



# ANNUAL CCR GROUNDWATER MONITORING & CORRECTIVE ACTION REPORT

Peg's Hill Landfill

January 31, 2020

Reporting Year – 2019  
Revision 01



A Touchstone Energy Cooperative 

## Executive Summary

This annual report documents the status of the groundwater monitoring and corrective action program for Spurlock Station’s proposed Coal Combustion Residual (CCR) Landfill (herein “Peg’s Hill Landfill”, “Landfill”, or “the Unit”) pursuant to 40 Code of Federal Regulations (CFR) §257.90(e). Table 1-1 provides an overview of the status of the groundwater monitoring and corrective action programs for the Unit during the reporting period.

**Table 1-1 Overview of the Status of the Groundwater Monitoring & Corrective Action Program for the Unit**

<b>Information Required by 40 CFR §257.90(e)(6)</b>	<b>Unit Information</b>
Identify whether the unit was operating at the start of the reporting period under the detection monitoring program or the assessment monitoring program.	Not applicable. Unit has not been constructed. Only background, or baseline, sampling is being conducted.
Identify whether the unit was operating at the end of the reporting period under the detection monitoring program or the assessment monitoring program.	Not applicable. Unit has not been constructed. Only background, or baseline, sampling is being conducted.
If applicable, list all Appendix III (statistically significant increases (SSIs) pursuant to §257.94(e) and the associated monitoring location(s).	Not Applicable
If applicable, provide date when the assessment monitoring program was initiated.	Not Applicable
If applicable, list all Appendix IV statistically significant levels (SSLs) pursuant to §257.95(g) and the associated monitoring location(s).	Not Applicable
If applicable, provide the date when the assessment of corrective measures was initiated.	Not Applicable
If applicable, provide the date when the public meeting was held for the assessment of corrective measures.	Not Applicable
If applicable, provide the date when the assessment of corrective measures was completed.	Not Applicable
If applicable, provide the date when a remedy was selected pursuant to §257.97.	Not Applicable
If applicable, provide the date when remedial activities were initiated or identify if they are ongoing.	Not Applicable

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## 1.0 Introduction

On April 17, 2015, the EPA issued the final version of the federal Coal Combustion Residual Rule (CCR) Rule to regulate the disposal of CCR materials generated at coal-fired units. The CCR Rule will be administered as part of the Resource Conservation and Recovery Act (RCRA, 42 United States Code [U.S.C.] §6901 et seq.) using the Subtitle D approach.

East Kentucky Power Cooperative (EKPC) is subject to the CCR Rule and as such must prepare an annual groundwater monitoring and corrective action report for all CCR Units per 40 Code of Federal Regulations (CFR) §257.90(e). The annual report must document the status of the groundwater monitoring and corrective action program for the CCR Unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve problems, and project key activities for the upcoming year.

This document has been prepared to meet those requirements for the proposed new Peg's Hill CCR Landfill at H.L Spurlock Power Station (Spurlock) located near Maysville, Kentucky. This report covers the 2019 reporting period, January 1, 2019 through December 31, 2019.

## 2.0 CCR Rule Compliance

In accordance with 40 CFR §257.90(e), EKPC is required to, at a minimum, provide the following information, to the extent available:

- A map, aerial image, or diagram showing the CCR unit and all background and downgradient monitoring wells/locations that are a part of the groundwater monitoring system, including identification numbers;
- Identify any monitoring wells/locations that were installed and/or decommissioned during the reporting period, along with a narrative description of why those actions were taken;
- Monitoring data obtained under §257.90 through §257.98, including a summary of the number of samples collected, the dates sampling occurred, and which program those samples were required by;
- A narrative description of any transition between monitoring programs (dates, circumstances, and identifying constituents detected at a statistically significant increase (SSI) over background levels);
- Other information required to be included in the annual report as specified in §257.90 through §257.98, such as:
  - Alternative Monitoring Frequency
  - Alternate Source Demonstrations
  - Assessment Monitoring Concentrations
  - Demonstrations of Additional Time to complete the assessment of corrective measures due to site-specific conditions; and
- A section at the beginning of the annual report that provides an overview of the current stats of groundwater monitoring and corrective action programs for the unit that contains all the information specified by §257.90(e)(6).

Other information being provided in this report includes, but is not limited to:

- Groundwater elevation data; and
- Laboratory analytical reports and quantification limits.

### 3.0 Facility Information

The proposed Peg's Hill CCR Landfill at Spurlock is located adjacent to (i.e., north of) the existing Spurlock CCR Landfill which is along South Ripley Road in Mason County. The site is located approximately five miles northwest of Maysville, Kentucky, and on the United States Geological Survey's Maysville West, Kentucky topographic map. The moderately rolling to hilly topography of the project area is typical for this region unless along a stream where erosion creates steeper slopes. Topographic relief across Peg's Hill is approximately 360 ft., with a natural topographic high of nearly 900 ft. above mean sea level (AMSL) occurring along the western portion of Peg's Hill, and with a topographic low in the valley bottom at approximately 540 ft. AMSL just downgradient of the proposed Landfill footprint. The Landfill is located within a stream valley and is situated in a tributary to Lawrence Creek. As a newly proposed CCR Unit, the Peg's Hill CCR Landfill has its own certified groundwater monitoring network that will be used to monitor groundwater under the CCR Rule. **Appendix A**, prepared by Geosyntec Consultants, Inc. (Geosyntec), shows the proposed Peg's Hill Landfill property, depicting the groundwater monitoring system present. Monitoring wells PH-MW-1 and PH-MW-2 are background monitoring locations in an adjacent valley, and wells PH-MW-3, PH-MW-4, and PH-MW-5 are downgradient monitoring locations. The background wells are located in the adjacent valley because they are more representative of background conditions for the compliance wells than upgradient wells. The background wells are completed in the same stratigraphic horizon (the Kope Formation), and similar depth (shallow, more highly fractured bedrock), as the compliance wells. If shallow monitoring wells were installed upgradient of the proposed landfill, they would be screened in a different (overlying) stratigraphic horizon than the downgradient wells, which is not recommended. If deeper upgradient wells were installed in the Kope Formation, they would be screened in a more saline zone and therefore would not be representative of background conditions for the downgradient wells. Hence, background wells were located in an adjacent valley in a similar hydrogeologic setting and screened in the shallow Kope Formation to be representative of background conditions.

### 4.0 Status of Groundwater Monitoring and Corrective Action Program

The CCR Unit did not undergo any program transition in 2019 and is currently collecting additional baseline groundwater samples pursuant to 40 CFR §257.94 prior to authorization of construction and CCR placement.

### 5.0 Summary of Key Actions Completed

This Section provides a narrative of the key actions completed at the CCR Unit during the reporting period.

#### 5.1 Design and Installation of the Groundwater Monitoring Network

The CCR Rule requires the certification of a Groundwater Monitoring System that meets the requirements of 40 CFR §257.91. During the fall of 2018 that system was installed for the proposed new Peg's Hill Landfill and later certified in February 2019 as a result of a hydrogeologic study, its conclusions, and recommendations for the Groundwater Monitoring System. The study and certification of the Groundwater Monitoring System were prepared by Geosyntec. Pursuant

to the requirements of the CCR Rule, the certification has been posted to the unit's public CCR website.

Based on the groundwater elevations and potentiometric surface map generated by Geosyntec during the hydrogeologic investigation, Geosyntec installed three downgradient wells, PH-MW-3, PH-MW-4, and PH-MW-5, and two background wells, PH-MW-1 and PH-MW-2. See **Appendix A** for well locations.

### 5.2 Background Groundwater Monitoring Activities

The CCR Rule requires reporting of monitoring data obtained under 40 CFR §257.90 through §257.98, during the reporting year, including a summary of the number of samples collected, the dates sampling occurred, and which program those samples were required by (background, detection, or assessment). **Table 5-1** summarizes those sampling events that occurred during the reporting period. The sampling results obtained in 2019 are summarized in **Table B-1** in **Appendix B**, while the laboratory analytical reports are included in **Appendix C**.

In February of 2019, EKPC began sampling the certified Groundwater Monitoring System and collected the required eight background samples at each background and downgradient monitoring well within six months of beginning sampling as required in 40 CFR 257.93 for new landfill units. Since the Landfill is a proposed CCR Landfill in the Commonwealth of Kentucky, and has not been constructed or received authorization to place CCR in the landfill, EKPC continues to collect additional independent background samples (until waste placement is authorized). Groundwater flow maps and velocity calculations from those events are included as **Appendix D**.

**Table 5-1: Annual Sampling & Analysis Summary**

Collection Date	Number of Samples Collected	Location of Collected Samples	Monitoring Program
2/25/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
3/8/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
3/29/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
4/12/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
4/29/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
5/17/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
5/31/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
6/28/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
7/29/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
9/3/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
9/27/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
10/28/19	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
11/27/19*	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background
12/30/19*	5	PH-MW-1, PH-MW-2 PH-MW-3, PH-MW-4, & PH-MW-5	Background

\* The laboratory analytical results for these sampling events were not available on or before December 31, 2019, and therefore those sampling results are not included in this report.

### 5.3 Statistical Method Selection and Certification

Geosyntec was engaged to review and analyze the first eight rounds of background groundwater monitoring data for the background and downgradient monitoring wells, and select and certify a

statistical method that is appropriate for evaluating the groundwater monitoring data in accordance with 40 CFR §257.93(f)(6). Based on the initial eight background samples, a combination of inter-well and intra-well approaches using control charts and an inter-well statistical approach using upper tolerance limits was selected and certified as appropriate for evaluating the groundwater monitoring data for the CCR Unit. The required certification is available on the Unit's public CCR website. These statistical approaches might be revised, if appropriate, as additional pre-disposal data are generated.

## 6.0 Problems Encountered and Actions Taken

No significant problems were encountered during the groundwater monitoring and corrective action program for the Peg's Hill Landfill in 2019.

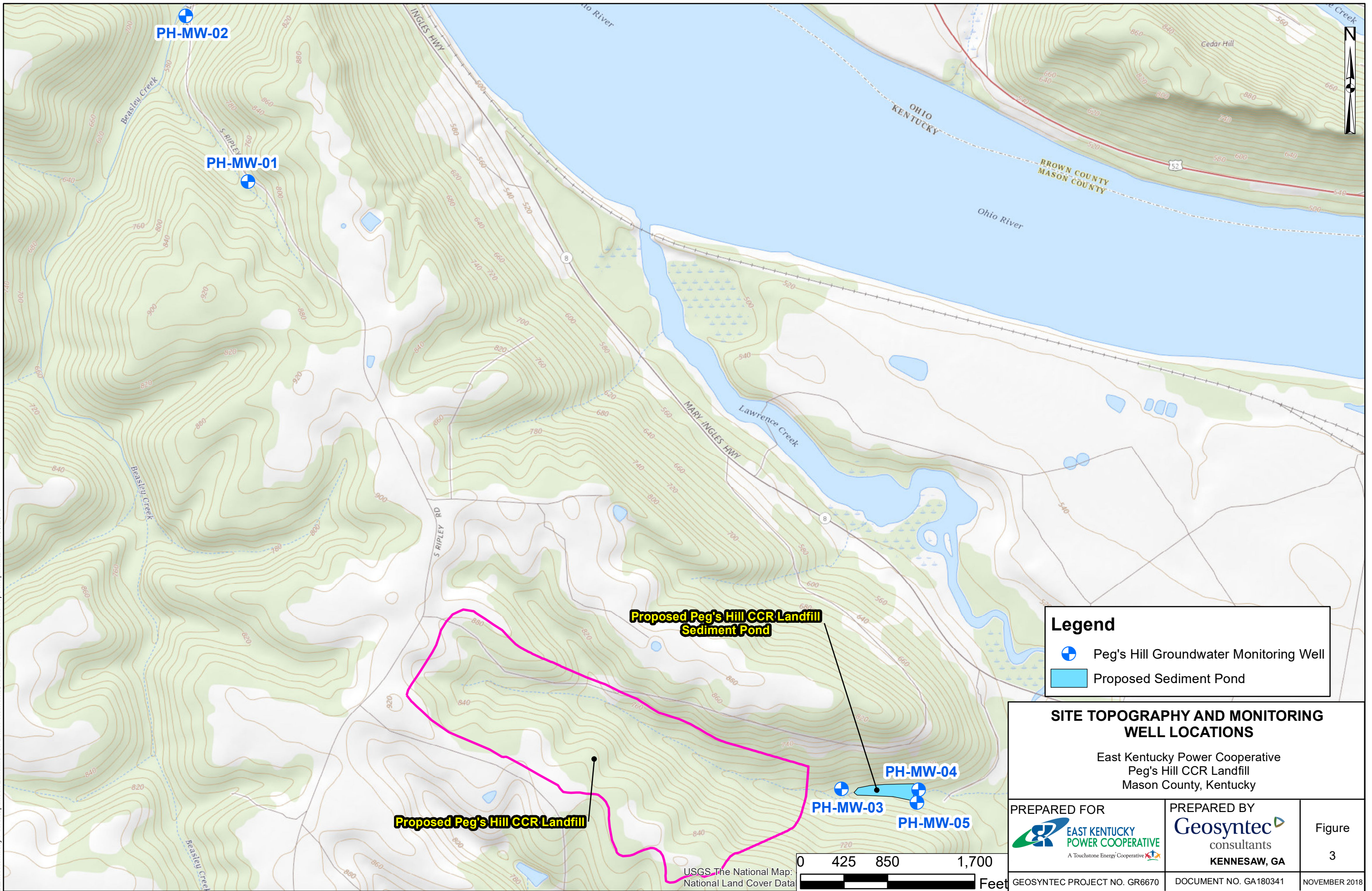
## 7.0 Key Activities Projected for 2020

In 2020, EKPC will continue collecting background samples. Once the Landfill has been constructed and waste is placed, EKPC will commence detection monitoring. In addition, EKPC will re-evaluate the certified statistical methodology and background limits prior to waste placement to look for opportunities to enhance the monitoring network's ability to detect a release from the CCR Unit based on additional pre-disposal background collected.

## **APPENDIX A – Groundwater Monitoring Locations Map**



N:\E\East\_Kentucky\_Power\Spurock\_Landfill\Area D MW Network\GIS\MXD\Installed Wells Topo Map.mxd\IDY 11/30/2018



**Legend**

- Peg's Hill Groundwater Monitoring Well
- Proposed Sediment Pond

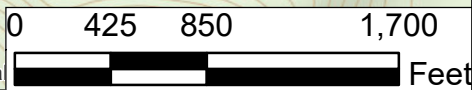
**SITE TOPOGRAPHY AND MONITORING WELL LOCATIONS**

East Kentucky Power Cooperative  
 Peg's Hill CCR Landfill  
 Mason County, Kentucky

PREPARED FOR  
 EAST KENTUCKY POWER COOPERATIVE  
 A Touchstone Energy Cooperative

PREPARED BY  
 Geosyntec consultants  
 KENNESAW, GA

Figure  
 3



USGS The National Map:  
 National Land Cover Data

GEOSYNTEC PROJECT NO. GR6670 DOCUMENT NO. GA180341 NOVEMBER 2018

## **APPENDIX B – Summary of Analytical Results**

Spurlock Peg's Hill

Annual Reporting Year 2019  
Table B-1: Summary of Analytical Results

Appendix 3 Constituents

Well ID	Sample Date	Event Type	GW Elevation (ft. MSL)	Boron (µg/L)	Calcium (µg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
PH-MW-01	2/25/2019	Background	706.40	916 D	142000 D	23.6	< 0.50	5.88	468 D	1200
PH-MW-01	3/8/2019	Background	705.00	1090 D	225000 D	45.5	< 0.50	6.23	578 D	1420
PH-MW-01	3/29/2019	Background	704.40	998	248000 D	36.3	< 0.50	5.98	539 D	2920
PH-MW-01	4/12/2019	Background	703.60	1510	248000 D	76.9	< 0.50	6.04	397 D	1980
PH-MW-01	4/29/2019	Background	703.30	2090	253000 D	88.8	< 0.50	6.13	404 D	1830
PH-MW-01	5/17/2019	Background	702.47	2690 D	295000 D	190 D	< 0.50	6.14	407 D	2040
PH-MW-01	5/31/2019	Background	702.14	2000	287000 D	253 D	< 0.50	6.25	405 D	2050
PH-MW-01	6/28/2019	Background	702.90	1500	297000 D	73.0	< 0.50	5.97	417 D	1740
PH-MW-01	7/29/2019	Background	702.65	1460	318000 D	58.0	< 0.50	5.84	391 D	2010
PH-MW-01	9/3/2019	Background	702.31	1650	315000 D	70.9	< 0.50	6.06	397 D	1920
PH-MW-01	9/27/2019	Background	701.72	2260	299000 D	105 D	< 0.50 D	5.90	404 D	2050
PH-MW-01	10/28/2019	Background	701.61	2500	296000 D	197 D	< 0.50	5.70	430 D	2190
PH-MW-02	2/25/2019	Background	549.50	2090 D	18000	572 D	1.2	8.04	26.6	1540
PH-MW-02	3/8/2019	Background	548.60	1530 D	34700	318 D	0.73	7.77	39.0	964
PH-MW-02	3/29/2019	Background	547.50	874	54700 D	219 D	0.55	7.70	35.8	924
PH-MW-02	4/12/2019	Background	548.80	1070	41400 D	174 D	0.59	7.72	29.8	888
PH-MW-02	4/29/2019	Background	547.80	1020	63200 D	120 D	< 0.50	7.40	29.3	656
PH-MW-02	5/17/2019	Background	547.57	1040 D	58200 D	130 D	< 0.50	7.80	28.8	676
PH-MW-02	5/31/2019	Background	547.43	956	51400 D	128 D	< 0.50	7.51	28.4	648
PH-MW-02	6/28/2019	Background	548.30	968	47700 D	149 D	< 0.50	7.64	28.7	704
PH-MW-02	7/29/2019	Background	547.68	966	43100	163 D	< 0.50	7.31	27.4	932
PH-MW-02	9/3/2019	Background	547.71	999	41100	162 D	< 0.50	7.57	28.3	756
PH-MW-02	9/27/2019	Background	547.08	1280	33800 D	230 D	0.69 D	7.76	25.8	912
PH-MW-02	10/28/2019	Background	546.68	1210	35400	212 D	0.69	7.51	27.2	837
PH-MW-03	2/25/2019	Background	568.60	3880 D	63500 D	707 D	0.79	7.66	477 D	2720
PH-MW-03	3/8/2019	Background	566.90	3600 D	69600 D	633 D	0.97	7.51	406 D	2150
PH-MW-03	3/29/2019	Background	566.00	3030	58200 D	688 D	0.99	7.46	354 D	2410
PH-MW-03	4/12/2019	Background	565.00	2940	53000 D	589 D	1.0	7.42	235 D	1870
PH-MW-03	4/29/2019	Background	565.10	3400	45700	612 D	1.1	7.49	191	1790
PH-MW-03	5/17/2019	Background	565.20	3660 D	44600	622 D	1.2	7.76	157	1730
PH-MW-03	5/31/2019	Background	564.26	2460	38000	599 D	1.2	7.79	145	1620
PH-MW-03	6/28/2019	Background	565.10	2940	36100 D	595 D	1.3	7.51	137	1570
PH-MW-03	7/29/2019	Background	564.59	2780	33300	575 D	1.3	7.48	121	1710
PH-MW-03	9/3/2019	Background	563.64	2610	34500	582 D	1.2	7.61	140	1550
PH-MW-03	9/27/2019	Background	560.72	2950	49300 D	580 D	1.0 D	7.50	211 D	1710
PH-MW-03	10/28/2019	Background	558.96	3050	71700 D	656 D	1.0	7.11	412 D	2100

Result Notes :	J - Estimated Value NA - Not available	R - Unusable (Quality Control Failure) D - Result reported from dilution
Result Units :	mg/L - milligram per liter ft. MSL - feet above mean sea level	µg/L - microgram per liter pCi/L - picocurie per liter S.U. - Standard Units
Event Type Abbreviations :	A3 - Appendix III Constituents for Detection Monitoring ASD - Alternative Source Demonstration	A4 - Appendix IV Constituents for Assessment Monitoring
Event Type Constituents :	Background - A3 and A4 Assessment - A3 (All) and A4 (Detected in annual screen).	Detection - A3 Annual Screen - A4 ASD - Tested A3 and A4 parameters

Spurlock Peg's Hill

Annual Reporting Year 2019  
Table B-1: Summary of Analytical Results

Appendix 3 Constituents

Well ID	Sample Date	Event Type	GW Elevation (ft. MSL)	Boron (µg/L)	Calcium (µg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
PH-MW-04	2/25/2019	Background	525.40	1130 D	98700 D	66.1	< 0.50	6.40	458 D	1150
PH-MW-04	3/8/2019	Background	523.80	1290 D	147000 D	72.7	< 0.50	6.31	415 J	1330
PH-MW-04	3/29/2019	Background	524.10	1090	138000 D	61.5	< 0.50	6.64	383 D	1280
PH-MW-04	4/12/2019	Background	524.20	997	135000 D	49.1	< 0.50	6.18	323 D	1360
PH-MW-04	4/29/2019	Background	524.30	1190	143000 D	42.8	< 0.50	6.31	283 D	1190
PH-MW-04	5/17/2019	Background	524.42	1420 D	165000 D	46.9	< 0.50	6.92	289 D	1230
PH-MW-04	5/31/2019	Background	524.46	1050	154000 D	45.2	< 0.50	6.96	272 D	1220
PH-MW-04	6/28/2019	Background	525.40	1090	126000 D	35.4	< 0.50	6.49	241 D	1040
PH-MW-04	7/29/2019	Background	524.77	1060	130000 D	32.9	< 0.50	6.24	213 D	1070
PH-MW-04	9/3/2019	Background	524.21	1120	172000 D	31.6	< 0.50	6.30	221 D	1090
PH-MW-04	9/27/2019	Background	523.48	1270	149000 D	29.4	< 0.50 D	6.40	219 D	1090
PH-MW-04	10/28/2019	Background	523.66	1180	171000 D	28.4	< 0.50	6.02	250 D	1130
PH-MW-05	2/25/2019	Background	531.50	188 D	116000 D	10.8	< 0.50	7.19	179	636
PH-MW-05	3/8/2019	Background	530.50	216 D	121000 D	11.5	< 0.50	7.27	195	708
PH-MW-05	3/29/2019	Background	530.30	185	104000 D	10.7	< 0.50	7.19	190	732
PH-MW-05	4/12/2019	Background	530.70	184	108000 D	10.2	< 0.50	7.12	190	700
PH-MW-05	4/29/2019	Background	530.60	219	112000 D	10.4	< 0.50	7.11	192	596
PH-MW-05	5/17/2019	Background	530.06	177	114000 D	10.6	< 0.50	7.16	195 D	580
PH-MW-05	5/31/2019	Background	529.40	201	116000 D	11.5	< 0.50	7.12	199 D	576
PH-MW-05	6/28/2019	Background	529.80	201	108000 D	10.8	< 0.50	7.10	193	514
PH-MW-05	7/29/2019	Background	528.21	260	108000 D	11.6	< 0.50	6.98	187	608
PH-MW-05	9/3/2019	Background	528.07	272	110000 D	12.0	< 0.50	7.07	209 D	598
PH-MW-05	9/27/2019	Background	526.70	316	115000 D	11.8	< 0.50 D	7.00	213 D	630
PH-MW-05	10/28/2019	Background	526.67	283	136000 D	12.2	< 0.50	6.81	219 D	644

Result Notes :	J - Estimated Value NA - Not available	R - Unusable (Quality Control Failure) D - Result reported from dilution
Result Units :	mg/L - milligram per liter ft. MSL - feet above mean sea level	µg/L - microgram per liter pCi/L - picocurie per liter S.U. - Standard Units
Event Type Abbreviations :	A3 - Appendix III Constituents for Detection Monitoring ASD - Alternative Source Demonstration	A4 - Appendix IV Constituents for Assessment Monitoring
Event Type Constituents :	Background - A3 and A4 Assessment - A3 (All) and A4 (Detected in annual screen).	Detection - A3 Annual Screen - A4 ASD - Tested A3 and A4 parameters

Appendix 4 Constituents																		
Well ID	Sample Date	Event Type	GW Elevation (ft. MSL)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Fluoride (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Radium (pCi/L)	Selenium (µg/L)	Thallium (µg/L)
PH-MW-01	2/25/2019	Background	706.40	< 1.0	< 1.0	75.5	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	80.7	< 0.0050	2.0	1.30	< 1.0	< 0.10
PH-MW-01	3/8/2019	Background	705.00	< 1.0	1.8	102	< 1.0	< 0.10	< 1.0	11.4	< 0.50	< 1.0	85.1	< 0.0050	1.3	0.892	< 1.0	< 0.10
PH-MW-01	3/29/2019	Background	704.40	< 1.0	2.0	108	< 1.0	< 0.10	< 1.0	12.1	< 0.50	< 1.0	84.1	< 0.0050	1.1	0.979	< 1.0	< 0.10
PH-MW-01	4/12/2019	Background	703.60	< 1.0	4.4	108	< 1.0	< 0.10	< 1.0	15.8	< 0.50	< 1.0	101	< 0.0200 D	< 1.0	2.21	< 1.0	< 0.10
PH-MW-01	4/29/2019	Background	703.30	< 1.0	4.4	104	< 1.0	< 0.10	< 1.0	17.0	< 0.50	< 1.0	132	< 0.0200 D	< 1.0	2.10	< 1.0	< 0.10
PH-MW-01	5/17/2019	Background	702.47	< 1.0	2.3	104	< 1.0	< 0.10	< 1.0	23.0	< 0.50	< 1.0	115	< 0.0200 D	< 1.0	2.52	1.3	< 0.10
PH-MW-01	5/31/2019	Background	702.14	< 1.0	3.1	86.4	< 1.0	< 0.10	< 1.0	18.2	< 0.50	< 1.0 D	113	< 0.0200 D	< 1.0	3.30	1.6	< 0.20 D
PH-MW-01	6/28/2019	Background	702.90	< 1.0	1.0	89.6	< 1.0	< 0.10	< 1.0	15.4	< 0.50	< 1.0	103	< 0.0050 D	< 1.0	1.70	< 1.0	< 0.10
PH-MW-01	7/29/2019	Background	702.65	< 1.0	1.2	93.5	< 1.0	< 0.10	< 1.0	14.4	< 0.50	< 1.0	101	< 0.0200 D	< 1.0	1.90	1.5	< 0.10
PH-MW-01	9/3/2019	Background	702.31	< 1.0	1.2	82.3	< 1.0	< 0.10	< 1.0	12.3	< 0.50	< 1.0	111	< 0.0200 D	< 1.0	3.31	1.2	< 0.10
PH-MW-01	9/27/2019	Background	701.72	< 1.0	2.6	69.8	< 1.0	< 0.10	< 1.0	8.1	< 0.50 D	< 1.0	128	< 0.0200 D	< 1.0	3.13	< 1.0	< 0.10
PH-MW-01	10/28/2019	Background	701.61	< 1.0	3.3	94.3	< 1.0	< 0.10	< 1.0	8.2	< 0.50	< 1.0 D	149	< 0.0200 D	< 1.0	1.76	1.2	< 0.20 D
PH-MW-02	2/25/2019	Background	549.50	< 1.0	1.5	68.8	< 1.0	< 0.10	< 1.0	< 1.0	1.2	< 1.0	160	< 0.0050	15.2	0.414	< 1.0	< 0.10
PH-MW-02	3/8/2019	Background	548.60	< 1.0	1.8	58.8	< 1.0	< 0.10	< 1.0	< 1.0	0.73	< 1.0	99.4	< 0.0050	8.7	0.668	< 1.0	< 0.10
PH-MW-02	3/29/2019	Background	547.50	< 1.0	1.3	62.7	< 1.0	< 0.10	< 1.0	< 1.0	0.55	< 1.0	55.2	< 0.0250 D	3.8	0.810	< 1.0	< 0.10
PH-MW-02	4/12/2019	Background	548.80	< 1.0	1.8	63.2	< 1.0	< 0.10	< 1.0	< 1.0	0.59	< 1.0	71.6	< 0.0050 D	5.2	1.39	< 1.0	< 0.10
PH-MW-02	4/29/2019	Background	547.80	< 1.0	< 1.0	77.1	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	65.9	< 0.0050 D	3.5	0.636	< 1.0	< 0.10
PH-MW-02	5/17/2019	Background	547.57	< 1.0	1.0	78.3	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	53.5	< 0.0050 D	2.9	1.67	< 1.0	< 0.10
PH-MW-02	5/31/2019	Background	547.43	< 1.0	< 1.0	75.1	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	57.7	< 0.0050 D	2.6	1.02	< 1.0	< 0.10
PH-MW-02	6/28/2019	Background	548.30	< 1.0	< 1.0	75.8	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	60.3	< 0.0050 D	2.8	1.44	< 1.0	< 0.10
PH-MW-02	7/29/2019	Background	547.68	< 1.0	< 1.0	83.0	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	64.8	< 0.0050 D	3.0	0.714	< 1.0	< 0.10
PH-MW-02	9/3/2019	Background	547.71	< 1.0	< 1.0	82.6	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	67.0	< 0.0050 D	3.0	1.52	< 1.0	< 0.10
PH-MW-02	9/27/2019	Background	547.08	< 1.0	1.3	69.5	< 1.0	< 0.10	< 1.0	< 1.0	0.69 D	< 1.0	90.2	< 0.0050 D	4.8	1.05	< 1.0	< 0.10
PH-MW-02	10/28/2019	Background	546.68	< 1.0	1.8	88.5	< 1.0	< 0.10	< 1.0	< 1.0	0.69	< 1.0	75.8	< 0.0050 D	3.4	0.343	< 1.0	< 0.10
PH-MW-03	2/25/2019	Background	568.60	< 1.0	1.6	92.6	< 1.0	< 0.10	< 1.0	1.8	0.79	< 1.0 D	214	< 0.0050	4.4	0.305	< 1.0	< 0.20 D
PH-MW-03	3/8/2019	Background	566.90	< 1.0	< 1.0	124	< 1.0	< 0.10	< 1.0	1.3	0.97	< 1.0 D	172	< 0.0100 D	3.4	1.41	1.2	< 0.20 D
PH-MW-03	3/29/2019	Background	566.00	< 1.0	1.1	140	< 1.0	< 0.10	< 1.0	3.0	0.99	< 1.0	147	< 0.0050	3.9	0.563	1.1	< 0.10
PH-MW-03	4/12/2019	Background	565.00	< 1.0	1.4	154	< 1.0	< 0.10	< 1.0	3.1	1.0	< 1.0	140	< 0.0050 D	4.1	0.965	1.2	< 0.10
PH-MW-03	4/29/2019	Background	565.10	< 1.0	1.3	168	< 1.0	< 0.10	< 1.0	2.2	1.1	< 1.0	165	< 0.0050 D	4.2	1.84	1.1	< 0.10
PH-MW-03	5/17/2019	Background	565.20	< 1.0	1.5	160	< 1.0	< 0.10	< 1.0	1.9	1.2	< 1.0	142	< 0.0050 D	4.4	1.06	1.6	< 0.10
PH-MW-03	5/31/2019	Background	564.26	< 1.0	1.4	165	< 1.0	< 0.10	< 1.0	1.8	1.2	< 1.0 D	111	< 0.0050 D	4.1	1.05	1.1	< 0.20 D
PH-MW-03	6/28/2019	Background	565.10	< 1.0	1.2	157	< 1.0	< 0.10	< 1.0	1.7	1.3	< 1.0	136	< 0.0050 D	4.6	1.12	< 1.0	< 0.10
PH-MW-03	7/29/2019	Background	564.59	< 1.0	1.3	176	< 1.0	< 0.10	< 1.0	1.7	1.3	< 1.0	134	< 0.0050 D	4.8	1.45	1.2	< 0.10
PH-MW-03	9/3/2019	Background	563.64	< 1.0	1.2	186	< 1.0	< 0.10	< 1.0	1.7	1.2	< 1.0	132	< 0.0050 D	4.9	1.24	1.2	< 0.10
PH-MW-03	9/27/2019	Background	560.72	< 1.0	< 1.0	207	< 1.0	< 0.10	< 1.0	1.6	1.0 D	< 1.0	157	< 0.0050 D	4.7	0.869	< 1.0	< 0.10
PH-MW-03	10/28/2019	Background	558.96	< 1.0	< 1.0	195	< 1.0	< 0.10	< 1.0	1.4	1.0	< 1.0 D	192	< 0.0050 D	4.8	0.0687	1.8	< 0.20 D

