



**CCR COMPLIANCE
GROUNDWATER MONITORING AND CORRECTIVE ACTION
ANNUAL REPORT
ASH FILTER PONDS AND ASH DISPOSAL SITE**

Prepared for:



GenOn Northeast Management Company
Keystone Generating Station
Shelocta, Pennsylvania

Prepared by:

Aptim Environmental & Infrastructure, Inc.
Pittsburgh, Pennsylvania

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Table of Contents

List of Tables iii

List of Figures iii

1.0 Introduction 1

2.0 Ash Filter Ponds..... 3

 2.1 Groundwater Monitoring Network 3

 2.2 2018 Data Collection 3

 2.3 2018 Monitoring Program Transitions..... 3

 2.4 2018 Corrective Actions 3

 2.5 2019 Projected Activities 4

3.0 East Valley Disposal Site 5

 3.1 Groundwater Monitoring Network 5

 3.2 2018 Data Collection 5

 3.3 2018 Monitoring Program Transitions..... 5

 3.4 2018 Corrective Actions 5

 3.5 2019 Projected Activities 6

4.0 West Valley Disposal Site 7

 4.1 Groundwater Monitoring Network 7

 4.2 2018 Data Collection 7

 4.3 2018 Monitoring Program Transitions..... 7

 4.4 2018 Corrective Actions 7

 4.5 2019 Projected Activities 8

Tables

Figures

List of Tables

Table 1	Ash Filter Ponds Groundwater Analytical Data Summary-Appendix III Constituents
Table 2	Ash Filter Ponds Groundwater Analytical Data Summary-Appendix IV Constituents
Table 3	East Valley Disposal Site Groundwater Analytical Data Summary-Appendix III Constituents
Table 4	East Valley Disposal Site Groundwater Analytical Data Summary-Appendix IV Constituents
Table 5	West Valley Disposal Site Groundwater Analytical Data Summary-Appendix III Constituents
Table 6	West Valley Disposal Site Groundwater Analytical Data Summary-Appendix IV Constituents

List of Figures

Figure 1	Ash Filter Ponds—Location and Groundwater Monitoring System Map
Figure 2	Ash Disposal Site—Location and Groundwater Monitoring System Map

1.0 Introduction

Title 40 Code of Federal Regulations (CFR) §257.90 mandates that existing Coal Combustion Residuals (CCR) landfills and surface impoundments, also known as CCR units, be subject to groundwater monitoring and corrective action requirements as further detailed in §257.91 through §257.98. These requirements are part of the overall CCR Rule (or Rule) which was published in the Federal Register on April 17, 2015 and which became effective on October 19, 2015. Specific obligations for Owners and Operators of existing CCR units regarding the preparation of “Annual Groundwater Monitoring and Corrective Action Reports (Annual Report)” are outlined in §257.90(e)(1-5). The first of these Annual Reports must be completed no later than January 31, 2018, and provide information to address the following aspects for the preceding calendar year:

- Document the status of the groundwater monitoring and corrective action program for the respective CCR units;
- Summarize key actions completed;
- Describe any problems encountered and actions taken to resolve the problems; and
- Offer a projection of key activities for the upcoming year.

At a minimum, the Annual Report must contain the following information to the extent applicable and available:

- A map, aerial image, or diagram showing the CCR unit and all background/upgradient and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program;
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- In addition to all the monitoring data obtained under §257.90 through §257.98, a summary including the number of groundwater samples that were collected for analysis for each background/upgradient and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and
- Any other information required to be included as specified in §257.90 through §257.98.

