.57815 J	0.005	0.01543 J	1.18188 J	< 0.99 U	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	82	0.049146 J	< 0.07 U	1	1.02071 J	0.618	< 0.083 U	< 0.68 U	0.003	< 0.005 U	1.261 J	< 0.99 U	< 0.86 U
3/7/2017	Background	< 0.93 U	< 1.05 U	77	< 0.02 U	< 0.07 U	2	0.814652 J	1.119	< 0.083 U	< 0.68 U	0.01	< 0.005 U	1.02218 J	< 0.99 U	< 0.86 U
4/26/2017	Background	< 0.93 U	1.5 J	69.33	< 0.02 U	< 0.07 U	0.26 J	0.65 J	0.668	0.3 J	< 0.68 U	0.00287	< 0.005 U	0.92 J	< 0.99 U	< 0.86 U
5/16/2017	Background	< 0.93 U	< 1.05 U	82.92	< 0.02 U	< 0.07 U	0.59 J	0.76 J	1.294	< 0.083 U	< 0.68 U	0.00357	< 0.005 U	1.55 J	< 0.99 U	< 0.86 U
6/16/2017	Background	< 0.93 U	< 1.05 U	76.25	< 0.02 U	< 0.07 U	0.39 J	1.17 J	2.477	< 0.083 U	< 0.68 U	0.00358	< 0.005 U	1.28 J	< 0.99 U	< 0.86 U
3/12/2019	Assessment	0.1 J	0.67	79.1	< 0.1 U	0.05 J	0.9 J	0.299	0.86	0.1 J	0.3 J	0.00167	< 0.005 U	< 2 U	0.3 J	< 0.5 U
6/10/2019	Assessment	0.2 J	0.3 J	78.3	< 0.1 U	< 0.05 U	0.3 J	< 0.1 U	1.128	0.11	< 0.2 U	< 0.02 U	< 0.005 U	10 J	0.5 J	< 0.5 U
8/27/2019	Assessment	0.11	0.46	79.1	< 0.02 U	0.02 J	0.385	0.128	1.344	< 0.083 U	0.05 J	0.00169	0.016 J	1 J	0.4	< 0.1 U
3/24/2020	Assessment	0.05 J	0.37	83.5	< 0.02 U	0.02 J	0.429	0.03 J	1.05	0.10	< 0.05 U	0.00133	< 0.002 U	0.6 J	0.4	< 0.1 U
6/24/2020	Assessment	0.10	0.38	78.8	< 0.02 U	0.02 J	0.781	0.102	1.355	0.08	0.08 J	0.00144	< 0.002 U	0.8 J	0.5	< 0.1 U
10/20/2020	Assessment	0.18	0.80	82.2	0.04 J	0.04 J	2.07	1.18	1.748	0.08	0.641	0.00140	0.002 J	0.7 J	0.6	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter



**Table 1 - Groundwater Data Summary: B-11**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.171	10.5	4	< 0.083 U	5.7	26	182
7/19/2016	Background	0.238	13.3	5	< 0.083 U	6.2	41	144
9/14/2016	Background	0.207	14.7	6	< 0.083 U	6.6	33	120
10/5/2016	Background	0.19	13	6	< 0.083 U	6.4	36	156
11/8/2016	Background	0.188	11.3	5	< 0.083 U	6.5	36	106
1/24/2017	Background	0.214	18.2	4	< 0.083 U	6.1	39	128
3/7/2017	Background	0.199	12.6	3	< 0.083 U	5.5	37	112
4/26/2017	Background	0.253	16.2	6	< 0.083 U	5.9	45	130
5/16/2017	Background	0.453	13.6	6	< 0.083 U	5.3	62	142
6/16/2017	Background	0.508	14.9	6	< 0.083 U	5.4	60	184
8/28/2017	Detection	0.266	9.65	6	< 0.083 U	5.3	43	108
12/21/2017	Detection	0.227	--	--	--	6.7	--	--
3/28/2018	Detection	0.465	12.2	4	< 0.083 U	5.4	53	136
8/27/2018	Detection	0.281	10.8	--	--	5.9	--	100
10/23/2018	Detection	--	--	6.93	< 0.083 U	--	47.7	--
3/12/2019	Assessment	0.409	11.6	4.03	0.04 J	5.8	44.9	104
6/10/2019	Assessment	0.548	17.0	3.73	0.04 J	5.9	54.7	82
8/27/2019	Assessment	0.605	15.4	3	< 0.083 U	5.8	59	138
3/24/2020	Assessment	--	--	3.27	0.04 J	6.4	47.6	144
6/23/2020	Assessment	0.255	12.3	4.33	0.02 J	6.0	32.7	104
10/20/2020	Assessment	0.327	14.1	3.39	0.03 J	5.3	37.4	143

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-11

Flint Creek - LF  
Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	139	0.899874 J	1	13	3.28467 J	1.311	< 0.083 U	4.23401 J	0.006	0.02458 J	0.362121 J	< 0.99 U	< 0.86 U
7/19/2016	Background	< 0.93 U	7	187	2	2	22	6	--	< 0.083 U	9	0.018	0.02442 J	0.590003 J	1.89587 J	< 0.86 U
9/14/2016	Background	< 0.93 U	32	494	6	4	108	25	8.05	< 0.083 U	49	0.079	0.097	3.32649 J	< 0.99 U	1.00112 J
10/5/2016	Background	< 0.93 U	3.13751 J	163	1	1	16	4.44532 J	2.161	< 0.083 U	6	0.02	< 0.005 U	0.370625 J	1.95476 J	< 0.86 U
11/8/2016	Background	< 0.93 U	< 1.05 U	99	0.259911 J	0.649573 J	2	0.824023 J	0.874	< 0.083 U	< 0.68 U	0.004	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	121	0.136215 J	0.418062 J	2	0.286943 J	1	< 0.083 U	< 0.68 U	0.003	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
3/7/2017	Background	< 0.93 U	< 1.05 U	97	0.249082 J	0.477646 J	2	0.554259 J	12.993	< 0.083 U	< 0.68 U	0.003	< 0.005 U	< 0.29 U	2.72028 J	< 0.86 U
4/26/2017	Background	< 0.93 U	< 1.05 U	138	0.38 J	0.56 J	5.16	1.24 J	0.512	< 0.083 U	0.83 J	0.00566	< 0.005 U	< 0.29 U	1.52 J	< 0.86 U
5/16/2017	Background	< 0.93 U	1.16 J	129	0.39 J	0.15 J	3.27	0.97 J	0.911	< 0.083 U	< 0.68 U	0.00329	< 0.005 U	< 0.29 U	2.68 J	< 0.86 U
6/16/2017	Background	< 0.93 U	< 1.05 U	127	0.41 J	0.13 J	3.67	1.08 J	2.655	< 0.083 U	1.23 J	0.00334	< 0.005 U	< 0.29 U	1.15 J	< 0.86 U
3/12/2019	Assessment	< 0.1 U	0.90	119	0.622	0.1 J	1.95	0.372	0.451	0.04 J	0.935	0.00221	< 0.005 U	< 2 U	3.5	< 0.5 U
6/10/2019	Assessment	< 0.04 U	0.36	111	0.316	0.08 J	0.884	0.162	1.121	0.04 J	0.2 J	0.03 J	< 0.005 U	< 0.8 U	3.1	< 0.2 U
8/27/2019	Assessment	< 0.02 U	0.55	131	0.317	0.10	1.36	0.256	0.455	< 0.083 U	0.416	0.00130	< 0.005 U	< 0.4 U	4.1	< 0.1 U
3/24/2020	Assessment	< 0.02 U	0.20	101	0.162	0.07	0.542	0.094	1.437	0.04 J	< 0.05 U	0.000878	< 0.002 U	< 0.4 U	3.0	< 0.1 U
6/23/2020	Assessment	< 0.02 U	0.13	91.1	0.275	0.07	0.763	0.084	0.835	0.02 J	< 0.05 U	0.00128	< 0.002 U	< 0.4 U	2.0	< 0.1 U
10/20/2020	Assessment	< 0.02 U	0.14	84.9	0.219	0.05	0.919	0.085	2.095	0.03 J	< 0.05 U	0.00151	< 0.002 U	< 0.4 U	2.3	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-12**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.02	63	10	< 0.083 U	8.2	19	280
7/19/2016	Background	0.02	61.1	10	< 0.083 U	7.6	15	216
9/14/2016	Background	0.02	70.5	11	< 0.083 U	7.1	14	236
10/5/2016	Background	0.02	69.2	12	0.1908 J	7.0	12	271
11/8/2016	Background	0.03	66.7	12	< 0.083 U	6.9	14	308
1/24/2017	Background	0.02	67.1	9	< 0.083 U	6.7	9	268
3/7/2017	Background	0.02	68.1	9	< 0.083 U	6.3	11	248
4/26/2017	Background	0.02379	59.4	9	< 0.083 U	6.4	10	282
5/16/2017	Background	0.023	61.5	10	< 0.083 U	6.4	10	236
6/16/2017	Background	0.0347	59.4	10	< 0.083 U	6.6	9	252
8/29/2017	Detection	0.03061	72	10	< 0.083 U	7.2	12	248
3/26/2018	Detection	0.02876	56.2	7	< 0.083 U	7.8	6	176
8/28/2018	Assessment	0.016	56.4	--	--	7.9	--	258
10/23/2018	Detection	--	--	13.2	< 0.083 U	--	9.16	--
3/11/2019	Assessment	0.02 J	58.0	11.0	0.06 J	8.5	5.0	254
6/10/2019	Assessment	0.04 J	60.9	10.6	0.06 J	7.2	7.0	244
8/27/2019	Assessment	< 0.02 U	59.6	8	< 0.083 U	6.9	9	252
3/23/2020	Assessment	--	--	8.53	0.03 J	6.7	6.1	210
6/23/2020	Assessment	< 0.02 U	57.0	11.2	0.03 J	7.3	6.2	238
10/19/2020	Assessment	< 0.02 U	70.3	11.0	0.05 J	6.6	9.5	266

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-12

Flint Creek - LF  
Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	62	0.020013 J	< 0.07 U	0.98147 J	3.36185 J	0.28188	< 0.083 U	0.779741 J	0.000759267 J	0.01713 J	2.94917 J	< 0.99 U	< 0.86 U
7/19/2016	Background	< 0.93 U	< 1.05 U	61	0.0839166 J	< 0.07 U	2	2.84565 J	--	< 0.083 U	1.17408 J	0.001	0.0216 J	3.86821 J	< 0.99 U	< 0.86 U
9/14/2016	Background	< 0.93 U	< 1.05 U	70	< 0.02 U	< 0.07 U	2	2.53407 J	1.953	< 0.083 U	0.716221 J	0.000874536 J	< 0.005 U	3.27157 J	< 0.99 U	< 0.86 U
10/5/2016	Background	< 0.93 U	< 1.05 U	67	< 0.02 U	< 0.07 U	0.86698 J	2.31495 J	1.666	0.1908 J	< 0.68 U	0.014	< 0.005 U	2.00891 J	< 0.99 U	< 0.86 U
11/8/2016	Background	< 0.93 U	8	123	1	0.465087 J	22	23	1.743	< 0.083 U	15	0.011	0.039	4.65502 J	< 0.99 U	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	63	< 0.02 U	< 0.07 U	0.446889 J	1.76121 J	1.357	< 0.083 U	< 0.68 U	0.000559654 J	< 0.005 U	1.1441 J	< 0.99 U	< 0.86 U
3/7/2017	Background	< 0.93 U	< 1.05 U	59	< 0.02 U	< 0.07 U	1	1.61975 J	2.97	< 0.083 U	0.903447 J	0.006	< 0.005 U	2.06812 J	< 0.99 U	< 0.86 U
4/26/2017	Background	1.92 J	1.23 J	53.73	0.02 J	< 0.07 U	0.65 J	1.34 J	0.908	< 0.083 U	< 0.68 U	0.00106	0.006 J	0.69 J	< 0.99 U	< 0.86 U
5/16/2017	Background	< 0.93 U	1.65 J	59.7	0.07 J	< 0.07 U	1.57	1.95 J	0.6398	< 0.083 U	0.77 J	0.00132	< 0.005 U	0.58 J	< 0.99 U	< 0.86 U
6/16/2017	Background	< 0.93 U	< 1.05 U	56.66	< 0.02 U	< 0.07 U	0.63 J	1.3 J	2.635	< 0.083 U	< 0.68 U	0.00085 J	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
8/28/2018	Assessment	0.15	0.43	48.8	0.042	0.03	0.993	2.51	0.891	--	0.535	0.000702	< 0.005 U	1.11	0.4	0.03 J
3/11/2019	Assessment	< 0.1 U	0.3 J	51.6	< 0.1 U	< 0.05 U	1.09	3.35	0.777	0.06 J	0.5 J	0.0008 J	< 0.005 U	< 2 U	0.3 J	< 0.5 U
6/10/2019	Assessment	0.1 J	0.29	54.2	< 0.04 U	0.03 J	0.585	2.49	0.5134	0.06 J	0.3	< 0.02 U	< 0.005 U	< 0.8 U	0.2 J	< 0.2 U
8/27/2019	Assessment	0.24	1.20	60.8	0.150	0.08	2.04	11.2	1.111	< 0.083 U	2.65	0.00176	0.006 J	0.4 J	1.4	< 0.1 U
3/23/2020	Assessment	0.05 J	0.14	52.6	< 0.02 U	0.02 J	0.321	2.62	1.722	0.03 J	0.07 J	0.000768	< 0.002 U	0.6 J	0.1 J	< 0.1 U
6/23/2020	Assessment	0.07 J	0.11	59.7	< 0.02 U	0.02 J	0.481	1.82	0.421	0.03 J	< 0.05 U	0.000828	< 0.002 U	0.5 J	0.1 J	< 0.1 U
10/19/2020	Assessment	0.16	0.14	62.9	< 0.02 U	0.03 J	0.601	2.26	1.611	0.05 J	0.1 J	0.00114	< 0.002 U	0.7 J	0.2	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1 - Groundwater Data Summary: B-13**

**Flint Creek - LF  
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/24/2016	Background	0.02	15.1	4	< 0.083 U	6.9	20	108
7/19/2016	Background	0.03	14.7	3	< 0.083 U	5.9	23	88
9/13/2016	Background	0.02	13	4	< 0.083 U	5.1	18	68
10/5/2016	Background	0.02	13.6	5	< 0.083 U	5.2	20	80
11/8/2016	Background	0.01	4.07	4	0.2121 J	5.4	7	52
1/24/2017	Background	0.01	4.26	3	< 0.083 U	6.2	7	44
3/7/2017	Background	0.02	10.1	3	< 0.083 U	4.8	16	64
4/26/2017	Background	0.02539	15	4	< 0.083 U	5.3	27	82
5/16/2017	Background	0.03198	20.1	4	< 0.083 U	5.7	33	60
6/16/2017	Background	0.04236	20.2	5	< 0.083 U	5.2	31	114
8/28/2017	Detection	0.02674	12.7	4	< 0.083 U	5.0	22	72
3/28/2018	Detection	0.02271	14.8	2	< 0.083 U	7.5	23	80
8/27/2018	Detection	0.016	12.4	--	--	5.1	--	58
10/22/2018	Detection	--	--	3.6	< 0.083 U	--	21.1	--
3/12/2019	Assessment	0.02 J	13.5	1.92	0.02 J	7.1	21.3	82
6/10/2019	Assessment	< 0.04 U	19.7	3.05	0.02 J	6.9	20.7	98
8/28/2019	Assessment	< 0.02 U	10.2	1	< 0.083 U	5.4	18	64
3/23/2020	Assessment	--	--	1.82	0.02 J	6.4	19.0	81
6/24/2020	Assessment	< 0.02 U	16.3	1.93	0.01 J	6.2	18.7	86
10/20/2020	Assessment	< 0.02 U	13.0	1.63	0.02 J	6.2	17.7	77

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

Table 1 - Groundwater Data Summary: B-13

Flint Creek - LF  
Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/24/2016	Background	< 0.93 U	< 1.05 U	53	0.122524 J	0.107623 J	2	1.81817 J	0.4473	< 0.083 U	< 0.68 U	< 0.00013 U	0.02179 J	< 0.29 U	< 0.99 U	< 0.86 U
7/19/2016	Background	< 0.93 U	< 1.05 U	60	0.224239 J	< 0.07 U	4	1.60103 J	--	< 0.083 U	1.35024 J	0.002	0.01382 J	< 0.29 U	< 0.99 U	< 0.86 U
9/13/2016	Background	< 0.93 U	< 1.05 U	54	< 0.02 U	< 0.07 U	3	1.45223 J	1.939	< 0.083 U	< 0.68 U	0.002	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
10/5/2016	Background	< 0.93 U	< 1.05 U	61	0.237762 J	< 0.07 U	5	2.78529 J	0.829	< 0.083 U	1.81371 J	0.011	< 0.005 U	0.539075 J	< 0.99 U	< 0.86 U
11/8/2016	Background	< 0.93 U	< 1.05 U	32	0.28466 J	0.256467 J	4	1.50224 J	0.3576	0.2121 J	1.58806 J	0.002	0.00767 J	< 0.29 U	< 0.99 U	< 0.86 U
1/24/2017	Background	< 0.93 U	< 1.05 U	36	0.29327 J	< 0.07 U	3	1.48125 J	0.733	< 0.083 U	< 0.68 U	0.002	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
3/7/2017	Background	< 0.93 U	< 1.05 U	44	0.142049 J	< 0.07 U	2	0.769644 J	0.841	< 0.083 U	< 0.68 U	0.002	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
4/26/2017	Background	< 0.93 U	1.92 J	66.22	0.22 J	0.1 J	4.05	1.94 J	0.844	< 0.083 U	1.02 J	0.00252	0.021 J	< 0.29 U	1.68 J	< 0.86 U
5/16/2017	Background	< 0.93 U	< 1.05 U	71.99	0.13 J	< 0.07 U	2.26	0.99 J	0.918	< 0.083 U	< 0.68 U	0.00133	< 0.005 U	< 0.29 U	1.38 J	< 0.86 U
6/16/2017	Background	< 0.93 U	< 1.05 U	72.45	0.12 J	< 0.07 U	2.61	1.26 J	2.577	< 0.083 U	< 0.68 U	0.00151	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
3/12/2019	Assessment	< 0.1 U	0.62	55.4	0.2 J	0.08 J	1.76	1.08	0.882	0.02 J	1.51	0.00115	< 0.005 U	< 2 U	0.8 J	< 0.5 U
6/10/2019	Assessment	< 0.02 U	0.07 J	55.1	0.05 J	0.04 J	0.379	0.03 J	0.461	0.02 J	< 0.05 U	< 0.02 U	< 0.005 U	< 0.4 U	0.5	< 0.1 U
8/28/2019	Assessment	< 0.02 U	0.17	47.1	0.151	0.05 J	0.818	0.272	0.862	< 0.083 U	0.221	0.000814	< 0.005 U	< 0.4 U	0.4	< 0.1 U
3/23/2020	Assessment	< 0.02 U	0.06 J	49.0	0.06 J	0.04 J	0.459	0.03 J	1.475	0.02 J	< 0.05 U	0.000578	< 0.002 U	< 0.4 U	0.4	< 0.1 U
6/24/2020	Assessment	< 0.02 U	0.08 J	52.3	0.05 J	0.07	0.460	0.051	0.4377	0.01 J	0.07 J	0.000504	< 0.002 U	< 0.4 U	0.5	< 0.1 U
10/20/2020	Assessment	< 0.02 U	0.06 J	45.3	0.08 J	0.05 J	0.345	0.060	0.276	0.02 J	0.05 J	0.000604	< 0.002 U	< 0.4 U	0.4	< 0.1 U

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.