Result Notes :	J - Estimated Value NA - Not available	R - Unusable (Quality Control Failure) D - Result reported from dilution
Result Units :	mg/L - milligram per liter ft. MSL - feet above mean sea level	µg/L - microgram per liter pCi/L - picocurie per liter S.U. - Standard Units
Event Type Abbreviations :	A3 - Appendix III Constituents for Detection Monitoring ASD - Alternative Source Demonstration A4 - Appendix IV Constituents for Assessment Monitoring	
Event Type Constituents :	Background - A3 and A4 Assessment - A3 (All) and A4 (Detected in annual screen).	Detection - A3 Annual Screen - A4 ASD - Tested A3 and A4 parameters

Appendix 4 Constituents																			
Well ID	Sample Date	Event Type	GW Elevation (ft. MSL)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Fluoride (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Radium (pCi/L)	Selenium (µg/L)	Thallium (µg/L)	
PH-MW-04	2/25/2019	Background	525.40	< 1.0	1.3	114	< 1.0	< 0.10	< 1.0	1.4	< 0.50	< 1.0	48.7	< 0.0050	3.6	0.112	< 1.0	< 0.10	
PH-MW-04	3/8/2019	Background	523.80	< 1.0	1.9	117	< 1.0	< 0.10	< 1.0	3.8	< 0.50	< 1.0	49.5	< 0.0050	3.4	0.679	< 1.0	< 0.10	
PH-MW-04	3/29/2019	Background	524.10	< 1.0	1.5	108	< 1.0	< 0.10	< 1.0	4.5	< 0.50	< 1.0	44.0	< 0.0050	3.2	1.33	< 1.0	< 0.10	
PH-MW-04	4/12/2019	Background	524.20	< 1.0	< 1.0	96.2	< 1.0	< 0.10	< 1.0	4.3	< 0.50	< 1.0	40.5	< 0.0050	D	3.0	1.16	< 1.0	< 0.10
PH-MW-04	4/29/2019	Background	524.30	< 1.0	1.0	101	< 1.0	< 0.10	< 1.0	5.0	< 0.50	< 1.0	48.4	< 0.0050	D	2.1	1.21	< 1.0	0.12
PH-MW-04	5/17/2019	Background	524.42	< 1.0	1.6	101	< 1.0	< 0.10	< 1.0	6.9	< 0.50	< 1.0	42.1	< 0.0050	D	1.9	2.07	1.1	< 0.10
PH-MW-04	5/31/2019	Background	524.46	< 1.0	< 1.0	94.0	< 1.0	< 0.10	< 1.0	5.8	< 0.50	< 1.0	38.6	< 0.0050	D	1.4	1.93	< 1.0	< 0.10
PH-MW-04	6/28/2019	Background	525.40	< 1.0	< 1.0	85.0	< 1.0	< 0.10	< 1.0	4.1	< 0.50	< 1.0	39.9	< 0.0100	D	1.5	1.73	< 1.0	< 0.10
PH-MW-04	7/29/2019	Background	524.77	< 1.0	1.1	127	< 1.0	< 0.10	< 1.0	6.1	< 0.50	< 1.0	45.0	< 0.0100	D	1.9	0.677	< 1.0	< 0.10
PH-MW-04	9/3/2019	Background	524.21	< 1.0	< 1.0	125	< 1.0	< 0.10	< 1.0	4.5	< 0.50	< 1.0	40.9	< 0.0100	D	1.2	1.30	< 1.0	< 0.10
PH-MW-04	9/27/2019	Background	523.48	< 1.0	< 1.0	114	< 1.0	< 0.10	< 1.0	4.1	< 0.50	D	43.0	< 0.0100	D	1.1	1.25	< 1.0	< 0.10
PH-MW-04	10/28/2019	Background	523.66	< 1.0	< 1.0	137	< 1.0	< 0.10	< 1.0	3.7	< 0.50	< 1.0	37.3	< 0.0100	D	< 1.0	1.03	< 1.0	< 0.10
PH-MW-05	2/25/2019	Background	531.50	< 1.0	< 1.0	101	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	< 1.0	0.629	< 1.0	< 0.10
PH-MW-05	3/8/2019	Background	530.50	< 1.0	< 1.0	98.3	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0100	D	< 1.0	0.310	< 1.0	< 0.10
PH-MW-05	3/29/2019	Background	530.30	< 1.0	< 1.0	91.6	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	< 1.0	0.644	< 1.0	< 0.10
PH-MW-05	4/12/2019	Background	530.70	< 1.0	< 1.0	95.7	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	< 1.0	0.909	< 1.0	< 0.10
PH-MW-05	4/29/2019	Background	530.60	< 1.0	< 1.0	94.8	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	25.7	< 0.0050	D	< 1.0	0.824	< 1.0	< 0.10
PH-MW-05	5/17/2019	Background	530.06	< 1.0	< 1.0	93.5	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	< 1.0	1.16	< 1.0	< 0.10
PH-MW-05	5/31/2019	Background	529.40	< 1.0	< 1.0	97.7	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	1.4	< 25.0	< 0.0050	D	1.0	1.28	< 1.0	< 0.10
PH-MW-05	6/28/2019	Background	529.80	< 1.0	< 1.0	86.0	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	< 1.0	1.96	< 1.0	< 0.10
PH-MW-05	7/29/2019	Background	528.21	< 1.0	< 1.0	112	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	< 1.0	0.324	< 1.0	< 0.10
PH-MW-05	9/3/2019	Background	528.07	< 1.0	< 1.0	120	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	1.1	0.340	< 1.0	< 0.10
PH-MW-05	9/27/2019	Background	526.70	< 1.0	< 1.0	117	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	D	26.8	< 0.0050	D	< 1.0	0.811	< 1.0	< 0.10
PH-MW-05	10/28/2019	Background	526.67	< 1.0	< 1.0	129	< 1.0	< 0.10	< 1.0	< 1.0	< 0.50	< 1.0	< 25.0	< 0.0050	D	< 1.0	0.930	< 1.0	< 0.10

Result Notes :	J - Estimated Value NA - Not available	R - Unusable (Quality Control Failure) D - Result reported from dilution
Result Units :	mg/L - milligram per liter ft. MSL - feet above mean sea level	µg/L - microgram per liter pCi/L - picocurie per liter S.U. - Standard Units
Event Type Abbreviations :	A3 - Appendix III Constituents for Detection Monitoring ASD - Alternative Source Demonstration	A4 - Appendix IV Constituents for Assessment Monitoring
Event Type Constituents :	Background - A3 and A4 Assessment - A3 (All) and A4 (Detected in annual screen).	Detection - A3 Annual Screen - A4 ASD - Tested A3 and A4 parameters

## APPENDIX C – Laboratory Analytical Reports

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 2/25/2019  
 Sample Collection Time: 10:00 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	706.4	MSL			2/25/2019	10:00 AM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	2/25/2019	10:00 AM	BTB
Conductivity	1494	µS/cm		SM 2510, B-2011	2/25/2019	10:00 AM	BTB
Temperature	47.05	°F		SM 2550, B-2010	2/25/2019	10:00 AM	BTB
Oxidation-Reduction Potential	44.5	mV		SM 2580, B-2011	2/25/2019	10:00 AM	BTB
pH	5.88	S.U.		SM 4500-H+, B-2011	2/25/2019	10:00 AM	BTB
Oxygen, dissolved	3.40	mg/L		SM 4500-O	2/25/2019	10:00 AM	BTB

Lab Identification #: 1900071

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 2/28/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 10:40 AM      Sample Received By: EH

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Barium	75.5	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Boron	916	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	9:45 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Calcium	142000	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	9:45 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Lithium	80.7	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:26 PM	JD
Molybdenum	2.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:19 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/6/2019	1:09 PM	JWE
Chloride	23.6	mg/L		EPA 300.0 Rev 2.1 (1993)	3/1/2019	1:38 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/1/2019	1:38 PM	JWE
Sulfate	468	mg/L		EPA 300.0 Rev 2.1 (1993)	3/4/2019	12:48 PM	JWE
Solids, Total Dissolved	1200	mg/L		SM 2540, C-2011 (mod)	3/1/2019	5:47	JD

Lab Identification #: 30283806001

**Pace**

 Sample Received Date: 3/13/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 10:00 AM      Sample Received By: ARM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.264 ± 0.410 (0.710)	pCi/L		EPA 903.1	3/26/2019	9:51 AM	MK1
Radium-228	1.04 ± 1.13 (2.38)	pCi/L		EPA 904.0	4/1/2019	8:03 PM	JLW
Total Radium Calculation	1.30 ± 1.54 (3.09)	pCi/L	5	Total Radium Calculation	4/2/2019	1:32 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:07 PM 04/17/2019



Eric Hamilton - QA/QC Chemist

04:20 PM 04/24/2019



**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 2/25/2019  
 Sample Collection Time: 11:55 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	549.5	MSL			2/25/2019	11:55 AM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	2/25/2019	11:55 AM	BTB
Conductivity	3014	µS/cm		SM 2510, B-2011	2/25/2019	11:55 AM	BTB
Temperature	48.92	°F		SM 2550, B-2010	2/25/2019	11:55 AM	BTB
Oxidation-Reduction Potential	-172.0	mV		SM 2580, B-2011	2/25/2019	11:55 AM	BTB
pH	8.04	S.U.		SM 4500-H+, B-2011	2/25/2019	11:55 AM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	2/25/2019	11:55 AM	BTB

Lab Identification #: 1900072

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 2/28/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 10:40 AM      Sample Received By: EH

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Arsenic	1.5	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Barium	68.8	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Boron	2090	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	9:57 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Calcium	18000	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Lithium	160	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:30 PM	JD
Molybdenum	15.2	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:30 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/6/2019	1:12 PM	JWE
Chloride	572	mg/L		EPA 300.0 Rev 2.1 (1993)	3/4/2019	1:10 PM	JWE
Fluoride	1.22	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/1/2019	2:00 PM	JWE
Sulfate	26.6	mg/L		EPA 300.0 Rev 2.1 (1993)	3/1/2019	2:00 PM	JWE
Solids, Total Dissolved	1540	mg/L		SM 2540, C-2011 (mod)	3/1/2019	5:47	JD

Lab Identification #: 30283806002

**Pace**

 Sample Received Date: 3/13/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 10:00 AM      Sample Received By: ARM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.0000 ± 0.417 (0.904)	pCi/L		EPA 903.1	3/26/2019	10:00 AM	MK1
Radium-228	0.414 ± 0.819 (1.80)	pCi/L		EPA 904.0	4/1/2019	8:03 PM	JLW
Total Radium Calculation	0.414 ± 1.24 (2.70)	pCi/L	5	Total Radium Calculation	4/2/2019	1:32 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:07 PM 04/17/2019



Eric Hamilton - QA/QC Chemist

04:20 PM 04/24/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 2/25/2019  
 Sample Collection Time: 3:50 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	568.6	MSL			2/25/2019	3:50 PM	BTB
Turbidity	1.39	NTU		SM 2130, B-2001	2/25/2019	3:50 PM	BTB
Conductivity	4505	µS/cm		SM 2510, B-2011	2/25/2019	3:50 PM	BTB
Temperature	51.35	°F		SM 2550, B-2010	2/25/2019	3:50 PM	BTB
Oxidation-Reduction Potential	-126.8	mV		SM 2580, B-2011	2/25/2019	3:50 PM	BTB
pH	7.66	S.U.		SM 4500-H+, B-2011	2/25/2019	3:50 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	2/25/2019	3:50 PM	BTB

Lab Identification #: 1900073

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 2/28/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 10:40 AM      Sample Received By: EH

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Arsenic	1.6	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Barium	92.6	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Boron	3880	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:01 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Calcium	63500	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:01 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Cobalt	1.8	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:54 PM	JD
Lithium	214	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:31 PM	JD
Molybdenum	4.4	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:35 AM	JD
Thallium	< 0.20	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:54 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/6/2019	1:15 PM	JWE
Chloride	707	mg/L		EPA 300.0 Rev 2.1 (1993)	3/4/2019	1:32 AM	JWE
Fluoride	0.79	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/1/2019	2:22 PM	JWE
Sulfate	477	mg/L		EPA 300.0 Rev 2.1 (1993)	3/4/2019	1:32 PM	JWE
Solids, Total Dissolved	2720	mg/L		SM 2540, C-2011 (mod)	3/1/2019	5:47	JD

Lab Identification #: 30283806003

**Pace**

 Sample Received Date: 3/13/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 10:00 AM      Sample Received By: ARM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.305 ± 0.361 (0.567)	pCi/L		EPA 903.1	3/26/2019	9:51 AM	MK1
Radium-228	-0.0301 ± 0.969 (2.24 )	pCi/L		EPA 904.0	4/1/2019	8:03 PM	JLW
Total Radium Calculation	0.305 ± 1.33 (2.81 )	pCi/L	5	Total Radium Calculation	4/2/2019	1:32 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 12:07 PM 04/17/2019



 Eric Hamilton - QA/QC Chemist  
 04:20 PM 04/24/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 2/25/2019  
 Sample Collection Time: 2:52 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	525.4	MSL			2/25/2019	2:52 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	2/25/2019	2:52 PM	BTB
Conductivity	1568	µS/cm		SM 2510, B-2011	2/25/2019	2:52 PM	BTB
Temperature	53.24	°F		SM 2550, B-2010	2/25/2019	2:52 PM	BTB
Oxidation-Reduction Potential	-19.0	mV		SM 2580, B-2011	2/25/2019	2:52 PM	BTB
pH	6.40	S.U.		SM 4500-H+, B-2011	2/25/2019	2:52 PM	BTB
Oxygen, dissolved	1.22	mg/L		SM 4500-O	2/25/2019	2:52 PM	BTB

Lab Identification #: 1900074

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 2/28/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 10:40 AM      Sample Received By: EH

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Arsenic	1.3	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Barium	114	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/25/2019	1:31 PM	JD
Boron	1130	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:13 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Calcium	98700	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:13 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Cobalt	1.4	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Lithium	48.7	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:32 PM	JD
Molybdenum	3.6	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:46 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/6/2019	1:18 PM	JWE
Chloride	66.1	mg/L		EPA 300.0 Rev 2.1 (1993)	3/1/2019	2:43 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/1/2019	2:43 PM	JWE
Sulfate	458	mg/L		EPA 300.0 Rev 2.1 (1993)	3/4/2019	1:54 PM	JWE
Solids, Total Dissolved	1150	mg/L		SM 2540, C-2011 (mod)	3/1/2019	5:47	JD

Lab Identification #: 30283806004

**Pace**

 Sample Received Date: 3/13/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 10:00 AM      Sample Received By: ARM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.112 ± 0.347 (0.672)	pCi/L		EPA 903.1	3/26/2019	9:51 AM	MK1
Radium-228	-0.661 ± 0.943 (2.27)	pCi/L		EPA 904.0	4/1/2019	8:03 PM	JLW
Total Radium Calculation	0.112 ± 1.29 (2.94)	pCi/L	5	Total Radium Calculation	4/2/2019	1:32 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:07 PM 04/17/2019



Eric Hamilton - QA/QC Chemist

04:20 PM 04/24/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 2/25/2019  
 Sample Collection Time: 1:05 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	531.5	MSL			2/25/2019	1:05 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	2/25/2019	1:05 PM	BTB
Conductivity	865.0	µS/cm		SM 2510, B-2011	2/25/2019	1:05 PM	BTB
Temperature	50.38	°F		SM 2550, B-2010	2/25/2019	1:05 PM	BTB
Oxidation-Reduction Potential	35.9	mV		SM 2580, B-2011	2/25/2019	1:05 PM	BTB
pH	7.19	S.U.		SM 4500-H+, B-2011	2/25/2019	1:05 PM	BTB
Oxygen, dissolved	5.54	mg/L		SM 4500-O	2/25/2019	1:05 PM	BTB

Lab Identification #: 1900075

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 2/28/2019  
 Sample Received Time: 10:40 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: EH

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Barium	101	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/25/2019	1:35 PM	JD
Boron	188	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:17 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Calcium	116000	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:17 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:34 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:50 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/6/2019	1:21 PM	JWE
Chloride	10.8	mg/L		EPA 300.0 Rev 2.1 (1993)	3/1/2019	3:05 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/1/2019	3:05 PM	JWE
Sulfate	179	mg/L		EPA 300.0 Rev 2.1 (1993)	3/1/2019	3:05 PM	JWE
Solids, Total Dissolved	636	mg/L		SM 2540, C-2011 (mod)	3/1/2019	5:47	JD

Lab Identification #: 30283806005

**Pace**

 Sample Received Date: 3/13/2019  
 Sample Received Time: 10:00 AM  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: ARM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.629 ± 0.440 (0.531)	pCi/L		EPA 903.1	3/26/2019	9:51 AM	MK1
Radium-228	-0.476 ± 1.07 (2.53)	pCi/L		EPA 904.0	4/1/2019	8:03 PM	JLW
Total Radium Calculation	0.629 ± 1.51 (3.06)	pCi/L	5	Total Radium Calculation	4/2/2019	1:32 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:07 PM 04/17/2019



Eric Hamilton - QA/QC Chemist

04:20 PM 04/24/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 3/8/2019  
 Sample Collection Time: 10:44 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	705.0	MSL			3/8/2019	10:44 AM	BTB
Turbidity	2.26	NTU		SM 2130, B-2001	3/8/2019	10:44 AM	BTB
Conductivity	1948	µS/cm		SM 2510, B-2011	3/8/2019	10:44 AM	BTB
Temperature	48.72	°F		SM 2550, B-2010	3/8/2019	10:44 AM	BTB
Oxidation-Reduction Potential	52.0	mV		SM 2580, B-2011	3/8/2019	10:44 AM	BTB
pH	6.23	S.U.		SM 4500-H+, B-2011	3/8/2019	10:44 AM	BTB
Oxygen, dissolved	2.08	mg/L		SM 4500-O	3/8/2019	10:44 AM	BTB

Lab Identification #: 1900106

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 3/11/2019  
 Sample Received Time: 11:20 AM

 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Arsenic	1.8	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Barium	102	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/25/2019	2:00 PM	JD
Boron	1090	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:33 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Calcium	225000	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:33 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Cobalt	11.4	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Lithium	85.1	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:41 PM	JD
Molybdenum	1.3	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:07 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/14/2019	8:58 AM	JWE
Chloride	45.5	mg/L		EPA 300.0 Rev 2.1 (1993)	3/12/2019	1:37 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/12/2019	1:37 PM	JWE
Sulfate	578	mg/L		EPA 300.0 Rev 2.1 (1993)	3/13/2019	11:41 AM	JWE
Solids, Total Dissolved	1420	mg/L		SM 2540, C-2011 (mod)	3/11/2019	15:20	JD

Lab Identification #: 30287838001

**Pace**

 Sample Received Date: 4/4/2019  
 Sample Received Time: 9:45 AM

 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.297 ± 0.545 (0.972)	pCi/L		EPA 903.1	4/15/2019	10:03 PM	MK1
Radium-228	0.595 ± 0.403 (0.758)	pCi/L		EPA 904.0	4/15/2019	2:49 PM	JLW
Total Radium Calculation	0.892 ± 0.948 (1.73)	pCi/L	5	Total Radium Calculation	4/16/2019	2:07 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:59 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

### Certificate of Analysis

Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

Sample Collection Date: 3/8/2019  
 Sample Collection Time: 12:40 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	548.6	MSL			3/8/2019	12:40 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	3/8/2019	12:40 PM	BTB
Conductivity	1814	µS/cm		SM 2510, B-2011	3/8/2019	12:40 PM	BTB
Temperature	48.45	°F		SM 2550, B-2010	3/8/2019	12:40 PM	BTB
Oxidation-Reduction Potential	-95.2	mV		SM 2580, B-2011	3/8/2019	12:40 PM	BTB
pH	7.77	S.U.		SM 4500-H+, B-2011	3/8/2019	12:40 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	3/8/2019	12:40 PM	BTB

Lab Identification #: 1900107

**EKPC - Central Laboratory Analyses**

Sample Received Date: 3/11/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:20 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Arsenic	1.8	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Barium	58.8	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/25/2019	2:04 PM	JD
Boron	1530	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:36 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Calcium	34700	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Lithium	99.4	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:43 PM	JD
Molybdenum	8.7	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:11 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/14/2019	9:01 AM	JWE
Chloride	318	mg/L		EPA 300.0 Rev 2.1 (1993)	3/13/2019	12:03 PM	JWE
Fluoride	0.73	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/12/2019	1:58 PM	JWE
Sulfate	39.0	mg/L		EPA 300.0 Rev 2.1 (1993)	3/8/2019	1:58 PM	JWE
Solids, Total Dissolved	964	mg/L		SM 2540, C-2011 (mod)	3/11/2019	15:20	JD

Lab Identification #: 30287838002

**Pace**

Sample Received Date: 4/4/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	-0.0644 ± 0.419 (0.908)	pCi/L		EPA 903.1	4/15/2019	10:00 PM	MK1
Radium-228	0.668 ± 0.578 (1.18)	pCi/L		EPA 904.0	4/15/2019	3:39 PM	JLW
Total Radium Calculation	0.668 ± 0.997 (2.09)	pCi/L	5	Total Radium Calculation	4/16/2019	2:07 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:59 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 3/8/2019  
 Sample Collection Time: 4:42 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	566.9	MSL			3/8/2019	4:42 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	3/8/2019	4:42 PM	BTB
Conductivity	3738	µS/cm		SM 2510, B-2011	3/8/2019	4:42 PM	BTB
Temperature	50.40	°F		SM 2550, B-2010	3/8/2019	4:42 PM	BTB
Oxidation-Reduction Potential	17.5	mV		SM 2580, B-2011	3/8/2019	4:42 PM	BTB
pH	7.51	S.U.		SM 4500-H+, B-2011	3/8/2019	4:42 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	3/8/2019	4:42 PM	BTB

Lab Identification #: 1900108

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 3/11/2019  
 Sample Received Time: 11:20 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Barium	124	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/25/2019	2:17 PM	JD
Boron	3600	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:48 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Calcium	69600	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	10:48 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Cobalt	1.3	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:58 PM	JD
Lithium	172	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:46 PM	JD
Molybdenum	3.4	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Selenium	1.2	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:24 PM	JD
Thallium	< 0.20	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:58 PM	JD
Mercury	< 0.0100	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/14/2019	10:43 AM	JWE
Chloride	633	mg/L		EPA 300.0 Rev 2.1 (1993)	3/13/2019	12:25 PM	JWE
Fluoride	0.97	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/12/2019	2:20 PM	JWE
Sulfate	406	mg/L		EPA 300.0 Rev 2.1 (1993)	3/13/2019	12:25 PM	JWE
Solids, Total Dissolved	2150	mg/L		SM 2540, C-2011 (mod)	3/11/2019	15:20	JD

Lab Identification #: 30287838003

**Pace**

 Sample Received Date: 4/4/2019  
 Sample Received Time: 9:45 AM  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.642 ± 0.595 (0.906)	pCi/L		EPA 903.1	4/15/2019	10:00 PM	MK1
Radium-228	0.764 ± 0.582 (1.16)	pCi/L		EPA 904.0	4/15/2019	3:39 PM	JLW
Total Radium Calculation	1.41 ± 1.18 (2.07)	pCi/L	5	Total Radium Calculation	4/16/2019	2:07 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:59 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 3/8/2019  
 Sample Collection Time: 2:53 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	523.8	MSL			3/8/2019	2:53 PM	BTB
Turbidity	2.75	NTU		SM 2130, B-2001	3/8/2019	2:53 PM	BTB
Conductivity	1802	µS/cm		SM 2510, B-2011	3/8/2019	2:53 PM	BTB
Temperature	49.46	°F		SM 2550, B-2010	3/8/2019	2:53 PM	BTB
Oxidation-Reduction Potential	34.4	mV		SM 2580, B-2011	3/8/2019	2:53 PM	BTB
pH	6.31	S.U.		SM 4500-H+, B-2011	3/8/2019	2:53 PM	BTB
Oxygen, dissolved	1.10	mg/L		SM 4500-O	3/8/2019	2:53 PM	BTB

Lab Identification #: 1900109

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 3/11/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:20 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Arsenic	1.9	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Barium	117	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/20/2019	11:31 AM	JD
Boron	1290	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:18 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Calcium	147000	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:00 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Cobalt	< 3.8	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Lithium	49.5	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:49 PM	JD
Molybdenum	3.4	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:35 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/14/2019	9:07 AM	JWE
Chloride	72.7	mg/L		EPA 300.0 Rev 2.1 (1993)	3/12/2019	2:42 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/12/2019	2:42 PM	JWE
Sulfate	415	mg/L		EPA 300.0 Rev 2.1 (1993)	3/13/2019	12:46 PM	JWE
Solids, Total Dissolved	1330	mg/L		SM 2540, C-2011 (mod)	3/11/2019	15:20	JD

Lab Identification #: 30287838004

**Pace**

 Sample Received Date: 4/4/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.453 ± 0.384 (0.47E)	pCi/L		EPA 903.1	4/15/2019	10:00 PM	MK1
Radium-228	0.226 ± 0.465 (1.02 )	pCi/L		EPA 904.0	4/15/2019	3:39 PM	JLW
Total Radium Calculation	0.679 ± 0.849 (1.50 )	pCi/L	5	Total Radium Calculation	4/16/2019	2:07 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

08:50 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019



**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 3/8/2019  
 Sample Collection Time: 1:42 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	530.5	MSL			3/8/2019	1:42 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	3/8/2019	1:42 PM	BTB
Conductivity	874.0	µS/cm		SM 2510, B-2011	3/8/2019	1:42 PM	BTB
Temperature	48.96	*F		SM 2550, B-2010	3/8/2019	1:42 PM	BTB
Oxidation-Reduction Potential	66.7	mV		SM 2580, B-2011	3/8/2019	1:42 PM	BTB
pH	7.27	S.U.		SM 4500-H+, B-2011	3/8/2019	1:42 PM	BTB
Oxygen, dissolved	6.72	mg/L		SM 4500-O	3/8/2019	1:42 PM	BTB