The Keystone Generating Station (Station), operated by GenOn Northeast Management Company, is a coal-fired power plant located in Shelocta, Pennsylvania. The Rule applies to this facility due to the management/disposal of CCR materials that are generated from the combustion of coal. CCR units associated with Station operations include the Keystone Ash Disposal Site (represented by the East Valley and West Valley Disposal Sites), and three Ash Filter Ponds (Ponds “A,” “B,” and “C”) used for the management of bottom ash. Each of these CCR units has a dedicated groundwater monitoring system that was originally installed to comply with Commonwealth of Pennsylvania Residual Waste Regulations, and was subsequently evaluated and modified (as needed) for use under the CCR program. Additionally, in accordance with the provisions of §257.91(d) of the Rule, the groundwater monitoring system for the Ash Filter Ponds has been designated to provide coverage in the context of a multiunit system encompassing all three ponds collectively.

In summary, this Annual Report has been prepared to comply with the requirements of §257.90(e), addressing each of the Keystone Station’s CCR Units with respect to the groundwater monitoring and corrective actions undertaken during Calendar Year 2018. This Annual Report and all subsequent reports thereto will be placed in the Station’s operating record per §257.105(h)(1), noticed to the State Director per §257.106(h)(1), and posted to the publicly accessible internet site per §257.107(h)(1).

2.0 Ash Filter Ponds

2.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the Ash Filter Ponds is comprised of four wells, including Well MW-5 (upgradient) and Wells MW-6, MP-29, and MP-30 (downgradient). The screened intervals of all four wells cross the interface between the Carmichaels Formation and the Mahoning Sandstone, recognized as the horizon for the uppermost aquifer. The locations of the groundwater monitoring wells are shown on Figure 1, along with depiction of the generalized groundwater flow direction in the area of the ponds. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2018 reporting period.

2.2 2018 Data Collection

During January 2018, the results from the October 2017 Detection Monitoring event were reviewed, and subsequent determination made that two downgradient wells showed Appendix III constituents at levels representing a statistically significant increase (SSI) above corresponding background concentrations (see Table 1). Accordingly, the Ash Filter Ponds were transitioned into the CCR Assessment Monitoring Program, and an initial round of samples covering all Appendix IV constituents was collected in March 2018 (see Table 2) per §257.95(b). From these results, the detected Appendix IV constituents were carried forward and analyzed during continued Assessment Monitoring events conducted in May 2018 and October 2018. As shown in Table 2, none of the Appendix IV constituents from the May and October 2018 events were measured at concentrations representing a statistically significant level (SSL) above the corresponding site-specific groundwater protection standards. Detected concentrations of two Appendix IV constituents; however, do remain above calculated background, and thus providing the basis for continued Assessment Monitoring into 2019.

2.3 2018 Monitoring Program Transitions

In 2018, the Ash Filter Ponds transitioned into the Assessment Monitoring Program based on review of the October 2017 Detection Monitoring results, and subsequent confirmation of Appendix III constituent concentrations representing SSIs above background in two downgradient wells. The transition to the Assessment Monitoring Program was implemented during March-April 2018, including placement of an appropriate notification into the facility's operating record per §257.105(h)(5).

2.4 2018 Corrective Actions

During 2018, there were no problems identified or corrective actions undertaken.

2.5 2019 Projected Activities

It is anticipated that Assessment Monitoring activities will continue for the Ash Filter Ponds during 2019, with continued review of Appendix III/Appendix IV constituent concentrations and comparison against calculated background and established groundwater protection standards.

3.0 East Valley Disposal Site

3.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the East Valley Disposal Site is comprised of four wells, including Well MP-21 (upgradient/side-gradient) and Wells MP-4, MP-17B, and MP-18 (downgradient). The screened intervals of all four monitoring wells are in bedrock units, including the Mahoning Sandstone which is represented as the uppermost aquifer in this area. The locations of the monitoring wells are shown on Figure 2 along with a depiction of the generalized groundwater flow direction. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2018 reporting period.