J: Estimated value. Parameter was detected at concentration below the reporting limit

--: Not analyzed

pCi/L: picocuries per liter

**Table 1: Residence Time Calculation Summary  
Flint Creek Landfill**

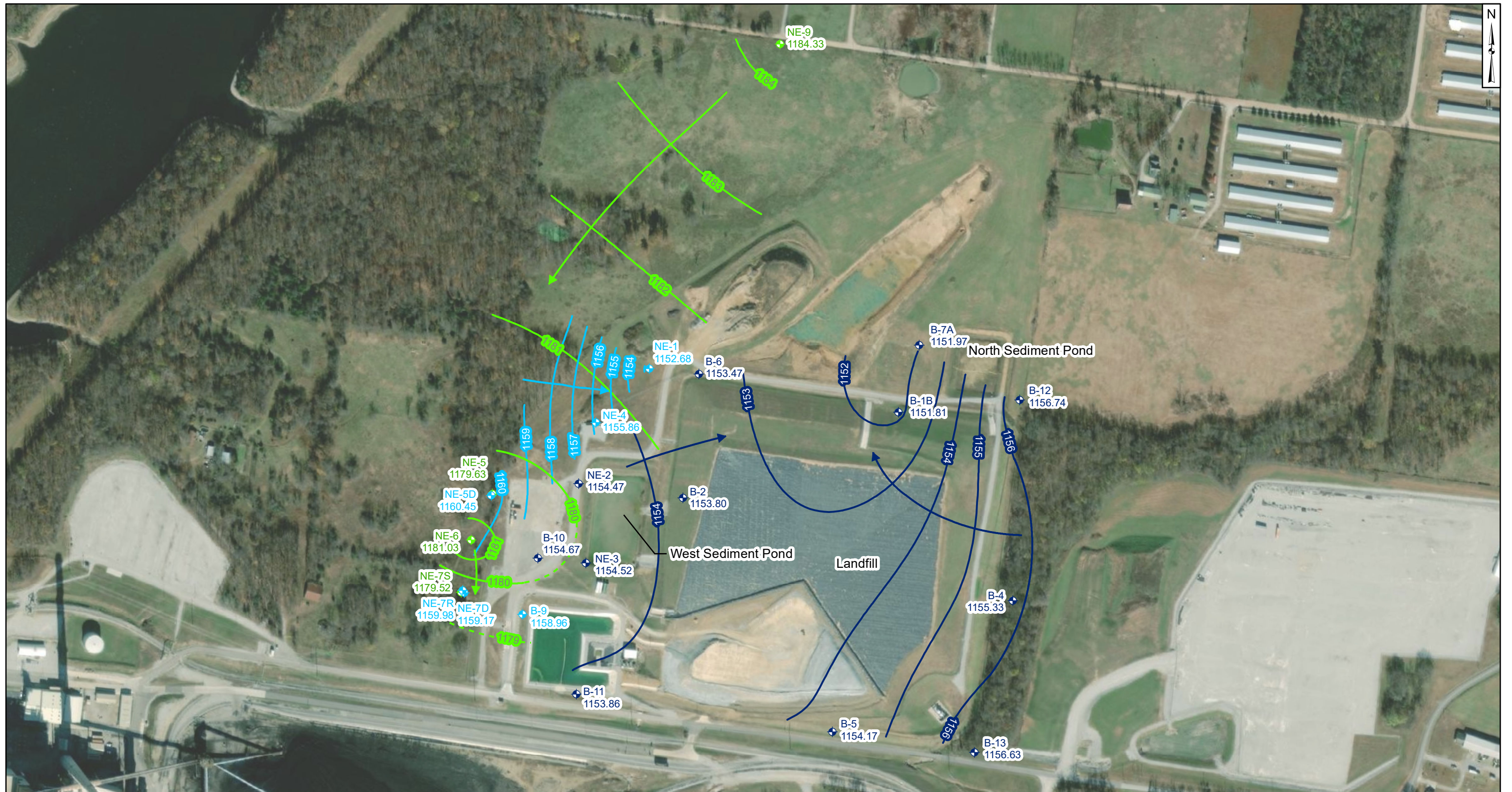
CCR Management Unit	Monitoring Well	Well Diameter (inches)	2020-03		2020-06		2020-10	
			Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)
Landfill	B-1B <sup>[3]</sup>	2.0	301	0.2	204	0.3	276	0.2
	B-2 <sup>[2]</sup>	2.0	57	1.1	68	0.9	71	0.9
	B-4 <sup>[1]</sup>	2.0	471	0.1	27	2.3	23	2.7
	B-5 <sup>[3]</sup>	2.0	39	1.6	35	1.8	28	2.2
	B-6 <sup>[2]</sup>	2.0	88	0.7	103	0.6	69	0.9
	B-7A <sup>[3]</sup>	2.0	327	0.2	110	0.6	80	0.8
	B-9 <sup>[2]</sup>	2.0	13	4.7	127	0.5	299	0.2
	B-10 <sup>[2]</sup>	2.0	45	1.4	86	0.7	88	0.7
	B-11 <sup>[2]</sup>	2.0	58	1.1	33	1.9	35	1.7
	B-12 <sup>[1]</sup>	2.0	382	0.2	9	6.6	58	1.1
	B-13 <sup>[1]</sup>	2.0	160	0.4	7	8.6	17	3.6

Notes:

[1] - Background Well

[2] - Downgradient Well

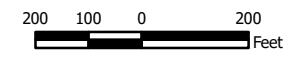
[3] - Crossgradient Well



Monitoring Wells	Groundwater Elevation Contour
◆ Shallow	— Shallow
◆ Intermediate	- - - Shallow, Inferred
◆ Deep	→ Shallow Flow Direction
	→ Intermediate
	→ Intermediate Flow Direction
	→ Deep
	- - - Deep, Inferred
	→ Deep Flow Direction

**Notes**

- Monitoring well coordinates and water level data (collected on March 23-24, 2020) provided by AEP.
- Site features are based on information available in the Groundwater Monitoring Well Network for CCR Compliance (Terracon, 2016) provided by AEP.
- Locations of NE-5D, NE-7R, and NE-9 are approximate.
- Groundwater elevation units are feet above mean sea level.



<b>Potentiometric Surface Map March 2020</b>		<b>Figure 2</b>
AEP Flint Creek Plant - Landfill Gentry, Arkansas		
Columbus, Ohio	2021/01/14	

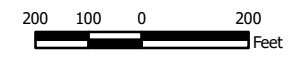




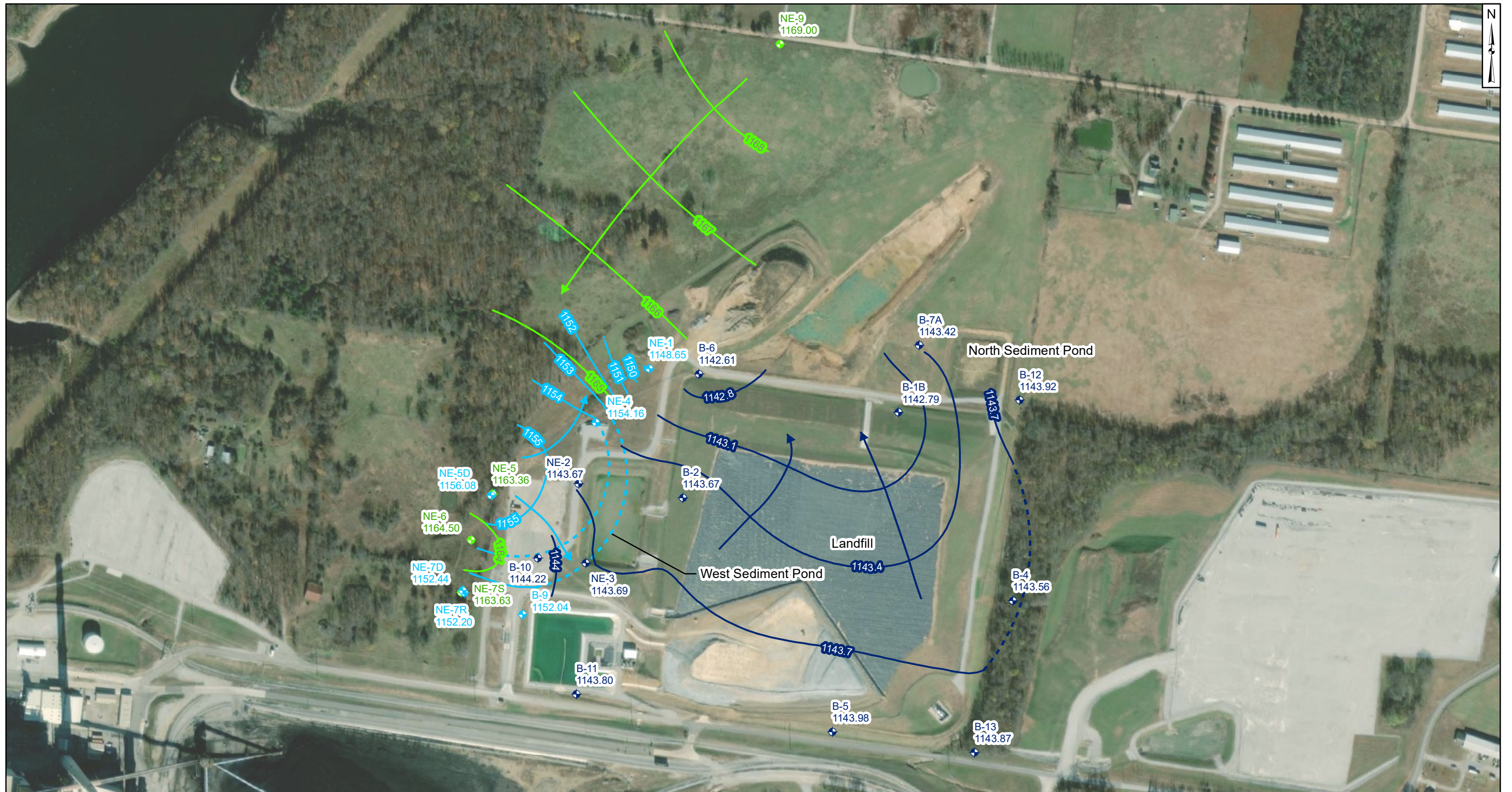
Monitoring Wells	Groundwater Elevation Contour
◆ Shallow	— Shallow
◆ Intermediate	- - - Shallow, Inferred
◆ Deep	→ Shallow Flow Direction
	→ Intermediate
	→ Intermediate Flow Direction
	→ Deep
	- - - Deep, Inferred
	→ Deep Flow Direction

**Notes**

- Monitoring well coordinates and water level data (collected on June 23, 2020) provided by AEP.
- Site features are based on information available in the Groundwater Monitoring Well Network for CCR Compliance (Terracon, 2016) provided by AEP.
- Locations of NE-5D, NE-7R, and NE-9 are approximate.
- Groundwater elevation units are feet above mean sea level.



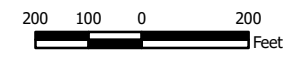
<b>Potentiometric Surface Map June 2020</b>		<b>Figure 3</b>
AEP Flint Creek Plant - Landfill Gentry, Arkansas		
Columbus, Ohio	2020/09/16	



Monitoring Wells	Groundwater Elevation Contour
◆ Shallow	— Shallow
◆ Intermediate	→ Shallow Flow Direction
◆ Deep	— Intermediate
	→ Intermediate Flow Direction
	- - - Intermediate, Inferred
	— Deep
	→ Deep Flow Direction
	- - - Deep, Inferred

**Notes**

- Monitoring well coordinates and water level data (collected on October 19, 2020) provided by AEP.
- Site features are based on information available in the Groundwater Monitoring Well Network for CCR Compliance (Terracon, 2016) provided by AEP.
- Locations of NE-5D, NE-7R, and NE-9 are approximate.
- Groundwater elevation units are feet above mean sea level.



<b>Potentiometric Surface Map October 2020</b>	
AEP Flint Creek Plant - Landfill Gentry, Arkansas	
<b>Geosyntec</b> consultants	
Columbus, Ohio	2021/01/05
<b>Figure 4</b>	

## **APPENDIX 2 - Statistical Analyses**

The October 2020 statistical analysis summary concluding that no SSLs were identified at the CCR unit follow.

**STATISTICAL ANALYSIS SUMMARY**  
**LANDFILL**  
**Flint Creek Plant**  
**Gentry, Arkansas**

*Submitted to*



1 Riverside Plaza  
Columbus, Ohio 43215-2372

*Submitted by*



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Columbus, Ohio 43221

October 19, 2020

CHA8500

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## LIST OF ATTACHMENTS

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

## LIST OF ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
CCR	Coal Combustion Residuals
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
LCL	Lower Confidence Limit
LF	Landfill
LFB	Laboratory Fortified Blanks
LPL	Lower Prediction Limit
LRB	Laboratory Reagent Blanks
MCL	Maximum Contaminant Level
NELAP	National Environmental Laboratory Accreditation Program
QA	Quality Assurance
QC	Quality Control
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
SU	Standard Units
TDS	Total Dissolved Solids
UPL	Upper Prediction Limit
USEPA	United States Environmental Protection Agency
UTL	Upper Tolerance Limit

## SECTION 1

### EXECUTIVE SUMMARY

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (40 CFR 257.90-257.98, "CCR rule"), groundwater monitoring has been conducted at the Landfill (LF), an existing CCR unit at the Flint Creek Power Plant located in Gentry, West Arkansas.

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron at the LF. An alternative source was not identified following the detection monitoring events; thus, the LF has been in assessment monitoring since 2018. During the most recent assessment monitoring event, completed in August 2019, no statistically significant levels (SSLs) were identified during these events, and the unit remained in assessment monitoring (Geosyntec, 2019). Two assessment monitoring events were conducted at the LF in March 2020 and June 2020, in accordance with 40 CFR 257.95. The results of these assessment events are documented in this report.

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

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Groundwater protection standards (GWPSs) were re-established for the Appendix IV parameters. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether any were present at concentrations above the GWPSs. No SSLs were identified; however, concentrations of Appendix III parameters remained above background. Thus, the unit will remain in assessment monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

## SECTION 2

### LANDFILL EVALUATION

#### 2.1 Data Validation & QA/QC

During the assessment monitoring program, two sets of samples were collected for analysis from each upgradient and downgradient well to meet the requirements of 40 CFR 257.95(b) (March 2020) and 257.95(d)(1) (June 2020). Samples from the June 2020 sample event were analyzed for all Appendix III and Appendix IV parameters, whereas samples from the March 2020 event were analyzed all Appendix IV parameters and all Appendix III parameters except boron and chloride. A summary of data collected during these assessment monitoring events may be found in Table 1.

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

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the Sanitas™ v.9.6.26d statistics software. The export file was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

#### 2.2 Statistical Analysis

Statistical analyses for the LF were conducted in accordance with the January 2017 *Statistical Analysis Plan* (AEP, 2017), except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained in March and June 2020 were screened for potential outliers; however, no outliers were identified in either set of data (Attachment B).

##### 2.2.1 Establishment of GWPSs

A GWPS was established for each Appendix IV parameter in accordance with 40 CFR 257.95(h) and the *Statistical Analysis Plan* (AEP, 2017). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) or risk-based level specified in 40 CFR 257.95(h)(2) for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit (UTL) was calculated using pooled data from the background wells collected during the background monitoring and assessment monitoring events. Tolerance limits were calculated parametrically with 95% coverage and 95% confidence



for cobalt and combined radium. Non-parametric tolerance limits were calculated for barium, beryllium, chromium, lead, and lithium due to apparent non-normal distributions. Non-parametric tolerance limits were calculated for antimony, arsenic, cadmium, fluoride, mercury, molybdenum, selenium, and thallium because greater than 50% of the data was non-detect results. Tolerance limits and the final GWPSs are summarized in Table 2.

### **2.2.2 Evaluation of Potential Appendix IV SSLs**

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

No SSLs were identified at the Flint Creek LF.

### **2.2.3 Evaluation of Potential Appendix III SSIs**

The Appendix III results were analyzed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations. Data collected during the June 2020 assessment monitoring events from each compliance well were compared to the prediction limits to assess whether the results are above background values. The results from these events and the prediction limits are summarized in Table 3. The following exceedances of the upper prediction limits (UPLs) were noted:

- Boron concentrations exceeded the interwell UPL of 0.0588 mg/L at B-2 (0.355 mg/L), and B-11 (0.255 mg/L).
- The recorded pH value exceeded the intrawell UPL of 7.9 SU at B-7A (8.2 SU).
- The reported sulfate concentration exceeded the intrawell UPL of 243 mg/L at B-5 (249 mg/L).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the June 2020 sample was above the UPL or below the LPL. Based on this evaluation, concentrations of Appendix III constituents appear to be above background concentrations and the unit will remain in assessment monitoring.

## **2.3 Conclusions**

A semi-annual assessment monitoring event was conducted in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. A review of outliers identified no potential outliers in the March or June 2020 data. GWPSs were re-established for the Appendix IV parameters. A

confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPSs. No SSLs were identified.

The Appendix III results were evaluated to assess whether concentrations of Appendix III parameters exceeded background levels. Boron, pH, and sulfate results exceeded background levels at select downgradient wells.

Based on this evaluation, the Flint Creek LF CCR unit will remain in assessment monitoring.

## **SECTION 3**

### **REFERENCES**

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

Geosyntec Consultants (Geosyntec). 2019. Statistical Analysis Summary – Landfill, Flint Creek Plant, Gentry, Arkansas, December 24, 2019.

# TABLES

**Table 1 - Groundwater Data Summary  
Flint Creek Plant - Landfill**

Parameter	Unit	B-1B		B-2		B-4		B-5		B-6		B-7A	
		3/24/2020	6/24/2020	3/24/2020	6/24/2020	3/23/2020	6/24/2020	3/23/2020	6/24/2020	3/24/2020	6/23/2020	3/24/2020	6/23/2020
Antimony	µg/L	0.12	0.03 J	0.02 J	0.1 U	0.03 J	0.1 U	0.1 U	0.1 U	0.03 J	0.1 U	0.07 J	0.09 J
Arsenic	µg/L	0.34	0.77	0.16	0.21	0.25	0.06 J	0.33	0.38	0.37	0.15	2.13	3.75
Barium	µg/L	116	113	36.0	71.6	35.7	38.7	22.4	20.1	47.3	41.6	50.1	48.5
Beryllium	µg/L	0.1 U	0.1 U	0.130	0.07 J	0.198	0.169	0.491	0.473	0.04 J	0.1 U	0.1 U	0.1 U
Boron	mg/L	-	0.05 U	-	0.355	-	0.107	-	0.05 U	-	0.02 J	-	0.05 U
Cadmium	µg/L	0.04 J	0.02 J	0.03 J	0.03 J	0.14	0.04 J	0.16	0.15	0.02 J	0.01 J	0.17	0.03 J
Calcium	mg/L	-	87.0	-	30.7	-	2.93	-	16.1	-	37.8	-	93.4
Chloride	mg/L	2.39	2.22	2.81	5.36	2.14	1.92	7.75	8.12	7.31	7.25	3.17	3.13
Chromium	µg/L	0.07 J	0.273	1.37	1.74	0.724	0.805	2.35	2.42	1.53	1.19	0.09 J	0.1 J
Cobalt	µg/L	0.02 J	0.05 J	0.053	0.055	0.133	0.059	0.271	0.259	0.291	0.053	0.237	0.057
Combined Radium	pCi/L	5.38	4.558	1.077	1.974	0.404	0.646	0.6329	0.821	3.448	0.457	2.876	1.706
Fluoride	mg/L	0.40	0.36	0.07	0.09	0.02 J	0.02 J	0.07	0.05 J	0.02 J	0.02 J	0.22	0.19
Lead	µg/L	0.06 J	0.07 J	0.2 U	0.2 U	0.396	0.2 U	0.1 J	0.1 J	0.403	0.06 J	0.1 J	0.2 U
Lithium	mg/L	0.0242	0.0243	0.00109	0.00132	0.000877	0.000964	0.00235	0.00232	0.000636	0.000456	0.0181	0.0186
Mercury	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.002 J	0.003 J	0.004 J	0.002 J	0.005 U	0.005 U	0.013
Molybdenum	µg/L	1 J	1 J	0.8 J	2 J	2 U	2 U	2 U	2 U	2 U	2 U	0.7 J	0.7 J
Selenium	µg/L	0.08 J	0.04 J	5.2	8.4	0.5	0.5	35.0	35.0	1.6	0.9	0.1 J	0.07 J
Sulfate	mg/L	21.8	23.7	68.1	84.9	15.4	15.3	255	249	16.9	10.8	34.8	35.5
Thallium	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Dissolved Solids	mg/L	258	272	168	252	58	57	418	406	202	140	304	286
pH	SU	7.1	7.4	5.7	6.2	6.7	6.6	4.7	5.5	6.6	6.8	8.4	8.2

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

SU: standard unit

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

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

-: Not sampled

**Table 1 - Groundwater Data Summary  
Flint Creek Plant - Landfill**

Parameter	Unit	B-9		B-10		B-11		B-12		B-13	
		3/24/2020	6/24/2020	3/24/2020	6/24/2020	3/24/2020	6/23/2020	3/23/2020	6/23/2020	3/23/2020	6/24/2020
Antimony	µg/L	0.03 J	0.05 J	0.05 J	0.10	0.1 U	0.1 U	0.05 J	0.07 J	0.1 U	0.1 U
Arsenic	µg/L	0.77	1.04	0.37	0.38	0.20	0.13	0.14	0.11	0.06 J	0.08 J
Barium	µg/L	151	147	83.5	78.8	101	91.1	52.6	59.7	49.0	52.3
Beryllium	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.162	0.275	0.1 U	0.1 U	0.06 J	0.05 J
Boron	mg/L	-	0.05 U	-	0.05 U	-	0.255	-	0.05 U	-	0.05 U
Cadmium	µg/L	0.01 J	0.01 J	0.02 J	0.02 J	0.07	0.07	0.02 J	0.02 J	0.04 J	0.07
Calcium	mg/L	-	91.0	-	76.5	-	12.3	-	57.0	-	16.3
Chloride	mg/L	3.70	4.04	9.41	10.1	3.27	4.33	8.53	11.2	1.82	1.93
Chromium	µg/L	0.932	1.35	0.429	0.781	0.542	0.763	0.321	0.481	0.459	0.460
Cobalt	µg/L	0.411	0.362	0.03 J	0.102	0.094	0.084	2.62	1.82	0.03 J	0.051
Combined Radium	pCi/L	1.696	0.843	1.05	1.355	1.437	0.835	1.722	0.421	1.475	0.4377
Fluoride	mg/L	0.09	0.07	0.10	0.08	0.04 J	0.02 J	0.03 J	0.03 J	0.02 J	0.01 J
Lead	µg/L	0.08 J	0.242	0.2 U	0.08 J	0.2 U	0.2 U	0.07 J	0.2 U	0.2 U	0.07 J
Lithium	mg/L	0.00356	0.00264	0.00133	0.00144	0.000878	0.00128	0.000768	0.000828	0.000578	0.000504
Mercury	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Molybdenum	µg/L	2 U	2 U	0.6 J	0.8 J	2 U	2 U	0.6 J	0.5 J	2 U	2 U
Selenium	µg/L	0.4	0.5	0.4	0.5	3.0	2.0	0.1 J	0.1 J	0.4	0.5
Sulfate	mg/L	29.8	30.7	26.1	27.8	47.6	32.7	6.1	6.2	19.0	18.7
Thallium	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Dissolved Solids	mg/L	264	274	252	234	144	104	210	238	81	86
pH	SU	6.9	7.6	7.2	7.8	6.4	6.0	6.7	7.3	6.4	6.2

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

SU: standard unit

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

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

-: Not sampled

**Table 2: Groundwater Protection Standards  
Flint Creek Plant - Landfill**

Constituent Name	MCL	CCR Rule-Specified	Background Limit
Antimony, Total (mg/L)	0.006		0.0050
Arsenic, Total (mg/L)	0.01		0.008
Barium, Total (mg/L)	2		0.13
Beryllium, Total (mg/L)	0.004		0.001
Cadmium, Total (mg/L)	0.005		0.001
Chromium, Total (mg/L)	0.1		0.0060
Cobalt, Total (mg/L)	n/a	0.006	0.0029
Combined Radium, Total (pCi/L)	5		8.79
Fluoride, Total (mg/L)	4		1
Lead, Total (mg/L)	n/a	0.015	0.005
Lithium, Total (mg/L)	n/a	0.04	0.041
Mercury, Total (mg/L)	0.002		0.000096
Molybdenum, Total (mg/L)	n/a	0.1	0.01
Selenium, Total (mg/L)	0.05		0.039
Thallium, Total (mg/L)	0.002		0.002

Notes:

Grey cell indicates calculated UTL is higher than the MCL or CCR Rule- specified value.