Lab Identification #: 1900110

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 3/11/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:20 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Barium	98.3	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	3/20/2019	11:35 AM	JD
Boron	216	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:19 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Calcium	121000	µg/L		EPA 200.8, Rev. 5.4 (1994)	3/19/2019	11:03 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	3/27/2019	1:51 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	3/19/2019	12:39 PM	JD
Mercury	< 0.0100	µg/L	2	EPA 245.7 Rev 2.0 (2005)	3/14/2019	10:46 AM	JWE
Chloride	11.5	mg/L		EPA 300.0 Rev 2.1 (1993)	3/12/2019	3:04 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	3/12/2019	3:04 PM	JWE
Sulfate	195	mg/L		EPA 300.0 Rev 2.1 (1993)	3/8/2019	3:04 PM	JWE
Solids, Total Dissolved	.708	mg/L		SM 2540, C-2011 (mod)	3/11/2019	15:20	JD

Lab Identification #: 30287838005

**Pace**

 Sample Received Date: 4/4/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.0000 ± 0.333 (0.746)	pCi/L		EPA 903.1	4/15/2019	10:00 PM	MK1
Radium-228	0.310 ± 0.558 (1.22)	pCi/L		EPA 904.0	4/15/2019	3:39 PM	JLW
Total Radium Calculation	0.310 ± 0.891 (1.97)	pCi/L	5	Total Radium Calculation	4/16/2019	2:07 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:59 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

### Certificate of Analysis

Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

Sample Collection Date: 3/29/2019  
 Sample Collection Time: 10:03 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	704.4	MSL			3/29/2019	10:03 AM	BTB
Turbidity	2.71	NTU		SM 2130, B-2001	3/29/2019	10:03 AM	BTB
Conductivity	2021	µS/cm		SM 2510, B-2011	3/29/2019	10:03 AM	BTB
Temperature	53.02	°F		SM 2550, B-2010	3/29/2019	10:03 AM	BTB
Oxidation-Reduction Potential	55.6	mV		SM 2580, B-2011	3/29/2019	10:03 AM	BTB
pH	5.98	S.U.		SM 4500-H+, B-2011	3/29/2019	10:03 AM	BTB
Oxygen, dissolved	2.94	mg/L		SM 4500-O	3/29/2019	10:03 AM	BTB

Lab Identification #: 1900159

**EKPC - Central Laboratory Analyses**

Sample Received Date: 4/2/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 10:35 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Arsenic	2.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Barium	108	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Boron	998	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Calcium	248000	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:50 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Cobalt	12.1	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Lithium	84.1	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Molybdenum	1.1	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:03 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	4/11/2019	10:06 AM	JWE
Chloride	36.3	mg/L		EPA 300.0 Rev 2.1 (1993)	4/5/2019	2:48 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/5/2019	2:48 PM	JWE
Sulfate	539	mg/L		EPA 300.0 Rev 2.1 (1993)	4/8/2019	12:35 PM	JWE
Solids, Total Dissolved	2920	mg/L		SM 2540, C-2011 (mod)	4/5/2019	8:10 AM	JWE

Lab Identification #: 30287841001

**Pace**

Sample Received Date: 4/4/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.219 ± 0.430 (0.786)	pCi/L		EPA 903.1	4/15/2019	10:15 PM	MK1
Radium-228	0.760 ± 0.515 (0.996)	pCi/L		EPA 904.0	4/15/2019	3:42 PM	JLW
Total Radium Calculation	0.979 ± 0.945 (1.78)	pCi/L	5	Total Radium Calculation	4/16/2019	2:07 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

08:23 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 3/29/2019  
 Sample Collection Time: 12:03 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	547.5	MSL			3/29/2019	12:03 PM	BTB
Turbidity	1.52	NTU		SM 2130, B-2001	3/29/2019	12:03 PM	BTB
Conductivity	1565	µS/cm		SM 2510, B-2011	3/29/2019	12:03 PM	BTB
Temperature	55.42	°F		SM 2550, B-2010	3/29/2019	12:03 PM	BTB
Oxidation-Reduction Potential	-130.6	mV		SM 2580, B-2011	3/29/2019	12:03 PM	BTB
pH	7.70	S.U.		SM 4500-H+, B-2011	3/29/2019	12:03 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	3/29/2019	12:03 PM	BTB

Lab Identification #: 1900160

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 4/2/2019  
 Sample Received Time: 10:35 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Arsenic	1.3	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Barium	62.7	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Boron	874	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Calcium	54700	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:51 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Lithium	55.2	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Molybdenum	3.8	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:07 PM	JD
Mercury	< 0.0250	µg/L	2	EPA 245.7 Rev 2.0 (2005)	4/11/2019	10:23 AM	JWE
Chloride	219	mg/L		EPA 300.0 Rev 2.1 (1993)	4/8/2019	12:57 PM	JWE
Fluoride	0.55	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/5/2019	3:10 PM	JWE
Sulfate	35.8	mg/L		EPA 300.0 Rev 2.1 (1993)	4/5/2019	3:10 PM	JWE
Solids, Total Dissolved	924	mg/L		SM 2540, C-2011 (mod)	4/5/2019	8:10 AM	JWE

Lab Identification #: 30287841002

**Pace**

 Sample Received Date: 4/4/2019  
 Sample Received Time: 9:45 AM  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.204 ± 0.312 (0.501)	pCi/L		EPA 903.1	4/15/2019	10:15 PM	MK1
Radium-228	0.606 ± 0.482 (0.965)	pCi/L		EPA 904.0	4/15/2019	3:42 PM	JLW
Total Radium Calculation	0.810 ± 0.794 (1.47)	pCi/L	5	Total Radium Calculation	4/16/2019	2:07 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

08:23 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 3/29/2019  
 Sample Collection Time: 4:02 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	566.0	MSL			3/29/2019	4:02 PM	BTB
Turbidity	1.24	NTU		SM 2130, B-2001	3/29/2019	4:02 PM	BTB
Conductivity	3461	µS/cm		SM 2510, B-2011	3/29/2019	4:02 PM	BTB
Temperature	55.78	°F		SM 2550, B-2010	3/29/2019	4:02 PM	BTB
Oxidation-Reduction Potential	-52.1	mV		SM 2580, B-2011	3/29/2019	4:02 PM	BTB
pH	7.46	S.U.		SM 4500-H+, B-2011	3/29/2019	4:02 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	3/29/2019	4:02 PM	BTB

Lab Identification #: 1900161

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 4/2/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 10:35 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Arsenic	1.1	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Barium	140	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Boron	3030	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Calcium	58200	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:52 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Cobalt	3.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Lithium	147	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Molybdenum	3.9	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Selenium	1.1	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:11 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	4/11/2019	10:09 AM	JWE
Chloride	688	mg/L		EPA 300.0 Rev 2.1 (1993)	4/8/2019	1:19 PM	JWE
Fluoride	0.99	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/5/2019	3:32 PM	JWE
Sulfate	354	mg/L		EPA 300.0 Rev 2.1 (1993)	4/8/2019	1:19 PM	JWE
Solids, Total Dissolved	2410	mg/L		SM 2540, C-2011 (mod)	4/5/2019	8:10 AM	JWE

Lab Identification #: 30287841003

**Pace**

 Sample Received Date: 4/4/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.450 ± 0.512 (0.807)	pCi/L		EPA 903.1	4/15/2019	10:15 PM	MK1
Radium-228	0.113 ± 0.435 (0.983)	pCi/L		EPA 904.0	4/15/2019	3:42 PM	JLW
Total Radium Calculation	0.563 ± 0.947 (1.79)	pCi/L	5	Total Radium Calculation	4/17/2019	1:14 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By:



Jared Daugherty - Chemist

08:23 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 3/29/2019  
 Sample Collection Time: 2:52 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	524.1	MSL			3/29/2019	2:52 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	3/29/2019	2:52 PM	BTB
Conductivity	2273	µS/cm		SM 2510, B-2011	3/29/2019	2:52 PM	BTB
Temperature	55.54	°F		SM 2550, B-2010	3/29/2019	2:52 PM	BTB
Oxidation-Reduction Potential	-11.0	mV		SM 2580, B-2011	3/29/2019	2:52 PM	BTB
pH	6.64	S.U.		SM 4500-H+, B-2011	3/29/2019	2:52 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	3/29/2019	2:52 PM	BTB

Lab Identification #: 1900162

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 4/2/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 10:35 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Arsenic	1.5	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Barium	108	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Boron	1090	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Calcium	138000	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:53 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Cobalt	< 4.5	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Lithium	44.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Molybdenum	3.2	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:23 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	4/11/2019	10:12 AM	JWE
Chloride	61.5	mg/L		EPA 300.0 Rev 2.1 (1993)	4/5/2019	3:53 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/5/2019	3:53 PM	JWE
Sulfate	383	mg/L		EPA 300.0 Rev 2.1 (1993)	4/8/2019	1:40 PM	JWE
Solids, Total Dissolved	1280	mg/L		SM 2540, C-2011 (mod)	4/5/2019	8:10 AM	JWE

Lab Identification #: 30287841004

**Pace**

 Sample Received Date: 4/4/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.519 ± 0.406 (0.477)	pCi/L		EPA 903.1	4/15/2019	10:15 PM	MK1
Radium-228	0.813 ± 0.501 (0.938)	pCi/L		EPA 904.0	4/15/2019	3:42 PM	JLW
Total Radium Calculation	1.33 ± 0.907 (1.42)	pCi/L	5	Total Radium Calculation	4/17/2019	1:14 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By:



Jared Daugherty - Chemist

08:23 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 3/29/2019  
 Sample Collection Time: 2:02 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	530.3	MSL			3/29/2019	2:02 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	3/29/2019	2:02 PM	BTB
Conductivity	840.0	µS/cm		SM 2510, B-2011	3/29/2019	2:02 PM	BTB
Temperature	55.13	*F		SM 2550, B-2010	3/29/2019	2:02 PM	BTB
Oxidation-Reduction Potential	50.9	mV		SM 2580, B-2011	3/29/2019	2:02 PM	BTB
pH	7.19	S.U.		SM 4500-H+, B-2011	3/29/2019	2:02 PM	BTB
Oxygen, dissolved	5.37	mg/L		SM 4500-O	3/29/2019	2:02 PM	BTB

Lab Identification #: 1900163

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 4/2/2019  
 Sample Received Time: 10:35 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Barium	91.6	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Boron	185	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Calcium	104000	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:54 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:36 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	4/11/2019	10:15 AM	JWE
Chloride	10.7	mg/L		EPA 300.0 Rev 2.1 (1993)	4/5/2019	4:15 PM	JWE
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/5/2019	4:15 PM	JWE
Sulfate	190	mg/L		EPA 300.0 Rev 2.1 (1993)	4/5/2019	4:15 PM	JWE
Solids, Total Dissolved	732	mg/L		SM 2540, C-2011 (mod)	4/5/2019	8:10 AM	JWE

Lab Identification #: 30287841005

**Pace**

 Sample Received Date: 4/4/2019  
 Sample Received Time: 9:45 AM  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MSS

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.186 ± 0.284 (0.457)	pCi/L		EPA 903.1	4/15/2019	10:15 PM	MK1
Radium-228	0.458 ± 0.446 (0.918)	pCi/L		EPA 904.0	4/15/2019	3:42 PM	JLW
Total Radium Calculation	0.644 ± 0.730 (1.38)	pCi/L	5	Total Radium Calculation	4/17/2019	1:14 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

08:23 AM 05/17/2019



Eric Hamilton - QA/QC Chemist

09:22 AM 05/17/2019

### Certificate of Analysis

Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

Sample Collection Date: 4/12/2019  
 Sample Collection Time: 10:54 AM  
 Sample Collected By: BB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	703.6	MSL			4/12/2019	10:54 AM	BB
Turbidity	2.44	NTU		SM 2130, B-2001	4/12/2019	10:54 AM	BB
Conductivity	2230	µS/cm		SM 2510, B-2011	4/12/2019	10:54 AM	BB
Temperature	55.71	°F		SM 2550, B-2010	4/12/2019	10:54 AM	BB
Oxidation-Reduction Potential	36.8	mV		SM 2580, B-2011	4/12/2019	10:54 AM	BB
pH	6.04	S.U.		SM 4500-H+, B-2011	4/12/2019	10:54 AM	BB
Oxygen, dissolved	1.82	mg/L		SM 4500-O	4/12/2019	10:54 AM	BB

Lab Identification #: 1900169

**EKPC - Central Laboratory Analyses**

Sample Received Date: 4/15/2019      Sample Receipt Temperatures (°C): <6  
 Sample Received Time: 1:25 PM      Sample Received By: JWE

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Arsenic	4.4	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Barium	108	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Boron	1510	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Calcium	248000	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	4:01 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Cobalt	15.8	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Lithium	101	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:52 PM	JD
Mercury	< 0.0200	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	2:49 PM	JD
Chloride	76.9	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	10:04 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/23/2019	10:04 PM	JD
Sulfate	397	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	6:27 PM	JD
Solids, Total Dissolved	1980	mg/L		SM 2540, C-2011 (mod)	4/18/2019	11:05	JD

Lab Identification #: 30290697001

**Pace**

Sample Received Date: 4/23/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:30 AM      Sample Received By: ET

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.49 ± 0.733 (0.689)	pCi/L		EPA 903.1	5/2/2019	10:13 AM	MK1
Radium-228	0.720 ± 0.370 (0.658)	pCi/L		EPA 904.0	5/2/2019	2:30 PM	JLW
Total Radium Calculation	2.21 ± 1.10 (1.35)	pCi/L	5	Total Radium Calculation	5/7/2019	12:54 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:27 AM 07/16/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

### Certificate of Analysis

Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

Sample Collection Date: 4/12/2019  
 Sample Collection Time: 12:20 PM  
 Sample Collected By: BB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	548.8	MSL			4/12/2019	12:20 PM	BB
Turbidity	4.07	NTU		SM 2130, B-2001	4/12/2019	12:20 PM	BB
Conductivity	1844	µS/cm		SM 2510, B-2011	4/12/2019	12:20 PM	BB
Temperature	57.81	°F		SM 2550, B-2010	4/12/2019	12:20 PM	BB
Oxidation-Reduction Potential	-141.9	mV		SM 2580, B-2011	4/12/2019	12:20 PM	BB
pH	7.72	S.U.		SM 4500-H+, B-2011	4/12/2019	12:20 PM	BB
Oxygen, dissolved	1.99	mg/L		SM 4500-O	4/12/2019	12:20 PM	BB

Lab Identification #: 1900170

**EKPC - Central Laboratory Analyses**

Sample Received Date: 4/15/2019      Sample Receipt Temperatures (°C): <6  
 Sample Received Time: 1:25 PM      Sample Received By: JWE

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Arsenic	1.8	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Barium	63.2	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Boron	1070	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Calcium	41400	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	4:02 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Lithium	71.6	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Molybdenum	5.2	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	2:56 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:07 PM	JD
Chloride	174	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	6:48 PM	JD
Fluoride	0.59	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/23/2019	10:26 PM	JD
Sulfate	29.8	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	10:26 PM	JD
Solids, Total Dissolved	888	mg/L		SM 2540, C-2011 (mod)	4/18/2019	11:05	JD

Lab Identification #: 30290697002

**Pace**

Sample Received Date: 4/23/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:30 AM      Sample Received By: ET

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.09 ± 0.662 (0.779)	pCi/L		EPA 903.1	5/2/2019	10:13 AM	MK1
Radium-228	0.295 ± 0.384 (0.821)	pCi/L		EPA 904.0	5/2/2019	2:30 PM	JLW
Total Radium Calculation	1.39 ± 1.05 (1.60)	pCi/L	5	Total Radium Calculation	5/7/2019	12:54 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:27 AM 07/16/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019



**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 4/12/2019  
 Sample Collection Time: 4:47 PM  
 Sample Collected By: BB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	565.0	MSL			4/12/2019	4:47 PM	BB
Turbidity	< 1	NTU		SM 2130, B-2001	4/12/2019	4:47 PM	BB
Conductivity	3233	µS/cm		SM 2510, B-2011	4/12/2019	4:47 PM	BB
Temperature	57.15	°F		SM 2550, B-2010	4/12/2019	4:47 PM	BB
Oxidation-Reduction Potential	-80.8	mV		SM 2580, B-2011	4/12/2019	4:47 PM	BB
pH	7.42	S.U.		SM 4500-H+, B-2011	4/12/2019	4:47 PM	BB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	4/12/2019	4:47 PM	BB

Lab Identification #: 1900171

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 4/15/2019      Sample Receipt Temperatures (°C): <6  
 Sample Received Time: 1:25 PM      Sample Received By: JWE

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Arsenic	1.4	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Barium	154	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Boron	2940	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Calcium	53000	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	4:03 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Cobalt	3.1	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Lithium	140	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Molybdenum	4.1	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Selenium	1.2	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:00 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:33 PM	JD
Chloride	589	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	7:10 PM	JD
Fluoride	1.06	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/23/2019	10:48 PM	JD
Sulfate	235	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	7:10 PM	JD
Solids, Total Dissolved	1870	mg/L		SM 2540, C-2011 (mod)	4/18/2019	11:05	JD

Lab Identification #: 30290697003

**Pace**

 Sample Received Date: 4/23/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:30 AM      Sample Received By: ET

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.317 ± 0.483 (0.831)	pCi/L		EPA 903.1	5/2/2019	10:13 AM	MK1
Radium-228	0.648 ± 0.379 (0.709)	pCi/L		EPA 904.0	5/2/2019	2:31 PM	JLW
Total Radium Calculation	0.965 ± 0.862 (1.54)	pCi/L	5	Total Radium Calculation	5/7/2019	12:54 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:27 AM 07/16/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

### Certificate of Analysis

Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

Sample Collection Date: 4/12/2019  
 Sample Collection Time: 3:33 PM  
 Sample Collected By: BB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	524.2	MSL			4/12/2019	3:33 PM	BB
Turbidity	2.26	NTU		SM 2130, B-2001	4/12/2019	3:33 PM	BB
Conductivity	1742	µS/cm		SM 2510, B-2011	4/12/2019	3:33 PM	BB
Temperature	58.69	°F		SM 2550, B-2010	4/12/2019	3:33 PM	BB
Oxidation-Reduction Potential	54.1	mV		SM 2580, B-2011	4/12/2019	3:33 PM	BB
pH	6.18	S.U.		SM 4500-H+, B-2011	4/12/2019	3:33 PM	BB
Oxygen, dissolved	1.29	mg/L		SM 4500-O	4/12/2019	3:33 PM	BB

Lab Identification #: 1900172

**EKPC - Central Laboratory Analyses**

Sample Received Date: 4/15/2019      Sample Receipt Temperatures (°C): <6  
 Sample Received Time: 1:25 PM      Sample Received By: JWE

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Barium	96.2	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Boron	997	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Calcium	135000	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	4:04 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Cobalt	4.3	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Lithium	40.5	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Molybdenum	3.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:04 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:36 PM	JD
Chloride	49.1	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	11:10 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/23/2019	11:10 PM	JD
Sulfate	323	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	7:32 PM	JD
Solids, Total Dissolved	1360	mg/L		SM 2540, C-2011 (mod)	4/18/2019	11:05	JD

Lab Identification #: 30290697004

**Pace**

Sample Received Date: 4/23/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:30 AM      Sample Received By: ET

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.881 ± 0.588 (0.730)	pCi/L		EPA 903.1	5/2/2019	10:13 AM	MK1
Radium-228	0.281 ± 0.335 (0.706)	pCi/L		EPA 904.0	5/2/2019	2:49 PM	JLW
Total Radium Calculation	1.16 ± 0.923 (1.44)	pCi/L	5	Total Radium Calculation	5/7/2019	12:54 PM	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:27 AM 07/16/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 4/12/2019  
 Sample Collection Time: 2:08 PM  
 Sample Collected By: BB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	530.7	MSL			4/12/2019	2:08 PM	BB
Turbidity	< 1	NTU		SM 2130, B-2001	4/12/2019	2:08 PM	BB
Conductivity	837.0	µS/cm		SM 2510, B-2011	4/12/2019	2:08 PM	BB
Temperature	56.97	°F		SM 2550, B-2010	4/12/2019	2:08 PM	BB
Oxidation-Reduction Potential	33.7	mV		SM 2580, B-2011	4/12/2019	2:08 PM	BB
pH	7.12	S.U.		SM 4500-H+, B-2011	4/12/2019	2:08 PM	BB
Oxygen, dissolved	7.32	mg/L		SM 4500-O	4/12/2019	2:08 PM	BB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900173

 Sample Received Date: 4/15/2019  
 Sample Received Time: 1:25 PM  
 Sample Receipt Temperatures (°C): <6  
 Sample Received By: JWE

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Barium	95.7	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Boron	184	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Calcium	108000	µg/L		EPA 200.8, Rev. 5.4 (1994)	4/24/2019	4:06 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	4/24/2019	3:24 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:39 PM	JD
Chloride	10.2	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	11:32 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	4/23/2019	11:32 PM	JD
Sulfate	190	mg/L		EPA 300.0 Rev 2.1 (1993)	4/23/2019	11:32 PM	JD
Solids, Total Dissolved	700	mg/L		SM 2540, C-2011 (mod)	4/18/2019	11:05	JD

Lab Identification #: 30290697005

**Pace**

 Sample Received Date: 4/23/2019  
 Sample Received Time: 9:30 AM  
 Sample Receipt Temperatures (°C): NA  
 Sample Received By: ET

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.384 ± 0.471 (0.768)	pCi/L		EPA 903.1	5/2/2019	10:13 AM	MK1
Radium-228	0.525 ± 0.420 (0.837)	pCi/L		EPA 904.0	5/2/2019	4:23 PM	JLW
Total Radium Calculation	0.909 ± 0.891 (1.61)	pCi/L	5	Total Radium Calculation	5/7/2019	12:54 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:27 AM 07/16/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 4/29/2019  
 Sample Collection Time: 10:19 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900199

 Sample Received Date: 4/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Arsenic	4.4	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Barium	104	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:24 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:24 PM	JD
Boron	2090	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:24 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Calcium	253000	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	3:41 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Cobalt	17.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Lithium	132	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:24 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:10 PM	JD
Mercury	< 0.0200	µg/L	2	EPA 245.7 Rev. 2.0 (2005)	5/8/2019	2:38 PM	JD
Chloride	88.8	mg/L		EPA 300.0 Rev. 2.1 (1993)	5/1/2019	5:28 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev. 2.1 (1993)	5/1/2019	5:28 PM	JD
Sulfate	404	mg/L		EPA 300.0 Rev. 2.1 (1993)	5/1/2019	1:49 PM	JD
Solids, Total Dissolved	1830	mg/L		SM 2540, C-2011 (mod)	5/3/2019	2:41 PM	JD

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

10:02 AM 06/17/2019



Eric Hamilton - QA/QC Chemist

11:21 AM 06/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 4/29/2019  
 Sample Collection Time: 1:24 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900200

 Sample Received Date: 4/30/2019  
 Sample Received Time: 2:30 PM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Barium	77.1	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:28 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:28 PM	JD
Boron	1020	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:28 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Calcium	63200	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	3:44 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Lithium	65.9	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:28 PM	JD
Molybdenum	3.5	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:23 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:42 PM	JD
Chloride	120	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	2:11 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/1/2019	5:50 PM	JD
Sulfate	29.3	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	5:50 PM	JD
Solids, Total Dissolved	656	mg/L		SM 2540, C-2011 (mod)	5/3/2019	2:41 PM	JD

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

10:02 AM 06/17/2019



Eric Hamilton - QA/QC Chemist

11:21 AM 06/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 4/29/2019  
 Sample Collection Time: 6:00 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900201

 Sample Received Date: 4/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Arsenic	1.3	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Barium	168	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:47 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/15/2019	11:21 AM	JD
Boron	3400	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:47 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Calcium	45700	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:47 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Cobalt	2.2	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Lithium	165	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:47 PM	JD
Molybdenum	4.2	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Selenium	1.1	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:35 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:45 PM	JD
Chloride	612	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	2:33 PM	JD
Fluoride	1.14	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/1/2019	6:11 PM	JD
Sulfate	191	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	6:11 PM	JD
Solids, Total Dissolved	1790	mg/L		SM 2540, C-2011 (mod)	5/3/2019	2:41 PM	JD

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

10:02 AM 06/17/2019



Eric Hamilton - QA/QC Chemist

11:21 AM 06/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 4/29/2019  
 Sample Collection Time: 4:48 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900202

 Sample Received Date: 4/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Arsenic	1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Barium	101	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:51 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/15/2019	11:25 AM	JD
Boron	1190	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:51 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Calcium	143000	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	3:48 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Cobalt	5.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Lithium	48.4	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:51 PM	JD
Molybdenum	2.1	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Thallium	0.12	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:39 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:48 PM	JD
Chloride	42.8	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	6:33 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/1/2019	6:33 PM	JD
Sulfate	283	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	2:54 PM	JD
Solids, Total Dissolved	1190	mg/L		SM 2540, C-2011 (mod)	5/3/2019	2:41 PM	JD

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

10:02 AM 06/17/2019



Eric Hamilton - QA/QC Chemist

11:21 AM 06/17/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 4/29/2019  
 Sample Collection Time: 3:22 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900203

 Sample Received Date: 4/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Barium	94.8	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:55 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/15/2019	11:28 AM	JD
Boron	219	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:55 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Calcium	112000	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/14/2019	3:52 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Lithium	25.7	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/14/2019	4:55 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/13/2019	2:43 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	5/8/2019	12:51 PM	JD
Chloride	10.4	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	6:55 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/1/2019	6:55 PM	JD
Sulfate	192	mg/L		EPA 300.0 Rev 2.1 (1993)	5/1/2019	6:55 PM	JD
Solids, Total Dissolved	596	mg/L		SM 2540, C-2011 (mod)	5/3/2019	2:41 PM	JD

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

10:02 AM 06/17/2019



Eric Hamilton - QA/QC Chemist

11:49 AM 06/17/2019



**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 5/17/2019  
 Sample Collection Time: 10:12 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	702.47	MSL			5/17/2019	10:12 AM	BTB
Turbidity	1.43	NTU		SM 2130, B-2001	5/17/2019	10:12 AM	BTB
Conductivity	2639	µS/cm		SM 2510, B-2011	5/17/2019	10:12 AM	BTB
Temperature	59.11	°F		SM 2550, B-2010	5/17/2019	10:12 AM	BTB
Oxidation-Reduction Potential	89.6	mV		SM 2580, B-2011	5/17/2019	10:12 AM	BTB
pH	6.14	S.U.		SM 4500-H+, B-2011	5/17/2019	10:12 AM	BTB
Oxygen, dissolved	1.00	mg/L		SM 4500-O	5/17/2019	10:12 AM	BTB

Lab Identification #: 1900236

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 5/20/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:21 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:19 AM	JD
Arsenic	2.3	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:19 AM	JD
Barium	104	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:49 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:47 PM	JD
Boron	2690	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:25 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:47 PM	JD
Calcium	295000	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:01 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:19 AM	JD
Cobalt	23.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:19 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:19 AM	JD
Lithium	115	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:47 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:47 PM	JD
Selenium	1.3	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:47 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:19 AM	JD
Mercury	< 0.0200	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/11/2019	10:27 AM	JD
Chloride	190	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	11:36 AM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/21/2019	3:58 PM	JD
Sulfate	407	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	11:36 AM	JD
Solids, Total Dissolved	2040	mg/L		SM 2540, C-2011 (mod)	5/21/2019	8:17 AM	JD

Lab Identification #: 30311682001

**Pace**

 Sample Received Date: 7/2/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.36 ± 0.572 (0.468)	pCi/L		EPA 903.1	7/17/2019	11:13	MK1
Radium-228	1.16 ± 0.423 (0.608)	pCi/L		EPA 904.0	7/10/2019	15:10	JLW
Total Radium Calculation	2.52 ± 0.995 (1.08)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:55 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 5/17/2019  
 Sample Collection Time: 11:55 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	547.57	MSL			5/17/2019	11:55 AM	BTB
Turbidity	3.42	NTU		SM 2130, B-2001	5/17/2019	11:55 AM	BTB
Conductivity	1530	µS/cm		SM 2510, B-2011	5/17/2019	11:55 AM	BTB
Temperature	61.39	°F		SM 2550, B-2010	5/17/2019	11:55 AM	BTB
Oxidation-Reduction Potential	-130.6	mV		SM 2580, B-2011	5/17/2019	11:55 AM	BTB
pH	7.80	S.U.		SM 4500-H+, B-2011	5/17/2019	11:55 AM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	5/17/2019	11:55 AM	BTB

Lab Identification #: 1900237

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 5/20/2019  
 Sample Received Time: 11:21 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:23 AM	JD
Arsenic	1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:23 AM	JD
Barium	78.3	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:53 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:59 PM	JD
Boron	1040	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:27 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:59 PM	JD
Calcium	58200	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:04 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:23 AM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:23 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:23 AM	JD
Lithium	53.5	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:53 AM	JD
Molybdenum	2.9	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:59 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:59 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:23 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/7/2019	9:52 AM	JD
Chloride	130	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	11:58 AM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/21/2019	4:20 PM	JD
Sulfate	28.8	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	4:20 PM	JD
Solids, Total Dissolved	676	mg/L		SM 2540, C-2011 (mod)	5/21/2019	8:17 AM	JD