3.2 2018 Data Collection

During January 2018, the results from the October 2017 Detection Monitoring event were reviewed, and subsequent determination made that each of the downgradient wells showed one or more Appendix III constituents at levels representing an SSI above corresponding background concentrations (see Table 3). Accordingly, the East Valley Disposal Site was transitioned into the CCR Assessment Monitoring Program, and an initial round of samples covering all Appendix IV constituents was collected in March 2018 (see Table 4) per §257.95(b). From these results, the detected Appendix IV constituents were carried forward and analyzed during continued Assessment Monitoring events conducted in May 2018 and October 2018. As shown in Table 4, none of the Appendix IV constituents from the May and October 2018 events were measured at concentrations representing an SSL above the corresponding site-specific groundwater protection standards, nor were any concentrations measured above calculated background values. However, several Appendix III constituents from the May and October 2018 events do remain above calculated background (see Table 3), and thus providing the basis for continued Assessment Monitoring into 2019.

3.3 2018 Monitoring Program Transitions

In 2018, the East Valley Disposal Site transitioned into the Assessment Monitoring Program based on review of the October 2017 Detection Monitoring results, and subsequent confirmation of Appendix III constituent concentrations representing SSIs above background in each of the downgradient wells. The transition to the Assessment Monitoring Program was implemented during March-April 2018, including placement of an appropriate notification into the facility's operating record per §257.105(h)(5).

3.4 2018 Corrective Actions

During 2018, there were no problems identified or corrective actions undertaken.

3.5 2019 Projected Activities

It is anticipated that Assessment Monitoring activities will continue for the East Valley Disposal Site during 2019, with continued review of Appendix III/Appendix IV constituent concentrations and comparison against calculated background and established groundwater protection standards.

4.0 West Valley Disposal Site

4.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the West Valley Disposal Site is comprised of four wells, including Well MP-21 (upgradient/side-gradient) and Wells MP-16, MP-23, and MP-24 (downgradient). The screened intervals of all four monitoring wells are in the Mahoning Sandstone which is represented as the uppermost aquifer in this area. The locations of the monitoring wells are shown on Figure 2 along with a depiction of the generalized groundwater flow direction. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2018 reporting period.

4.2 2018 Data Collection

During January 2018, the results from the October 2017 Detection Monitoring event were reviewed, and subsequent determination made that two of the downgradient wells showed one or more Appendix III constituents at levels representing an SSI above corresponding background concentrations (see Table 5). Accordingly, the West Valley Disposal Site was transitioned into the CCR Assessment Monitoring Program, and an initial round of samples covering all Appendix IV constituents was collected in March 2018 (see Table 6) per §257.95(b). From these results, the detected Appendix IV constituents were carried forward and analyzed during continued Assessment Monitoring events conducted in May 2018 and November 2018. As shown in Table 6, none of the Appendix IV constituents from the May and November 2018 events were measured at concentrations representing an SSL above the corresponding site-specific groundwater protection standards. Detected concentrations of two Appendix IV constituents; however, do remain above calculated background, and thus providing the basis for continued Assessment Monitoring into 2019.

4.3 2018 Monitoring Program Transitions

In 2018, the West Valley Disposal Site transitioned into the Assessment Monitoring Program based on review of the October 2017 Detection Monitoring results, and subsequent confirmation of Appendix III constituent concentrations representing SSIs above background in two of the downgradient wells. The transition to the Assessment Monitoring Program was implemented during March-April 2018, including placement of an appropriate notification into the facility's operating record per §257.105(h)(5).

4.4 2018 Corrective Actions

During 2018, there were no problems identified or corrective actions undertaken.

4.5 2019 Projected Activities

It is anticipated that Assessment Monitoring activities will continue for the West Valley Disposal Site during 2019, with continued review of Appendix III/Appendix IV constituent concentrations and comparison against calculated background and established groundwater protection standards.