MCL = Maximum Contaminant Level

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

The higher of the calculated UTL or MCL/Rule-Specified Level is used as the GWPS.

**Table 3: Appendix III Data Summary  
Flint Creek Plant - Landfill**

Analyte	Unit	Description	B-1B	B-2	B-5	B-6	B-7A	B-9	B-10	B-11
			6/24/2020	6/24/2020	6/24/2020	6/23/2020	6/23/2020	6/24/2020	6/24/2020	6/23/2020
Boron	mg/L	Intrawell Background Value (UPL)	0.0588							
		Analytical Result	0.02	<b>0.355</b>	0.02	0.02	0.02	0.02	0.02	0.02
Calcium	mg/L	Intrawell Background Value (UPL)	96.7	88.0	19.2	61.5	109	137	112	18.3
		Analytical Result	87.0	30.7	16.1	37.8	93.4	91.0	76.5	12.3
Chloride	mg/L	Intrawell Background Value (UPL)	5.84	9.83	11.6	12.2	6.87	8.31	11.5	7.73
		Analytical Result	2.22	5.36	8.12	7.25	3.13	4.04	10.1	4.33
Fluoride	mg/L	Intrawell Background Value (UPL)	0.707	1.00	1.00	0.207	1.00	1.00	1.00	1.00
		Analytical Result	0.36	0.09	0.05	0.02	0.19	0.07	0.08	0.02
pH	SU	Intrawell Background Value (UPL)	8.4	7.3	6.8	7.4	7.9	8.5	8.8	7.0
		Intrawell Background Value (LPL)	6.2	5.2	4.3	6.1	6.5	6.2	5.9	4.8
		Analytical Result	7.4	6.2	5.5	6.8	<b>8.2</b>	7.6	7.8	6.0
Sulfate	mg/L	Intrawell Background Value (UPL)	28.1	803	243	42.3	37.1	37.6	39.4	65.7
		Analytical Result	23.7	84.9	<b>249</b>	10.8	35.5	30.7	27.8	32.7
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	317	1,410	447	292	339	293	315	193
		Analytical Result	272	252	406	140	286	274	234	104

Notes:

UPL: Upper prediction limit

LPL: Lower prediction limit

**Bold values exceed the background value.**

Background values are shaded gray.



# ATTACHMENT A

Certification by Qualified Professional Engineer

**Certification by Qualified Professional Engineer**

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Flint Creek Landfill CCR management area and that the requirements of 40 CFR 257.93(f) have been met.

DAVID ANTHONY MILLER

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature



15296

License Number

ARKANSAS

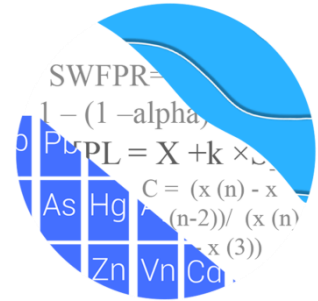
Licensing State

10.19.2020

Date

**ATTACHMENT B**  
**Statistical Analysis Output**

# GROUNDWATER STATS CONSULTING



September 4, 2020

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

Re: Flint Creek Landfill - Assessment Monitoring Report June 2020

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide Assessment Monitoring statistical analysis of groundwater data through June 2020 for American Electric Power Inc.'s Flint Creek Landfill. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Sampling began at the site for the CCR program in 2016. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** B-1B, B-4, B-5, B-7A, B-12, and B-13
- **Downgradient wells:** B-2, B-6, B-9, B-10, and B-11

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

The CCR Assessment Monitoring program consists of the following constituents:

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

Time series plots and box plots for Appendix IV parameters are provided for all wells and constituents; and are used to evaluate concentrations over the entire record (Figure A). Additionally, box plots are included for all constituents at upgradient and downgradient wells (Figure B).

### **Background Screening**

Prior to constructing statistical limits, background data are screened through time series plots for outliers and extreme trending patterns that would lead to artificially elevated statistical limits. Values identified as outliers are flagged with (o) and displayed in a lighter font and disconnected symbol on the time series graphs. A summary of flagged outliers is included as Figure C.

For the current analysis, all data through June 2020 were screened, including data from downgradient wells. For the downgradient well data that are used to construct confidence intervals, a regulatory conservative approach is taken in that values that are marginally high relative to the rest of the data are retained unless there is particular justification for excluding them. Several outliers, however, were flagged as a result of changes in reporting limits as follows.

It was noted that several constituents had higher reported concentrations in many wells during the September and November 2016 events which appear to be either a laboratory or sampling issue. Therefore, these values were flagged as outliers since they do not represent the population within these wells. Additionally, several reporting limits for the metals are significantly lower beginning in March 2019 than those reported historically. Nondetect values are not replaced with the most recent reporting limit in order to create conservative statistical limits from a regulatory perspective. For lithium, the reporting limit during the June 2019 event increased from a historical limit of 0.001 mg/L to 0.1 mg/L. Therefore, this value was flagged in all wells as it appears to be related to laboratory or sampling practices.

## Summary of Statistical Methods

Assessment monitoring for Appendix IV parameters involves the comparison of a confidence interval for each parameter at each downgradient well against the corresponding Groundwater Protection Standard (GWPS). If, and only if, the entire confidence interval exceeds the GWPS, the well/constituent pair is considered to exceed its standard. The GWPS is determined for each parameter as the largest of the Maximum Contaminant Levels (MCLs), CCR Rule-Specified levels, or background limits determined from tolerance limits on pooled upgradient well data.

Prior to computing tolerance limits on upgradient well data or confidence intervals on downgradient well data, the distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric tolerance limits and confidence intervals as appropriate, based on the following criteria.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% nondetects in background, the reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory. There is no replacement of historical reporting limits with the most recent reporting limit. For several constituents, the most recent reporting limits are significantly lower than those reported historically. This is the most conservative approach for tolerance limits and confidence intervals at this site.
- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric tolerance limits are used on data containing greater than 50% nondetects.

## Evaluation of Appendix IV Parameters – June 2020

When data followed a normal or transformed-normal distribution, parametric tolerance limits were used to calculate background limits for Appendix IV parameters using pooled upgradient well data through June 2020 with a target of 95% confidence and 95% coverage (Figure D). Nonparametric tolerance limits are constructed when data do not follow a normal or transformed-normal distribution or when there are greater than 50% nondetects. The confidence and coverage levels for nonparametric tolerance limits are

dependent upon the number of background samples. These background limits were then compared to the Maximum Contaminant Levels (MCLs) and CCR Rule-Specified levels to determine the highest limit for use as the GWPS in the confidence interval comparisons (Figure E).

Confidence intervals were then constructed on downgradient wells with data through June 2020 for each of the Appendix IV parameters using either parametric or nonparametric intervals depending on the data distribution and percentage of nondetects, similar to the logic used to construct tolerance limits as discussed above (Figure F). Each confidence interval was compared with the corresponding GWPS from Figure E. Only when the entire confidence interval is above the GWPS is the well/constituent pair considered to exceed its respective standard. Both a tabular summary and graphical presentation of the confidence interval results follow this letter. No statistical exceedances were identified.

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

For Groundwater Stats Consulting,

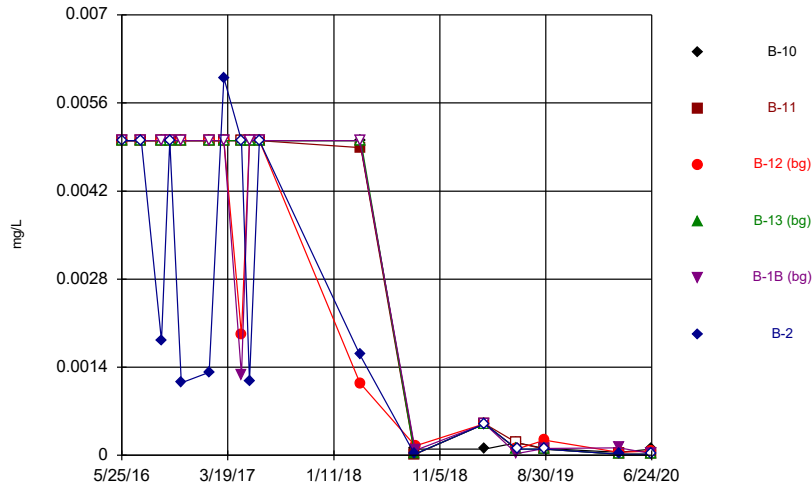


Abdul Diane  
Groundwater Analyst



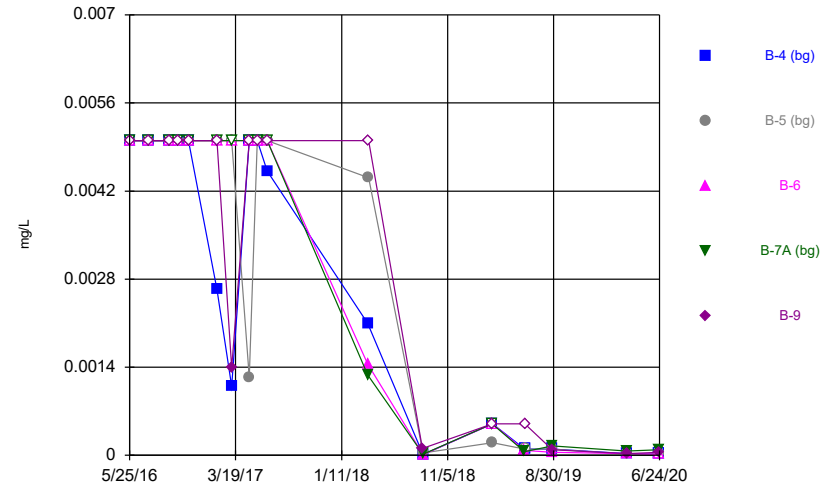
Kristina L. Rayner  
Groundwater Statistician

Time Series



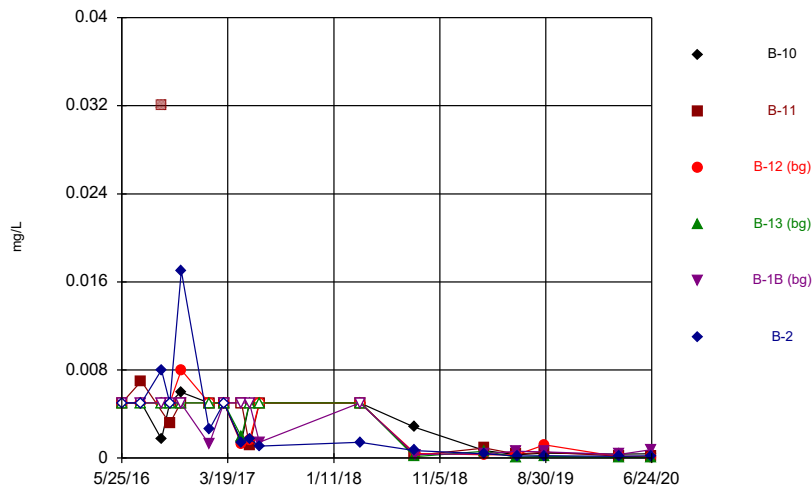
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Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



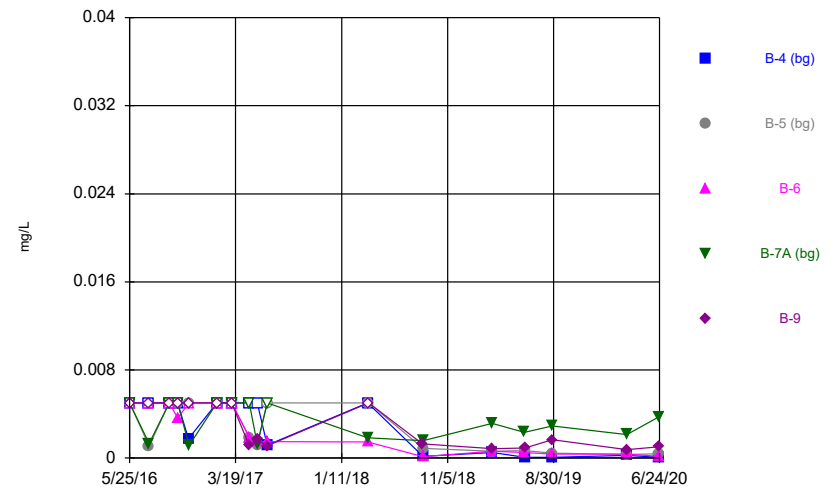
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Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



Constituent: Arsenic, total Analysis Run 9/2/2020 2:00 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

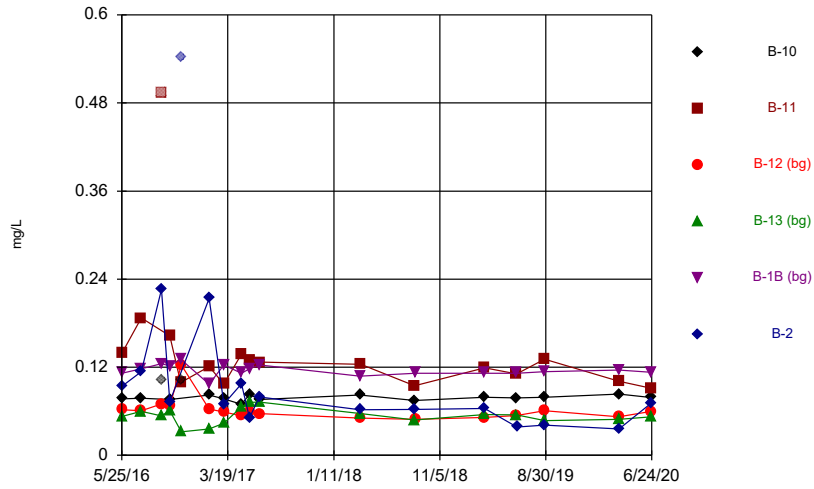
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Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

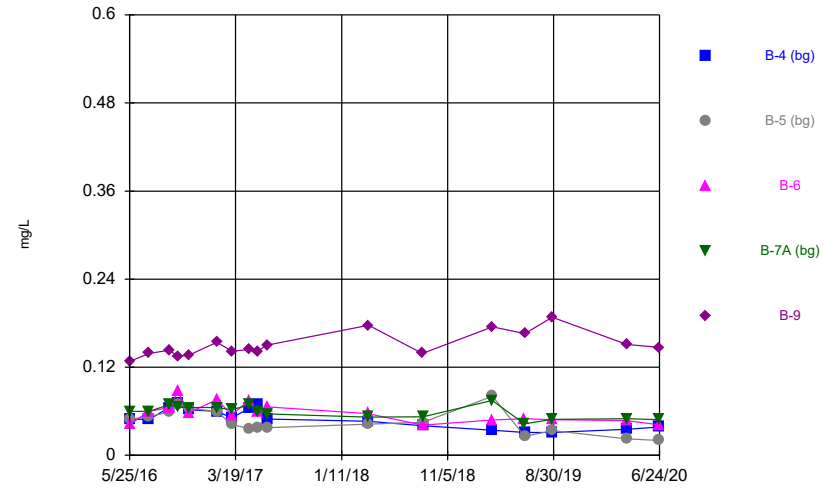


Time Series



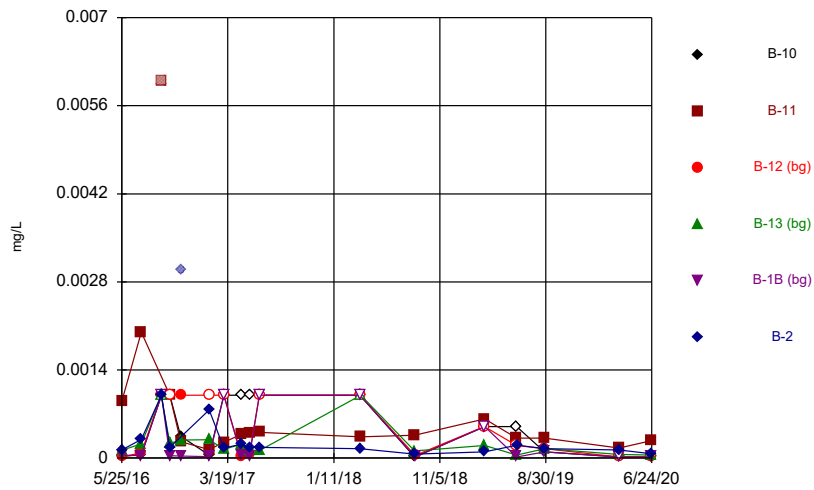
Constituent: Barium, total Analysis Run 9/2/2020 2:00 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



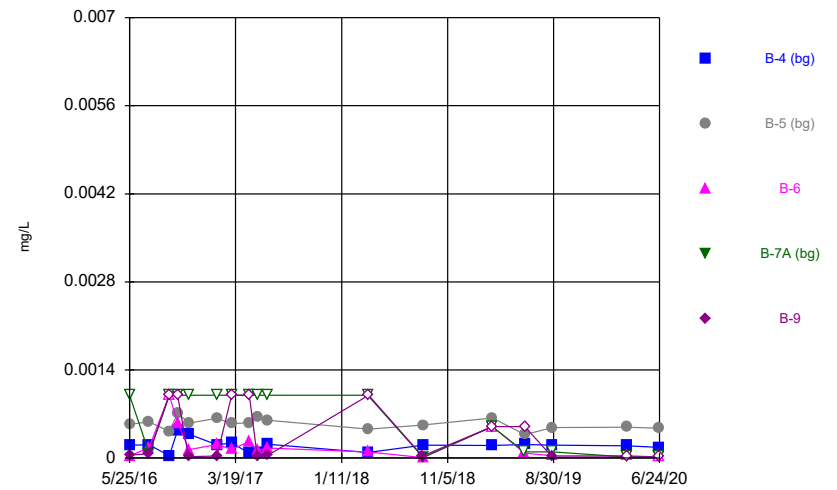
Constituent: Barium, total Analysis Run 9/2/2020 2:00 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