Lab Identification #: 30311682002

**Pace**

 Sample Received Date: 7/2/2019  
 Sample Received Time: 9:30  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.04 ± 0.688 (0.906)	pCi/L		EPA 903.1	7/17/2019	11:13	MK1
Radium-228	0.628 ± 0.439 (0.853)	pCi/L		EPA 904.0	7/10/2019	15:10	JLW
Total Radium Calculation	1.67 ± 1.13 (1.76)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:55 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 5/17/2019  
 Sample Collection Time: 4:31 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	565.20	MSL			5/17/2019	4:31 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	5/17/2019	4:31 PM	BTB
Conductivity	3087	µS/cm		SM 2510, B-2011	5/17/2019	4:31 PM	BTB
Temperature	67.55	°F		SM 2550, B-2010	5/17/2019	4:31 PM	BTB
Oxidation-Reduction Potential	-62.0	mV		SM 2580, B-2011	5/17/2019	4:31 PM	BTB
pH	7.76	S.U.		SM 4500-H+, B-2011	5/17/2019	4:31 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	5/17/2019	4:31 PM	BTB

Lab Identification #: 1900238

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 5/20/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:21 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:27 AM	JD
Arsenic	1.5	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:27 AM	JD
Barium	160	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:57 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:03 PM	JD
Boron	3660	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:29 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:03 PM	JD
Calcium	44600	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:03 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:27 AM	JD
Cobalt	1.9	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:27 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:27 AM	JD
Lithium	142	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:57 AM	JD
Molybdenum	4.4	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:03 PM	JD
Selenium	1.6	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:03 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:27 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/7/2019	9:58 AM	JD
Chloride	622	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	12:20 PM	JD
Fluoride	1.24	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/21/2019	4:42 PM	JD
Sulfate	157	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	4:42 PM	JD
Solids, Total Dissolved	1730	mg/L		SM 2540, C-2011 (mod)	5/21/2019	8:17 AM	JD

Lab Identification #: 30311682003

**Pace**

 Sample Received Date: 7/2/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.418 ± 0.424 (0.642)	pCi/L		EPA 903.1	7/17/2019	11:39	MK1
Radium-228	0.642 ± 0.351 (0.634)	pCi/L		EPA 904.0	7/10/2019	15:10	JLW
Total Radium Calculation	1.06 ± 0.775 (1.28)	pCi/L	5	Total Radium Calculation	7/17/2019	11:39	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:55 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

### Certificate of Analysis

Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

Sample Collection Date: 5/17/2019  
 Sample Collection Time: 1:50 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	524.42	MSL			5/17/2019	1:50 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	5/17/2019	1:50 PM	BTB
Conductivity	2446	µS/cm		SM 2510, B-2011	5/17/2019	1:50 PM	BTB
Temperature	65.70	°F		SM 2550, B-2010	5/17/2019	1:50 PM	BTB
Oxidation-Reduction Potential	-16.0	mV		SM 2580, B-2011	5/17/2019	1:50 PM	BTB
pH	6.92	S.U.		SM 4500-H+, B-2011	5/17/2019	1:50 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	5/17/2019	1:50 PM	BTB

Lab Identification #: 1900239

**EKPC - Central Laboratory Analyses**

Sample Received Date: 5/20/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:21 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:39 AM	JD
Arsenic	1.6	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:39 AM	JD
Barium	101	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	12:09 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:15 PM	JD
Boron	1420	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/28/2019	11:38 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:15 PM	JD
Calcium	165000	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:28 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:39 AM	JD
Cobalt	6.9	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:39 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:39 AM	JD
Lithium	42.1	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	12:09 PM	JD
Molybdenum	1.9	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:15 PM	JD
Selenium	1.1	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:15 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:39 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/7/2019	10:06 AM	JD
Chloride	46.9	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	5:04 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/21/2019	5:04 PM	JD
Sulfate	289	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	12:41 PM	JD
Solids, Total Dissolved	1230	mg/L		SM 2540, C-2011 (mod)	5/21/2019	8:17 AM	JD

Lab Identification #: 30311682004

**Pace**

Sample Received Date: 7/2/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.34 ± 0.628 (0.565)	pCi/L		EPA 903.1	7/17/2019	11:39	MK1
Radium-228	0.729 ± 0.392 (0.695)	pCi/L		EPA 904.0	7/10/2019	15:10	JLW
Total Radium Calculation	2.07 ± 1.02 (1.26)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:55 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 5/17/2019  
 Sample Collection Time: 2:45 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	530.06	MSL			5/17/2019	2:45 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	5/17/2019	2:45 PM	BTB
Conductivity	869.0	µS/cm		SM 2510, B-2011	5/17/2019	2:45 PM	BTB
Temperature	61.54	°F		SM 2550, B-2010	5/17/2019	2:45 PM	BTB
Oxidation-Reduction Potential	103.4	mV		SM 2580, B-2011	5/17/2019	2:45 PM	BTB
pH	7.16	S.U.		SM 4500-H+, B-2011	5/17/2019	2:45 PM	BTB
Oxygen, dissolved	6.21	mg/L		SM 4500-O	5/17/2019	2:45 PM	BTB

Lab Identification #: 1900240

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 5/20/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:21 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:42 AM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:42 AM	JD
Barium	93.5	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	12:13 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:19 PM	JD
Boron	177	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:19 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:19 PM	JD
Calcium	114000	µg/L		EPA 200.8, Rev. 5.4 (1994)	5/24/2019	12:32 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:42 AM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:42 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:42 AM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	5/28/2019	12:13 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:19 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	5/24/2019	1:19 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	5/23/2019	11:42 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/7/2019	10:15 AM	JD
Chloride	10.6	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	5:25 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	5/21/2019	5:25 PM	JD
Sulfate	195	mg/L		EPA 300.0 Rev 2.1 (1993)	5/21/2019	1:03 PM	JD
Solids, Total Dissolved	580	mg/L		SM 2540, C-2011 (mod)	5/21/2019	8:17 AM	JD

Lab Identification #: 30311682005

**Pace**

 Sample Received Date: 7/2/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.889 ± 0.462 (0.160)	pCi/L		EPA 903.1	7/17/2019	11:39	MK1
Radium-228	0.271 ± 0.315 (0.663)	pCi/L		EPA 904.0	7/10/2019	15:10	JLW
Total Radium Calculation	1.16 ± 0.777 (0.824)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

07:55 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:53 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 5/31/2019  
 Sample Collection Time: 10:24 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	702.14	MSL			5/31/2019	10:24 AM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	5/31/2019	10:24 AM	BTB
Conductivity	2950	µS/cm		SM 2510, B-2011	5/31/2019	10:24 AM	BTB
Temperature	59.36	*F		SM 2550, B-2010	5/31/2019	10:24 AM	BTB
Oxidation-Reduction Potential	69.6	mV		SM 2580, B-2011	5/31/2019	10:24 AM	BTB
pH	6.25	S.U.		SM 4500-H+, B-2011	5/31/2019	10:24 AM	BTB
Oxygen, dissolved	1.66	mg/L		SM 4500-O	5/31/2019	10:24 AM	BTB

Lab Identification #: 1900245

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 6/3/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:57 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Arsenic	3.1	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Barium	86.4	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:07 PM	JD
Boron	2000	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:07 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Calcium	287000	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	9:32 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Cobalt	18.2	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:03 PM	JD
Lithium	113	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:07 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Selenium	1.6	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:29 PM	JD
Thallium	< 0.20	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:03 PM	JD
Mercury	< 0.0200	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/11/2019	10:33 AM	JD
Chloride	253	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	5:35 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	6/5/2019	9:14 PM	JD
Sulfate	405	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	5:35 PM	JD
Solids, Total Dissolved	2050	mg/L		SM 2540, C-2011	6/5/2019	12:38 PM	JD

Lab Identification #: 30311682001

**Pace**

 Sample Received Date: 7/2/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.80 ± 0.790 (0.846)	pCi/L		EPA 903.1	7/17/2019	11:39	MK1
Radium-228	1.50 ± 0.508 (0.695)	pCi/L		EPA 904.0	7/10/2019	15:11	JLW
Total Radium Calculation	3.30 ± 1.30 (1.54)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By:



Jared Daugherty - Chemist

07:58 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:54 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 5/31/2019  
 Sample Collection Time: 12:29 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	547.43	MSL			5/31/2019	12:29 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	5/31/2019	12:29 PM	BTB
Conductivity	1203	µS/cm		SM 2510, B-2011	5/31/2019	12:29 PM	BTB
Temperature	61.09	°F		SM 2550, B-2010	5/31/2019	12:29 PM	BTB
Oxidation-Reduction Potential	0.0	mV		SM 2580, B-2011	5/31/2019	12:29 PM	BTB
pH	7.51	S.U.		SM 4500-H+, B-2011	5/31/2019	12:29 PM	BTB
Oxygen, dissolved	1.52	mg/L		SM 4500-O	5/31/2019	12:29 PM	BTB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900246

 Sample Received Date: 6/3/2019  
 Sample Received Time: 11:57 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Barium	75.1	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	6/13/2019	10:23 AM	JD
Boron	956	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/13/2019	10:23 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Calcium	51400	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/13/2019	10:19 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Lithium	57.7	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	6/13/2019	10:23 AM	JD
Molybdenum	2.6	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:41 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/7/2019	10:34 AM	JD
Chloride	128	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	5:57 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	6/5/2019	9:35 PM	JD
Sulfate	28.4	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	9:35 PM	JD
Solids, Total Dissolved	648	mg/L		SM 2540, C-2011	6/5/2019	12:38 PM	JD

Lab Identification #: 30311682002

**Pace**

 Sample Received Date: 7/2/2019  
 Sample Received Time: 9:30  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	-0.0547 ± 0.250 (0.590)	pCi/L		EPA 903.1	7/16/2019	15:23	MK1
Radium-228	1.02 ± 0.395 (0.575)	pCi/L		EPA 904.0	7/10/2019	11:49	JLW
Total Radium Calculation	1.02 ± 0.645 (1.16)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By:



Jared Daugherty - Chemist

07:58 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:54 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 5/31/2019  
 Sample Collection Time: 5:25 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	564.26	MSL			5/31/2019	5:25 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	5/31/2019	5:25 PM	BTB
Conductivity	2948	µS/cm		SM 2510, B-2011	5/31/2019	5:25 PM	BTB
Temperature	57.27	°F		SM 2550, B-2010	5/31/2019	5:25 PM	BTB
Oxidation-Reduction Potential	-46.2	mV		SM 2580, B-2011	5/31/2019	5:25 PM	BTB
pH	7.79	S.U.		SM 4500-H+, B-2011	5/31/2019	5:25 PM	BTB
Oxygen, dissolved	1.49	mg/L		SM 4500-O	5/31/2019	5:25 PM	BTB

Lab Identification #: 1900247

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 6/3/2019  
 Sample Received Time: 11:57 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Arsenic	1.4	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Barium	165	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:19 PM	JD
Boron	2460	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:19 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Calcium	38000	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:19 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Cobalt	1.8	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:15 PM	JD
Lithium	111	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:19 PM	JD
Molybdenum	4.1	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Selenium	1.1	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:45 PM	JD
Thallium	< 0.20	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:15 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/7/2019	10:40 AM	JD
Chloride	599	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	6:18 PM	JD
Fluoride	1.27	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	6/5/2019	9:57 PM	JD
Sulfate	145	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	9:57 PM	JD
Solids, Total Dissolved	1620	mg/L		SM 2540, C-2011	6/5/2019	12:38 PM	JD

Lab Identification #: 30311682003

**Pace**

 Sample Received Date: 7/2/2019  
 Sample Received Time: 9:30  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.639 ± 0.667 (1.06)	pCi/L		EPA 903.1	7/16/2019	15:23	MK1
Radium-228	0.414 ± 0.356 (0.714)	pCi/L		EPA 904.0	7/10/2019	11:49	JLW
Total Radium Calculation	1.05 ± 1.02 (1.77)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By:



Jared Daugherty - Chemist

07:58 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:54 PM 07/26/2019



**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 5/31/2019  
 Sample Collection Time: 2:11 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	524.46	MSL			5/31/2019	2:11 PM	BTB
Turbidity	1.16	NTU		SM 2130, B-2001	5/31/2019	2:11 PM	BTB
Conductivity	2343	µS/cm		SM 2510, B-2011	5/31/2019	2:11 PM	BTB
Temperature	61.43	°F		SM 2550, B-2010	5/31/2019	2:11 PM	BTB
Oxidation-Reduction Potential	-5.9	mV		SM 2580, B-2011	5/31/2019	2:11 PM	BTB
pH	6.96	S.U.		SM 4500-H+, B-2011	5/31/2019	2:11 PM	BTB
Oxygen, dissolved	1.41	mg/L		SM 4500-O	5/31/2019	2:11 PM	BTB

Lab Identification #: 1900248

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 6/3/2019  
 Sample Received Time: 11:57 AM

 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Barium	94.0	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:30 PM	JD
Boron	1050	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:30 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Calcium	154000	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	9:55 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Cobalt	-5.8	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Lithium	38.6	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:30 PM	JD
Molybdenum	1.4	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:49 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/11/2019	10:39 AM	JD
Chloride	45.2	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	10:19 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	6/5/2019	10:19 PM	JD
Sulfate	272	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	10:19 PM	JD
Solids, Total Dissolved	1220	mg/L		SM 2540, C-2011	6/5/2019	12:38 PM	JD

Lab Identification #: 30311682004

**Pace**

 Sample Received Date: 7/2/2019  
 Sample Received Time: 9:30

 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.16 ± 0.549 (0.426)	pCi/L		EPA 903.1	7/16/2019	15:23	MK1
Radium-228	0.773 ± 0.403 (0.713)	pCi/L		EPA 904.0	7/10/2019	11:49	JLW
Total Radium Calculation	1.93 ± 0.952 (1.14)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 07:58 AM 07/26/2019



 Eric Hamilton - QA/QC Chemist  
 02:54 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 5/31/2019  
 Sample Collection Time: 3:23 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	529.4	MSL			5/31/2019	3:23 PM	BTB
Turbidity	1.72	NTU		SM 2130, B-2001	5/31/2019	3:23 PM	BTB
Conductivity	866.0	µS/cm		SM 2510, B-2011	5/31/2019	3:23 PM	BTB
Temperature	57.45	°F		SM 2550, B-2010	5/31/2019	3:23 PM	BTB
Oxidation-Reduction Potential	114.8	mV		SM 2580, B-2011	5/31/2019	3:23 PM	BTB
pH	7.12	S.U.		SM 4500-H+, B-2011	5/31/2019	3:23 PM	BTB
Oxygen, dissolved	8.22	mg/L		SM 4500-O	5/31/2019	3:23 PM	BTB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900249

 Sample Received Date: 6/3/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 11:57 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Barium	97.7	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:34 PM	JD
Boron	201	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:34 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Calcium	116000	µg/L		EPA 200.8, Rev. 5.4 (1994)	6/11/2019	11:08 AM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Lead	1.4	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	3:34 PM	JD
Molybdenum	1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	6/11/2019	12:53 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	6/11/2019	10:49 AM	JD
Chloride	11.5	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	10:41 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	6/5/2019	10:41 PM	JD
Sulfate	199	mg/L		EPA 300.0 Rev 2.1 (1993)	6/5/2019	7:02 PM	JD
Solids, Total Dissolved	576	mg/L		SM 2540, C-2011	6/5/2019	12:38 PM	JD

Lab Identification #: 30311682005

**Pace**

 Sample Received Date: 7/2/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.481 ± 0.450 (0.640)	pCi/L		EPA 903.1	7/16/2019	15:23	MK1
Radium-228	0.797 ± 0.359 (0.579)	pCi/L		EPA 904.0	7/10/2019	11:49	JLW
Total Radium Calculation	1.28 ± 0.809 (1.22)	pCi/L	5	Total Radium Calculation	7/18/2019	10:03	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By:



Jared Daugherty - Chemist

07:58 AM 07/26/2019



Eric Hamilton - QA/QC Chemist

02:54 PM 07/26/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 6/28/2019  
 Sample Collection Time: 12:53 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	702.9	MSL			6/28/2019	12:53 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	6/28/2019	12:53 PM	BTB
Conductivity	2492	µS/cm		SM 2510, B-2011	6/28/2019	12:53 PM	BTB
Temperature	66.51	°F		SM 2550, B-2010	6/28/2019	12:53 PM	BTB
Oxidation-Reduction Potential	71.9	mV		SM 2580, B-2011	6/28/2019	12:53 PM	BTB
pH	5.97	S.U.		SM 4500-H+, B-2011	6/28/2019	12:53 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	6/28/2019	12:53 PM	BTB

Lab Identification #: 1900254

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 7/1/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Arsenic	1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Barium	89.6	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Boron	1500	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Calcium	297000	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	1:14 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Cobalt	15.4	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Lithium	103	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:44 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	7/24/2019	8:44 AM	JD
Chloride	73.0	mg/L		EPA 300.0 Rev 2.1 (1993)	7/8/2019	8:27 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	7/8/2019	8:27 PM	JD
Sulfate	417	mg/L		EPA 300.0 Rev 2.1 (1993)	7/9/2019	12:14 PM	JD
Solids, Total Dissolved	1740	mg/L		SM 2540, C-2011	7/2/2019	1:51 PM	JD

Lab Identification #: 30315566001

**Pace**

 Sample Received Date: 7/23/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.22 ± 0.637 (0.628)	pCi/L		EPA 903.1	8/1/2019	5:16 PM	MK1
Radium-228	0.478 ± 0.409 (0.831)	pCi/L		EPA 904.0	7/31/2019	3:56 PM	JLW
Total Radium Calculation	1.70 ± 1.05 (1.46)	pCi/L	5	Total Radium Calculation	8/6/2019	1:11 PM	JAL

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

08:37 AM 08/19/2019



Eric Hamilton - QA/QC Chemist

11:40 AM 08/20/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 6/28/2019  
 Sample Collection Time: 2:23 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	548.3	MSL			6/28/2019	2:23 PM	BTB
Turbidity	4.92	NTU		SM 2130, B-2001	6/28/2019	2:23 PM	BTB
Conductivity	1620	µS/cm		SM 2510, B-2011	6/28/2019	2:23 PM	BTB
Temperature	66.69	°F		SM 2550, B-2010	6/28/2019	2:23 PM	BTB
Oxidation-Reduction Potential	-180.1	mV		SM 2580, B-2011	6/28/2019	2:23 PM	BTB
pH	7.64	S.U.		SM 4500-H+, B-2011	6/28/2019	2:23 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	6/28/2019	2:23 PM	BTB

Lab Identification #: 1900255

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 7/1/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Barium	75.8	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Boron	968	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Calcium	47700	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	1:13 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Lithium	60.3	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Molybdenum	2.8	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:32 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	7/11/2019	12:15 PM	JD
Chloride	149	mg/L		EPA 300.0 Rev 2.1 (1993)	7/9/2019	12:36 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	7/8/2019	8:49 PM	JD
Sulfate	28.7	mg/L		EPA 300.0 Rev 2.1 (1993)	7/8/2019	8:49 PM	JD
Solids, Total Dissolved	704	mg/L		SM 2540, C-2011	7/2/2019	1:51 PM	JD

Lab Identification #: 30315566002

**Pace**

 Sample Received Date: 7/23/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.627 ± 0.497 (0.647)	pCi/L		EPA 903.1	8/1/2019	5:16 PM	MK1
Radium-228	0.816 ± 0.433 (0.779)	pCi/L		EPA 904.0	7/31/2019	3:56 PM	JLW
Total Radium Calculation	1.44 ± 0.930 (1.43)	pCi/L	5	Total Radium Calculation	8/6/2019	1:11 PM	JAL

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 08:37 AM 08/19/2019



 Eric Hamilton - QA/QC Chemist  
 11:40 AM 08/20/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.3  
 Gradient: Down

 Sample Collection Date: 6/28/2019  
 Sample Collection Time: 5:45 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	565.1	MSL			6/28/2019	5:45 PM	BTB
Turbidity	2.53	NTU		SM 2130, B-2001	6/28/2019	5:45 PM	BTB
Conductivity	2999	µS/cm		SM 2510, B-2011	6/28/2019	5:45 PM	BTB
Temperature	66.24	°F		SM 2550, B-2010	6/28/2019	5:45 PM	BTB
Oxidation-Reduction Potential	-122.4	mV		SM 2580, B-2011	6/28/2019	5:45 PM	BTB
pH	7.51	S.U.		SM 4500-H+, B-2011	6/28/2019	5:45 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	6/28/2019	5:45 PM	BTB

Lab Identification #: 1900256

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 7/1/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Arsenic	1.2	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Barium	157	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Boron	2940	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Calcium	36100	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	1:12 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Cobalt	1.7	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Lithium	136	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Molybdenum	4.6	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:28 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	7/11/2019	12:21 PM	JD
Chloride	595	mg/L		EPA 300.0 Rev 2.1 (1993)	7/9/2019	12:58 PM	JD
Fluoride	1.33	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	7/8/2019	9:11 PM	JD
Sulfate	137	mg/L		EPA 300.0 Rev 2.1 (1993)	7/8/2019	9:11 PM	JD
Solids, Total Dissolved	1570	mg/L		SM 2540, C-2011	7/2/2019	1:51 PM	JD

Lab Identification #: 30315566003

**Pace**

 Sample Received Date: 7/23/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.835 ± 0.750 (1.14)	pCi/L		EPA 903.1	8/1/2019	5:16 PM	MK1
Radium-228	0.281 ± 0.383 (0.820)	pCi/L		EPA 904.0	7/31/2019	3:56 PM	JLW
Total Radium Calculation	1.12 ± 1.13 (1.96)	pCi/L	5	Total Radium Calculation	8/6/2019	1:11 PM	JAL

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

11:51 AM 08/20/2019



Eric Hamilton - QA/QC Chemist

01:28 PM 08/20/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 6/28/2019  
 Sample Collection Time: 4:20 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	525.4	MSL			6/28/2019	4:20 PM	BTB
Turbidity	< 1	NTU		SM 2130, B-2001	6/28/2019	4:20 PM	BTB
Conductivity	2339	µS/cm		SM 2510, B-2011	6/28/2019	4:20 PM	BTB
Temperature	70.43	°F		SM 2550, B-2010	6/28/2019	4:20 PM	BTB
Oxidation-Reduction Potential	-35.7	mV		SM 2580, B-2011	6/28/2019	4:20 PM	BTB
pH	6.49	S.U.		SM 4500-H+, B-2011	6/28/2019	4:20 PM	BTB
Oxygen, dissolved	< 1	mg/L		SM 4500-O	6/28/2019	4:20 PM	BTB

Lab Identification #: 1900257

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 7/1/2019  
 Sample Received Time: 2:30 PM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Barium	85.0	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Boron	1090	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Calcium	126000	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	1:11 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Cobalt	4.1	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Lithium	39.9	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Molybdenum	1.5	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:24 AM	JD
Mercury	< 0.0100	µg/L	2	EPA 245.7 Rev 2.0 (2005)	7/24/2019	8:50 AM	JD
Chloride	35.4	mg/L		EPA 300.0 Rev 2.1 (1993)	7/8/2019	9:32 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	7/8/2019	9:32 PM	JD
Sulfate	241	mg/L		EPA 300.0 Rev 2.1 (1993)	7/9/2019	1:20 PM	JD
Solids, Total Dissolved	1040	mg/L		SM 2540, C-2011	7/2/2019	1:51 PM	JD

Lab Identification #: 30315566004

**Pace**

 Sample Received Date: 7/23/2019  
 Sample Received Time: 9:45 AM  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.849 ± 0.758 (1.18)	pCi/L		EPA 903.1	8/1/2019	5:16 PM	MK1
Radium-228	0.880 ± 0.417 (0.710)	pCi/L		EPA 904.0	7/31/2019	3:56 PM	JLW
Total Radium Calculation	1.73 ± 1.18 (1.89)	pCi/L	5	Total Radium Calculation	8/6/2019	1:11 PM	JAL

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

11:51 AM 08/20/2019



Eric Hamilton - QA/QC Chemist

01:28 PM 08/20/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 6/28/2019  
 Sample Collection Time: 3:16 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	529.8	MSL			6/28/2019	3:16 PM	BTB
Turbidity	1.41	NTU		SM 2130, B-2001	6/28/2019	3:16 PM	BTB
Conductivity	893.0	µS/cm		SM 2510, B-2011	6/28/2019	3:16 PM	BTB
Temperature	68.27	°F		SM 2550, B-2010	6/28/2019	3:16 PM	BTB
Oxidation-Reduction Potential	70.1	mV		SM 2580, B-2011	6/28/2019	3:16 PM	BTB
pH	7.10	S.U.		SM 4500-H+, B-2011	6/28/2019	3:16 PM	BTB
Oxygen, dissolved	5.78	mg/L		SM 4500-O	6/28/2019	3:16 PM	BTB

Lab Identification #: 1900258

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 7/1/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 2:30 PM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Barium	86.0	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Boron	201	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Calcium	108000	µg/L		EPA 200.8, Rev. 5.4 (1994)	7/19/2019	1:10 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	7/19/2019	10:20 AM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	7/11/2019	12:39 PM	JD
Chloride	10.8	mg/L		EPA 300.0 Rev 2.1 (1993)	7/8/2019	9:54 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	7/8/2019	9:54 PM	JD
Sulfate	193	mg/L		EPA 300.0 Rev 2.1 (1993)	7/8/2019	9:54 PM	JD
Solids, Total Dissolved	514	mg/L		SM 2540, C-2011	7/2/2019	1:51 PM	JD

Lab Identification #: 30315566005

**Pace**

 Sample Received Date: 7/23/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:45 AM      Sample Received By: MM

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.77 ± 0.798 (0.591)	pCi/L		EPA 903.1	8/1/2019	5:16 PM	MK1
Radium-228	0.187 ± 0.326 (0.711)	pCi/L		EPA 904.0	7/31/2019	3:56 PM	JLW
Total Radium Calculation	1.96 ± 1.12 (1.30)	pCi/L	5	Total Radium Calculation	8/6/2019	1:11 PM	JAL

**Comments / Notes:**

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

08:37 AM 08/19/2019



Eric Hamilton - QA/QC Chemist

11:40 AM 08/20/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 7/29/2019  
 Sample Collection Time: 11:11 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	702.65	MSL			7/29/2019	11:11 AM	BTB
Turbidity	1.57	NTU		SM 2130, B-2001	7/29/2019	11:11 AM	BTB
Conductivity	2453	µS/cm		SM 2510, B-2011	7/29/2019	11:11 AM	BTB
Temperature	61.052	°F		SM 2550, B-2010	7/29/2019	11:11 AM	BTB
Oxidation-Reduction Potential	89.3	mV		SM 2580, B-2011	7/29/2019	11:11 AM	BTB
pH	5.84	S.U.		SM 4500-H+, B-2011	7/29/2019	11:11 AM	BTB
Oxygen, dissolved	1.01	mg/L		SM 4500-O	7/29/2019	11:11 AM	BTB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900411

 Sample Received Date: 7/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 8:42 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Arsenic	1.2	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Barium	93.5	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Boron	1460	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Calcium	318000	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/13/2019	12:20 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Cobalt	14.4	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Lithium	101	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Selenium	1.5	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:44 PM	JD
Mercury	< 0.0200	µg/L	2	EPA 245.7 Rev 2.0 (2005)	8/21/2019	3:43 PM	JD
Chloride	58.0	mg/L		EPA 300.0 Rev 2.1 (1993)	8/5/2019	1:13 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	8/5/2019	1:13 PM	JD
Sulfate	391	mg/L		EPA 300.0 Rev 2.1 (1993)	8/6/2019	15:56	JD
Solids, Total Dissolved	2010	mg/L		SM 2540, C-2011	8/5/2019	2:43 PM	JD

Lab Identification #: 30319407001

**Pace**

 Sample Received Date: 8/13/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.38 ± 0.536 (0.339)	pCi/L		EPA 903.1	8/30/2019	12:38 PM	MK1
Radium-228	0.515 ± 0.420 (0.844)	pCi/L		EPA 904.0	8/23/2019	2:27 PM	JLW
Total Radium Calculation	1.90 ± 0.956 (1.18 )	pCi/L	5	Total Radium Calculation	9/3/2019	1:53 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 01:59 PM 10/09/2019



 Eric Hamilton - QA/QC Chemist  
 04:14 PM 10/09/2019



### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 7/29/2019  
 Sample Collection Time: 12:37 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	547.68	MSL			7/29/2019	12:37 PM	BTB
Turbidity	2.29	NTU		SM 2130, B-2001	7/29/2019	12:37 PM	BTB
Conductivity	1295	µS/cm		SM 2510, B-2011	7/29/2019	12:37 PM	BTB
Temperature	64.31	°F		SM 2550, B-2010	7/29/2019	12:37 PM	BTB
Oxidation-Reduction Potential	-47.2	mV		SM 2580, B-2011	7/29/2019	12:37 PM	BTB
pH	7.31	S.U.		SM 4500-H+, B-2011	7/29/2019	12:37 PM	BTB
Oxygen, dissolved	< 1.0	mg/L		SM 4500-O	7/29/2019	12:37 PM	BTB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900412