Tables

Table 1
Keystone Generating Station
Ash Filter Ponds--Groundwater Analytical Data
CCR Appendix III Constituents

Monitoring Well	Date Sampled	Groundwater Elevation (ft. MSL)	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
			Calculated Background						
			0.06	120.1	48	0.2	819	372	4.11-6.92
MW-5 (Upgradient)	23-Dec-15	1003.51	< 0.05	54.7	36	< 0.1	482	272	5.67
	14-Mar-16	1005.46	< 0.05	59.5	34	< 0.1	458	272	5.20
	19-May-16	1002.11	< 0.05	71.6	36	< 0.1	562	304	5.75
	17-Aug-16	1001.46	0.05	101	23	< 0.1	686	326	5.69
	30-Nov-16	1001.96	< 0.05	59.7	35	< 0.1	496	256	5.20
	23-Feb-17	1008.41	0.06	59.9	39	0.2	432	256	5.84
	2-May-17	1006.21	< 0.05	66.6	44	0.1	534	297	4.68
	21-Aug-17	1003.56	< 0.05	67.6	39	0.1	560	317	6.08
	11-Oct-17	1001.76	< 0.05	68.6	40	< 0.1	558	341	5.18
	15-May-18	1009.71	< 0.05	65.9	38	0.2	570	314	5.51
12-Nov-18	1010.91	0.06	81.2	34	0.3	546	332	6.08	
MW-6 (Downgradient)	22-Dec-15	1001.81	< 0.05	8.3	14	< 0.1	84	23	5.62
	16-Mar-16	1002.06	< 0.05	7.1	7	< 0.1	62	11	5.76
	18-May-16	1000.56	< 0.05	8.3	6	< 0.1	110	14	5.48
	25-Aug-16	999.96	< 0.05	9.3	7	< 0.1	104	18	5.38
	17-Nov-16	1000.61	< 0.05	7.1	6	< 0.1	80	10	5.64
	28-Feb-17	1001.21	< 0.05	6.3	8	< 0.1	62	8	6.43
	3-May-17	1002.16	< 0.05	7.2	7	< 0.1	92	10	5.17
	22-Aug-17	1001.56	< 0.05	6.8	7	< 0.1	92	11	4.87
	10-Oct-17	1000.41	< 0.05	7.3	6	< 0.1	84	14	5.63
	10-May-18	1002.61	< 0.05	6.6	8	< 0.1	92	8	6.15
30-Oct-18	1004.36	< 0.05	6.0	8	< 0.1	78	8	5.57	
MP-29 (Downgradient)	22-Dec-15	1000.63	0.07	106	112	0.2	684	222	6.56
	15-Mar-16	1000.98	0.08	88.9	92	0.2	546	177	7.03
	19-May-16	1000.03	0.14	120	142	0.2	758	242	6.60
	10-Aug-16	999.28	0.10	109	129	0.2	830	235	6.77
	22-Nov-16	1000.13	0.09	130	116	0.1	764	247	6.73
	27-Feb-17	1001.33	0.08	80.9	73	0.2	548	173	7.75
	3-May-17	1002.63	0.08	105	92	0.1	568	184	6.13
	21-Aug-17	1002.73	0.12	112	100	< 0.1	646	226	7.50
	12-Oct-17	1003.18	0.05	120	129	0.2	734	294	6.60
	14-May-18	1004.33	0.08	62.3	32	< 0.1	332	98	7.11
30-Oct-18	1005.13	0.09	54.7	18	< 0.1	304	76	6.87	
MP-30 (Downgradient)	22-Dec-15	998.30	0.06	87.7	103	< 0.1	526	197	6.65
	15-Mar-16	998.60	0.07	59.1	101	< 0.1	348	103	6.07
	18-May-16	997.55	< 0.05	104	172	< 0.1	796	265	6.17
	10-Aug-16	996.75	< 0.05	114	120	< 0.1	792	289	6.45
	22-Nov-16	996.95	< 0.05	110	107	0.1	578	202	7.11
	27-Feb-17	997.75	0.08	61.6	97	< 0.1	424	131	7.13
	2-May-17	999.25	0.08	99.2	283	< 0.1	800	107	5.83
	22-Aug-17	999.05	0.13	71.8	197	< 0.1	604	127	5.47
	11-Oct-17	998.15	0.10	81.9	195	< 0.1	672	176	6.04
	15-May-18	1000.55	0.07	58.1	191	< 0.1	588	72	6.21
30-Oct-18	1001.75	0.12	30.9	38	< 0.1	228	69	5.99	

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds (Dec. 2015 thru Aug. 2017) of groundwater sampling data for Well MW-5.