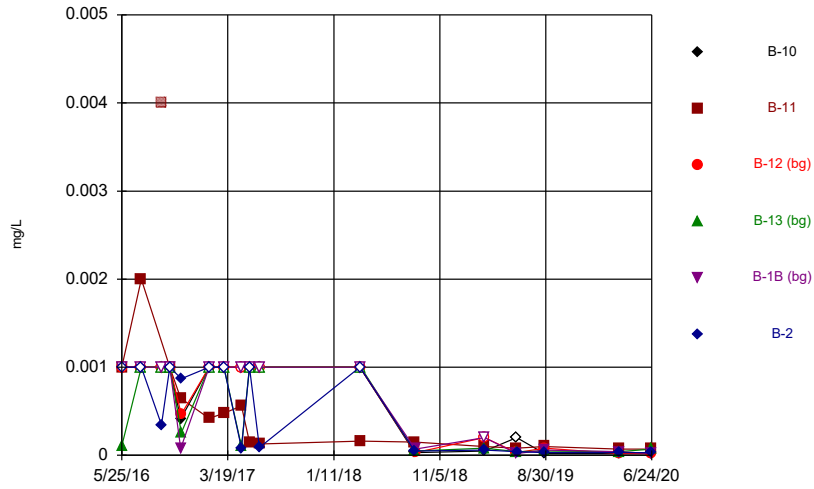
Constituent: Beryllium, total Analysis Run 9/2/2020 2:01 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



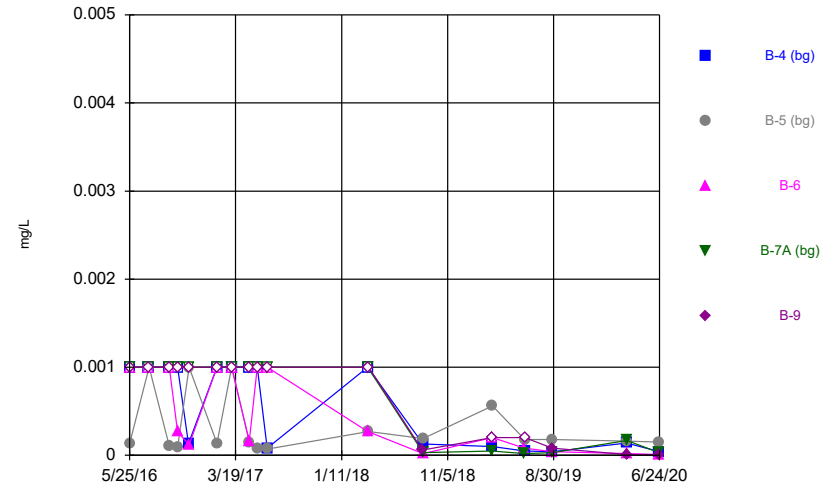
Constituent: Beryllium, total Analysis Run 9/2/2020 2:01 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



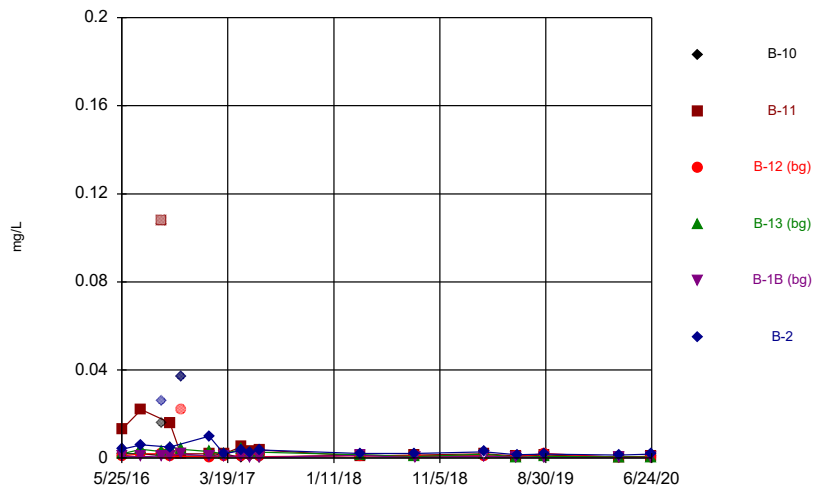
Constituent: Cadmium, total Analysis Run 9/2/2020 2:01 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



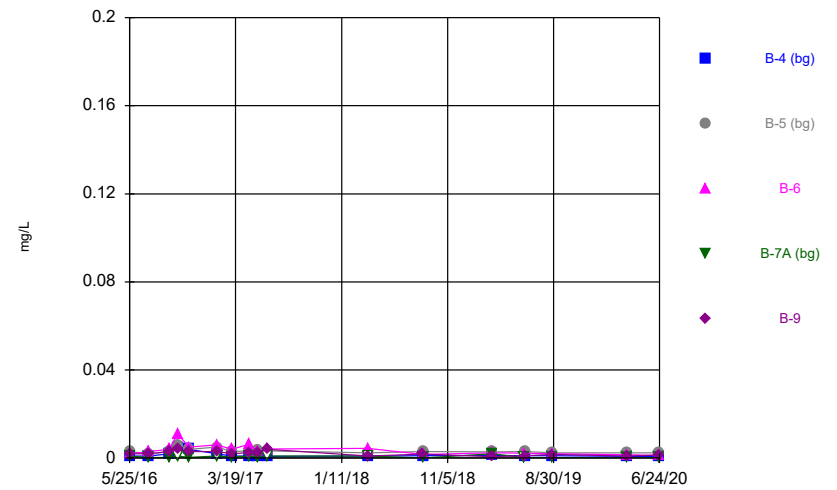
Constituent: Cadmium, total Analysis Run 9/2/2020 2:01 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



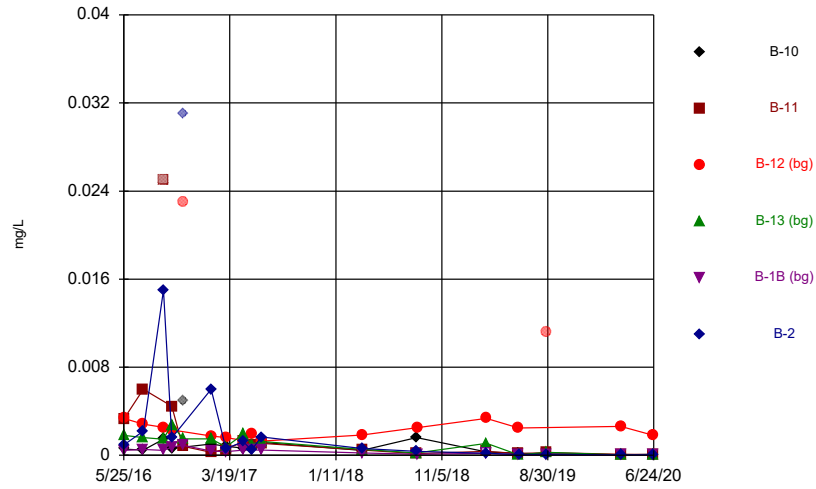
Constituent: Chromium, total Analysis Run 9/2/2020 2:01 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



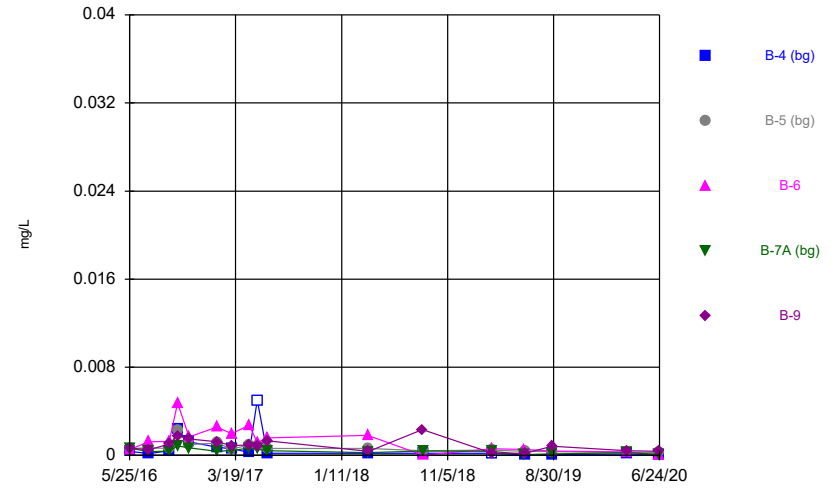
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 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



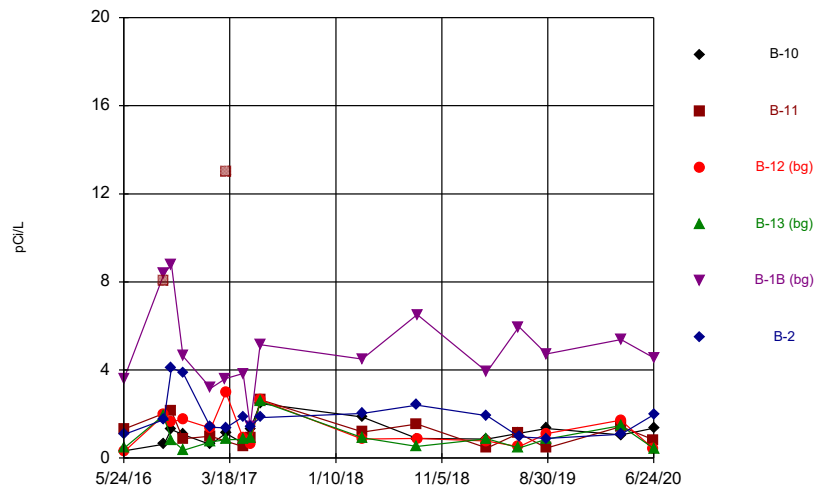
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Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



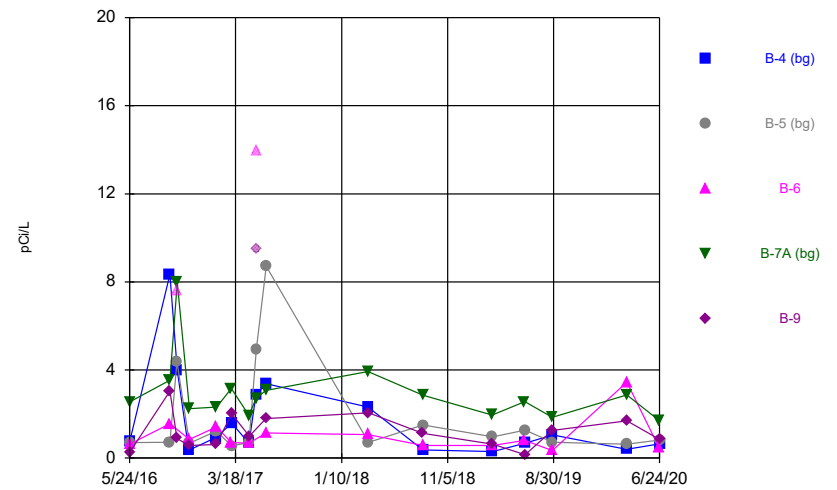
Constituent: Cobalt, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



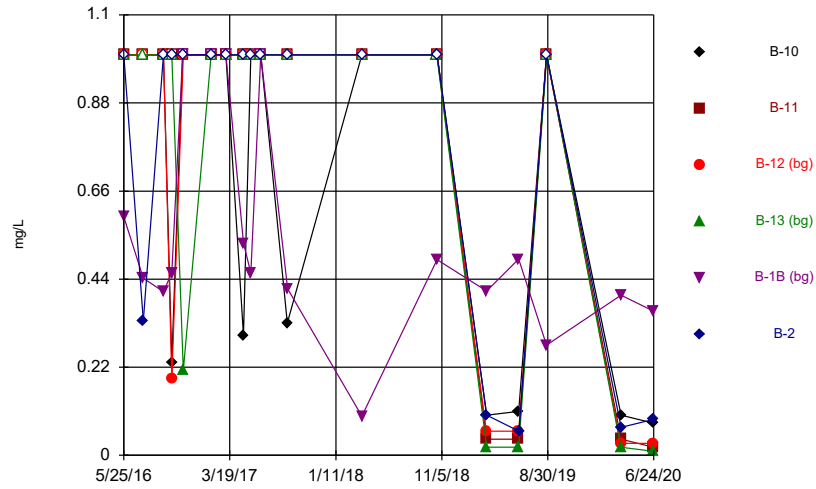
Constituent: Combined Radium 226 + 228 Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



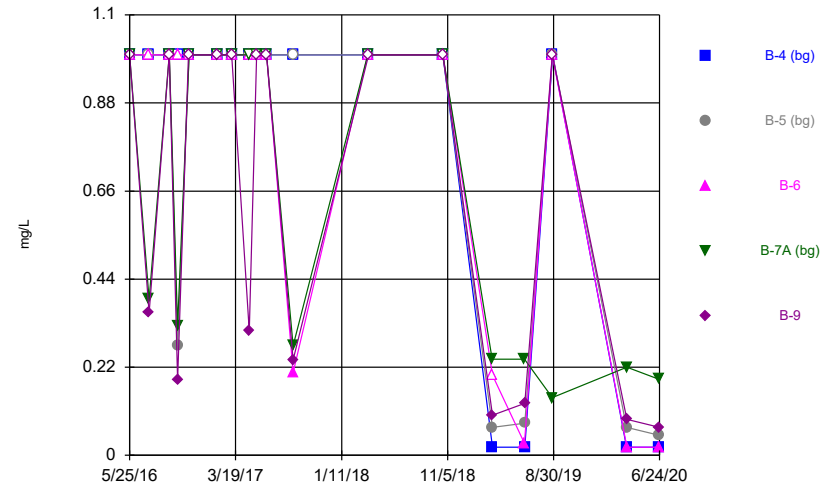
Constituent: Combined Radium 226 + 228 Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



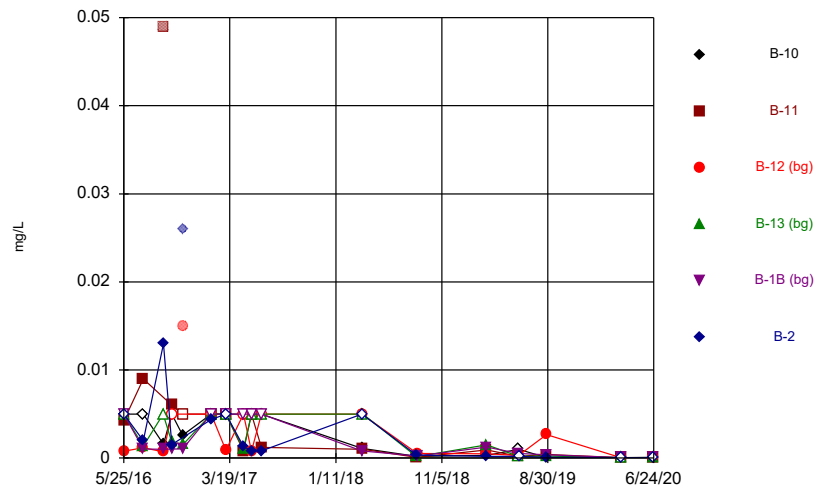
Constituent: Fluoride, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



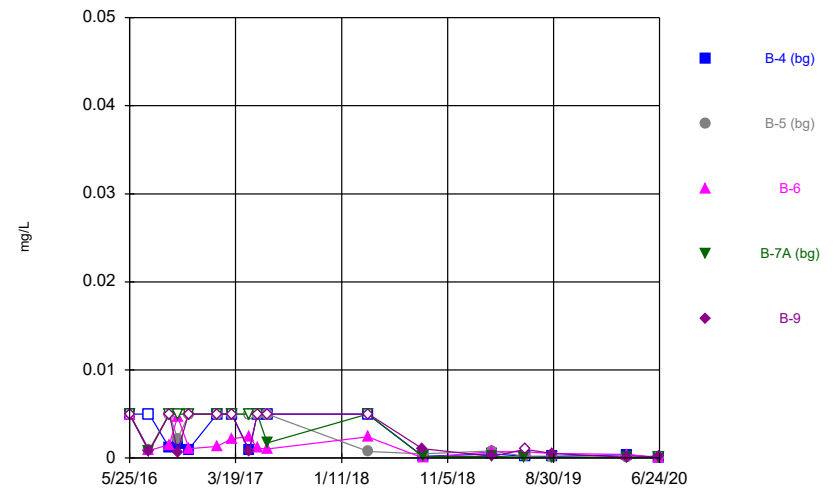
Constituent: Fluoride, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



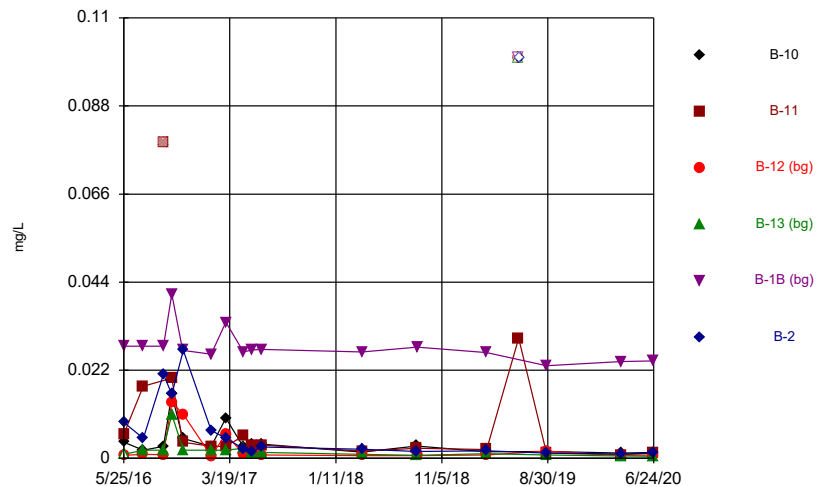
Constituent: Lead, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



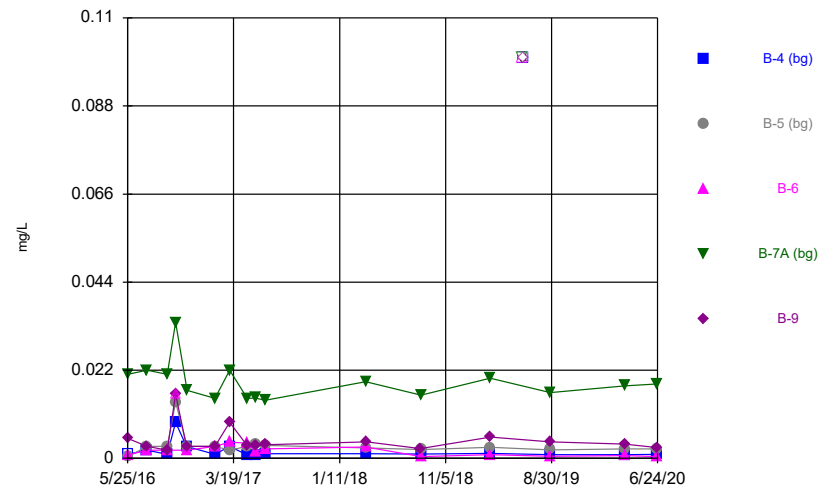
Constituent: Lead, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



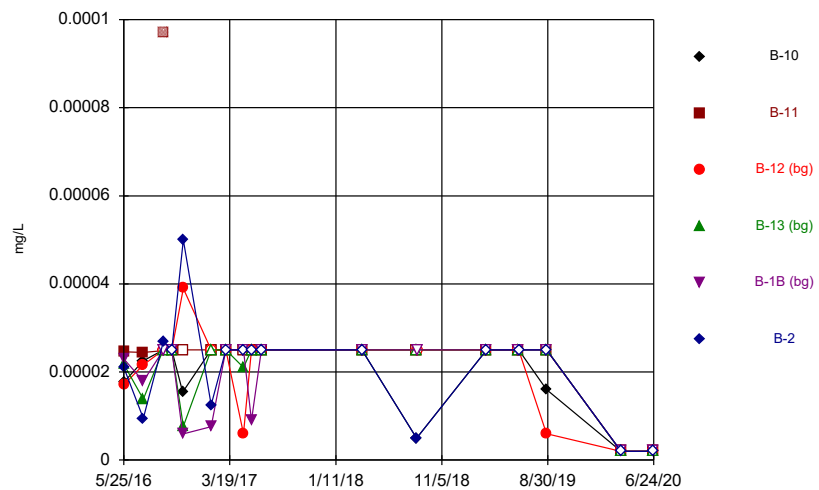
Constituent: Lithium, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