 Sample Received Date: 7/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 8:42 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Barium	83.0	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Boron	966	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Calcium	43100	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Lithium	64.8	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Molybdenum	3.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:47 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	8/21/2019	1:26 PM	JD
Chloride	163	mg/L		EPA 300.0 Rev 2.1 (1993)	8/6/2019	16:17	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	8/5/2019	1:35 PM	JD
Sulfate	27.4	mg/L		EPA 300.0 Rev 2.1 (1993)	8/5/2019	1:35 PM	JD
Solids, Total Dissolved	932	mg/L		SM 2540, C-2011	8/5/2019	2:43 PM	JD

Lab Identification #: 30319407002

**Pace**

 Sample Received Date: 8/13/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.714 ± 0.477 (0.591)	pCi/L		EPA 903.1	8/30/2019	12:38 PM	MK1
Radium-228	-0.0723 ± 0.300 (0.718)	pCi/L		EPA 904.0	8/23/2019	2:27 PM	JLW
Total Radium Calculation	0.714 ± 0.777 (1.31)	pCi/L	5	Total Radium Calculation	9/3/2019	1:53 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 01:59 PM 10/09/2019



 Eric Hamilton - QA/QC Chemist  
 04:14 PM 10/09/2019



Report Date: Thursday, October 10, 2019

### Certificate of Analysis

Station:	H.L. Spurlock Power Station	Sample Collection Date:	7/29/2019
Well ID No.:	PH-MW-03	Sample Collection Time:	4:57 PM
AKGW No.:	8006-4556	Sample Collected By:	BTB
Well Depth (Ft.):	42.25	Sample Matrix:	Ground Water
Well Elevation (Ft. MSL):	593.30	Laboratory Certification ID:	KY# 08012
Gradient:	Down		

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	564.59	MSL			7/29/2019	4:57 PM	BTB
Turbidity	3.07	NTU		SM 2130, B-2001	7/29/2019	4:57 PM	BTB
Conductivity	2912	µS/cm		SM 2510, B-2011	7/29/2019	4:57 PM	BTB
Temperature	64.27	°F		SM 2550, B-2010	7/29/2019	4:57 PM	BTB
Oxidation-Reduction Potential	-74.7	mV		SM 2580, B-2011	7/29/2019	4:57 PM	BTB
pH	7.48	S.U.		SM 4500-H+, B-2011	7/29/2019	4:57 PM	BTB
Oxygen, dissolved	< 1.0	mg/L		SM 4500-O	7/29/2019	4:57 PM	BTB

<b>EKPC - Central Laboratory Analyses</b>			Lab Identification #:	1900413
Sample Received Date:	7/30/2019	Sample Receipt Temperatures (°C):	< 6	
Sample Received Time:	8:42 AM	Sample Received By:	JD	

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Arsenic	1.3	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Barium	176	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Boron	2780	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Calcium	33300	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Cobalt	1.7	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Lithium	134	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Molybdenum	4.8	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Selenium	1.2	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:51 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	8/21/2019	1:30 PM	JD
Chloride	575	mg/L		EPA 300.0 Rev 2.1 (1993)	8/6/2019	16:39	JD
Fluoride	1.32	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	8/5/2019	1:57 PM	JD
Sulfate	121	mg/L		EPA 300.0 Rev 2.1 (1993)	8/5/2019	1:57 PM	JD
Solids, Total Dissolved	1710	mg/L		SM 2540, C-2011	8/5/2019	2:43 PM	JD

<b>Pace</b>			Lab Identification #:	30319407003
Sample Received Date:	8/13/2019	Sample Receipt Temperatures (°C):	N/A	
Sample Received Time:	9:30 AM	Sample Received By:	MG	

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.23 ± 0.653 (0.786)	pCi/L		EPA 903.1	8/30/2019	12:38 PM	MK1
Radium-228	0.218 ± 0.394 (0.861)	pCi/L		EPA 904.0	8/23/2019	2:27 PM	JLW
Total Radium Calculation	1.45 ± 1.05 (1.65)	pCi/L	5	Total Radium Calculation	9/3/2019	1:53 PM	CMC

Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By : 

Jared Daugherty - Chemist  
01:59 PM 10/09/2019



Eric Hamilton - QA/QC Chemist  
04:14 PM 10/09/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 7/29/2019  
 Sample Collection Time: 3:11 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	524.77	MSL			7/29/2019	3:11 PM	BTB
Turbidity	2.63	NTU		SM 2130, B-2001	7/29/2019	3:11 PM	BTB
Conductivity	1744	µS/cm		SM 2510, B-2011	7/29/2019	3:11 PM	BTB
Temperature	68.99	°F		SM 2550, B-2010	7/29/2019	3:11 PM	BTB
Oxidation-Reduction Potential	55.4	mV		SM 2580, B-2011	7/29/2019	3:11 PM	BTB
pH	6.24	S.U.		SM 4500-H+, B-2011	7/29/2019	3:11 PM	BTB
Oxygen, dissolved	< 1.0	mg/L		SM 4500-O	7/29/2019	3:11 PM	BTB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900414

 Sample Received Date: 7/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 8:42 AM      Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Arsenic	1.1	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Barium	127	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Boron	1060	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/14/2019	11:08 AM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Calcium	130000	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/13/2019	12:21 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Cobalt	6.1	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Lithium	45.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Molybdenum	1.9	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:55 PM	JD
Mercury	< 0.0100	µg/L	2	EPA 245.7 Rev 2.0 (2005)	8/22/2019	11:51 AM	JD
Chloride	32.9	mg/L		EPA 300.0 Rev 2.1 (1993)	8/5/2019	2:19 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	8/5/2019	2:19 PM	JD
Sulfate	213	mg/L		EPA 300.0 Rev 2.1 (1993)	8/6/2019	17:01	JD
Solids, Total Dissolved	1070	mg/L		SM 2540, C-2011	8/5/2019	2:43 PM	JD

**Pace**

Lab Identification #: 30319407004

 Sample Received Date: 8/13/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.560 ± 0.393 (0.502)	pCi/L		EPA 903.1	8/30/2019	12:38 PM	MK1
Radium-228	0.117 ± 0.320 (0.717)	pCi/L		EPA 904.0	8/23/2019	2:27 PM	JLW
Total Radium Calculation	0.677 ± 0.713 (1.22)	pCi/L	5	Total Radium Calculation	9/3/2019	1:53 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 01:59 PM 10/09/2019



 Eric Hamilton - QA/QC Chemist  
 04:14 PM 10/09/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 7/29/2019  
 Sample Collection Time: 1:50 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	528.21	MSL			7/29/2019	1:50 PM	BTB
Turbidity	1.35	NTU		SM 2130, B-2001	7/29/2019	1:50 PM	BTB
Conductivity	886.0	µS/cm		SM 2510, B-2011	7/29/2019	1:50 PM	BTB
Temperature	64.85	°F		SM 2550, B-2010	7/29/2019	1:50 PM	BTB
Oxidation-Reduction Potential	129.7	mV		SM 2580, B-2011	7/29/2019	1:50 PM	BTB
pH	6.98	S.U.		SM 4500-H+, B-2011	7/29/2019	1:50 PM	BTB
Oxygen, dissolved	3.07	mg/L		SM 4500-O	7/29/2019	1:50 PM	BTB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900415

 Sample Received Date: 7/30/2019  
 Sample Received Time: 8:42 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: JD

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Arsenic	< 1.0	µg/L	10	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Barium	112	µg/L	2000	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Beryllium	< 1.0	µg/L	4	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Boron	260	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Cadmium	< 0.10	µg/L	5	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Calcium	108000	µg/L		EPA 200.8, Rev. 5.4 (1994)	8/13/2019	12:22 PM	JD
Chromium	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Cobalt	< 1.0	µg/L	6	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Lead	< 1.0	µg/L	15	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Lithium	< 25.0	µg/L	40	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Molybdenum	< 1.0	µg/L	100	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Selenium	< 1.0	µg/L	50	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Thallium	< 0.10	µg/L	2	EPA 200.8, Rev. 5.4 (1994)	8/9/2019	1:59 PM	JD
Mercury	< 0.0050	µg/L	2	EPA 245.7 Rev 2.0 (2005)	8/21/2019	1:42 PM	JD
Chloride	11.6	mg/L		EPA 300.0 Rev 2.1 (1993)	8/5/2019	2:40 PM	JD
Fluoride	< 0.50	mg/L	4.0	EPA 300.0 Rev 2.1 (1993)	8/5/2019	2:40 PM	JD
Sulfate	187	mg/L		EPA 300.0 Rev 2.1 (1993)	8/5/2019	2:40 PM	JD
Solids, Total Dissolved	608	mg/L		SM 2540, C-2011	8/5/2019	2:43 PM	JD

**Pace**

Lab Identification #: 30319407005

 Sample Received Date: 8/13/2019  
 Sample Received Time: 9:30 AM  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: MG

Parameter	Result	Units	MCL	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.324 ± 0.274 (0.340)	pCi/L		EPA 903.1	8/30/2019	12:38 PM	MK1
Radium-228	-0.189 ± 0.374 (0.893)	pCi/L		EPA 904.0	8/23/2019	2:27 PM	JLW
Total Radium Calculation	0.324 ± 0.648 (1.23 )	pCi/L	5	Total Radium Calculation	9/3/2019	1:53 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 01:59 PM 10/09/2019



 Eric Hamilton - QA/QC Chemist  
 04:14 PM 10/09/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 9/3/2019  
 Sample Collection Time: 12:47 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	702.31	MSL		9/3/2019	12:47 PM	BTB
Turbidity	0.8	NTU	SM 2130, B-2001	9/3/2019	12:47 PM	BTB
Conductivity	2560	µS/cm	SM 2510, B-2011	9/3/2019	12:47 PM	BTB
Temperature	63.16	°F	SM 2550, B-2010	9/3/2019	12:47 PM	BTB
Oxidation-Reduction Potential	32.9	mV	SM 2580, B-2011	9/3/2019	12:47 PM	BTB
pH	6.06	S.U.	SM 4500-H+, B-2011	9/3/2019	12:47 PM	BTB
Oxygen, dissolved	1.83	mg/L	SM 4500-O	9/3/2019	12:47 PM	BTB

**EKPC - Central Laboratory Analyses**

Lab Identification #: 1900498

 Sample Received Date: 9/6/2019  
 Sample Received Time: 10:25 AM  
 Sample Receipt Temperatures (°C): < 6  
 Sample Received By: TY

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Arsenic	1.2	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Barium	82.3	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Boron	1650	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Calcium	315000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	9/24/2019	1:37 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Cobalt	12.3	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Lithium	111	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Molybdenum	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Selenium	1.2	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	9/24/2019	2:13 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:31 PM	JD
Mercury	< 0.0200	µg/L	0.0180	0.0200	EPA 245.7 Rev 2.0 (2005)	9/18/2019	1:53 PM	JD
Chloride	70.9	mg/L	0.2	0.5	EPA 300.0 Rev 2.1 (1993)	9/18/2019	8:33 PM	JD
Fluoride	< 0.50	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	9/18/2019	8:33 PM	JD
Sulfate	397	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	9/19/2019	13:59	JD
Solids, Total Dissolved	1920	mg/L		100	SM 2540, C-2011	9/9/2019	10:52 AM	JD

Lab Identification #: 30326159001

**Pace**

 Sample Received Date: 9/24/2019  
 Sample Received Time: 9:15 AM  
 Sample Receipt Temperatures (°C): N/A  
 Sample Received By: NJ

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.45 ± 0.627 (0.445)	pCi/L			EPA 903.1	10/9/2019	2:05 PM	MK1
Radium-228	1.86 ± 0.649 (0.900)	pCi/L			EPA 904.0	10/11/2019	2:08 PM	VAL
Total Radium Calculation	3.31 ± 1.28 (1.35)	pCi/L			Total Radium Calculation	10/14/2019	10:13 AM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



 Jared Daugherty - Chemist  
 08:56 AM 10/31/2019



 Eric Hamilton - QA/QC Chemist  
 10:52 AM 11/01/2019



Report Date: Friday, November 1, 2019

### Certificate of Analysis

Station:	H.L. Spurlock Power Station	Sample Collection Date:	9/3/2019
Well ID No.:	PH-MW-02	Sample Collection Time:	2:28 PM
AKGW No.:	8006-4555	Sample Collected By:	BTB
Well Depth (Ft.):	43.02	Sample Matrix:	Ground Water
Well Elevation (Ft. MSL):	570.93	Laboratory Certification ID:	KY# 08012
Gradient:	Up		

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	547.71	MSL		9/3/2019	2:28 PM	BTB
Turbidity	3.3	NTU	SM 2130, B-2001	9/3/2019	2:28 PM	BTB
Conductivity	1485	µS/cm	SM 2510, B-2011	9/3/2019	2:28 PM	BTB
Temperature	62.19	°F	SM 2550, B-2010	9/3/2019	2:28 PM	BTB
Oxidation-Reduction Potential	-145.9	mV	SM 2580, B-2011	9/3/2019	2:28 PM	BTB
pH	7.57	S.U.	SM 4500-H+, B-2011	9/3/2019	2:28 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	9/3/2019	2:28 PM	BTB

<b>EKPC - Central Laboratory Analyses</b>			Lab Identification #:	1900499
Sample Received Date:	9/6/2019	Sample Receipt Temperatures (°C):	< 6	
Sample Received Time:	10:25 AM	Sample Received By:	TY	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Barium	82.6	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Boron	999	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Calcium	41100	µg/L	67.6	250	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Cobalt	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Lithium	67.0	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Molybdenum	3.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	9/24/2019	2:15 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:35 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	9/18/2019	12:17 PM	JD
Chloride	162	mg/L	0.8	2.5	EPA 300.0 Rev 2.1 (1993)	9/19/2019	14:21	JD
Fluoride	< 0.50	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	9/18/2019	8:55 PM	JD
Sulfate	28.3	mg/L	0.24	1.0	EPA 300.0 Rev 2.1 (1993)	9/18/2019	8:55 PM	JD
Solids, Total Dissolved	756	mg/L		50.0	SM 2540, C-2011	9/9/2019	10:52 AM	JD

<b>Pace</b>			Lab Identification #:	30326159002
Sample Received Date:	9/24/2019	Sample Receipt Temperatures (°C):	N/A	
Sample Received Time:	9:15 AM	Sample Received By:	NJ	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.14 ± 0.565 (0.531)	pCi/L			EPA 903.1	10/9/2019	2:05 PM	MK1
Radium-228	0.377 ± 0.388 (0.802)	pCi/L			EPA 904.0	10/8/2019	1:07 PM	VAL
Total Radium Calculation	1.52 ± 0.953 (1.33 )	pCi/L			Total Radium Calculation	10/14/2019	10:13 AM	CMC

Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By : 

Jared Daugherty - Chemist  
08:56 AM 10/31/2019



Eric Hamilton - QA/QC Chemist  
10:52 AM 11/01/2019



Report Date: Friday, November 1, 2019

### Certificate of Analysis

Station:	H.L. Spurlock Power Station	Sample Collection Date:	9/3/2019
Well ID No.:	PH-MW-03	Sample Collection Time:	6:16 PM
AKGW No.:	8006-4556	Sample Collected By:	BTB
Well Depth (Ft.):	42.25	Sample Matrix:	Ground Water
Well Elevation (Ft. MSL):	593.30	Laboratory Certification ID:	KY# 08012
Gradient:	Down		

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	563.64	MSL		9/3/2019	6:16 PM	BTB
Turbidity	1.34	NTU	SM 2130, B-2001	9/3/2019	6:16 PM	BTB
Conductivity	2929	µS/cm	SM 2510, B-2011	9/3/2019	6:16 PM	BTB
Temperature	66.02	°F	SM 2550, B-2010	9/3/2019	6:16 PM	BTB
Oxidation-Reduction Potential	-134.4	mV	SM 2580, B-2011	9/3/2019	6:16 PM	BTB
pH	7.61	S.U.	SM 4500-H+, B-2011	9/3/2019	6:16 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	9/3/2019	6:16 PM	BTB

<b>EKPC - Central Laboratory Analyses</b>			Lab Identification #:	1900500
Sample Received Date:	9/6/2019	Sample Receipt Temperatures (°C):	< 6	
Sample Received Time:	10:25 AM	Sample Received By:	TY	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Arsenic	1.2	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Barium	186	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Boron	2610	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Calcium	34500	µg/L	67.6	250	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Cobalt	1.7	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Lithium	132	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Molybdenum	4.9	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Selenium	1.2	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	9/24/2019	2:17 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:39 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	9/18/2019	10:45 AM	JD
Chloride	582	mg/L	1.5	5.0	EPA 300.0 Rev 2.1 (1993)	9/19/2019	14:43	JD
Fluoride	1.27	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	9/18/2019	9:17 PM	JD
Sulfate	140	mg/L	0.24	1.0	EPA 300.0 Rev 2.1 (1993)	9/18/2019	9:17 PM	JD
Solids, Total Dissolved	1550	mg/L		100	SM 2540, C-2011	9/9/2019	10:52 AM	JD

<b>Pace</b>			Lab Identification #:	30326159003
Sample Received Date:	9/24/2019	Sample Receipt Temperatures (°C):	N/A	
Sample Received Time:	9:15 AM	Sample Received By:	NJ	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.469 ± 0.448 (0.682)	pCi/L			EPA 903.1	10/9/2019	2:05 PM	MK1
Radium-228	0.770 ± 0.408 (0.717)	pCi/L			EPA 904.0	10/8/2019	1:07 PM	VAL
Total Radium Calculation	1.24 ± 0.856 (1.40)	pCi/L			Total Radium Calculation	10/14/2019	10:13 AM	CMC

Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By : 

Jared Daugherty - Chemist  
08:56 AM 10/31/2019



Eric Hamilton - QA/QC Chemist  
10:52 AM 11/01/2019



Report Date: Friday, November 1, 2019

### Certificate of Analysis

Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

Sample Collection Date: 9/3/2019  
 Sample Collection Time: 5:06 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	524.21	MSL		9/3/2019	5:06 PM	BTB
Turbidity	1.41	NTU	SM 2130, B-2001	9/3/2019	5:06 PM	BTB
Conductivity	1770	µS/cm	SM 2510, B-2011	9/3/2019	5:06 PM	BTB
Temperature	64.00	°F	SM 2550, B-2010	9/3/2019	5:06 PM	BTB
Oxidation-Reduction Potential	17.6	mV	SM 2580, B-2011	9/3/2019	5:06 PM	BTB
pH	6.30	S.U.	SM 4500-H+, B-2011	9/3/2019	5:06 PM	BTB
Oxygen, dissolved	1.03	mg/L	SM 4500-O	9/3/2019	5:06 PM	BTB

EKPC - Central Laboratory Analyses			Lab Identification #:	1900501
Sample Received Date:	9/6/2019	Sample Receipt Temperatures (°C):	< 6	
Sample Received Time:	10:25 AM	Sample Received By:	TY	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Barium	125	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Boron	1120	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Calcium	172000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	9/24/2019	1:39 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Cobalt	4.5	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Lithium	40.9	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Molybdenum	1.2	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	9/24/2019	2:23 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:43 PM	JD
Mercury	< 0.0100	µg/L	0.0090	0.0100	EPA 245.7 Rev 2.0 (2005)	9/18/2019	1:45 PM	JD
Chloride	31.6	mg/L	0.2	0.5	EPA 300.0 Rev 2.1 (1993)	9/18/2019	9:38 PM	JD
Fluoride	< 0.50	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	9/18/2019	9:38 PM	JD
Sulfate	221	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	9/19/2019	15:05	JD
Solids, Total Dissolved	1090	mg/L		50.0	SM 2540, C-2011	9/9/2019	10:52 AM	JD

Pace			Lab Identification #:	30326159004
Sample Received Date:	9/24/2019	Sample Receipt Temperatures (°C):	N/A	
Sample Received Time:	9:15 AM	Sample Received By:	NJ	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.875 ± 0.596 (0.821)	pCi/L			EPA 903.1	10/9/2019	2:05 PM	MK1
Radium-228	0.424 ± 0.312 (0.593)	pCi/L			EPA 904.0	10/8/2019	1:07 PM	VAL
Total Radium Calculation	1.30 ± 0.908 (1.41)	pCi/L			Total Radium Calculation	10/14/2019	10:13 AM	CMC

Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :

Jared Daugherty - Chemist  
 08:56 AM 10/31/2019

Eric Hamilton - QA/QC Chemist  
 10:52 AM 11/01/2019





Report Date: Friday, November 1, 2019

### Certificate of Analysis

Station:	H. L. Spurlock Power Station	Sample Collection Date:	9/3/2019
Well ID No.:	PH-MW-05	Sample Collection Time:	3:24 PM
AKGW No.:	8006-4558	Sample Collected By:	BTB
Well Depth (Ft.):	37.45	Sample Matrix:	Ground Water
Well Elevation (Ft. MSL):	560.32	Laboratory Certification ID:	KY# 08012
Gradient:	Down		

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	528.07	MSL		9/3/2019	3:24 PM	BTB
Turbidity	2.11	NTU	SM 2130, B-2001	9/3/2019	3:24 PM	BTB
Conductivity	914.0	µS/cm	SM 2510, B-2011	9/3/2019	3:24 PM	BTB
Temperature	69.98	°F	SM 2550, B-2010	9/3/2019	3:24 PM	BTB
Oxidation-Reduction Potential	62.4	mV	SM 2580, B-2011	9/3/2019	3:24 PM	BTB
pH	7.07	S.U.	SM 4500-H+, B-2011	9/3/2019	3:24 PM	BTB
Oxygen, dissolved	3.48	mg/L	SM 4500-O	9/3/2019	3:24 PM	BTB

<b>EKPC - Central Laboratory Analyses</b>			Lab Identification #:	1900502
Sample Received Date:	9/6/2019	Sample Receipt Temperatures (°C):	< 6	
Sample Received Time:	10:25 AM	Sample Received By:	TY	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Barium	120	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Boron	272	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Calcium	110000	µg/L	676	2500	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	2:00 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Cobalt	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Lithium	< 25.0	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Molybdenum	1.1	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	9/24/2019	2:25 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	9/23/2019	1:56 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	9/18/2019	12:30 PM	JD
Chloride	12.0	mg/L	0.2	0.5	EPA 300.0 Rev 2.1 (1993)	9/18/2019	10:00 PM	JD
Fluoride	< 0.50	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	9/18/2019	10:00 PM	JD
Sulfate	209	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	9/19/2019	15:26	JD
Solids, Total Dissolved	598	mg/L		50.0	SM 2540, C-2011	9/9/2019	10:52 AM	JD

<b>Pace</b>			Lab Identification #:	30326159005
Sample Received Date:	9/24/2019	Sample Receipt Temperatures (°C):	N/A	
Sample Received Time:	9:15 AM	Sample Received By:	NJ	

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.221 ± 0.435 (0.780)	pCi/L			EPA 903.1	10/9/2019	2:05 PM	MK1
Radium-228	0.119 ± 0.537 (1.21)	pCi/L			EPA 904.0	10/8/2019	2:36 PM	VAL
Total Radium Calculation	0.340 ± 0.972 (1.99)	pCi/L			Total Radium Calculation	10/14/2019	10:13 AM	CMC

Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By : 

Jared Daugherty - Chemist  
09:34 AM 10/31/2019



Eric Hamilton - QA/QC Chemist  
10:52 AM 11/01/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 9/27/2019  
 Sample Collection Time: 10:45 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	701.72	MSL		9/27/2019	10:45 AM	BTB
Turbidity	1.45	NTU	SM 2130, B-2001	9/27/2019	10:45 AM	BTB
Conductivity	2566	µS/cm	SM 2510, B-2011	9/27/2019	10:45 AM	BTB
Temperature	55.74	°F	SM 2550, B-2010	9/27/2019	10:45 AM	BTB
Oxidation-Reduction Potential	33.2	mV	SM 2580, B-2011	9/27/2019	10:45 AM	BTB
pH	5.90	S.U.	SM 4500-H+, B-2011	9/27/2019	10:45 AM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	9/27/2019	10:45 AM	BTB

Lab Identification #: 1900515

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 9/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 3:30 PM      Sample Received By: TY

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Arsenic	2.6	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Barium	69.8	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Boron	2260	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Calcium	299000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	1:20 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Cobalt	8.1	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Lithium	128	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Molybdenum	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:21 PM	JD
Mercury	< 0.0200	µg/L	0.0180	0.0200	EPA 245.7 Rev 2.0 (2005)	10/16/2019	9:57 AM	JD
Chloride	105	mg/L	0.8	2.5	EPA 300.0 Rev 2.1 (1993)	10/11/2019	12:48 AM	JD
Fluoride	< 0.50	mg/L	0.06	0.50	EPA 300.0 Rev 2.1 (1993)	10/17/2019	9:09 AM	JD
Sulfate	404	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	10/11/2019	12:48 AM	JD
Solids, Total Dissolved	2050	mg/L		50.0	SM 2540, C-2011	10/1/2019	1:57 PM	JD

Lab Identification #: 30329014001

**Pace**

 Sample Received Date: 10/9/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:20 AM      Sample Received By: NJ

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.808 ± 0.626 (0.883)	pCi/L			EPA 903.1	10/25/2019	12:41 PM	MK1
Radium-228	2.32 ± 0.721 (0.960)	pCi/L			EPA 904.0	10/24/2019	12:43 PM	VAL
Total Radium Calculation	3.13 ± 1.35 (1.84)	pCi/L			Total Radium Calculation	10/29/2019	11:13 AM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:09 PM 11/13/2019



Eric Hamilton - QA/QC Chemist

04:00 PM 11/14/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 9/27/2019  
 Sample Collection Time: 12:02 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	547.08	MSL		9/27/2019	12:02 PM	BTB
Turbidity	2.13	NTU	SM 2130, B-2001	9/27/2019	12:02 PM	BTB
Conductivity	1602	µS/cm	SM 2510, B-2011	9/27/2019	12:02 PM	BTB
Temperature	61.20	°F	SM 2550, B-2010	9/27/2019	12:02 PM	BTB
Oxidation-Reduction Potential	-165.4	mV	SM 2580, B-2011	9/27/2019	12:02 PM	BTB
pH	7.76	S.U.	SM 4500-H+, B-2011	9/27/2019	12:02 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	9/27/2019	12:02 PM	BTB

Lab Identification #: 1900516

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 9/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 3:30 PM      Sample Received By: TY

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Arsenic	1.3	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Barium	69.5	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Boron	1280	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Calcium	33800	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	1:23 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Cobalt	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Lithium	90.2	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Molybdenum	4.8	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:25 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	10/15/2019	2:10 PM	JD
Chloride	230	mg/L	0.8	2.5	EPA 300.0 Rev 2.1 (1993)	10/11/2019	1:10 AM	JD
Fluoride	0.69	mg/L	0.06	0.50	EPA 300.0 Rev 2.1 (1993)	10/17/2019	9:31 AM	JD
Sulfate	25.8	mg/L	0.24	1.0	EPA 300.0 Rev 2.1 (1993)	10/10/2019	8:49 PM	JD
Solids, Total Dissolved	912	mg/L		50.0	SM 2540, C-2011	10/1/2019	1:57 PM	JD

Lab Identification #: 30329014002

**Pace**

 Sample Received Date: 10/9/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:20 AM      Sample Received By: NJ

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.124 ± 0.298 (0.576)	pCi/L			EPA 903.1	10/25/2019	12:41 PM	MK1
Radium-228	0.927 ± 0.506 (0.921)	pCi/L			EPA 904.0	10/24/2019	12:43 PM	VAL
Total Radium Calculation	1.05 ± 0.804 ( 1.50 )	pCi/L			Total Radium Calculation	10/29/2019	11:13 AM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:09 PM 11/13/2019



Eric Hamilton - QA/QC Chemist

04:00 PM 11/14/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.30  
 Gradient: Down

 Sample Collection Date: 9/27/2019  
 Sample Collection Time: 4:42 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	560.72	MSL		9/27/2019	4:42 PM	BTB
Turbidity	3.18	NTU	SM 2130, B-2001	9/27/2019	4:42 PM	BTB
Conductivity	2777	µS/cm	SM 2510, B-2011	9/27/2019	4:42 PM	BTB
Temperature	62.33	°F	SM 2550, B-2010	9/27/2019	4:42 PM	BTB
Oxidation-Reduction Potential	13.1	mV	SM 2580, B-2011	9/27/2019	4:42 PM	BTB
pH	7.50	S.U.	SM 4500-H+, B-2011	9/27/2019	4:42 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	9/27/2019	4:42 PM	BTB

Lab Identification #: 1900517

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 9/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 3:30 PM      Sample Received By: TY

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Barium	207	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Boron	2950	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Calcium	49300	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	1:27 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Cobalt	1.6	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Lithium	157	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Molybdenum	4.7	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:37 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	10/15/2019	1:49 PM	JD
Chloride	580	mg/L	1.5	5.0	EPA 300.0 Rev 2.1 (1993)	10/11/2019	1:32 AM	JD
Fluoride	1.07	mg/L	0.06	0.50	EPA 300.0 Rev 2.1 (1993)	10/17/2019	9:52 AM	JD
Sulfate	211	mg/L	2.45	10.0	EPA 300.0 Rev 2.1 (1993)	10/11/2019	1:32 AM	JD
Solids, Total Dissolved	1710	mg/L		50.0	SM 2540, C-2011	10/1/2019	1:57 PM	JD