Table 3
Keystone Generating Station
East Valley Disposal Site--Groundwater Analytical Data
CCR Appendix III Constituents

Monitoring Well	Date Sampled	Groundwater Elevation (ft. MSL)	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chlorid (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
			Calculated Background						
			0.08	47.8	3.8	0.3	222	15	6.52-9.11
MP-21 (Upgradient)	28-Dec-15	1069.20	< 0.05	38.0	2	0.2	204	15	7.85
	8-Mar-16	1069.15	0.05	40.5	2	0.2	210	15	7.86
	31-May-16	1072.00	0.08	42.5	1	0.2	202	14	7.37
	22-Aug-16	1066.55	0.06	39.0	1	0.2	206	14	7.50
	8-Nov-16	1068.50	0.05	42.3	3	0.2	198	15	8.28
	6-Mar-17	1068.06	0.06	40.3	2	0.2	198	13	7.32
	31-May-17	1068.60	< 0.05	37.0	2	0.2	192	15	7.27
	28-Aug-17	1066.80	0.05	39.6	2	0.2	204	15	8.30
	10-Oct-17	1066.20	0.05	41.4	2	0.2	200	15	7.68
16-May-18	1069.00	< 0.05	43.6	2	0.2	196	16	7.79	
7-Nov-18	1068.40	0.17	70.9	2	0.2	228	15	8.97	
MP-4 (Downgradient)	29-Dec-15	1022.13	< 0.05	46.0	2	0.1	158	17	7.71
	9-Mar-16	1016.78	< 0.05	57.8	2	0.1	206	54	8.02
	25-May-16	1017.08	< 0.05	77.0	3	< 0.1	266	39	8.00
	23-Aug-16	1017.78	< 0.05	74.4	1	< 0.1	296	20	7.87
	28-Nov-16	1015.48	< 0.05	67.3	2	< 0.1	230	23	8.12
	7-Mar-17	1021.48	< 0.05	42.1	1	0.1	156	15	8.08
	23-May-17	1015.78	< 0.05	57.9	< 1	< 0.1	214	11	8.49
	23-Aug-17	1016.08	< 0.05	80.6	1	< 0.1	248	14	6.87
	12-Oct-17	1016.88	< 0.05	74.5	2	< 0.1	252	19	7.25
14-May-18	1021.68	< 0.05	59.2	< 1	< 0.1	194	21	7.68	
31-Oct-18	1020.08	< 0.05	65.3	< 1	< 0.1	220	12	7.43	
MP-17B (Downgradient)	29-Dec-15	1025.11	< 0.05	79.2	2	0.1	304	59	7.32
	10-Mar-16	1024.56	< 0.05	81.0	2	0.1	322	52	6.92
	1-Jun-16	1024.16	< 0.05	88.2	3	0.2	414	57	7.48
	18-Aug-16	1024.16	< 0.05	83.5	2	0.1	280	48	7.15
	29-Nov-16	1023.36	< 0.05	90.9	2	< 0.1	362	31	7.32
	2-Mar-17	1024.46	< 0.05	81.0	3	0.1	302	30	7.09
	30-May-17	1024.71	< 0.05	80.7	3	< 0.1	310	34	6.98
	23-Aug-17	1022.91	< 0.05	84.7	2	< 0.1	326	26	7.11
	9-Oct-17	1022.06	< 0.05	81.5	2	< 0.1	354	50	7.40
9-May-18	1024.41	0.09	73.2	3	0.1	304	39	7.57	
31-Oct-18	1024.61	< 0.05	73.9	2	< 0.1	312	52	7.22	
MP-18 (Downgradient)	29-Dec-15	1018.28	< 0.05	39.1	2	< 0.1	168	42	7.16
	9-Mar-16	1017.58	0.06	58.2	2	< 0.1	272	53	7.11
	26-May-16	1017.18	< 0.05	50.4	2	0.1	222	46	7.58
	18-Aug-16	1015.43	< 0.05	21.5	2	< 0.1	116	31	7.01
	28-Nov-16	1016.43	< 0.05	54.0	2	< 0.1	236	46	7.12
	2-Mar-17	1017.18	< 0.05	42.5	2	< 0.1	188	45	7.95
	30-May-17	1018.18	< 0.05	40.0	2	< 0.1	180	45	6.97
	24-Aug-17	1016.08	< 0.05	45.8	2	< 0.1	186	48	6.63
	9-Oct-17	1015.18	< 0.05	25.5	2	< 0.1	144	29	7.35
9-May-18	1017.58	0.07	42.2	2	< 0.1	282	45	7.63	
12-Nov-18	1017.88	< 0.05	44.5	1	< 0.1	200	43	8.04	