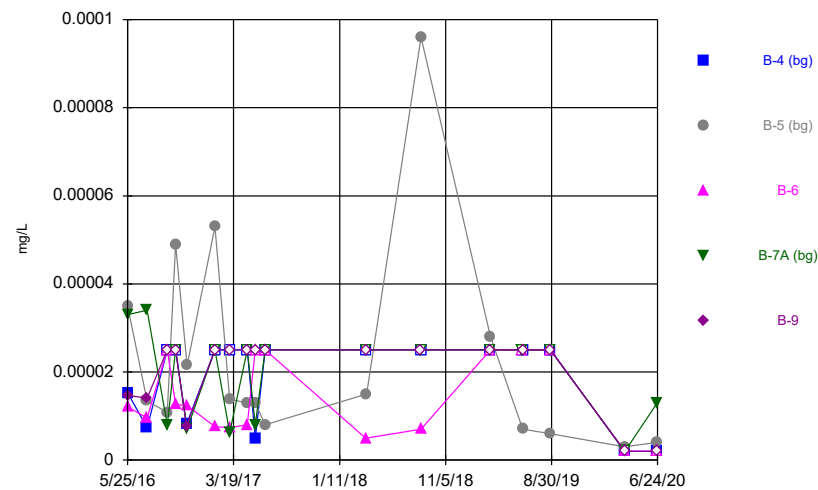
Constituent: Lithium, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



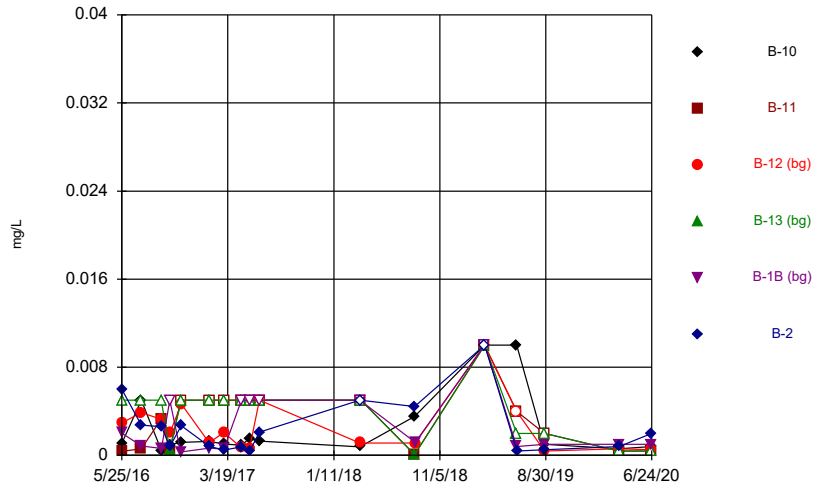
Constituent: Mercury, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



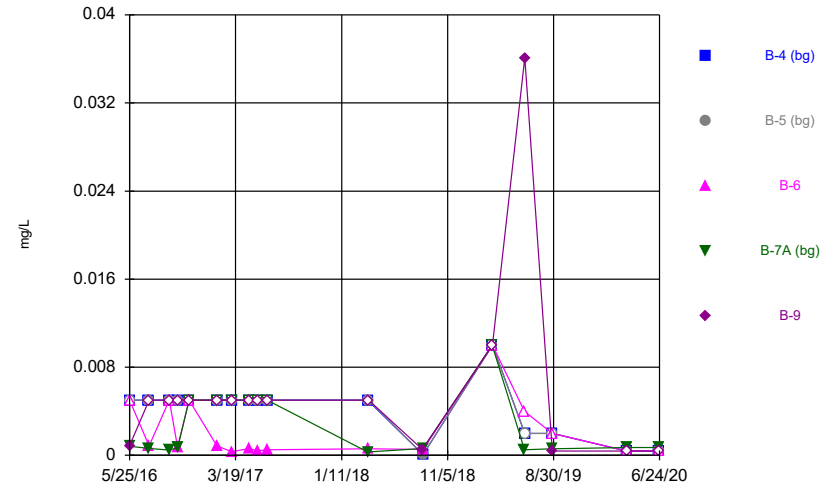
Constituent: Mercury, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



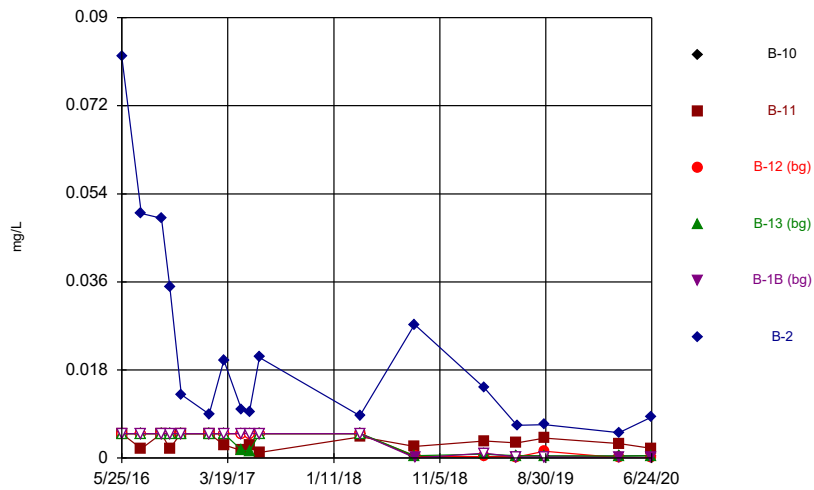
Constituent: Molybdenum, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



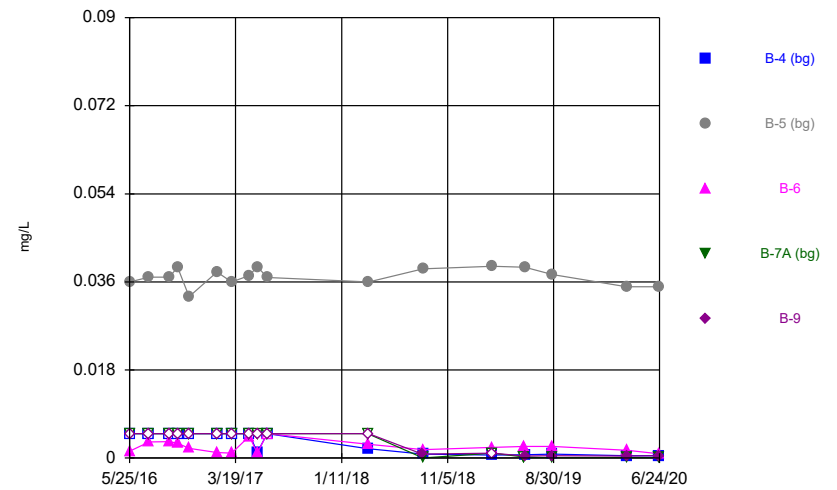
Constituent: Molybdenum, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



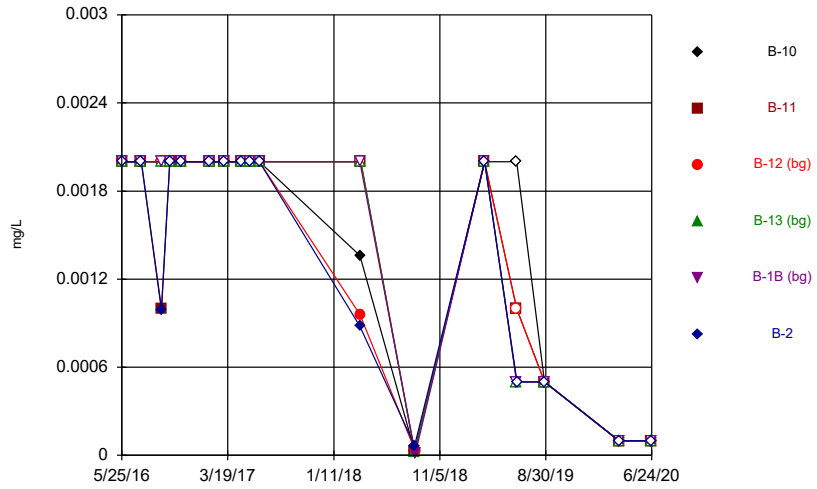
Constituent: Selenium, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



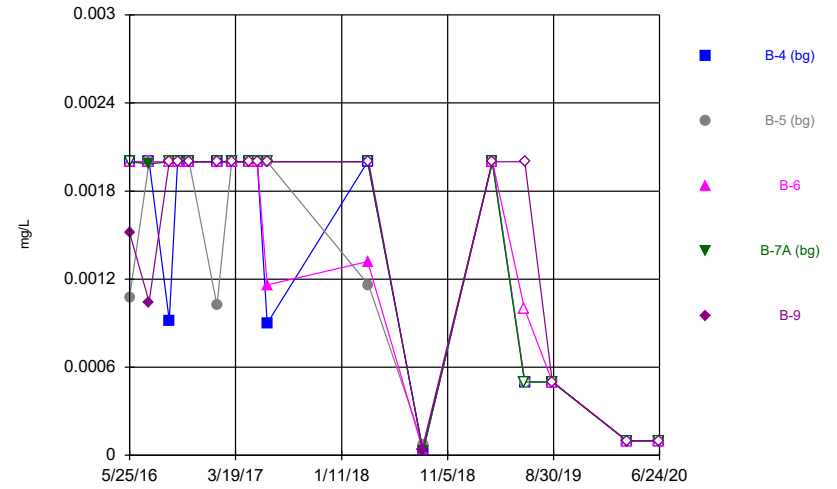
Constituent: Selenium, total Analysis Run 9/2/2020 2:01 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



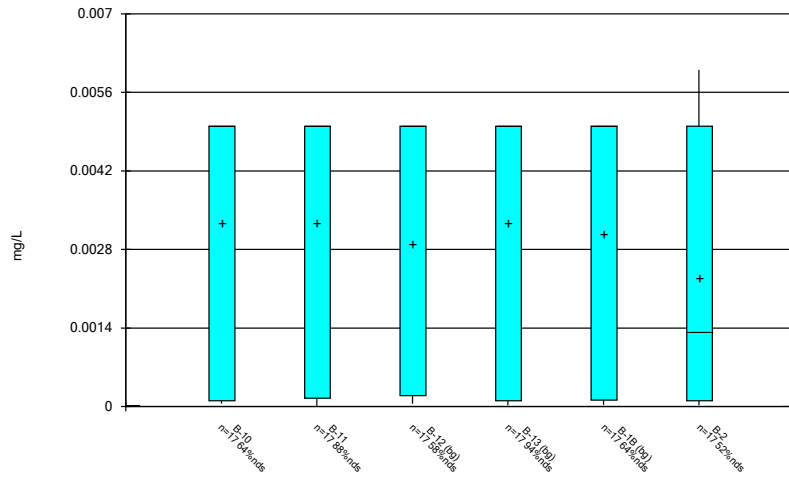
Constituent: Thallium, total Analysis Run 9/2/2020 2:01 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Time Series



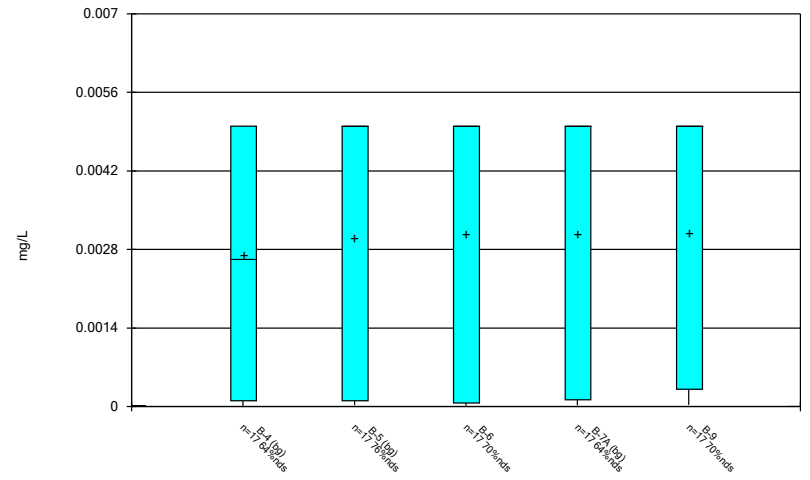
Constituent: Thallium, total Analysis Run 9/2/2020 2:01 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



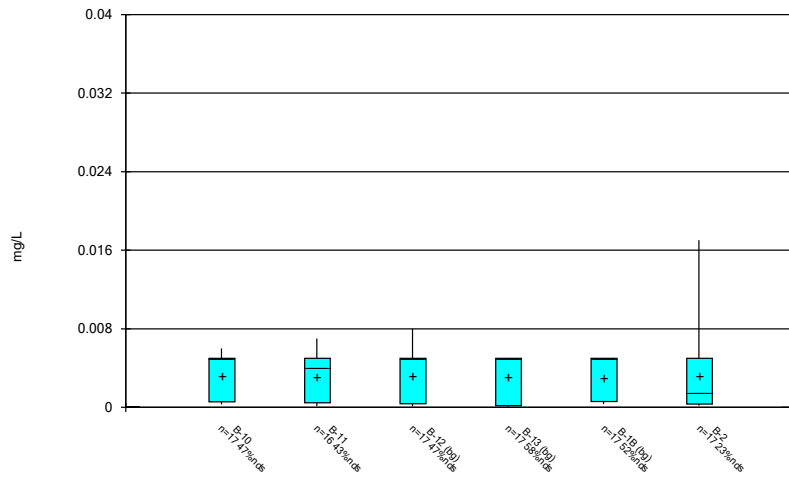
Constituent: Antimony, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



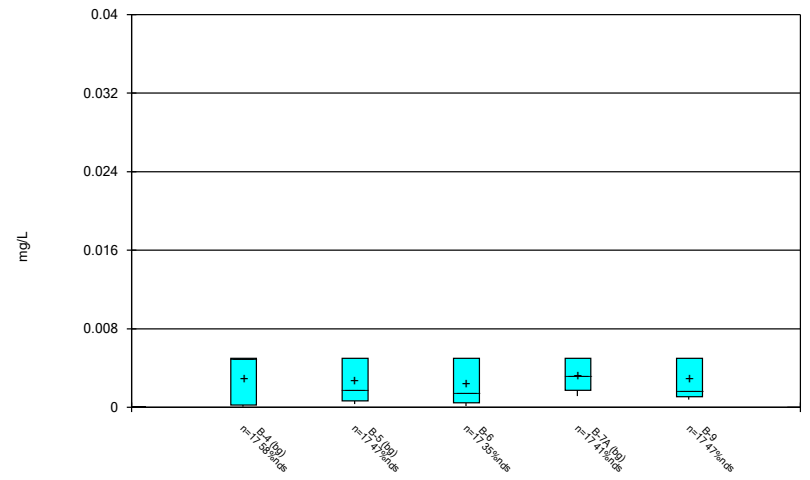
Constituent: Antimony, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



Constituent: Arsenic, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

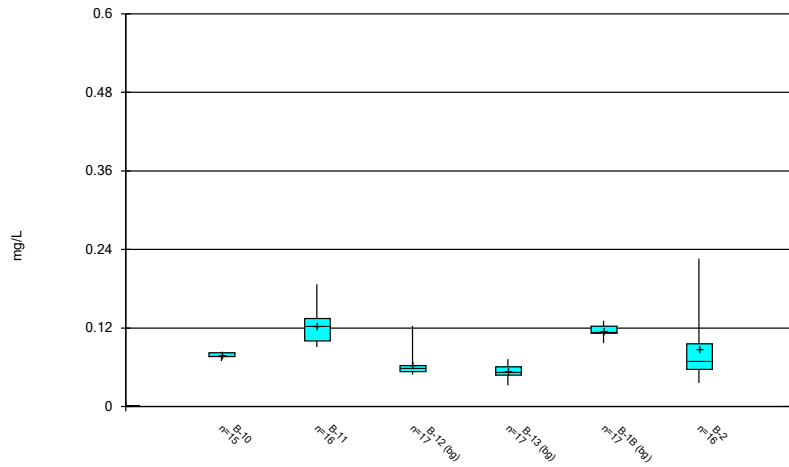
Box & Whiskers Plot



Constituent: Arsenic, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

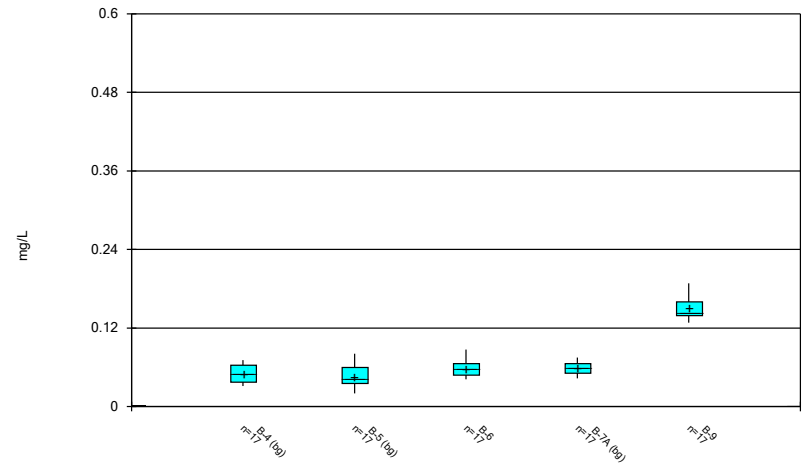


Box & Whiskers Plot



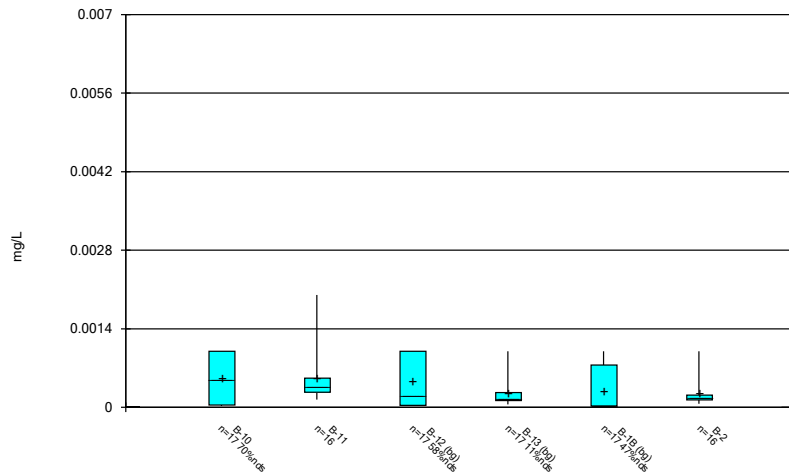
Constituent: Barium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



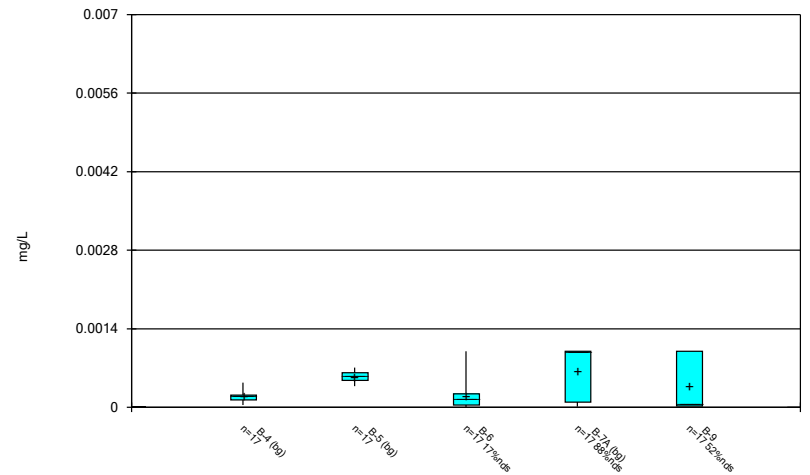
Constituent: Barium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



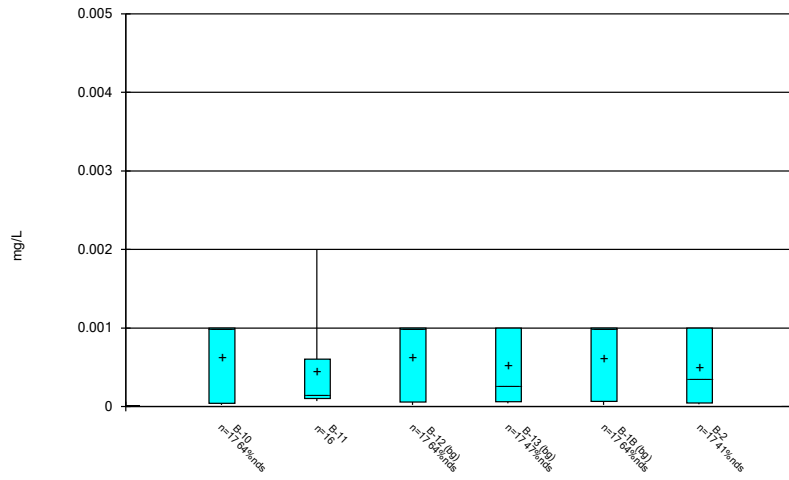
Constituent: Beryllium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