Lab Identification #: 30329014003

**Pace**

 Sample Received Date: 10/9/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:20 AM      Sample Received By: NJ

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.175 ± 0.381 (0.702)	pCi/L			EPA 903.1	10/25/2019	12:41 PM	MK1
Radium-228	0.694 ± 0.419 (0.777)	pCi/L			EPA 904.0	10/24/2019	12:43 PM	VAL
Total Radium Calculation	0.869 ± 0.800 ( 1.48 )	pCi/L			Total Radium Calculation	10/29/2019	11:13 AM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:09 PM 11/13/2019



Eric Hamilton - QA/QC Chemist

04:00 PM 11/14/2019

**Certificate of Analysis**

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 9/27/2019  
 Sample Collection Time: 3:47 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	523.48	MSL		9/27/2019	3:47 PM	BTB
Turbidity	1.77	NTU	SM 2130, B-2001	9/27/2019	3:47 PM	BTB
Conductivity	1554	µS/cm	SM 2510, B-2011	9/27/2019	3:47 PM	BTB
Temperature	64.22	°F	SM 2550, B-2010	9/27/2019	3:47 PM	BTB
Oxidation-Reduction Potential	89.4	mV	SM 2580, B-2011	9/27/2019	3:47 PM	BTB
pH	6.40	S.U.	SM 4500-H+, B-2011	9/27/2019	3:47 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	9/27/2019	3:47 PM	BTB

Lab Identification #: 1900518

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 9/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 3:30 PM      Sample Received By: TY

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Barium	114	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Boron	1270	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Calcium	149000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	1:31 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Cobalt	4.1	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Lithium	43.0	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Molybdenum	1.1	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:41 PM	JD
Mercury	< 0.0100	µg/L	0.0090	0.0100	EPA 245.7 Rev 2.0 (2005)	10/16/2019	9:47 AM	JD
Chloride	29.4	mg/L	0.2	0.5	EPA 300.0 Rev 2.1 (1993)	10/10/2019	9:33 PM	JD
Fluoride	< 0.50	mg/L	0.06	0.50	EPA 300.0 Rev 2.1 (1993)	10/17/2019	10:14 AM	JD
Sulfate	219	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	10/11/2019	1:54 AM	JD
Solids, Total Dissolved	1090	mg/L		50.0	SM 2540, C-2011	10/1/2019	1:57 PM	JD

Lab Identification #: 30329014004

**Pace**

 Sample Received Date: 10/9/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:20 AM      Sample Received By: NJ

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.358 ± 0.407 (0.642)	pCi/L			EPA 903.1	10/25/2019	12:41 PM	MK1
Radium-228	0.896 ± 0.507 (0.956)	pCi/L			EPA 904.0	10/24/2019	12:52 PM	VAL
Total Radium Calculation	1.25 ± 0.914 ( 1.60 )	pCi/L			Total Radium Calculation	10/29/2019	11:13 AM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:09 PM 11/13/2019



Eric Hamilton - QA/QC Chemist

04:00 PM 11/14/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 9/27/2019  
 Sample Collection Time: 1:51 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	526.7	MSL		9/27/2019	1:51 PM	BTB
Turbidity	0.52	NTU	SM 2130, B-2001	9/27/2019	1:51 PM	BTB
Conductivity	865.0	µS/cm	SM 2510, B-2011	9/27/2019	1:51 PM	BTB
Temperature	64.13	°F	SM 2550, B-2010	9/27/2019	1:51 PM	BTB
Oxidation-Reduction Potential	255.5	mV	SM 2580, B-2011	9/27/2019	1:51 PM	BTB
pH	7.00	S.U.	SM 4500-H+, B-2011	9/27/2019	1:51 PM	BTB
Oxygen, dissolved	2.3	mg/L	SM 4500-O	9/27/2019	1:51 PM	BTB

Lab Identification #: 1900519

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 9/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 3:30 PM      Sample Received By: TY

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Barium	117	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Boron	316	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Calcium	115000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	1:35 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Cobalt	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Lithium	26.8	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Molybdenum	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	10/2/2019	12:45 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	10/15/2019	2:22 PM	JD
Chloride	11.8	mg/L	0.2	0.5	EPA 300.0 Rev 2.1 (1993)	10/10/2019	9:54 PM	JD
Fluoride	< 0.50	mg/L	0.06	0.50	EPA 300.0 Rev 2.1 (1993)	10/17/2019	10:36 AM	JD
Sulfate	213	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	10/11/2019	2:16 AM	JD
Solids, Total Dissolved	630	mg/L		25.0	SM 2540, C-2011	10/1/2019	1:57 PM	JD

Lab Identification #: 30329014005

**Pace**

 Sample Received Date: 10/9/2019      Sample Receipt Temperatures (°C): NA  
 Sample Received Time: 9:20 AM      Sample Received By: NJ

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.344 ± 0.357 (0.532)	pCi/L			EPA 903.1	10/25/2019	12:41 PM	MK1
Radium-228	0.470 ± 0.433 (0.891)	pCi/L			EPA 904.0	10/24/2019	12:52 PM	VAL
Total Radium Calculation	0.811 ± 0.790 (1.42)	pCi/L			Total Radium Calculation	10/29/2019	11:13 AM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:09 PM 11/13/2019



Eric Hamilton - QA/QC Chemist

04:00 PM 11/14/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-01  
 AKGW No.: 8006-4554  
 Well Depth (Ft.): 37.57  
 Well Elevation (Ft. MSL): 736.38  
 Gradient: Up

 Sample Collection Date: 10/28/2019  
 Sample Collection Time: 11:37 AM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	701.61	MSL		10/28/2019	11:37 AM	BTB
Turbidity	1.08	NTU	SM 2130, B-2001	10/28/2019	11:37 AM	BTB
Conductivity	2899	µS/cm	SM 2510, B-2011	10/28/2019	11:37 AM	BTB
Temperature	53.47	°F	SM 2550, B-2010	10/28/2019	11:37 AM	BTB
Oxidation-Reduction Potential	52.2	mV	SM 2580, B-2011	10/28/2019	11:37 AM	BTB
pH	5.70	S.U.	SM 4500-H+, B-2011	10/28/2019	11:37 AM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	10/28/2019	11:37 AM	BTB

Lab Identification #: 1900524

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 10/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 12:50 PM      Sample Received By: JD

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Arsenic	3.3	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Barium	94.3	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Boron	2500	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	1:10 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:12 PM	JD
Calcium	296000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	12:41 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Cobalt	8.2	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Lead	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/19/2019	9:46 AM	JD
Lithium	149	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Molybdenum	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:30 PM	JD
Selenium	1.2	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:12 PM	JD
Thallium	< 0.20	µg/L	0.08	0.20	EPA 200.8, Rev. 5.4 (1994)	11/19/2019	9:46 AM	JD
Mercury	< 0.0200	µg/L	0.0180	0.0200	EPA 245.7 Rev 2.0 (2005)	11/8/2019	2:42 PM	JD
Chloride	197	mg/L	0.8	2.5	EPA 300.0 Rev 2.1 (1993)	11/5/2019	1:13 PM	JD
Fluoride	< 0.50	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	11/4/2019	7:50 PM	JD
Sulfate	430	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	11/5/2019	1:13 PM	JD
Solids, Total Dissolved	2190	mg/L		50.0	SM 2540, C-2011	11/1/2019	2:20 PM	JD

Lab Identification #: 30333925001

**Pace**

 Sample Received Date: 11/6/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: DK

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	1.29 ± 0.870 (1.14 )	pCi/L			EPA 903.1	11/22/2019	11:41 AM	MK1
Radium-228	0.469 ± 0.369 (0.729)	pCi/L			EPA 904.0	11/21/2019	3:48 PM	VAL
Total Radium Calculation	1.76 ± 1.24 (1.87 )	pCi/L			Total Radium Calculation	11/22/2019	12:35 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:44 PM 12/04/2019



Eric Hamilton - QA/QC Chemist

01:25 PM 12/06/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-02  
 AKGW No.: 8006-4555  
 Well Depth (Ft.): 43.02  
 Well Elevation (Ft. MSL): 570.93  
 Gradient: Up

 Sample Collection Date: 10/28/2019  
 Sample Collection Time: 12:52 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	546.68	MSL		10/28/2019	12:52 PM	BTB
Turbidity	4.79	NTU	SM 2130, B-2001	10/28/2019	12:52 PM	BTB
Conductivity	1767	µS/cm	SM 2510, B-2011	10/28/2019	12:52 PM	BTB
Temperature	55.47	°F	SM 2550, B-2010	10/28/2019	12:52 PM	BTB
Oxidation-Reduction Potential	-156.6	mV	SM 2580, B-2011	10/28/2019	12:52 PM	BTB
pH	7.51	S.U.	SM 4500-H+, B-2011	10/28/2019	12:52 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	10/28/2019	12:52 PM	BTB

Lab Identification #: 1900525

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 10/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 12:50 PM      Sample Received By: JD

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Arsenic	1.8	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Barium	88.5	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Boron	1210	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	1:11 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:14 PM	JD
Calcium	35400	µg/L	67.6	125	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Cobalt	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Lithium	75.8	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Molybdenum	3.4	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:14 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:34 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	11/1/2019	10:17 AM	JD
Chloride	212	mg/L	0.8	2.5	EPA 300.0 Rev 2.1 (1993)	11/5/2019	1:34 PM	JD
Fluoride	0.69	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	11/4/2019	8:12 PM	JD
Sulfate	27.2	mg/L	0.24	1.0	EPA 300.0 Rev 2.1 (1993)	11/4/2019	8:12 PM	JD
Solids, Total Dissolved	837	mg/L		25.0	SM 2540, C-2011	11/1/2019	2:20 PM	JD

Lab Identification #: 30333925002

**Pace**

 Sample Received Date: 11/6/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: DK

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.233 ± 0.379 (0.642)	pCi/L			EPA 903.1	11/22/2019	11:41 AM	MK1
Radium-228	0.110 ± 0.321 (0.720)	pCi/L			EPA 904.0	11/21/2019	3:48 PM	VAL
Total Radium Calculation	0.343 ± 0.700 (1.36)	pCi/L			Total Radium Calculation	11/22/2019	12:35 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:44 PM 12/04/2019



Eric Hamilton - QA/QC Chemist

01:25 PM 12/06/2019



### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-03  
 AKGW No.: 8006-4556  
 Well Depth (Ft.): 42.25  
 Well Elevation (Ft. MSL): 593.30  
 Gradient: Down

 Sample Collection Date: 10/28/2019  
 Sample Collection Time: 4:40 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	558.96	MSL		10/28/2019	4:40 PM	BTB
Turbidity	< 1.0	NTU	SM 2130, B-2001	10/28/2019	4:40 PM	BTB
Conductivity	3579	µS/cm	SM 2510, B-2011	10/28/2019	4:40 PM	BTB
Temperature	58.08	°F	SM 2550, B-2010	10/28/2019	4:40 PM	BTB
Oxidation-Reduction Potential	119.2	mV	SM 2580, B-2011	10/28/2019	4:40 PM	BTB
pH	7.11	S.U.	SM 4500-H+, B-2011	10/28/2019	4:40 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	10/28/2019	4:40 PM	BTB

Lab Identification #: 1900526

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 10/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 12:50 PM      Sample Received By: JD

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Barium	195	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Boron	3050	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	1:13 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:15 PM	JD
Calcium	71700	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	12:43 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Cobalt	1.4	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Lead	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/19/2019	9:48 AM	JD
Lithium	192	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Molybdenum	4.8	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:38 PM	JD
Selenium	1.8	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:15 PM	JD
Thallium	< 0.20	µg/L	0.08	0.20	EPA 200.8, Rev. 5.4 (1994)	11/19/2019	9:48 AM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	11/8/2019	2:48 PM	JD
Chloride	656	mg/L	1.5	5.0	EPA 300.0 Rev 2.1 (1993)	11/5/2019	1:56 PM	JD
Fluoride	1.02	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	11/4/2019	8:34 PM	JD
Sulfate	412	mg/L	2.45	10.0	EPA 300.0 Rev 2.1 (1993)	11/5/2019	1:56 PM	JD
Solids, Total Dissolved	2100	mg/L		50.0	SM 2540, C-2011	11/1/2019	2:20 PM	JD

Lab Identification #: 30333925003

**Pace**

 Sample Received Date: 11/6/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: DK

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.0687 ± 0.329 (0.186)	pCi/L			EPA 903.1	11/22/2019	11:41 AM	MK1
Radium-228	-0.0414 ± 0.343 (0.806)	pCi/L			EPA 904.0	11/21/2019	3:48 PM	VAL
Total Radium Calculation	0.0687 ± 0.672 (0.992)	pCi/L			Total Radium Calculation	11/22/2019	12:35 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:44 PM 12/04/2019



Eric Hamilton - QA/QC Chemist

01:25 PM 12/06/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-04  
 AKGW No.: 8006-4557  
 Well Depth (Ft.): 37.32  
 Well Elevation (Ft. MSL): 548.56  
 Gradient: Down

 Sample Collection Date: 10/28/2019  
 Sample Collection Time: 4:02 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	523.66	MSL		10/28/2019	4:02 PM	BTB
Turbidity	< 1.0	NTU	SM 2130, B-2001	10/28/2019	4:02 PM	BTB
Conductivity	1747	µS/cm	SM 2510, B-2011	10/28/2019	4:02 PM	BTB
Temperature	58.57	°F	SM 2550, B-2010	10/28/2019	4:02 PM	BTB
Oxidation-Reduction Potential	74.0	mV	SM 2580, B-2011	10/28/2019	4:02 PM	BTB
pH	6.02	S.U.	SM 4500-H+, B-2011	10/28/2019	4:02 PM	BTB
Oxygen, dissolved	< 1.0	mg/L	SM 4500-O	10/28/2019	4:02 PM	BTB

Lab Identification #: 1900527

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 10/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 12:50 PM      Sample Received By: JD

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Barium	137	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Boron	1180	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	1:14 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:17 PM	JD
Calcium	171000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	12:44 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Cobalt	3.7	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Lithium	37.3	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Molybdenum	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:17 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:42 PM	JD
Mercury	< 0.0100	µg/L	0.0090	0.0100	EPA 245.7 Rev 2.0 (2005)	11/8/2019	3:23 PM	JD
Chloride	28.4	mg/L	0.2	0.5	EPA 300.0 Rev 2.1 (1993)	11/4/2019	8:55 PM	JD
Fluoride	< 0.50	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	11/4/2019	8:55 PM	JD
Sulfate	250	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	11/5/2019	2:18 PM	JD
Solids, Total Dissolved	1130	mg/L		25.0	SM 2540, C-2011	11/1/2019	2:20 PM	JD

Lab Identification #: 30333925004

**Pace**

 Sample Received Date: 11/6/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: DK

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.495 ± 0.516 (0.778)	pCi/L			EPA 903.1	11/22/2019	11:41 AM	MK1
Radium-228	0.531 ± 0.366 (0.703)	pCi/L			EPA 904.0	11/21/2019	3:49 PM	VAL
Total Radium Calculation	1.03 ± 0.882 ( 1.48 )	pCi/L			Total Radium Calculation	11/22/2019	12:35 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:44 PM 12/04/2019



Eric Hamilton - QA/QC Chemist

01:25 PM 12/06/2019

### Certificate of Analysis

 Station: H.L. Spurlock Power Station  
 Well ID No: PH-MW-05  
 AKGW No.: 8006-4558  
 Well Depth (Ft.): 37.45  
 Well Elevation (Ft. MSL): 560.32  
 Gradient: Down

 Sample Collection Date: 10/28/2019  
 Sample Collection Time: 2:24 PM  
 Sample Collected By: BTB  
 Sample Matrix: Ground Water  
 Laboratory Certification ID: KY# 08012

Field Analyses	Result	Units	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Groundwater Elevation	526.67	MSL		10/28/2019	2:24 PM	BTB
Turbidity	< 1.0	NTU	SM 2130, B-2001	10/28/2019	2:24 PM	BTB
Conductivity	960.0	µS/cm	SM 2510, B-2011	10/28/2019	2:24 PM	BTB
Temperature	57.92	°F	SM 2550, B-2010	10/28/2019	2:24 PM	BTB
Oxidation-Reduction Potential	193.6	mV	SM 2580, B-2011	10/28/2019	2:24 PM	BTB
pH	6.81	S.U.	SM 4500-H+, B-2011	10/28/2019	2:24 PM	BTB
Oxygen, dissolved	3.77	mg/L	SM 4500-O	10/28/2019	2:24 PM	BTB

Lab Identification #: 1900528

**EKPC - Central Laboratory Analyses**

 Sample Received Date: 10/30/2019      Sample Receipt Temperatures (°C): < 6  
 Sample Received Time: 12:50 PM      Sample Received By: JD

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Antimony	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Arsenic	< 1.0	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Barium	129	µg/L	0.2	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Beryllium	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Boron	283	µg/L	3.4	50.0	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	1:16 PM	JD
Cadmium	< 0.10	µg/L	0.08	0.10	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:18 PM	JD
Calcium	136000	µg/L	676	1250	EPA 200.8, Rev. 5.4 (1994)	11/18/2019	12:45 PM	JD
Chromium	< 1.0	µg/L	0.5	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Cobalt	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Lead	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Lithium	< 25.0	µg/L	10.5	25.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Molybdenum	< 1.0	µg/L	0.1	1.0	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Selenium	< 1.0	µg/L	0.4	1.0	EPA 200.8, Rev. 5.4 (1994)	11/14/2019	2:18 PM	JD
Thallium	< 0.10	µg/L	0.04	0.10	EPA 200.8, Rev. 5.4 (1994)	11/8/2019	2:46 PM	JD
Mercury	< 0.0050	µg/L	0.0045	0.0050	EPA 245.7 Rev 2.0 (2005)	11/8/2019	3:01 PM	JD
Chloride	12.2	mg/L	0.2	0.5	EPA 300.0 Rev 2.1 (1993)	11/4/2019	9:17 PM	JD
Fluoride	< 0.50	mg/L	0.01	0.50	EPA 300.0 Rev 2.1 (1993)	11/4/2019	9:17 PM	JD
Sulfate	219	mg/L	1.23	5.0	EPA 300.0 Rev 2.1 (1993)	11/5/2019	2:40 PM	JD
Solids, Total Dissolved	644	mg/L		25.0	SM 2540, C-2011	11/1/2019	2:20 PM	JD

Lab Identification #: 30333925005

**Pace**

 Sample Received Date: 11/6/2019      Sample Receipt Temperatures (°C): N/A  
 Sample Received Time: 9:30 AM      Sample Received By: DK

Parameter	Result	Units	MDL	Report Limit	Analysis Method	Date Analyzed:	Time Analyzed:	Analyst:
Radium-226	0.416 ± 0.598 (0.979)	pCi/L			EPA 903.1	11/22/2019	11:41 AM	MK1
Radium-228	0.514 ± 0.340 (0.646)	pCi/L			EPA 904.0	11/21/2019	3:49 PM	VAL
Total Radium Calculation	0.930 ± 0.938 ( 1.63 )	pCi/L			Total Radium Calculation	11/22/2019	12:35 PM	CMC

## Comments / Notes:

Sample Results are compliant with East Kentucky Power Cooperatives Quality Assurance program. Quality Control sample results achieved laboratory specification.

Electronically Approved By :



Jared Daugherty - Chemist

12:44 PM 12/04/2019



Eric Hamilton - QA/QC Chemist

01:25 PM 12/06/2019

# APPENDIX D – Flow Calculations & Direction Maps

**GROUNDWATER FLOW VELOCITY CALCULATION**

**Facility Name:** Peg's Hill Landfill  
**Sampling Event Date:** February 25th, 2019

**INPUT VARIABLES: Downgradient wells <sup>(1)</sup>**

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 568.58 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 531.51 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

**CALCULATIONS:**

dh = 37.07 ft  
 Hyd. Grad.(i) = 0.049 ft/ft  
 GW Flow Velocity ( $K_h*i/n_e$ ) = 2.61E-03 ft/day

**INPUT VARIABLES: Background wells <sup>(2)</sup>**

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 706.40 ft  
 $h_2$  = 549.48 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

**CALCULATIONS:**

dh = 156.92 ft  
 i = 0.078 ft/ft  
 ( $K_h*i/n_e$ ) = 4.13E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

V = Groundwater flow velocity ( $\frac{feet}{day}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{feet}{day}$ )

i = Horizontal hydraulic gradient ( $\frac{feet}{foot}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

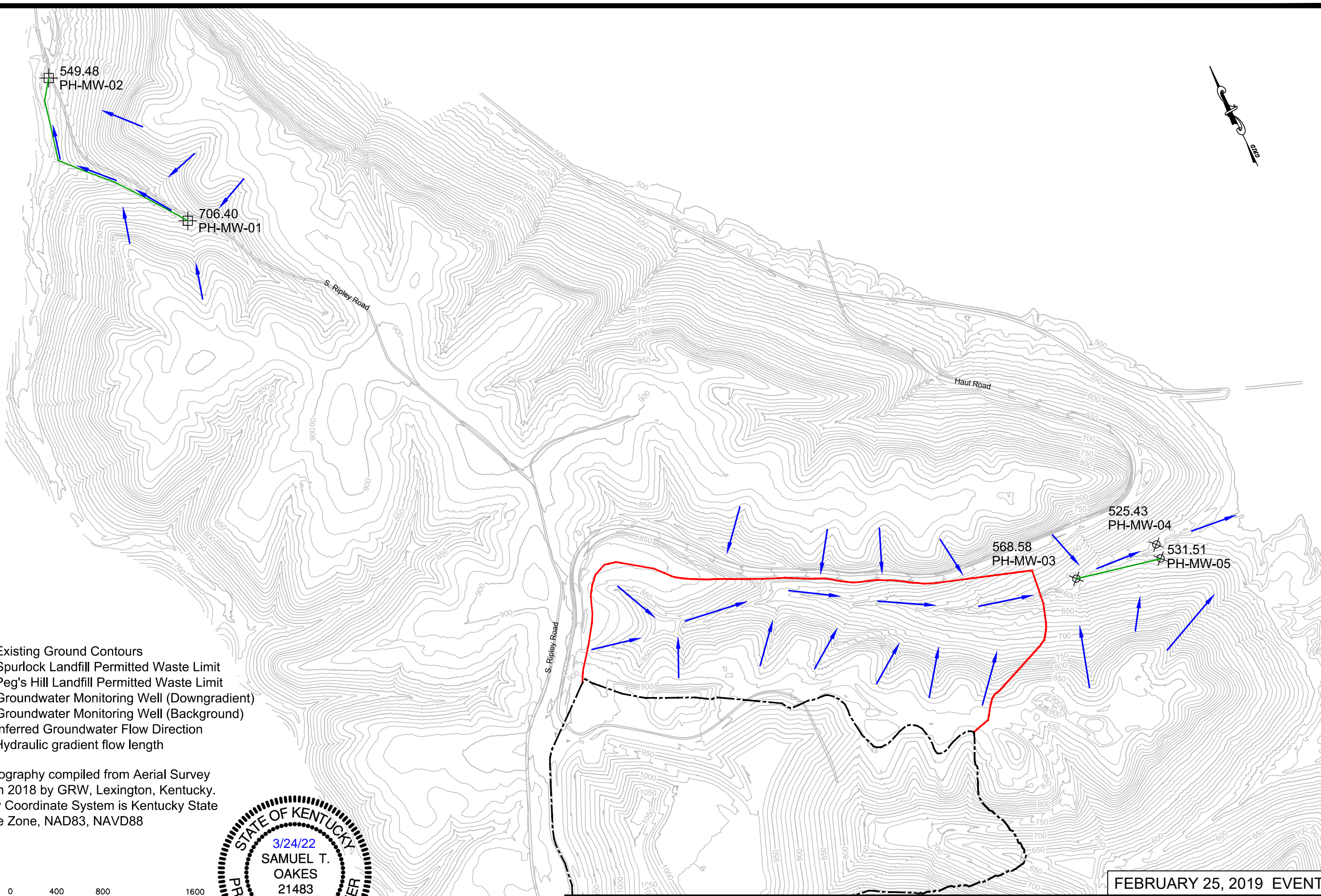
L = Distance between location 1 and 2

$n_e$  = Effective porosity

**Notes:**

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine h1. Groundwater elevation readings from downgradient well PH-MW-05 used to determine h2.
2. Groundwater elevation readings from background well PH-MW-01 used to determine h1. Groundwater elevation readings from background well PH-MW-02 used to determine h2.
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.



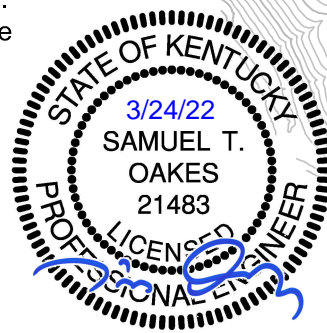
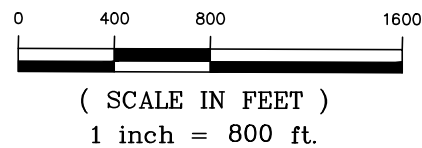


**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

**Note:**

- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
- 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



FEBRUARY 25, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: March 8th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 566.90 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 530.51 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 36.39 ft  
 Hyd. Grad.(i) = 0.049 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.57E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 705.01 ft  
 $h_2$  = 548.59 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 156.42 ft  
 i = 0.078 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.11E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

$V$  = Groundwater flow velocity ( $\frac{\text{feet}}{\text{day}}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{\text{feet}}{\text{day}}$ )

$i$  = Horizontal hydraulic gradient ( $\frac{\text{feet}}{\text{foot}}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

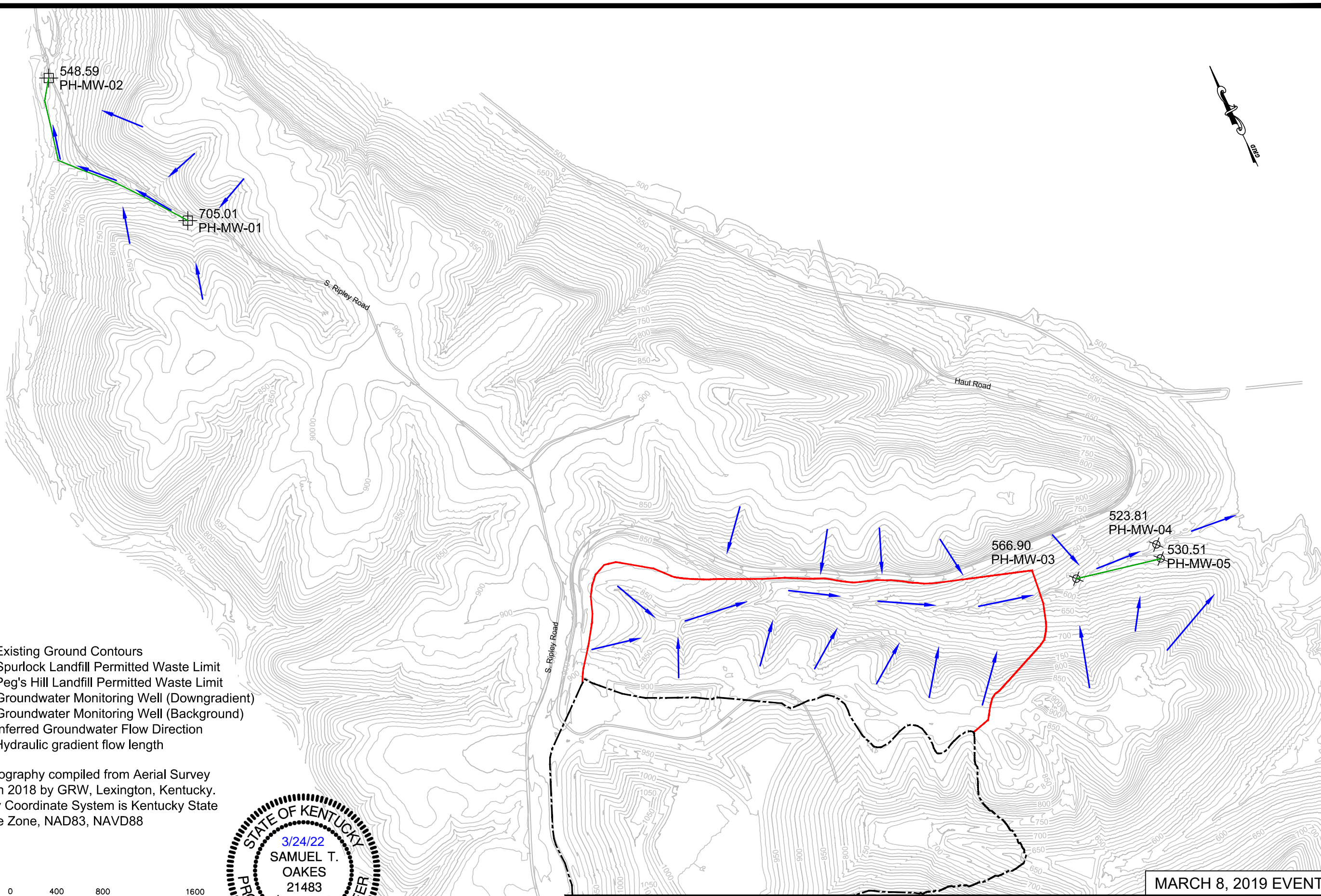
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity








### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.