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds (Dec. 2015 thru Aug. 2017) of groundwater sampling data for Well MP-21.

Table 5
Keystone Generating Station
West Valley Disposal Site--Groundwater Analytical Data
CCR Appendix III Constituents

Monitoring Well	Date Sampled	Groundwater Elevation (ft. MSL)	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
			Calculated Background						
			0.08	47.8	3.8	0.3	222	15	6.52-9.11
MP-21 (Upgradient)	28-Dec-15	1069.20	< 0.05	38.0	2	0.2	204	15	7.85
	8-Mar-16	1069.15	0.05	40.5	2	0.2	210	15	7.86
	31-May-16	1072.00	0.08	42.5	1	0.2	202	14	7.37
	22-Aug-16	1066.55	0.06	39.0	1	0.2	206	14	7.50
	8-Nov-16	1068.50	0.05	42.3	3	0.2	198	15	8.28
	6-Mar-17	1068.06	0.06	40.3	2	0.2	198	13	7.32
	31-May-17	1068.60	< 0.05	37.0	2	0.2	192	15	7.27
	28-Aug-17	1066.80	0.05	39.6	2	0.2	204	15	8.30
	10-Oct-17	1066.20	0.05	41.4	2	0.2	200	15	7.68
16-May-18	1069.00	< 0.05	43.6	2	0.2	196	16	7.79	
7-Nov-18	1068.40	0.17	70.9	2	0.2	228	15	8.97	
MP-16 (Downgradient)	30-Dec-15	1051.40	0.08	45.4	25	0.2	226	9	7.52
	7-Mar-16	1051.05	< 0.05	45.0	26	0.2	230	9	7.65
	26-May-16	1051.05	< 0.05	43.6	26	0.3	228	4	7.25
	25-Aug-16	1050.45	0.11	39.8	27	0.2	230	8	8.05
	30-Nov-16	1051.25	0.06	39.9	25	0.2	224	7	7.29
	23-Feb-17	1050.75	0.07	37.1	25	0.2	204	8	8.18
	24-May-17	1051.50	0.07	35.5	25	0.2	200	8	7.15
	29-Aug-17	1051.10	0.07	37.0	29	0.1	212	7	7.11
	5-Oct-17	1050.65	0.06	37.9	28	0.2	208	8	7.59
10-May-18	1052.15	0.07	35.0	27	0.2	210	8	7.76	
8-Nov-18	1052.85	0.05	36.9	29	0.2	220	8	8.36	
MP-23 (Downgradient)	23-Dec-15	1061.14	< 0.05	40.7	70	0.1	298	54	6.17
	7-Mar-16	1061.14	< 0.05	44.8	72	< 0.1	264	54	6.17
	25-May-16	1060.44	< 0.05	43.1	68	< 0.1	334	48	5.92
	23-Aug-16	1058.04	< 0.05	50.9	96	< 0.1	496	46	5.99
	29-Nov-16	1059.74	< 0.05	47.8	85	< 0.1	272	48	6.02
	28-Feb-17	1059.84	< 0.05	45.7	91	0.1	262	52	6.98
	24-May-17	1060.54	< 0.05	45.1	91	< 0.1	344	56	5.63
	24-Aug-17	1059.34	< 0.05	46.8	101	< 0.1	354	58	5.59
	11-Oct-17	1058.14	< 0.05	53.9	106	< 0.1	452	51	6.02
10-May-18	1060.94	< 0.05	47.1	93	< 0.1	370	56	6.65	
8-Nov-18	1061.94	< 0.05	44.3	87	< 0.1	314	61	7.08	
MP-24 (Downgradient)	28-Dec-15	1081.26	< 0.05	19.3	3	0.1	108	13	6.75
	8-Mar-16	1076.76	< 0.05	28.9	4	0.1	152	14	6.85
	31-May-16	1069.26	0.06	19.3	2	< 0.1	100	13	6.51
	22-Aug-16	1054.96	< 0.05	24.8	2	0.1	124	11	6.71
	8-Nov-16	1071.36	< 0.05	37.0	2	0.1	154	13	7.60
	6-Mar-17	1076.16	< 0.05	39.6	2	0.1	166	12	6.82
	31-May-17	1079.46	< 0.05	31.0	2	0.1	128	10	6.61
	28-Aug-17	1053.76	< 0.05	46.0	2	0.2	176	10	7.92
	10-Oct-17	1051.16	< 0.05	44.7	2	0.2	172	10	7.20
16-May-18	1078.16	< 0.05	43.7	2	0.2	190	10	7.50	
7-Nov-18	1076.56	< 0.05	44.5	2	0.1	204	9	8.35	