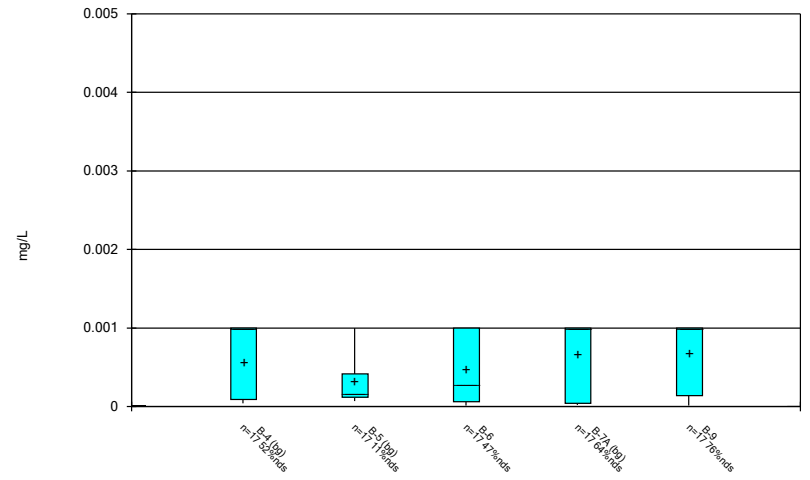
Constituent: Beryllium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



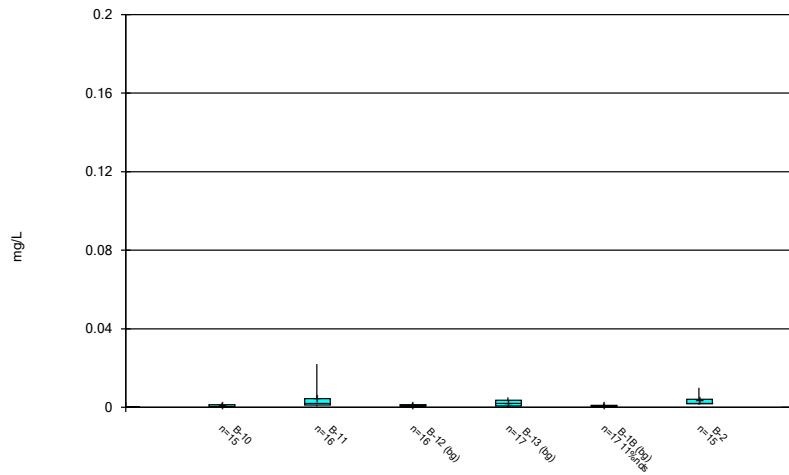
Constituent: Cadmium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



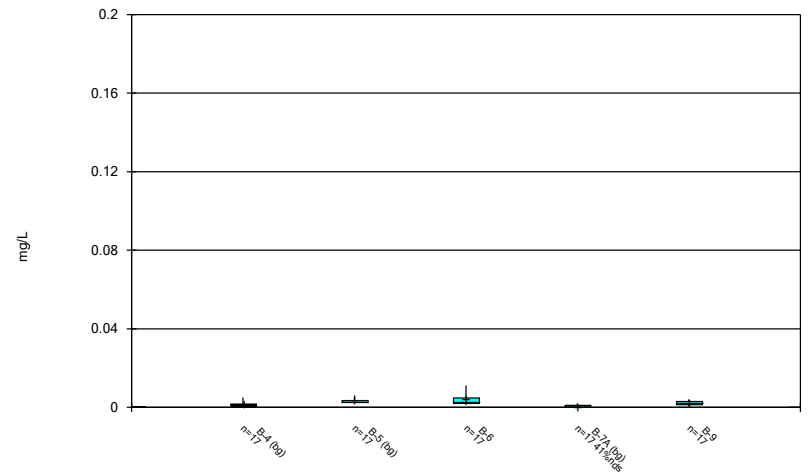
Constituent: Cadmium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



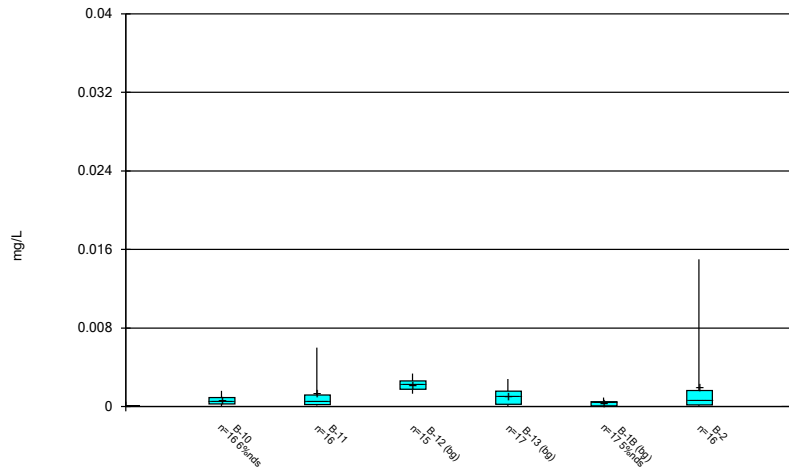
Constituent: Chromium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



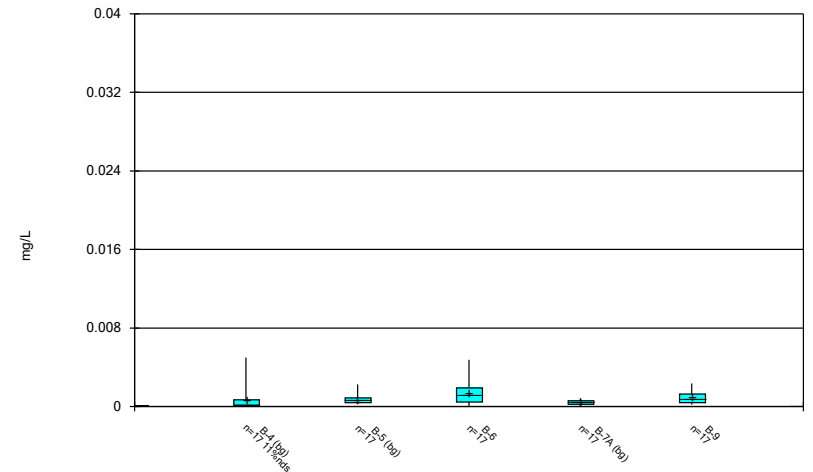
Constituent: Chromium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



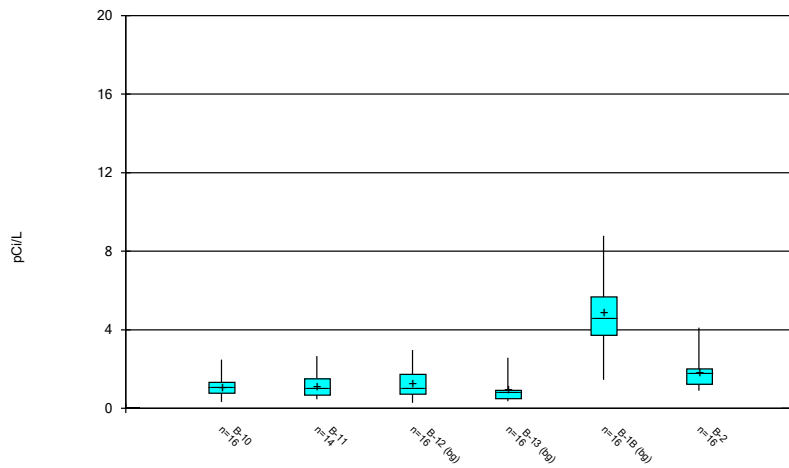
Constituent: Cobalt, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



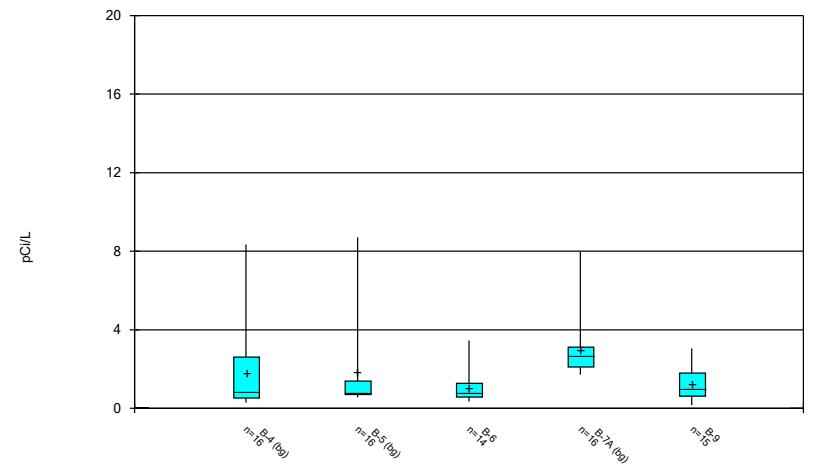
Constituent: Cobalt, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



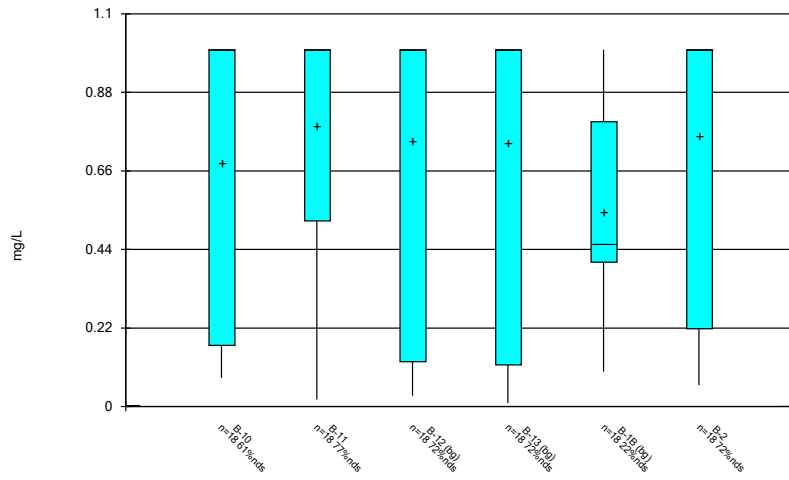
Constituent: Combined Radium 226 + 228 Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



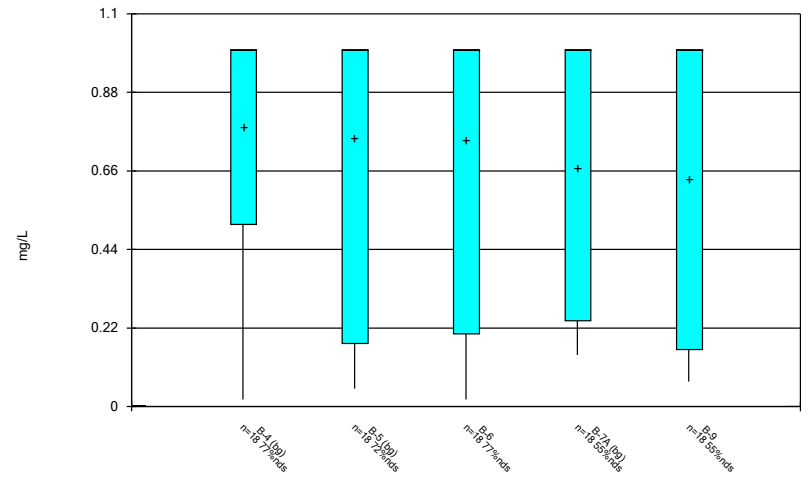
Constituent: Combined Radium 226 + 228 Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



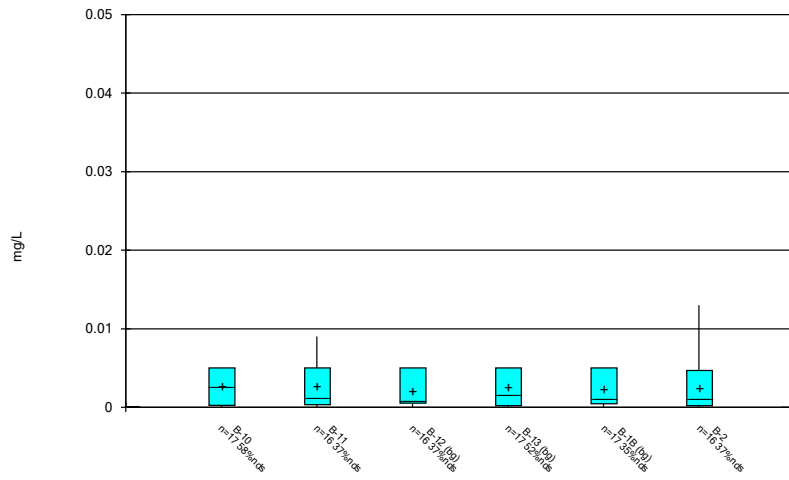
Constituent: Fluoride, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



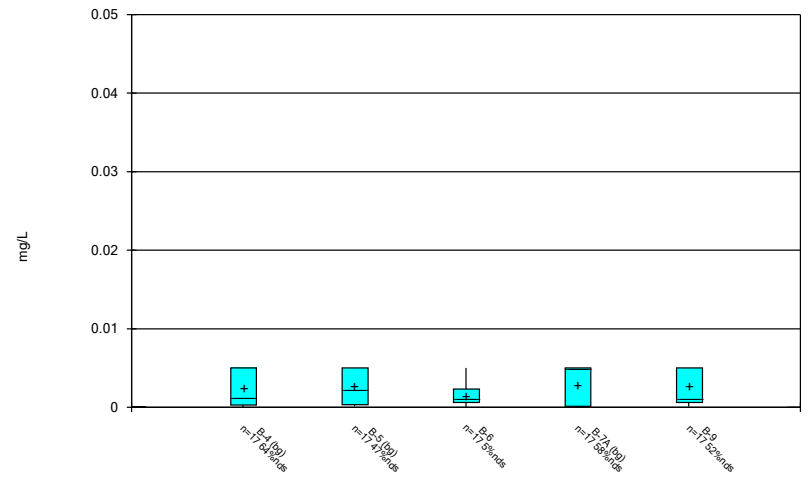
Constituent: Fluoride, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



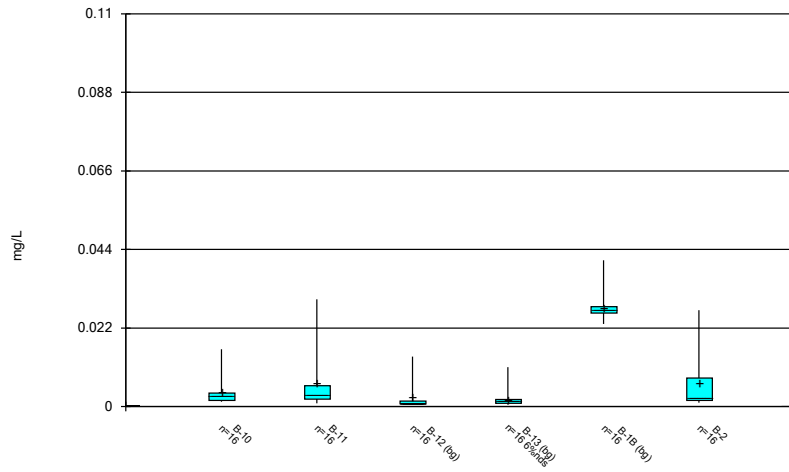
Constituent: Lead, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



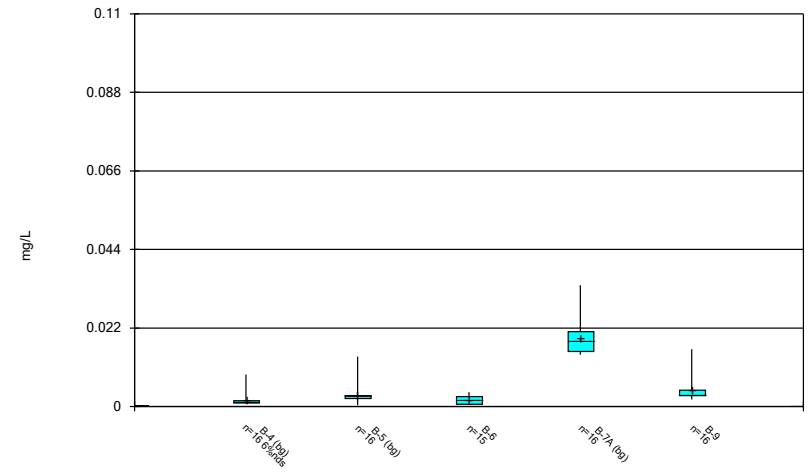
Constituent: Lead, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



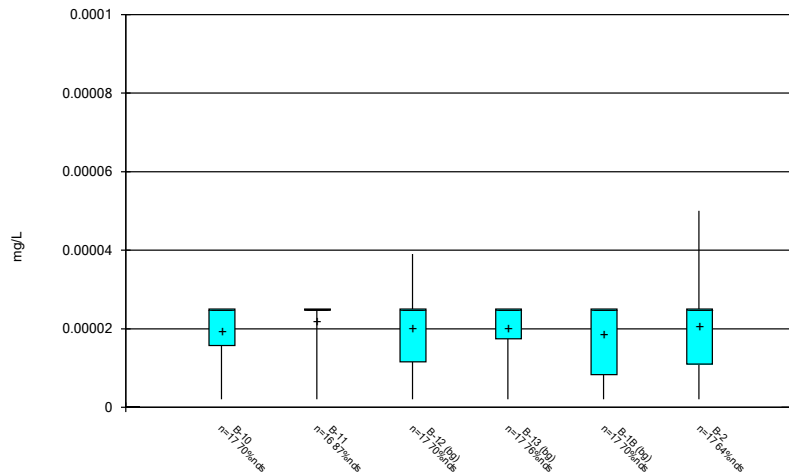
Constituent: Lithium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



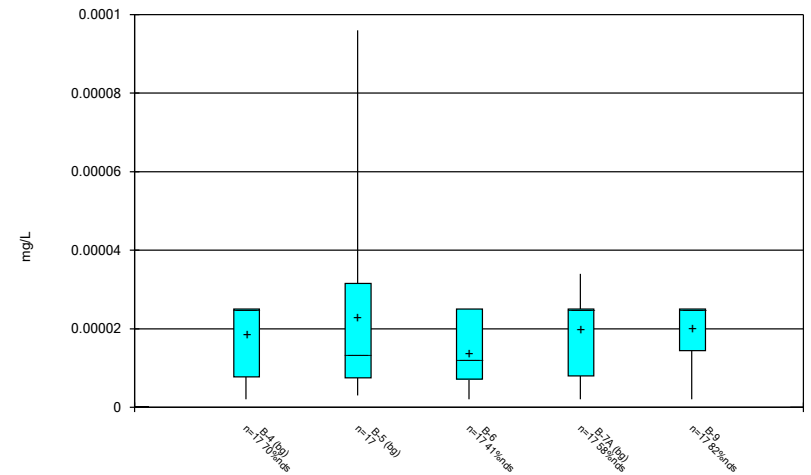
Constituent: Lithium, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



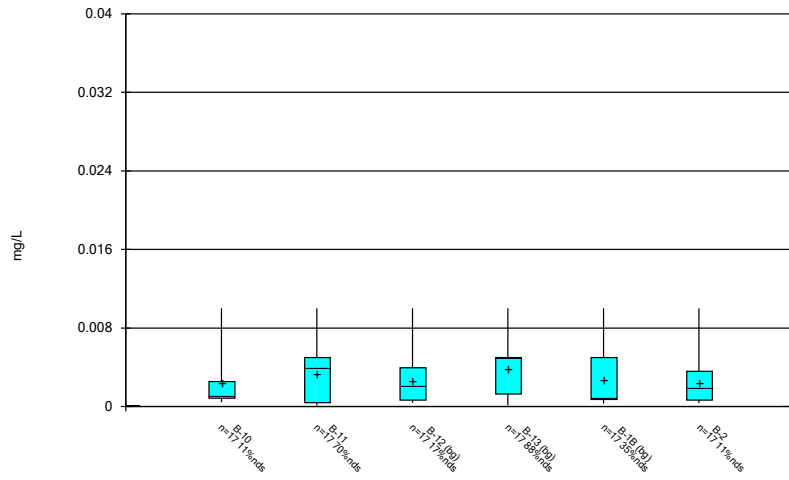
Constituent: Mercury, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