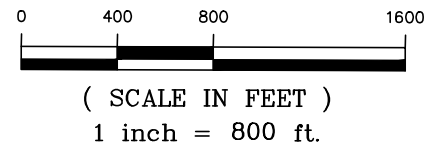


**LEGEND**

-  Existing Ground Contours
-  Spurlock Landfill Permitted Waste Limit
-  Peg's Hill Landfill Permitted Waste Limit
-  Groundwater Monitoring Well (Downgradient)
-  Groundwater Monitoring Well (Background)
-  Inferred Groundwater Flow Direction
-  Hydraulic gradient flow length

**Note:**

- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
- 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



MARCH 8, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**





## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: March 29th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 565.96 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 530.29 ft  
 Flow Length (L) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 35.67 ft  
 Hyd. Grad.(i) = 0.048 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.52E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 704.43 ft  
 $h_2$  = 547.52 ft  
 L = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 156.91 ft  
 i = 0.078 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.13E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

V = Groundwater flow velocity ( $\frac{\text{feet}}{\text{day}}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{\text{feet}}{\text{day}}$ )

i = Horizontal hydraulic gradient ( $\frac{\text{feet}}{\text{foot}}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

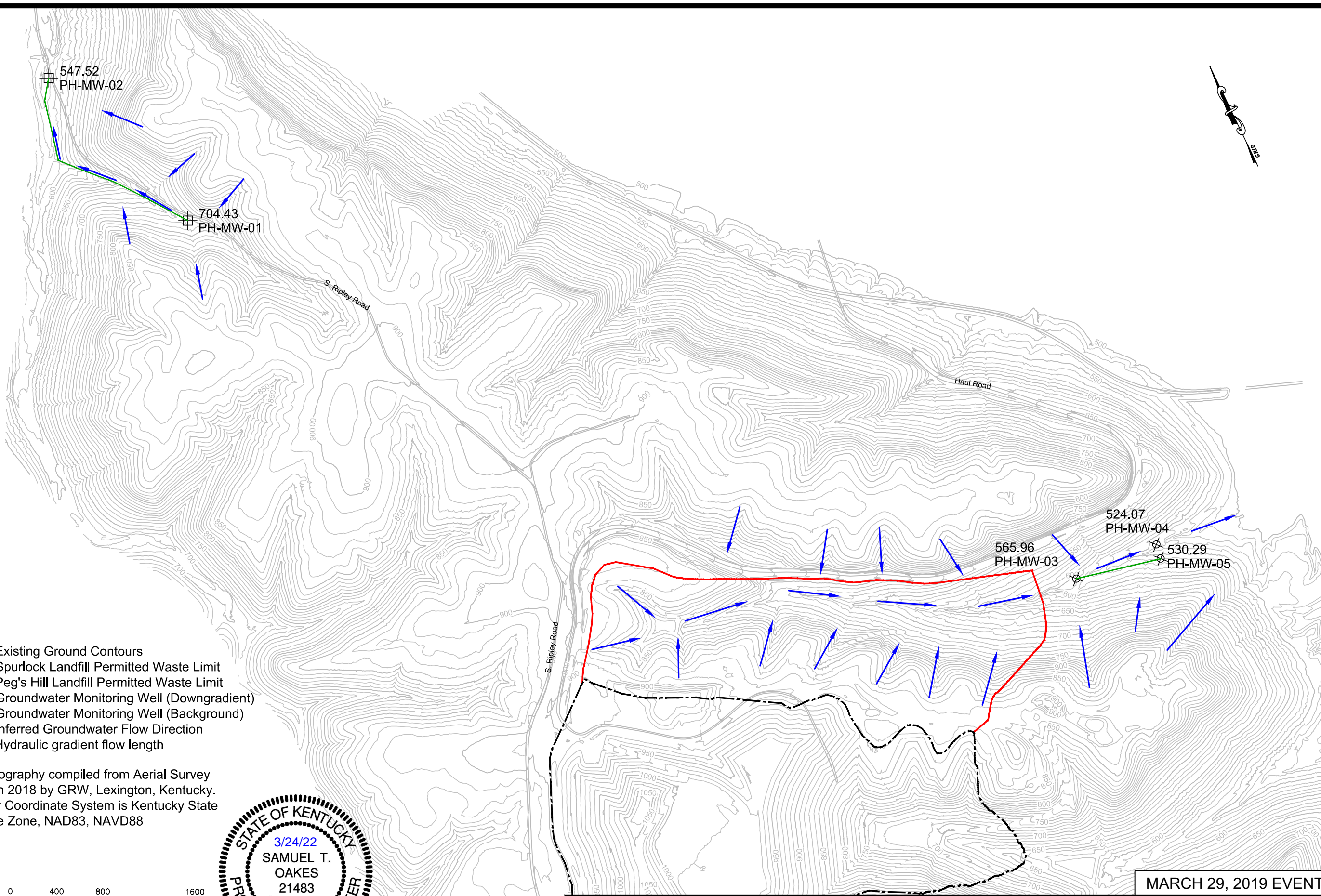
L = Distance between location 1 and 2

$n_e$  = Effective porosity


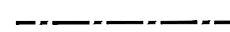




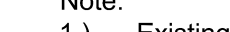
### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine h1. Groundwater elevation readings from downgradient well PH-MW-05 used to determine h2.
2. Groundwater elevation readings from background well PH-MW-01 used to determine h1. Groundwater elevation readings from background well PH-MW-02 used to determine h2.
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

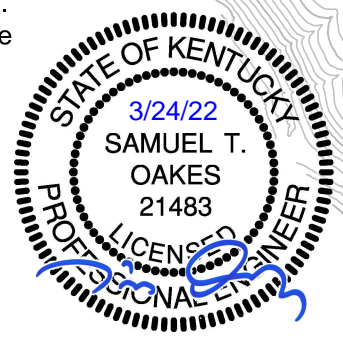
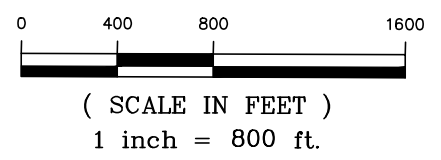




**LEGEND**

-  Existing Ground Contours
-  Spurlock Landfill Permitted Waste Limit
-  Peg's Hill Landfill Permitted Waste Limit
-  Groundwater Monitoring Well (Downgradient)
-  Groundwater Monitoring Well (Background)
-  Inferred Groundwater Flow Direction
-  Hydraulic gradient flow length

- Note:**
- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
  - 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



MARCH 29, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: April 12th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 565.01 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 530.66 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 34.35 ft  
 Hyd. Grad.(i) = 0.046 ft/ft  
 GW Flow Velocity ( $K_h \cdot i$ )/ $n_e$  = 2.42E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 703.57 ft  
 $h_2$  = 548.76 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.81 ft  
 $i$  = 0.077 ft/ft  
 $(K_h \cdot i)/n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h \cdot i}{n_e}$$

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$K_h$  = Horizontal Hydraulic Conductivity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{foot}}\right) = \frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

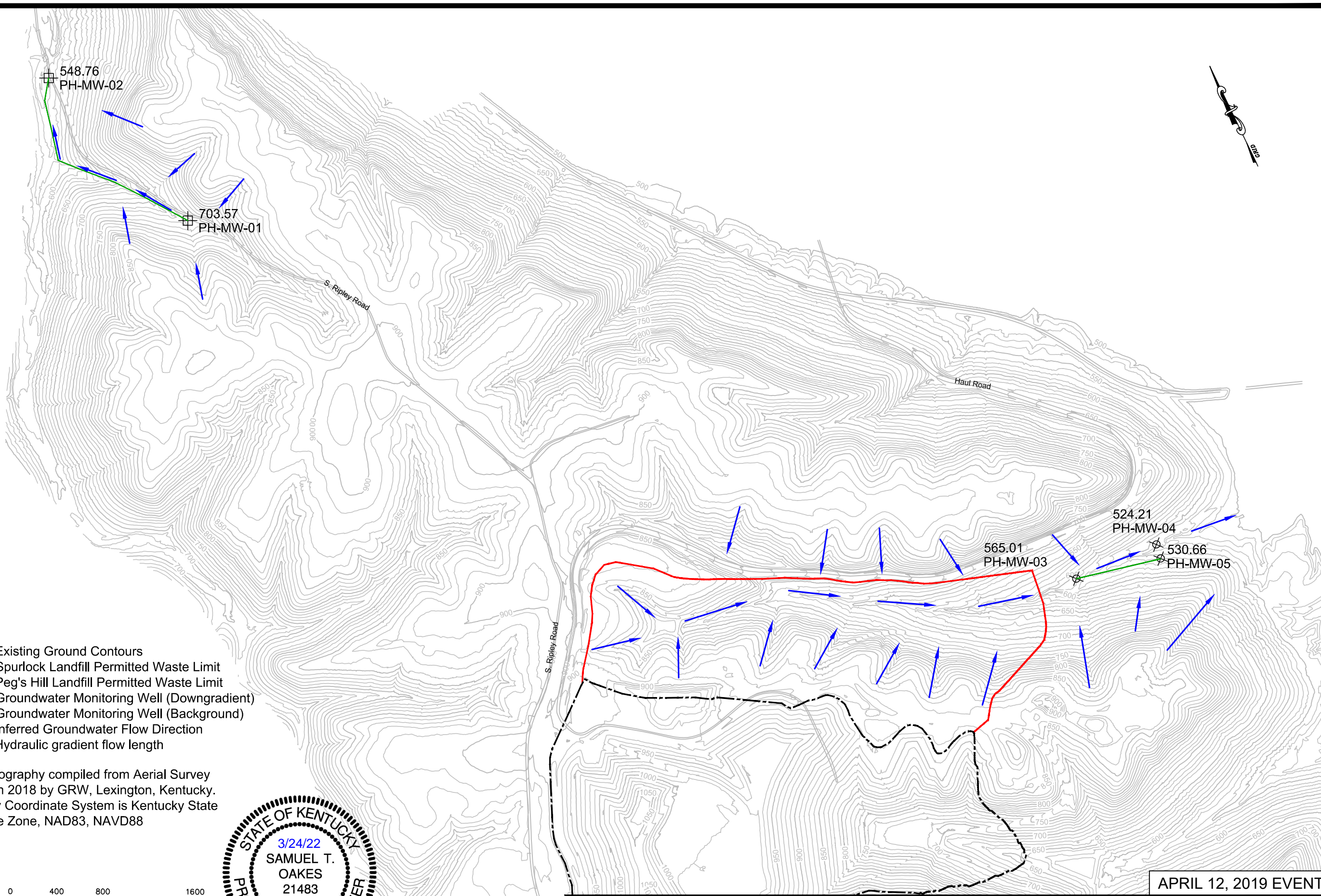
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity








### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

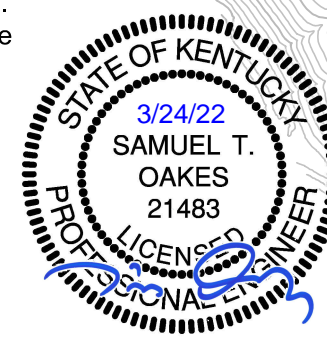
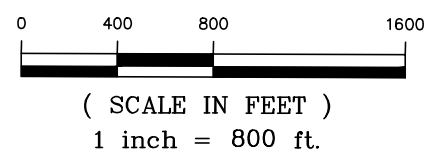




**LEGEND**

-  Existing Ground Contours
-  Spurlock Landfill Permitted Waste Limit
-  Peg's Hill Landfill Permitted Waste Limit
-  Groundwater Monitoring Well (Downgradient)
-  Groundwater Monitoring Well (Background)
-  Inferred Groundwater Flow Direction
-  Hydraulic gradient flow length

- Note:
- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
  - 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



APRIL 12, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: April 29th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 565.10 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 530.57 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 34.53 ft  
 Hyd. Grad.(i) = 0.046 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.44E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 703.27 ft  
 $h_2$  = 547.82 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 155.45 ft  
 i = 0.077 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.09E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

V = Groundwater flow velocity ( $\frac{\text{feet}}{\text{day}}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{\text{feet}}{\text{day}}$ )

i = Horizontal hydraulic gradient ( $\frac{\text{feet}}{\text{foot}}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

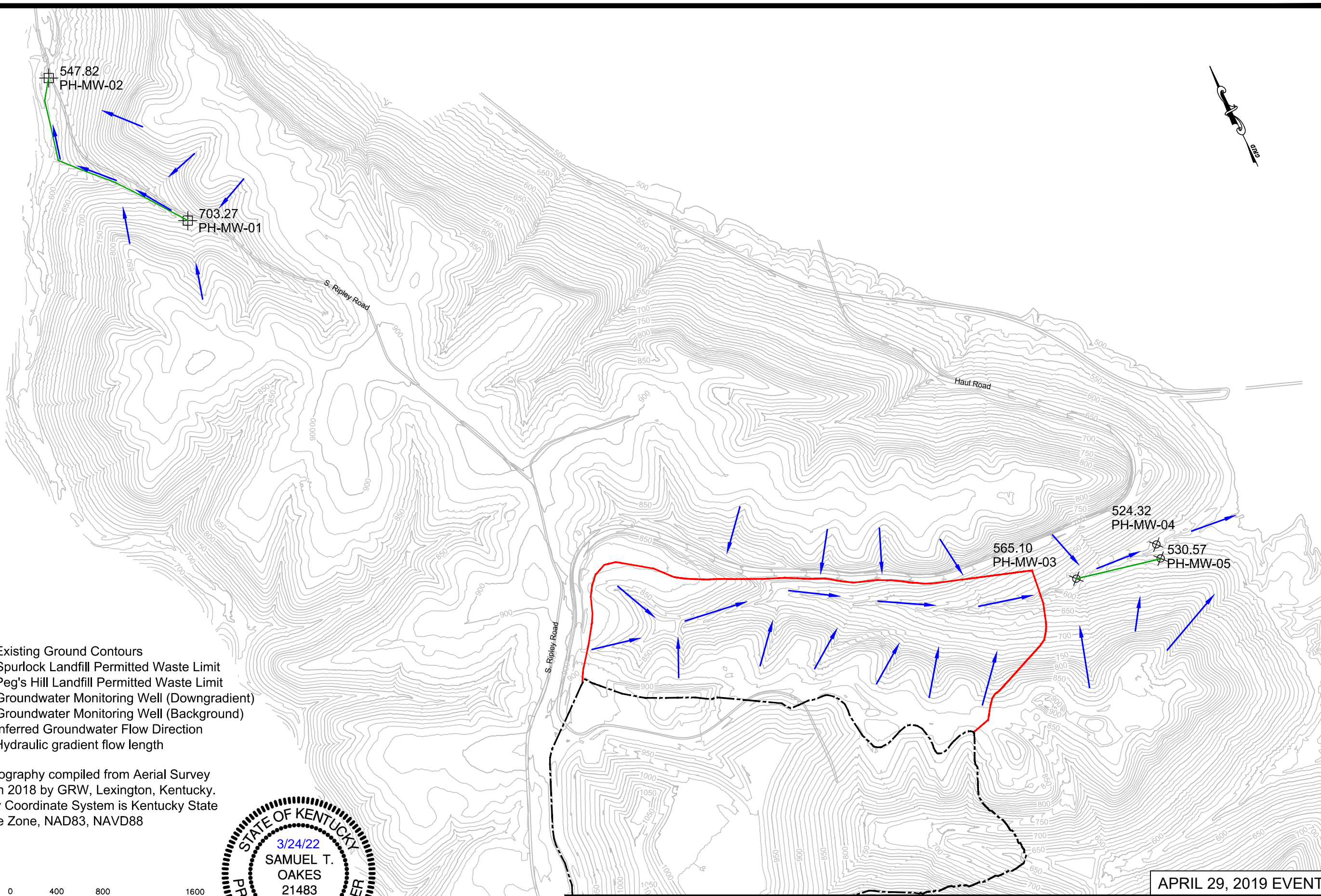
L = Distance between location 1 and 2

$n_e$  = Effective porosity


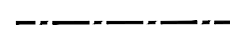




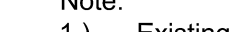
### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

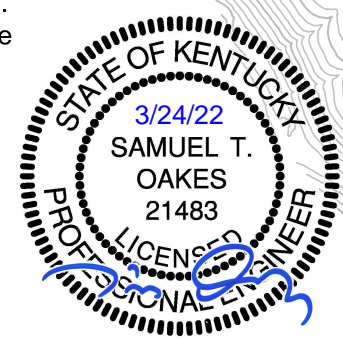
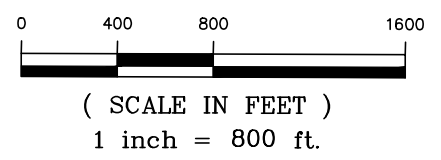




**LEGEND**

-  Existing Ground Contours
-  Spurlock Landfill Permitted Waste Limit
-  Peg's Hill Landfill Permitted Waste Limit
-  Groundwater Monitoring Well (Downgradient)
-  Groundwater Monitoring Well (Background)
-  Inferred Groundwater Flow Direction
-  Hydraulic gradient flow length

- Note:**
- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
  - 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



APRIL 29, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: May 17th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 565.20 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 530.06 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 35.14 ft  
 Hyd. Grad.(i) = 0.047 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.48E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 702.47 ft  
 $h_2$  = 547.57 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.90 ft  
 i = 0.077 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$K_h$  = Horizontal Hydraulic Conductivity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{foot}}\right) = \frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

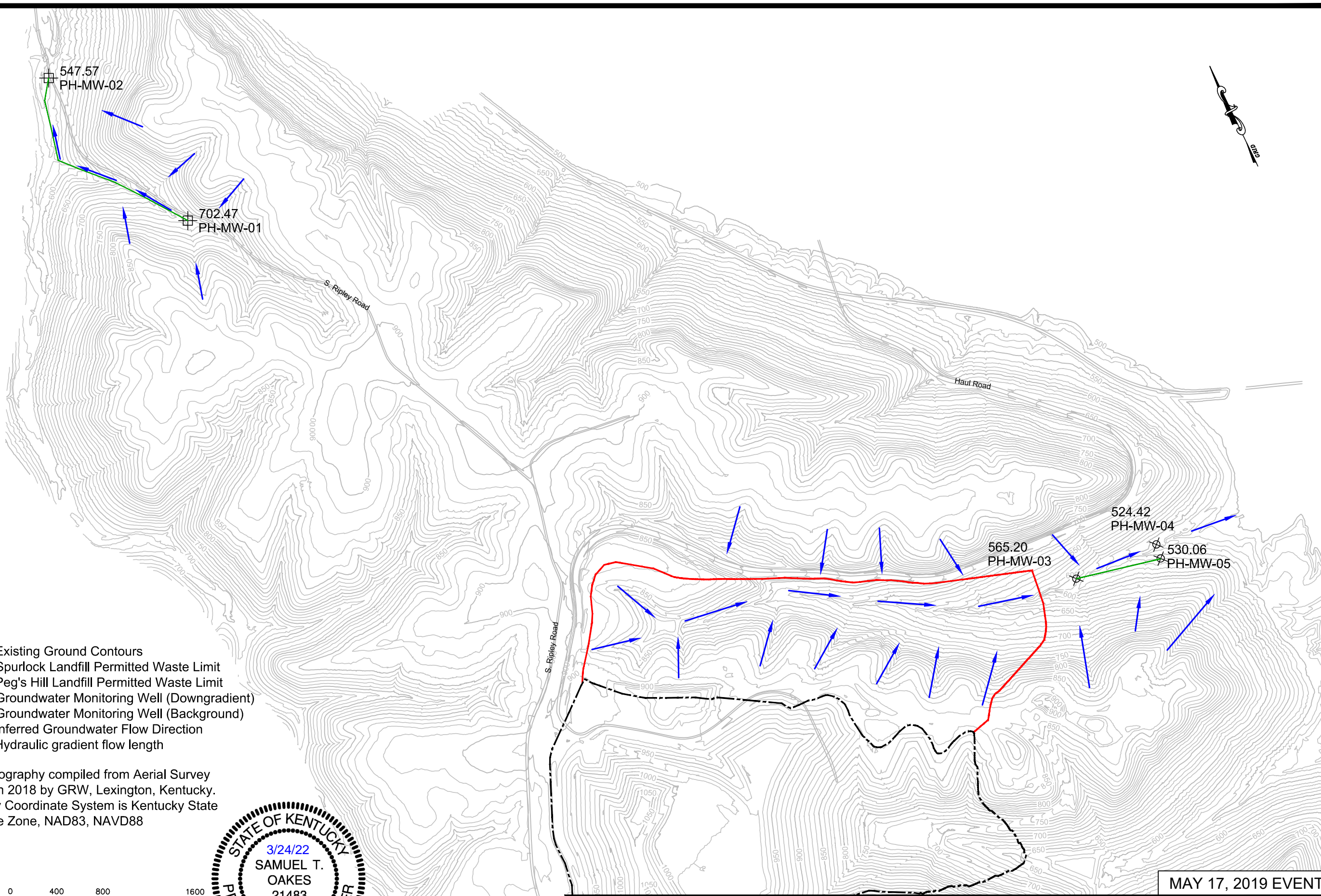
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity

### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

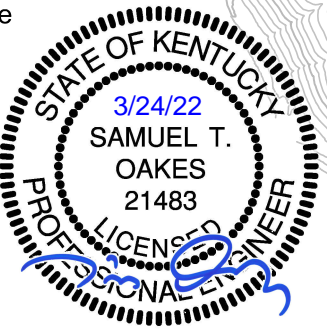
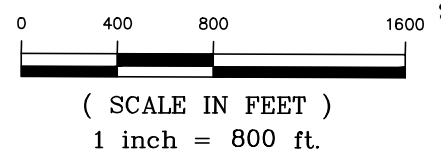




**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

- Note:
- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
  - 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



MAY 17, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**





## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: May 31st, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 564.26 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 529.40 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 34.86 ft  
 Hyd. Grad.(i) = 0.046 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.46E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 702.14 ft  
 $h_2$  = 547.43 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.71 ft  
 i = 0.077 ft/ft  
 $(K_h * i) / n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$K_h$  = Horizontal Hydraulic Conductivity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{foot}}\right) = \frac{h_1 - h_2}{L}$

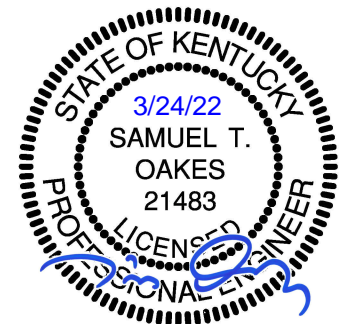
$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

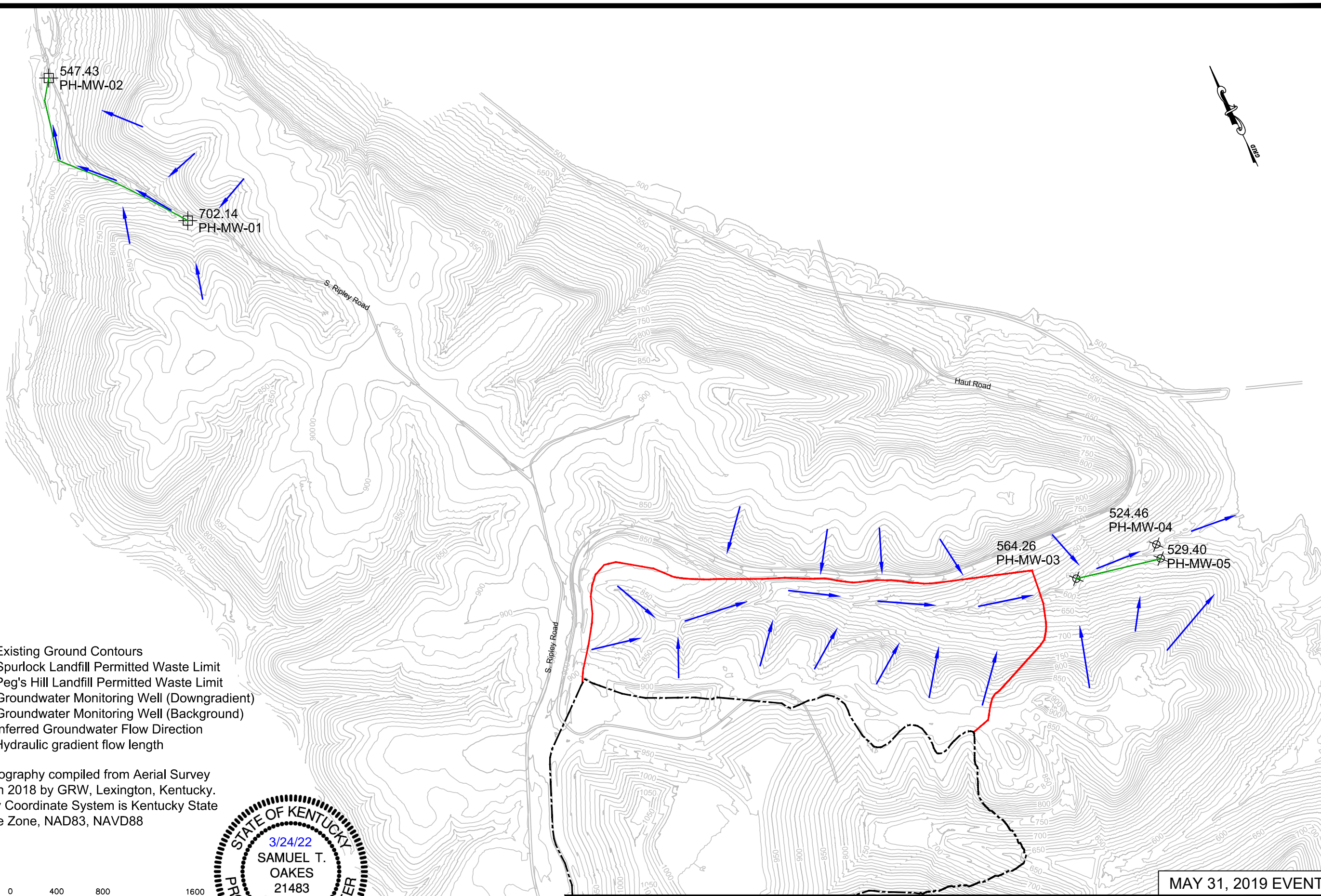
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity


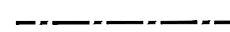




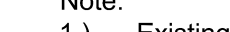
### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

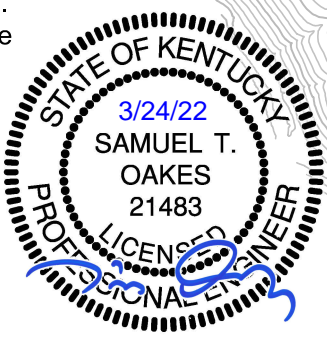
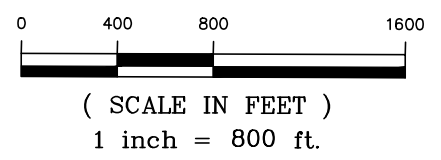




**LEGEND**

-  Existing Ground Contours
-  Spurlock Landfill Permitted Waste Limit
-  Peg's Hill Landfill Permitted Waste Limit
-  Groundwater Monitoring Well (Downgradient)
-  Groundwater Monitoring Well (Background)
-  Inferred Groundwater Flow Direction
-  Hydraulic gradient flow length

- Note:**
- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
  - 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



MAY 31, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: June 28th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 565.14 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 529.83 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 35.31 ft  
 Hyd. Grad.(i) = 0.047 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.49E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 702.91 ft  
 $h_2$  = 548.27 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.64 ft  
 i = 0.077 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$K_h$  = Horizontal Hydraulic Conductivity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{foot}}\right) = \frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

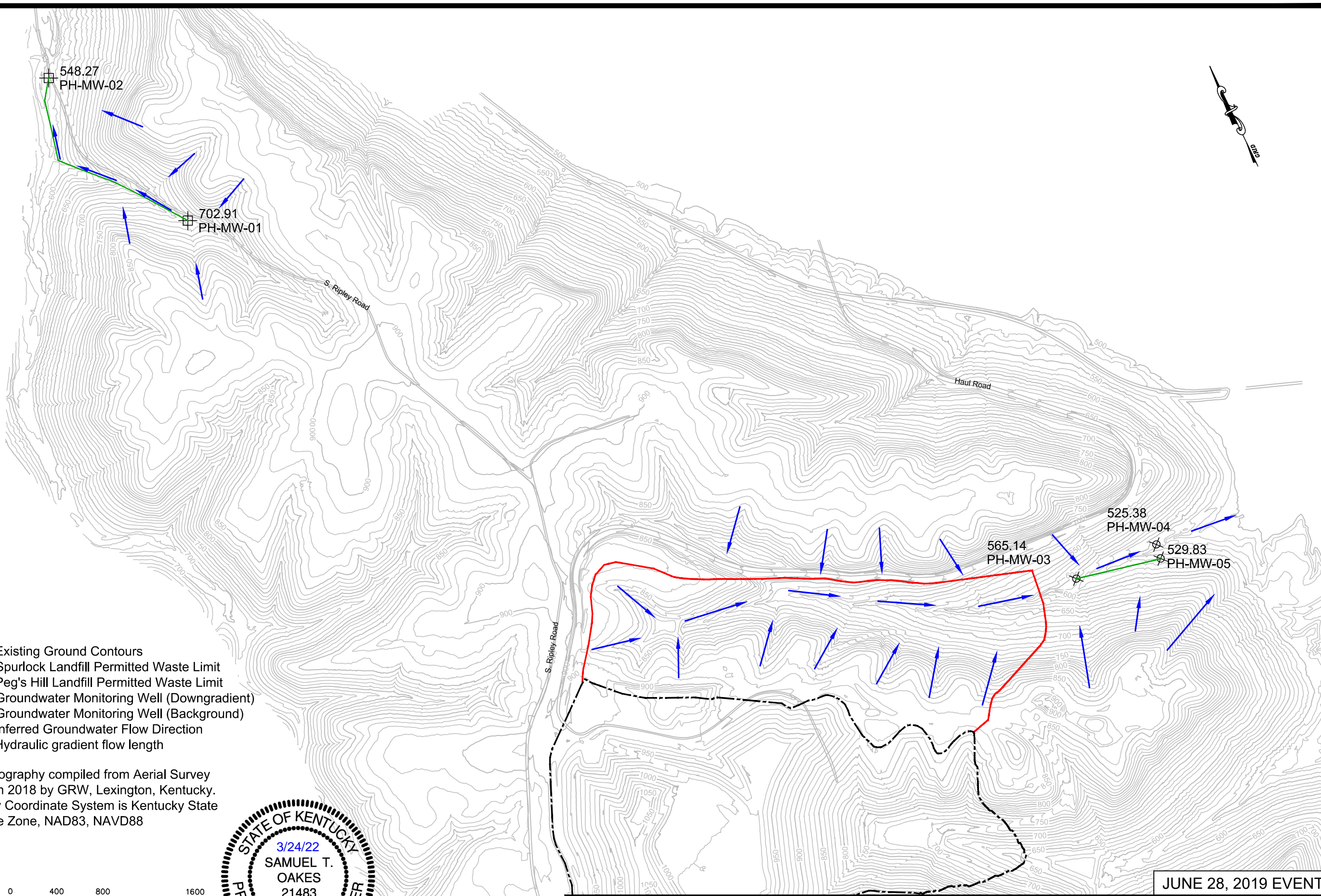
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity

### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.