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds (Dec. 2015 thru Aug. 2017) of groundwater sampling data for Well MP-21.



Figures

FILE: O:\PROJECT\1009174011_keystone\1009174011-B9.dwg
 Plot Date/Time: Jan 03, 2019 - 8:49am
 Plotted By: Greg Jones

OFFICE: Pittsburgh, PA
 DATE: 1/3/19
 DESIGNED BY: ---
 DRAWN BY: E. Schlegel
 CHECKED BY: ---
 APPROVED BY: ---
 DRAWING NUMBER: 1009174011-B9



LEGEND:

-  MW-5 (1009.71) CCR GROUNDWATER MONITORING WELL WITH GROUNDWATER ELEVATION MEASURED BETWEEN MAY 10 AND 15, 2018
-  GROUNDWATER FLOW DIRECTION



REFERENCES:

1. GOOGLE AERIAL PHOTOGRAPH, DATED 10/11/2015.

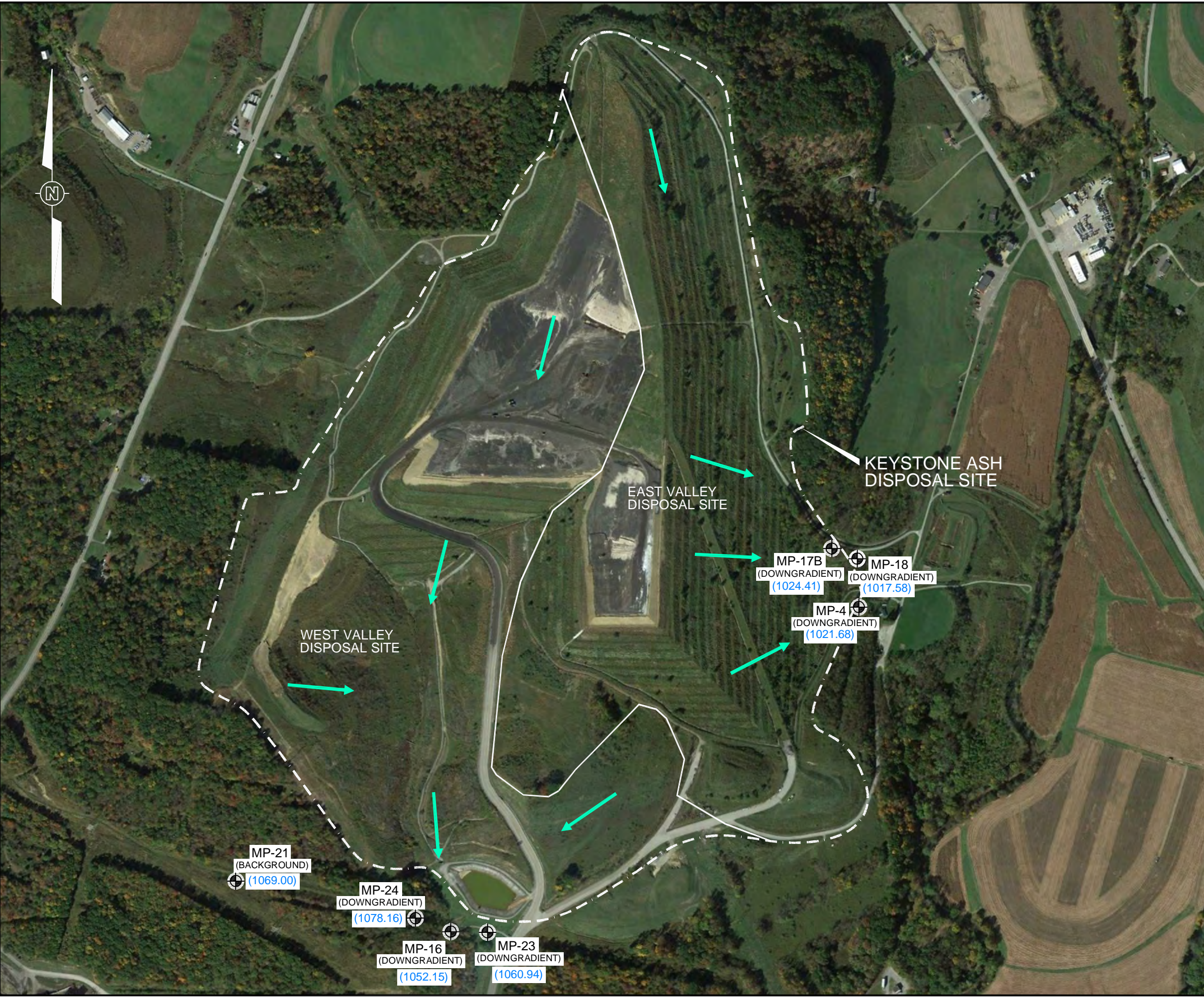
APTIM
 500 Penn Center Boulevard,
 Suite 1000
 Pittsburgh, Pennsylvania 15235

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FIGURE 1
 CCR COMPLIANCE GROUNDWATER MONITORING WELL LOCATION MAP
 ASH FILTER PONDS
 KEYSTONE GENERATING STATION
 PLUMCREEK TOWNSHIP, ARMSTRONG COUNTY, PA

FILE: O:\PROJECT\1009174011_keystone\1009174011-B10.dwg
 Plot Date/Time: Jan 03, 2019 - 8:58am
 Xref: Image
 Plotted By: Greg Jones

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	1/3/19	--	E. Schlegel	--	--	1009174011-B10



LEGEND:

- MP-18 (1017.58) CCR GROUNDWATER MONITORING WELL WITH GROUNDWATER ELEVATION MEASURED BETWEEN MAY 9 AND 16, 2018
- GROUNDWATER FLOW DIRECTION



REFERENCES:

- GOOGLE AERIAL PHOTOGRAPH, DATED 10/11/2015.

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FIGURE 2
 CCR COMPLIANCE GROUNDWATER MONITORING WELL LOCATION MAP
 EAST VALLEY AND WEST VALLEY ASH DISPOSAL SITES
 KEYSTONE GENERATING STATION
 PLUMCREEK TOWNSHIP, ARMSTRONG COUNTY, PA