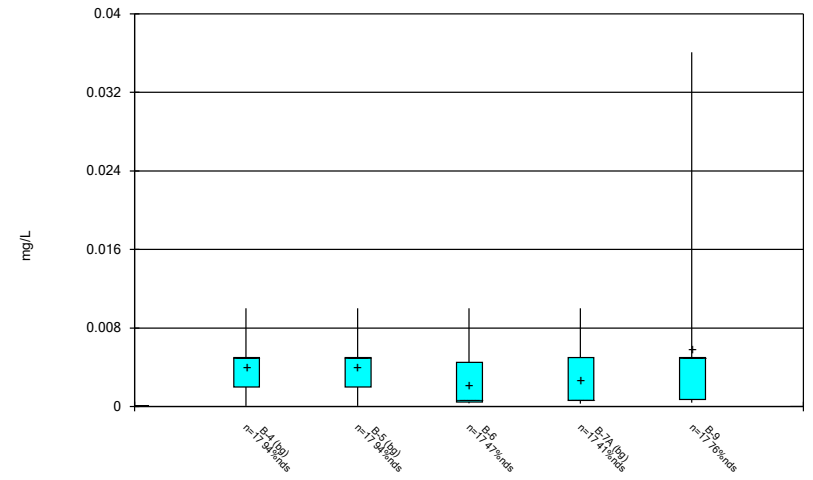
Constituent: Mercury, total Analysis Run 9/2/2020 2:04 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



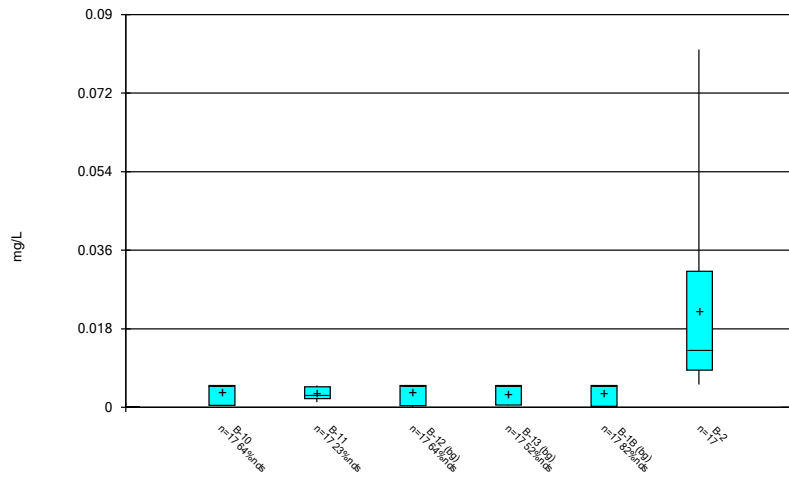
Constituent: Molybdenum, total Analysis Run 9/2/2020 2:04 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



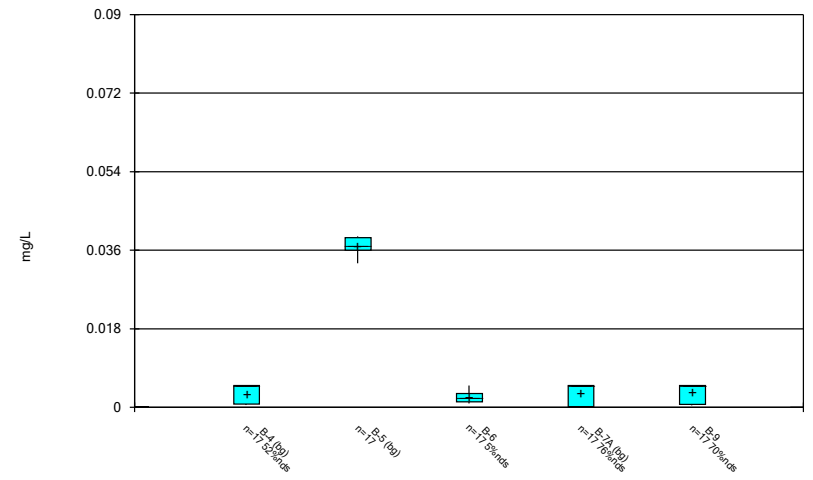
Constituent: Molybdenum, total Analysis Run 9/2/2020 2:04 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



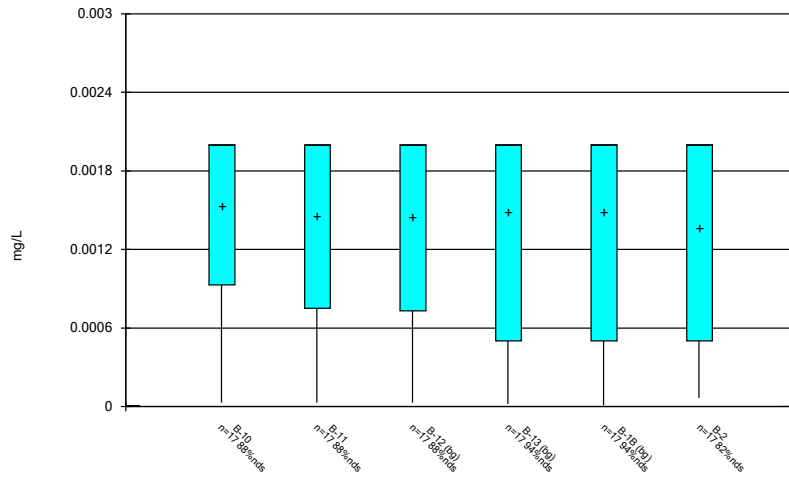
Constituent: Selenium, total Analysis Run 9/2/2020 2:04 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Box & Whiskers Plot



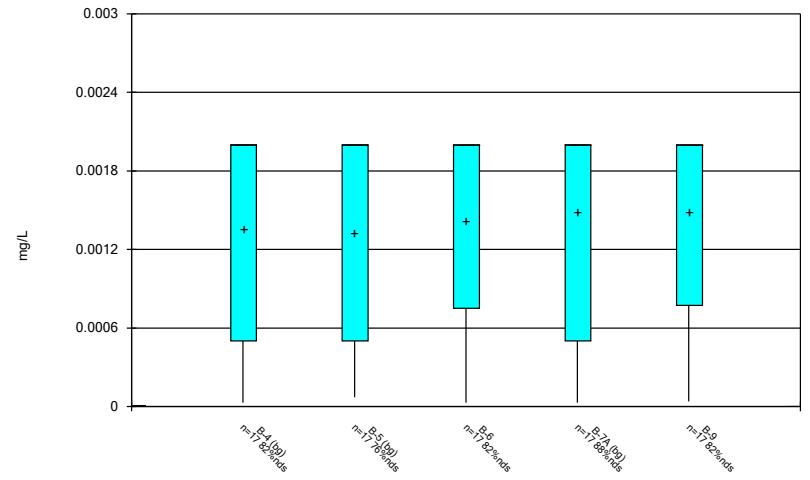
Constituent: Selenium, total Analysis Run 9/2/2020 2:04 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 9/2/2020 2:04 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 9/2/2020 2:05 PM  
Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

# Outlier Summary

Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF Printed 9/2/2020, 2:06 PM

Date	B-11 Arsenic, total (mg/L)	B-10 Barium, total (mg/L)	B-11 Barium, total (mg/L)	B-2 Barium, total (mg/L)	B-11 Beryllium, total (mg/L)	B-2 Beryllium, total (mg/L)	B-11 Cadmium, total (mg/L)	B-10 Chromium, total (mg/L)	B-11 Chromium, total (mg/L)	B-12 Chromium, total (mg/L)
9/14/2016	0.032 (o)	0.102 (o)	0.494 (o)		0.006 (o)		0.004 (o)	0.016 (o)	0.108 (o)	
10/5/2016										
10/7/2016										
11/7/2016		0.103 (o)						0.037 (o)		
11/8/2016				0.543 (o)		0.003 (o)				0.022 (o)
3/7/2017										
5/15/2017										
5/16/2017										
6/10/2019										
6/11/2019										
8/27/2019										

Date	B-2 Chromium, total (mg/L)	B-10 Cobalt, total (mg/L)	B-11 Cobalt, total (mg/L)	B-12 Cobalt, total (mg/L)	B-2 Cobalt, total (mg/L)	B-11 Combined Radium 226 + 228 (pCi/L)	B-6 Combined Radium 226 + 228 (pCi/L)	B-9 Combined Radium 226 + 228 (pCi/L)	B-11 Lead, total (mg/L)	B-12 Lead, total (mg/L)
9/14/2016	0.026 (o)		0.025 (o)			8.05 (o)			0.049 (o)	
10/5/2016							7.58 (o)			
10/7/2016										
11/7/2016		0.005 (o)								
11/8/2016	0.037 (o)			0.023 (o)	0.031 (o)					0.015 (o)
3/7/2017						12.993 (o)				
5/15/2017							13.943 (o)			
5/16/2017								9.472 (o)		
6/10/2019										
6/11/2019										
8/27/2019				0.0112 (o)						



# Outlier Summary

Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF Printed 9/2/2020, 2:06 PM

Date	B-2 Lead, total (mg/L)	B-10 Lithium, total (mg/L)	B-11 Lithium, total (mg/L)	B-12 Lithium, total (mg/L)	B-13 Lithium, total (mg/L)	B-1B Lithium, total (mg/L)	B-2 Lithium, total (mg/L)	B-4 Lithium, total (mg/L)	B-5 Lithium, total (mg/L)	B-6 Lithium, total (mg/L)
9/14/2016			0.079 (o)							
10/5/2016										
10/7/2016										0.016 (o)
11/7/2016										
11/8/2016	0.026 (o)									
3/7/2017										
5/15/2017										
5/16/2017										
6/10/2019	<0.1 (o)		<0.1 (o)	<0.1 (o)	<0.1 (o)					<0.1 (o)
6/11/2019							<0.1 (o)	<0.1 (o)	<0.1 (o)	
8/27/2019										

Date	B-7A Lithium, total (mg/L)	B-9 Lithium, total (mg/L)	B-11 Mercury, total (mg/L)
9/14/2016			9.7E-05 (o)
10/5/2016			
10/7/2016			
11/7/2016			
11/8/2016			
3/7/2017			
5/15/2017			
5/16/2017			
6/10/2019	<0.1 (o)		
6/11/2019		<0.1 (o)	
8/27/2019			

# Tolerance Limit Summary Table

Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF Printed 9/2/2020, 2:07 PM

<u>Constituent</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony, total (mg/L)	0.005	n/a	n/a	102	n/a	n/a	70.59	n/a	n/a	0.005343	NP Inter(NDs)
Arsenic, total (mg/L)	0.008	n/a	n/a	102	n/a	n/a	50.98	n/a	n/a	0.005343	NP Inter(NDs)
Barium, total (mg/L)	0.131	n/a	n/a	102	n/a	n/a	0	n/a	n/a	0.005343	NP Inter(normality)
Beryllium, total (mg/L)	0.001	n/a	n/a	102	n/a	n/a	34.31	n/a	n/a	0.005343	NP Inter(normality)
Cadmium, total (mg/L)	0.001	n/a	n/a	102	n/a	n/a	50.98	n/a	n/a	0.005343	NP Inter(NDs)
Chromium, total (mg/L)	0.006	n/a	n/a	101	n/a	n/a	8.911	n/a	n/a	0.005625	NP Inter(normality)
Cobalt, total (mg/L)	0.002871	n/a	n/a	100	0.02613	0.01427	3	None	sqrt(x)	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	8.792	n/a	n/a	96	0.4365	0.8994	0	None	ln(x)	0.05	Inter
Fluoride, total (mg/L)	1	n/a	n/a	108	n/a	n/a	62.04	n/a	n/a	0.003928	NP Inter(NDs)
Lead, total (mg/L)	0.005	n/a	n/a	101	n/a	n/a	49.5	n/a	n/a	0.005625	NP Inter(normality)
Lithium, total (mg/L)	0.041	n/a	n/a	96	n/a	n/a	2.083	n/a	n/a	0.007269	NP Inter(normality)
Mercury, total (mg/L)	0.000096	n/a	n/a	102	n/a	n/a	57.84	n/a	n/a	0.005343	NP Inter(NDs)
Molybdenum, total (mg/L)	0.01	n/a	n/a	102	n/a	n/a	61.76	n/a	n/a	0.005343	NP Inter(NDs)
Selenium, total (mg/L)	0.0392	n/a	n/a	102	n/a	n/a	54.9	n/a	n/a	0.005343	NP Inter(NDs)
Thallium, total (mg/L)	0.002	n/a	n/a	102	n/a	n/a	87.25	n/a	n/a	0.005343	NP Inter(NDs)

<b>FLINT CREEK LANDFILL GWPS</b>				
<b>Constituent Name</b>	<b>MCL</b>	<b>CCR Rule-Specified</b>	<b>Background Limit</b>	<b>GWPS</b>
Antimony, Total (mg/L)	0.006		0.005	0.006
Arsenic, Total (mg/L)	0.01		0.008	0.01
Barium, Total (mg/L)	2		0.13	2
Beryllium, Total (mg/L)	0.004		0.001	0.004
Cadmium, Total (mg/L)	0.005		0.001	0.005
Chromium, Total (mg/L)	0.1		0.006	0.1
Cobalt, Total (mg/L)	n/a	0.006	0.003	0.006
Combined Radium, Total (pCi/L)	5		8.8	8.8
Fluoride, Total (mg/L)	4		1	4
Lead, Total (mg/L)	0.015		0.005	0.015
Lithium, Total (mg/L)	n/a	0.04	0.041	0.041
Mercury, Total (mg/L)	0.002		0.000096	0.002
Molybdenum, Total (mg/L)	n/a	0.1	0.01	0.1
Selenium, Total (mg/L)	0.05		0.039	0.05
Thallium, Total (mg/L)	0.002		0.002	0.002

\*Grey cell indicates Background Limit is higher than MCL or CCR Rule-Specified Level

\*MCL = Maximum Contaminant Level

\*CCR = Coal Combustion Residual

\*GWPS = Groundwater Protection Standard

# Confidence Intervals Summary Table - All Results (No Significant)

Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF Printed 9/2/2020, 2:16 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	B-10	0.005	0.0001	0.006	No	17	0.003274	0.002409	64.71	None	No	0.01	NP (NDs)
Antimony, total (mg/L)	B-11	0.005	0.0001	0.006	No	17	0.003279	0.002391	88.24	None	No	0.01	NP (NDs)
Antimony, total (mg/L)	B-2	0.005	0.0001	0.006	No	17	0.002283	0.002277	52.94	None	No	0.01	NP (NDs)
Antimony, total (mg/L)	B-6	0.005	0.00005	0.006	No	17	0.003067	0.002404	70.59	None	No	0.01	NP (NDs)
Antimony, total (mg/L)	B-9	0.005	0.00011	0.006	No	17	0.003098	0.002362	70.59	None	No	0.01	NP (NDs)
Arsenic, total (mg/L)	B-10	0.005	0.00046	0.01	No	17	0.003189	0.002197	47.06	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	B-11	0.005	0.00025	0.01	No	16	0.003043	0.002428	43.75	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	B-2	0.002661	0.000372	0.01	No	17	0.003241	0.004258	23.53	Kaplan-Meier	x^(1/3)	0.01	Param.
Arsenic, total (mg/L)	B-6	0.005	0.00037	0.01	No	17	0.002477	0.002092	35.29	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	B-9	0.005	0.00104	0.01	No	17	0.002967	0.00199	47.06	None	No	0.01	NP (normality)
Barium, total (mg/L)	B-10	0.08072	0.07582	2	No	15	0.07827	0.003615	0	None	No	0.01	Param.
Barium, total (mg/L)	B-11	0.14	0.1065	2	No	16	0.1233	0.02582	0	None	No	0.01	Param.
Barium, total (mg/L)	B-2	0.1063	0.05338	2	No	16	0.08721	0.05608	0	None	ln(x)	0.01	Param.
Barium, total (mg/L)	B-6	0.06572	0.04929	2	No	17	0.05751	0.01311	0	None	No	0.01	Param.
Barium, total (mg/L)	B-9	0.1603	0.1399	2	No	17	0.1504	0.01665	0	None	sqrt(x)	0.01	Param.
Beryllium, total (mg/L)	B-10	0.001	0.0000284	0.004	No	17	0.0005082	0.0004506	70.59	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	B-11	0.000613	0.0002528	0.004	No	16	0.0005076	0.0004646	0	None	ln(x)	0.01	Param.
Beryllium, total (mg/L)	B-2	0.0002973	0.0001	0.004	No	16	0.0002468	0.0002579	0	None	No	0.01	NP (normality)
Beryllium, total (mg/L)	B-6	0.0001861	0.00004688	0.004	No	17	0.0002106	0.0002563	17.65	Kaplan-Meier	sqrt(x)	0.01	Param.
Beryllium, total (mg/L)	B-9	0.001	0.0000202	0.004	No	17	0.0003727	0.0004439	52.94	Kaplan-Meier	No	0.01	NP (NDs)
Cadmium, total (mg/L)	B-10	0.001	0.00003	0.005	No	17	0.0006325	0.0004619	64.71	None	No	0.01	NP (NDs)
Cadmium, total (mg/L)	B-11	0.000512	0.0001242	0.005	No	16	0.0004447	0.0005227	0	None	ln(x)	0.01	Param.
Cadmium, total (mg/L)	B-2	0.001	0.00004	0.005	No	17	0.0005076	0.0004693	41.18	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	B-6	0.001	0.00004	0.005	No	17	0.0004815	0.0004536	47.06	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	B-9	0.001	0.00008	0.005	No	17	0.00068	0.0004493	76.47	None	No	0.01	NP (NDs)
Chromium, total (mg/L)	B-10	0.001302	0.0005102	0.1	No	15	0.0009529	0.0006243	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	B-11	0.005204	0.001238	0.1	No	16	0.004809	0.006387	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	B-2	0.004377	0.001944	0.1	No	15	0.003351	0.002275	0	None	x^(1/3)	0.01	Param.
Chromium, total (mg/L)	B-6	0.004911	0.002265	0.1	No	17	0.003765	0.002424	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	B-9	0.002784	0.001491	0.1	No	17	0.002138	0.001032	0	None	No	0.01	Param.
Cobalt, total (mg/L)	B-10	0.0009548	0.0003384	0.006	No	16	0.0006466	0.0004736	6.25	None	No	0.01	Param.
Cobalt, total (mg/L)	B-11	0.001659	0.0002596	0.006	No	16	0.001268	0.001752	0	None	x^(1/3)	0.01	Param.
Cobalt, total (mg/L)	B-2	0.001705	0.0001991	0.006	No	16	0.00195	0.003776	0	None	ln(x)	0.01	Param.
Cobalt, total (mg/L)	B-6	0.001904	0.000514	0.006	No	17	0.001363	0.001203	0	None	sqrt(x)	0.01	Param.
Cobalt, total (mg/L)	B-9	0.001269	0.000536	0.006	No	17	0.0009026	0.0005851	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	B-10	1.462	0.7873	8.8	No	16	1.125	0.5185	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	B-11	1.622	0.728	8.8	No	14	1.175	0.6314	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	B-2	2.366	1.279	8.8	No	16	1.872	0.9324	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	B-6	1.359	0.5489	8.8	No	14	1.016	0.7836	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	B-9	1.729	0.6607	8.8	No	15	1.195	0.7885	0	None	No	0.01	Param.
Fluoride, total (mg/L)	B-10	1	0.11	4	No	18	0.6807	0.4167	61.11	None	No	0.01	NP (NDs)
Fluoride, total (mg/L)	B-11	1	0.04	4	No	18	0.7856	0.4128	77.78	None	No	0.01	NP (NDs)
Fluoride, total (mg/L)	B-2	1	0.1	4	No	18	0.7587	0.4043	72.22	None	No	0.01	NP (NDs)
Fluoride, total (mg/L)	B-6	1	0.2	4	No	18	0.7487	0.4197	77.78	None	No	0.01	NP (NDs)
Fluoride, total (mg/L)	B-9	1	0.13	4	No	18	0.6379	0.4222	55.56	None	No	0.01	NP (NDs)
Lead, total (mg/L)	B-10	0.005	0.000189	0.015	No	17	0.002761	0.002263	58.82	None	No	0.01	NP (NDs)
Lead, total (mg/L)	B-11	0.00244	0.000251	0.015	No	16	0.002753	0.002805	37.5	Kaplan-Meier	sqrt(x)	0.01	Param.
Lead, total (mg/L)	B-2	0.00229	0.0001295	0.015	No	16	0.002481	0.003406	37.5	Kaplan-Meier	sqrt(x)	0.01	Param.
Lead, total (mg/L)	B-6	0.002154	0.0005528	0.015	No	17	0.001536	0.001444	5.882	None	sqrt(x)	0.01	Param.
Lead, total (mg/L)	B-9	0.005	0.000509	0.015	No	17	0.002668	0.002281	52.94	None	No	0.01	NP (NDs)
Lithium, total (mg/L)	B-10	0.004769	0.001945	0.041	No	16	0.003987	0.003829	0	None	ln(x)	0.01	Param.
Lithium, total (mg/L)	B-11	0.007416	0.00198	0.041	No	16	0.006645	0.008408	0	None	ln(x)	0.01	Param.
Lithium, total (mg/L)	B-2	0.007565	0.001944	0.041	No	16	0.006656	0.007875	0	None	ln(x)	0.01	Param.
Lithium, total (mg/L)	B-6	0.002652	0.001025	0.041	No	15	0.001839	0.001201	0	None	No	0.01	Param.
Lithium, total (mg/L)	B-9	0.00528	0.00264	0.041	No	16	0.004549	0.003466	0	None	No	0.01	NP (normality)

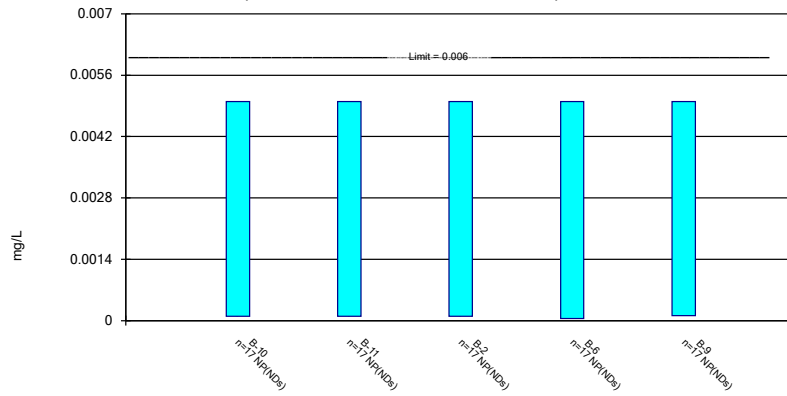
# Confidence Intervals Summary Table - All Results (No Significant) Page 2

Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF Printed 9/2/2020, 2:16 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Mercury, total (mg/L)	B-10	0.000025	0.00001543	0.002	No	17	0.00001945	0.000008539	70.59	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	B-11	0.000025	0.00002442	0.002	No	16	0.00002206	0.000007833	87.5	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	B-2	0.000027	0.00000946	0.002	No	17	0.00002083	0.00001174	64.71	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	B-6	0.000025	0.000007	0.002	No	17	0.00001386	0.000008989	41.18	None	No	0.01	NP (normality)
Mercury, total (mg/L)	B-9	0.000025	0.00001407	0.002	No	17	0.00002003	0.00000852	82.35	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	B-10	0.00352	0.0008	0.1	No	17	0.002434	0.003067	11.76	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	B-11	0.005	0.0003706	0.1	No	17	0.003325	0.002728	70.59	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	B-2	0.003504	0.0008845	0.1	No	17	0.002497	0.002595	11.76	None	sqrt(x)	0.01	Param.
Molybdenum, total (mg/L)	B-6	0.005	0.00043	0.1	No	17	0.002192	0.002707	47.06	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	B-9	0.01	0.00054	0.1	No	17	0.005807	0.008222	76.47	None	No	0.01	NP (NDs)
Selenium, total (mg/L)	B-10	0.005	0.0004	0.05	No	17	0.003376	0.002266	64.71	None	No	0.01	NP (NDs)
Selenium, total (mg/L)	B-11	0.003226	0.002064	0.05	No	17	0.003199	0.001326	23.53	Kaplan-Meier	No	0.01	Param.
Selenium, total (mg/L)	B-2	0.02619	0.009416	0.05	No	17	0.02208	0.02097	0	None	ln(x)	0.01	Param.
Selenium, total (mg/L)	B-6	0.003104	0.001592	0.05	No	17	0.002348	0.001207	5.882	None	No	0.01	Param.
Selenium, total (mg/L)	B-9	0.005	0.0005	0.05	No	17	0.003447	0.002172	70.59	None	No	0.01	NP (NDs)
Thallium, total (mg/L)	B-10	0.002	0.0005	0.002	No	17	0.001535	0.0007937	88.24	None	No	0.01	NP (NDs)
Thallium, total (mg/L)	B-11	0.002	0.0005	0.002	No	17	0.001455	0.0008021	88.24	None	No	0.01	NP (NDs)
Thallium, total (mg/L)	B-2	0.002	0.0005	0.002	No	17	0.001361	0.0008213	82.35	None	No	0.01	NP (NDs)
Thallium, total (mg/L)	B-6	0.002	0.0005	0.002	No	17	0.001424	0.0007859	82.35	None	No	0.01	NP (NDs)
Thallium, total (mg/L)	B-9	0.002	0.0005	0.002	No	17	0.001488	0.0007908	82.35	None	No	0.01	NP (NDs)

### Non-Parametric Confidence Interval

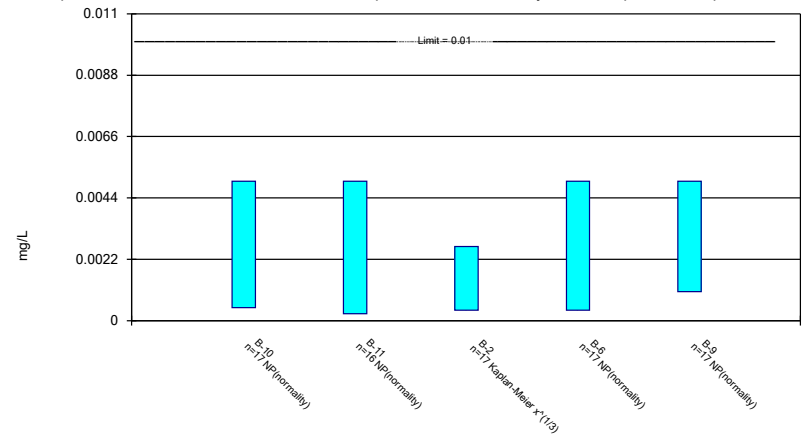
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Antimony, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Parametric and Non-Parametric (NP) Confidence Interval

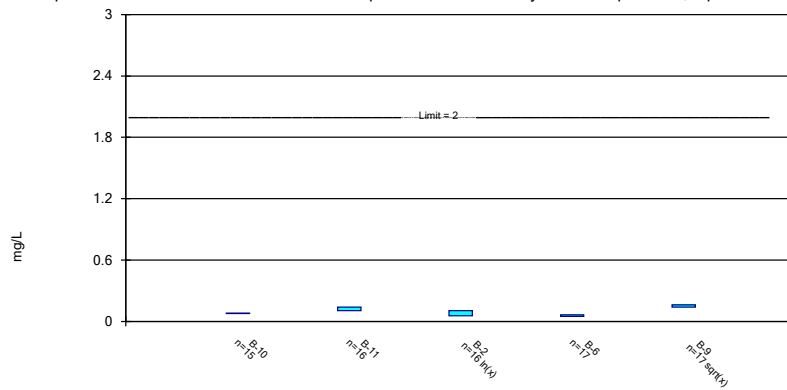
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Parametric Confidence Interval

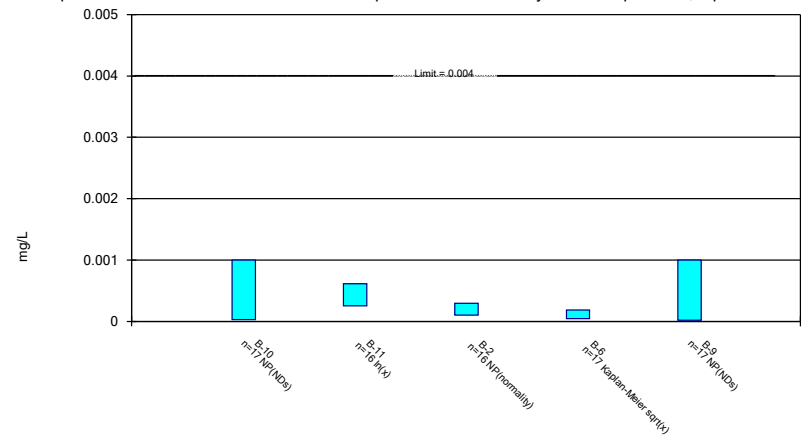
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Constituent: Barium, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Parametric and Non-Parametric (NP) Confidence Interval

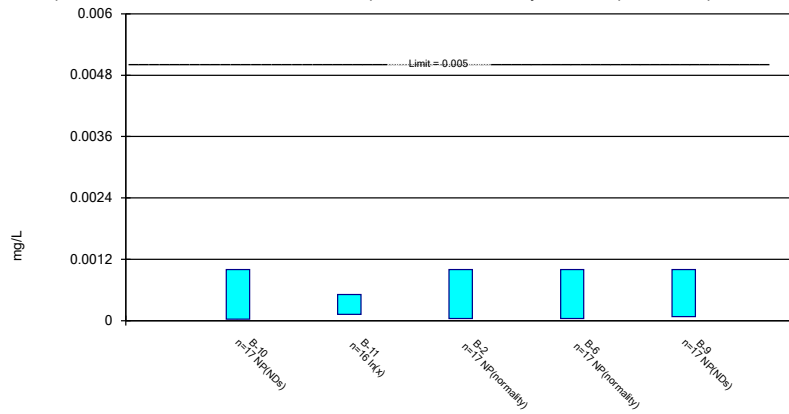
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Constituent: Beryllium, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Parametric and Non-Parametric (NP) Confidence Interval

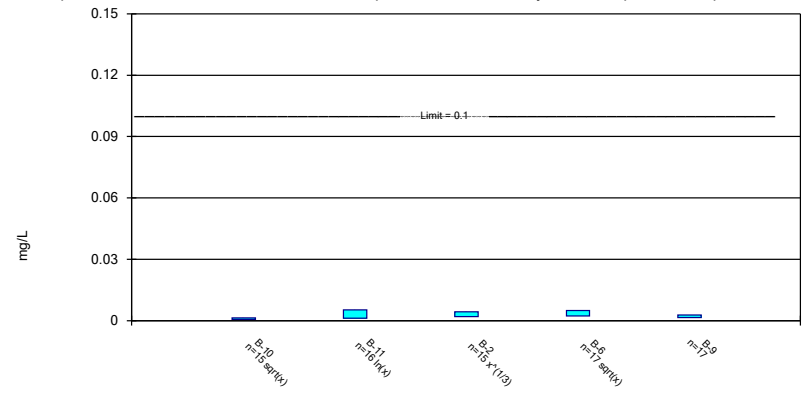
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Parametric Confidence Interval

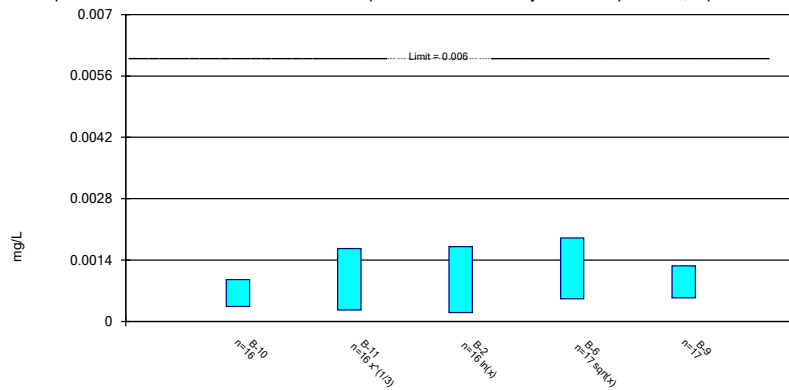
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Parametric Confidence Interval

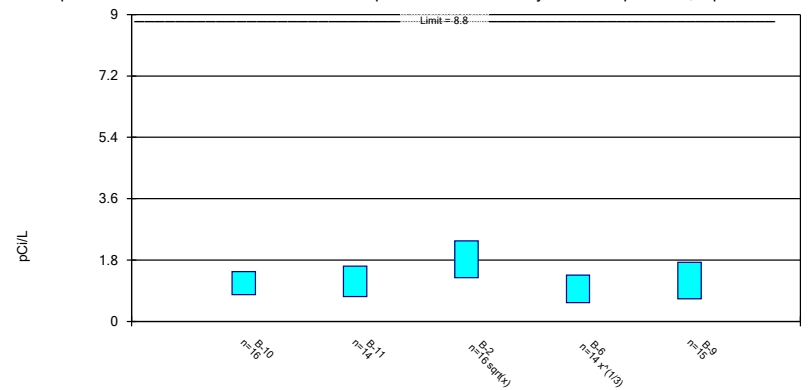
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Parametric Confidence Interval

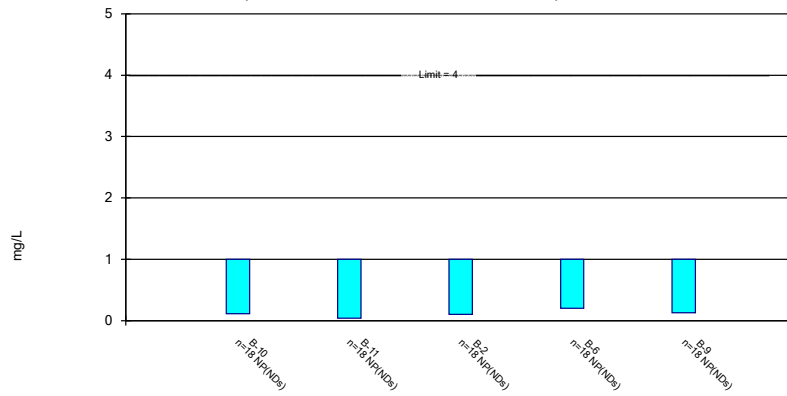
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Non-Parametric Confidence Interval

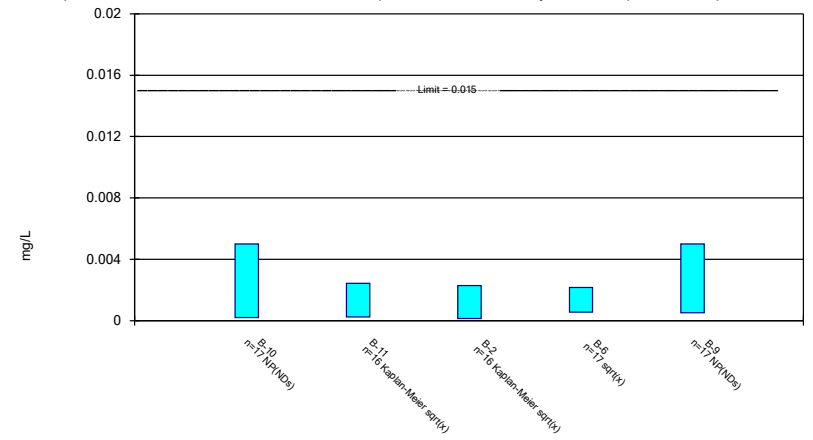
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Fluoride, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Parametric and Non-Parametric (NP) Confidence Interval

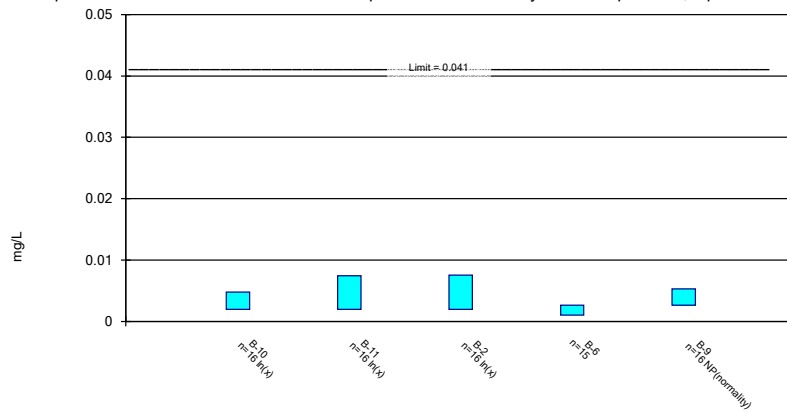
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Parametric and Non-Parametric (NP) Confidence Interval

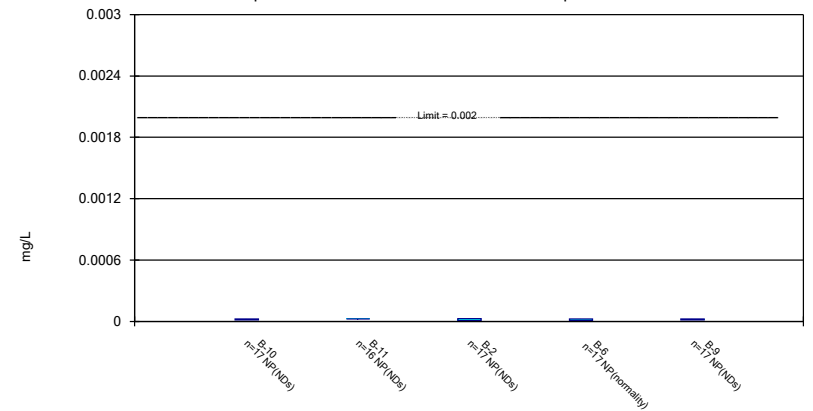
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### Non-Parametric Confidence Interval

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

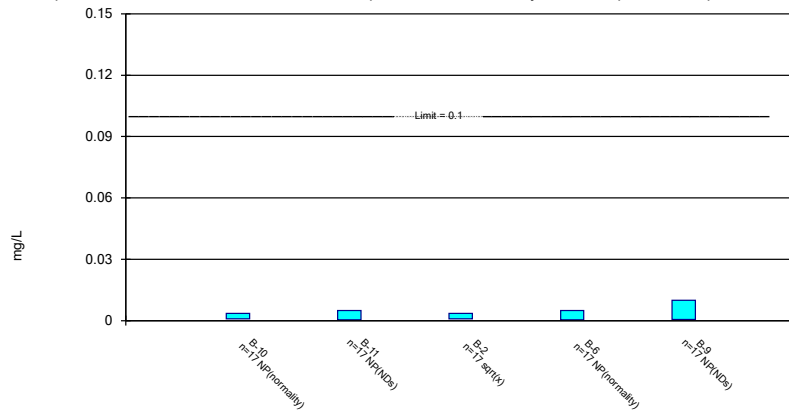


Constituent: Mercury, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF



Parametric and Non-Parametric (NP) Confidence Interval

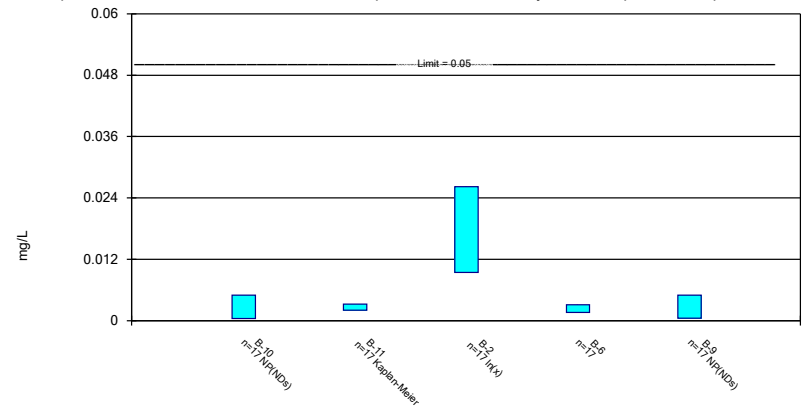
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Parametric and Non-Parametric (NP) Confidence Interval

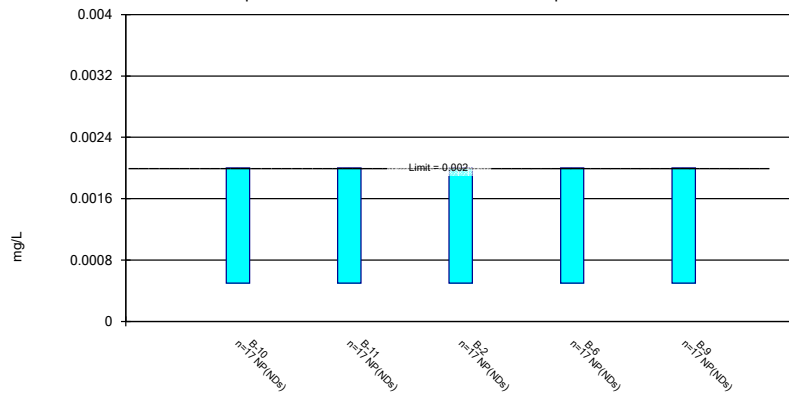
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

Non-Parametric Confidence Interval

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



Constituent: Thallium, total Analysis Run 9/2/2020 2:15 PM  
 Flint Creek Landfill Client: Geosyntec Data: Flint Creek LF

### **APPENDIX 3 – Alternative Source Demonstrations**

Alternative source demonstrations relative to Appendix IV SSLs above the groundwater protection standard were not necessary because no SSLs above the groundwater protection standards were identified in 2020. Alternative source demonstrations are not applicable at this time.

## **APPENDIX 4 - Notices for Monitoring Program Transitions**

No transition between monitoring requirements occurred in 2020; the CCR unit remained in assessment monitoring over the entire year. Notices for monitoring program transitions are not applicable at this time.

## **APPENDIX 5 - Well Installation/Decommissioning Logs**

No monitoring wells installed or decommissioned in 2020. Well installation/decommissioning logs are not applicable at this time.