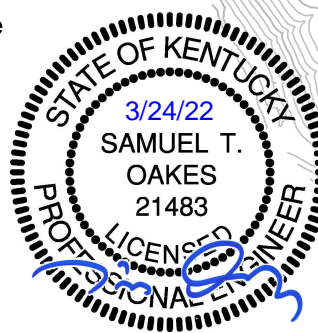
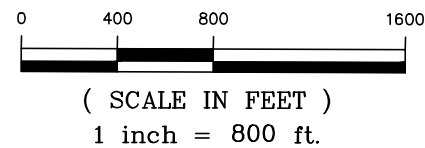


**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

**Note:**

- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
- 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



JUNE 28, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: July 29th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 564.59 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 528.21 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 36.38 ft  
 Hyd. Grad.(i) = 0.049 ft/ft  
 GW Flow Velocity ( $K_h*i$ )/ $n_e$  = 2.57E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 702.65 ft  
 $h_2$  = 547.68 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.97 ft  
 i = 0.077 ft/ft  
 ( $K_h*i$ )/ $n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$K_h$  = Horizontal Hydraulic Conductivity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{foot}}\right) = \frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

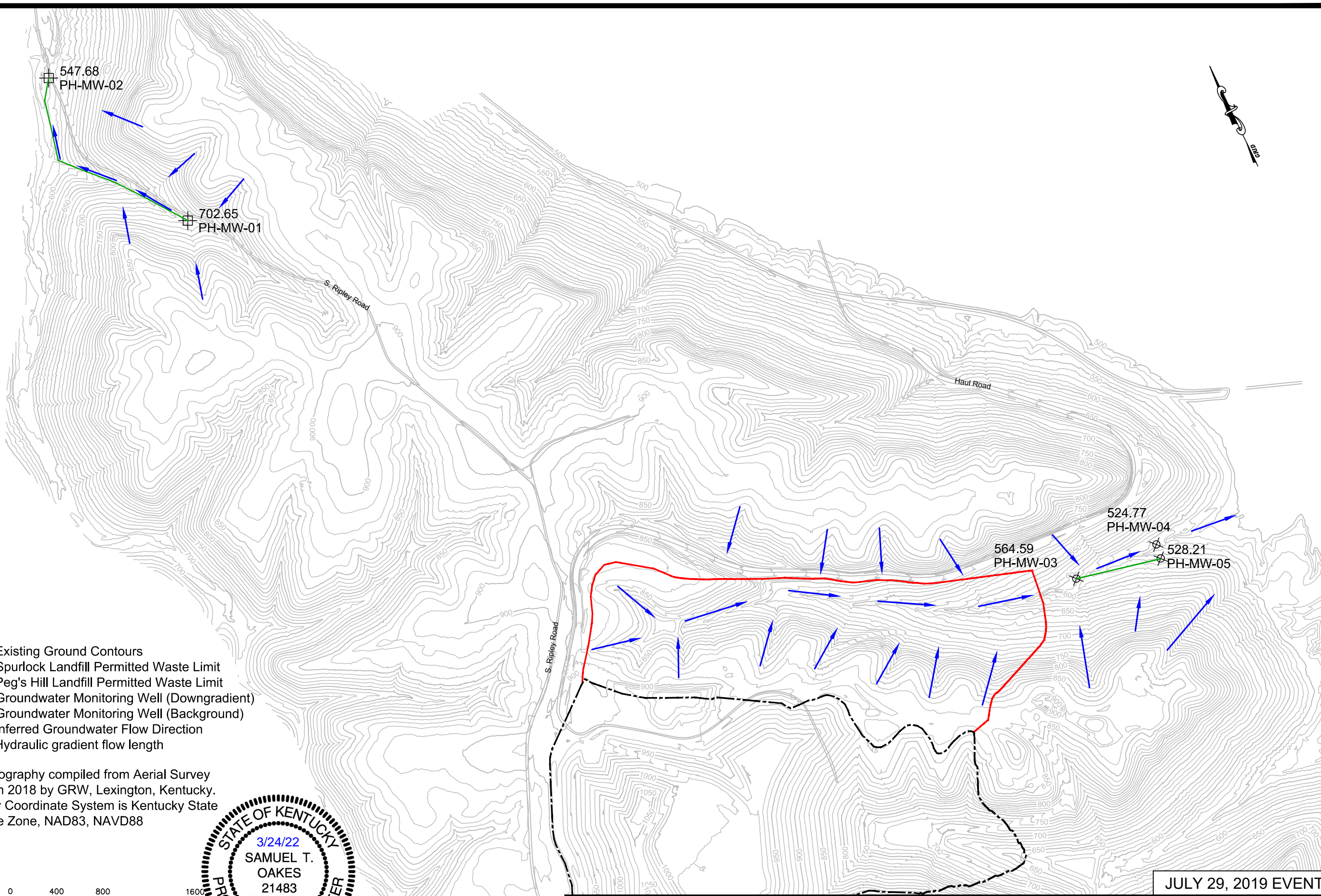
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity

### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

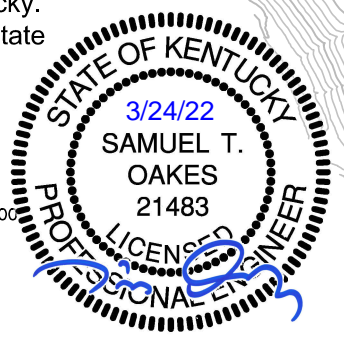
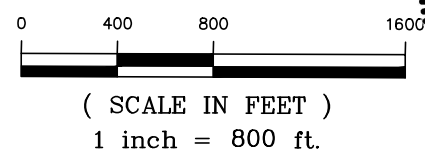




**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

- Note:**
- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
  - 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



JULY 29, 2019 EVENT



Project:	2019047
Checked By:	STO
Date:	03-15-22
Scale:	1"=800'

**PEG'S HILL LANDFILL**  
MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: September 3rd, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 563.64 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 528.07 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 35.57 ft  
 Hyd. Grad.(i) = 0.047 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.51E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 702.31 ft  
 $h_2$  = 547.71 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.60 ft  
 i = 0.077 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.06E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

V = Groundwater flow velocity ( $\frac{\text{feet}}{\text{day}}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{\text{feet}}{\text{day}}$ )

i = Horizontal hydraulic gradient ( $\frac{\text{feet}}{\text{foot}}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

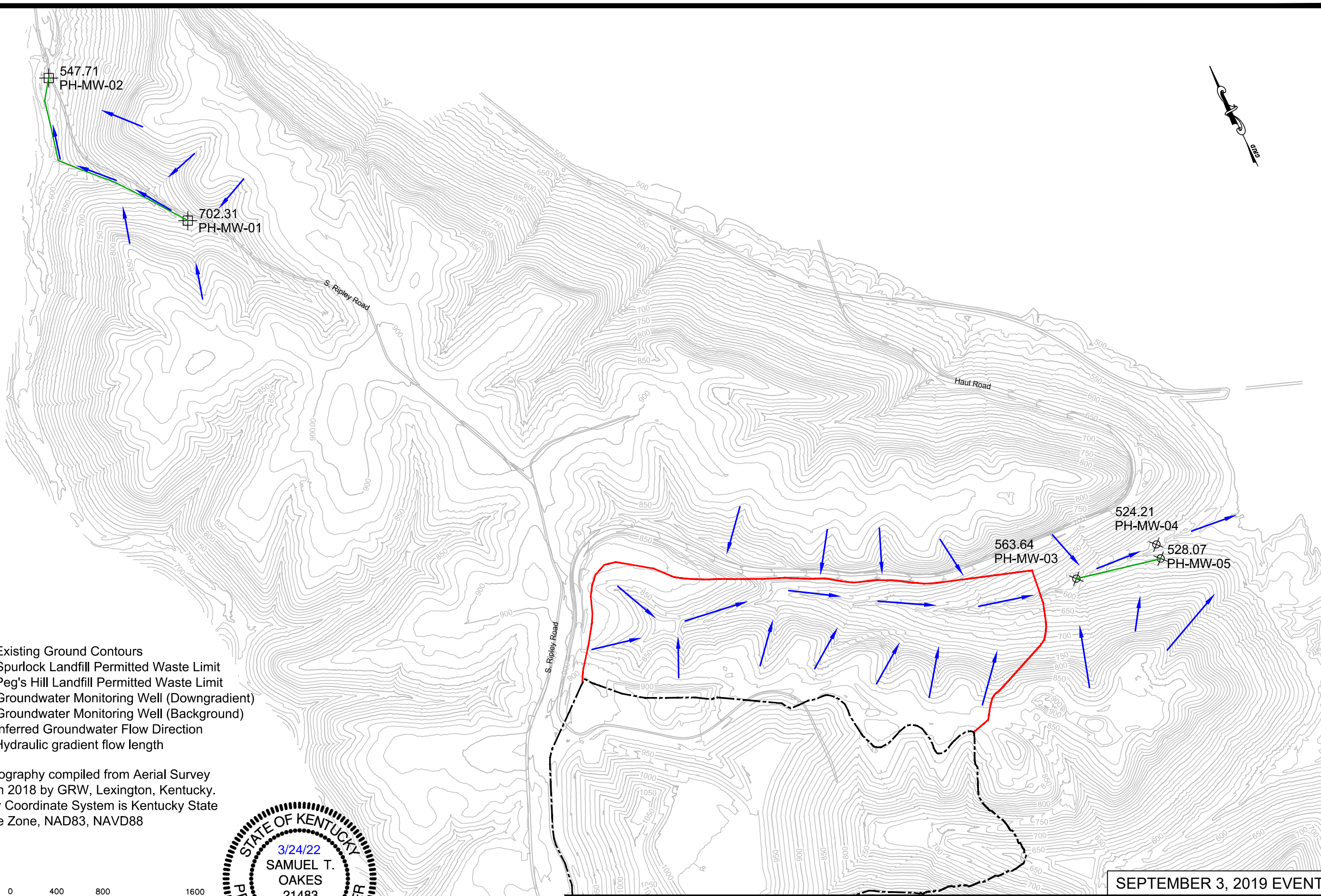
L = Distance between location 1 and 2

$n_e$  = Effective porosity








### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine h1. Groundwater elevation readings from downgradient well PH-MW-05 used to determine h2.
2. Groundwater elevation readings from background well PH-MW-01 used to determine h1. Groundwater elevation readings from background well PH-MW-02 used to determine h2.
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.



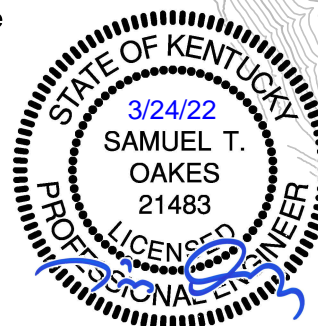
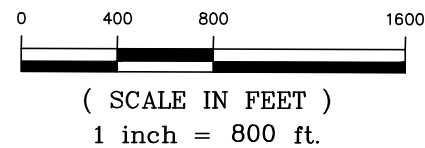


**LEGEND**

-  Existing Ground Contours
-  Spurlock Landfill Permitted Waste Limit
-  Peg's Hill Landfill Permitted Waste Limit
-  Groundwater Monitoring Well (Downgradient)
-  Groundwater Monitoring Well (Background)
-  Inferred Groundwater Flow Direction
-  Hydraulic gradient flow length

**Note:**

- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
- 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



SEPTEMBER 3, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**





## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: September 27th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 560.72 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 526.75 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 33.97 ft  
 Hyd. Grad.(i) = 0.045 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.40E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 701.72 ft  
 $h_2$  = 547.08 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.64 ft  
 i = 0.077 ft/ft  
 $(K_h * i) / n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

$V$  = Groundwater flow velocity ( $\frac{\text{feet}}{\text{day}}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{\text{feet}}{\text{day}}$ )

$i$  = Horizontal hydraulic gradient ( $\frac{\text{feet}}{\text{foot}}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

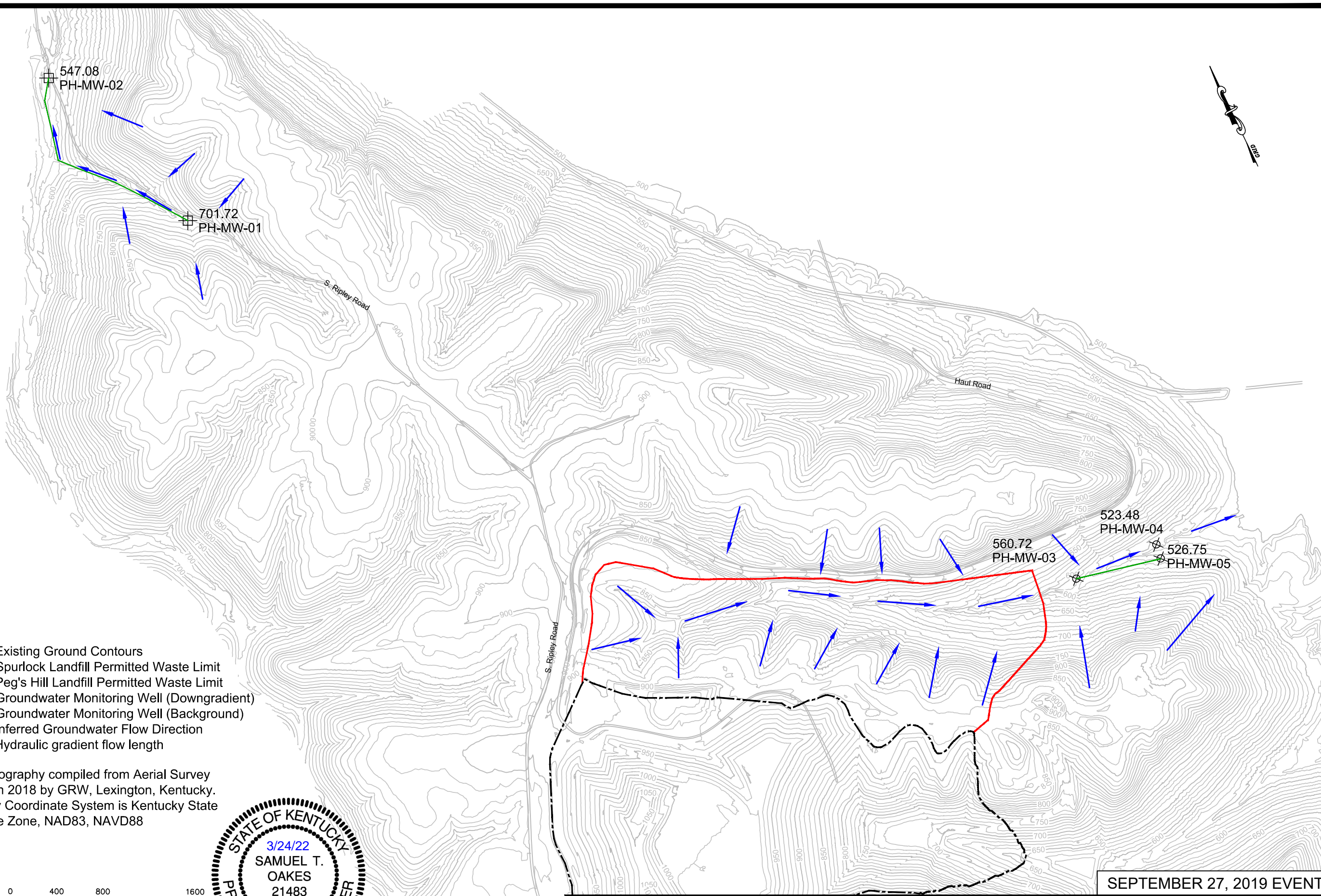
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity

### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.



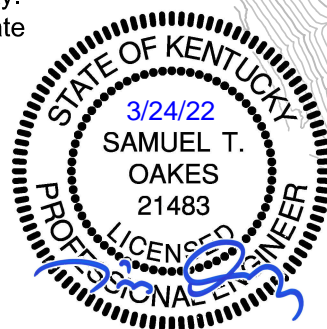
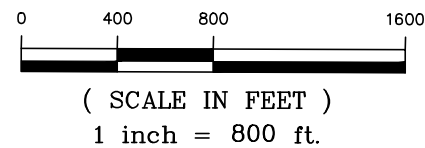


**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

**Note:**

- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
- 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



SEPTEMBER 27, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: October 28th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 558.96 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 526.67 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 32.29 ft  
 Hyd. Grad.(i) = 0.043 ft/ft  
 GW Flow Velocity ( $K_h * i$ )/ $n_e$  = 2.28E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 701.61 ft  
 $h_2$  = 546.68 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.93 ft  
 i = 0.077 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

V = Groundwater flow velocity ( $\frac{\text{feet}}{\text{day}}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{\text{feet}}{\text{day}}$ )

i = Horizontal hydraulic gradient ( $\frac{\text{feet}}{\text{foot}}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

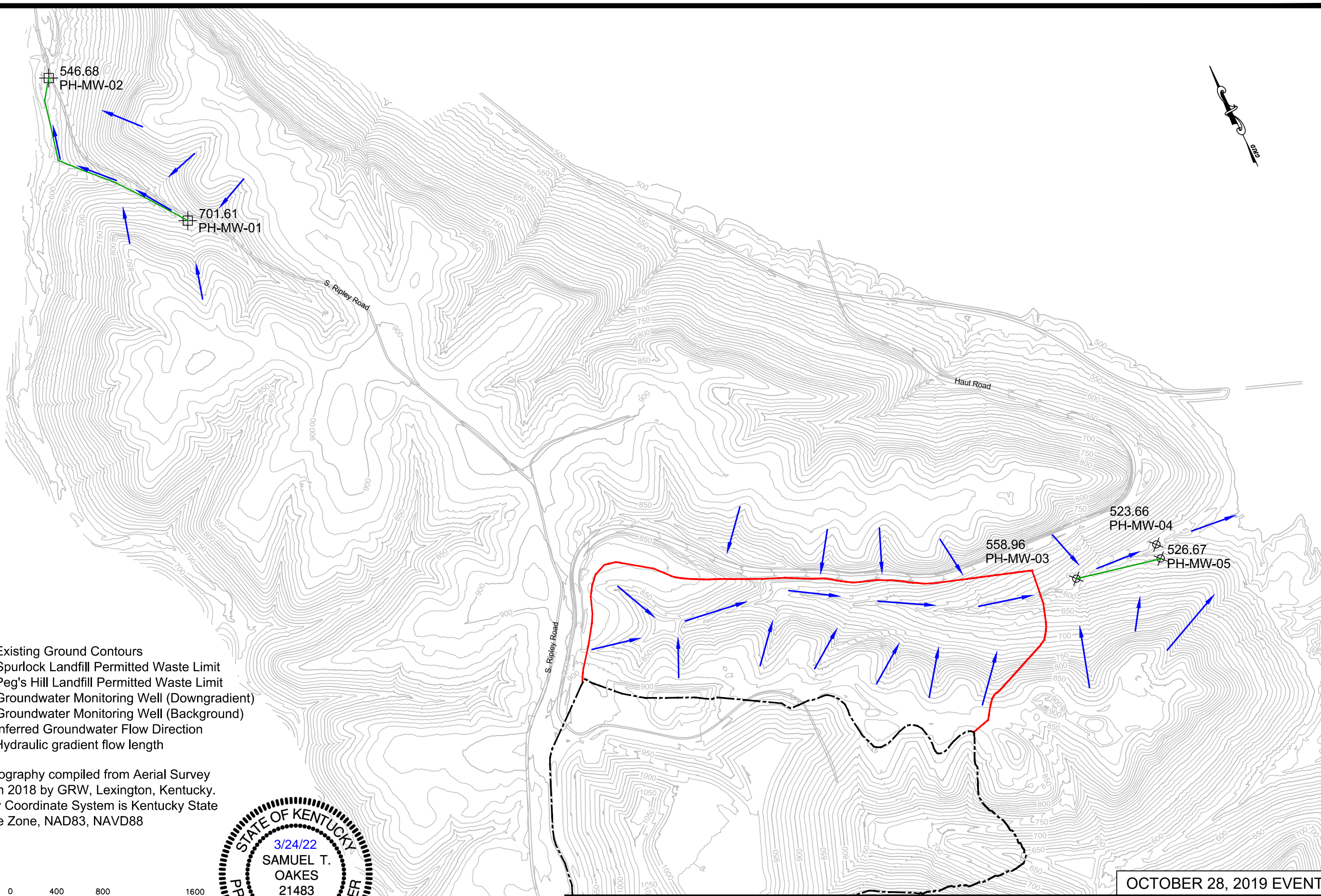
L = Distance between location 1 and 2

$n_e$  = Effective porosity

### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

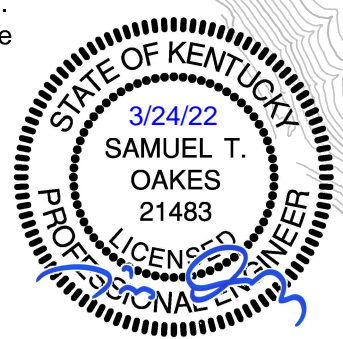
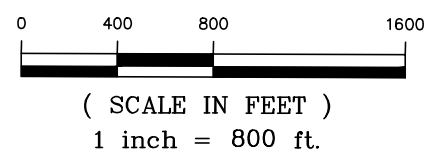




**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

**Note:**  
 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.  
 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



OCTOBER 28, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: November 27th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 560.03 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 527.73 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 32.30 ft  
 Hyd. Grad.(i) = 0.043 ft/ft  
 GW Flow Velocity ( $K_h * i / n_e$ ) = 2.28E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 701.68 ft  
 $h_2$  = 547.66 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.02 ft  
 i = 0.077 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.05E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$K_h$  = Horizontal Hydraulic Conductivity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{foot}}\right) = \frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

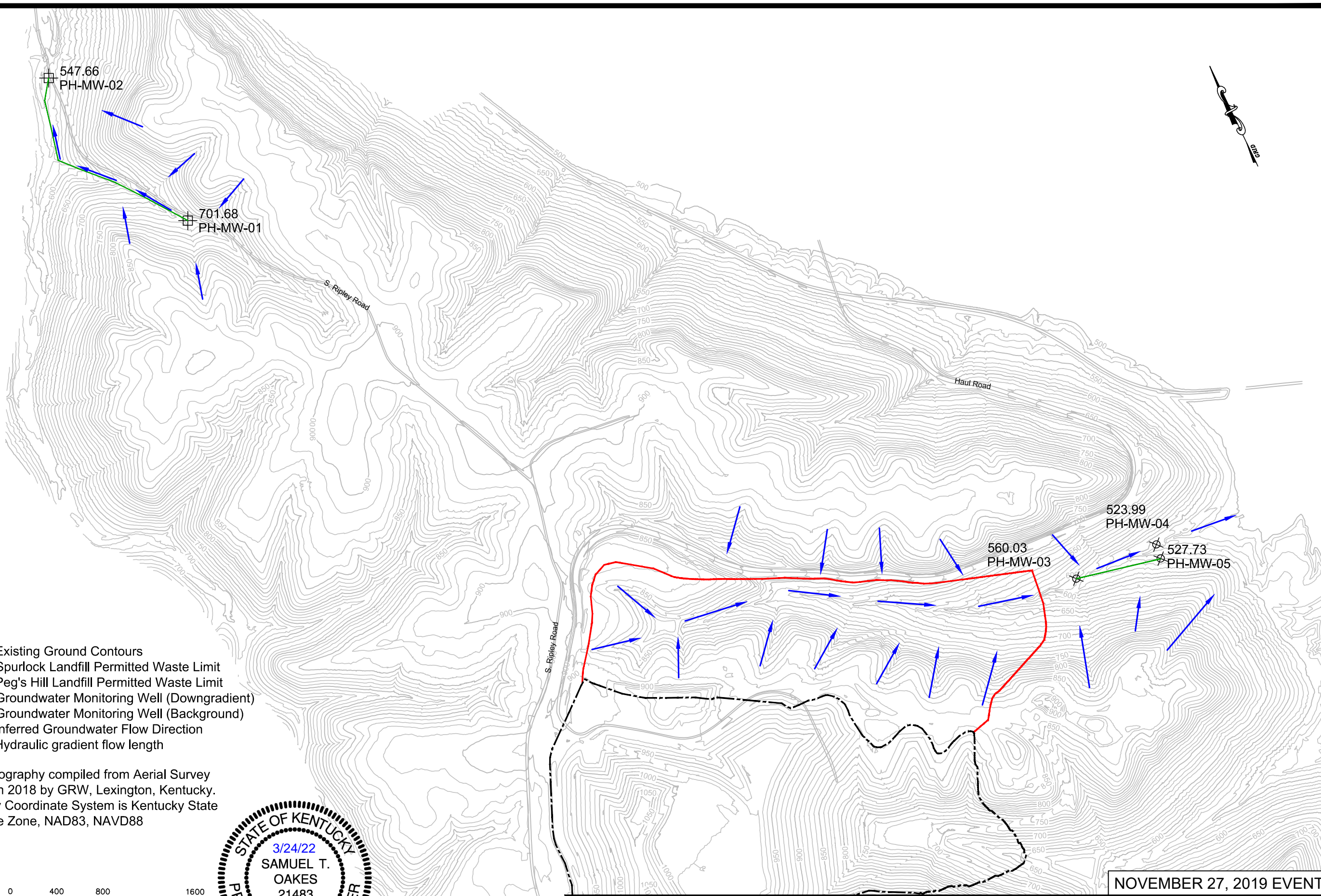
$L$  = Distance between location 1 and 2

$n_e$  = Effective porosity

### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine  $h_1$ . Groundwater elevation readings from downgradient well PH-MW-05 used to determine  $h_2$ .
2. Groundwater elevation readings from background well PH-MW-01 used to determine  $h_1$ . Groundwater elevation readings from background well PH-MW-02 used to determine  $h_2$ .
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.



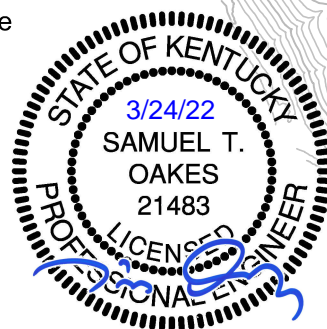
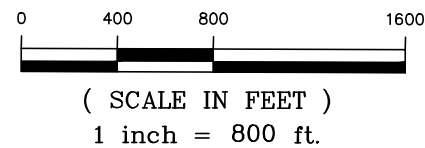


**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

**Note:**

- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
- 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



NOVEMBER 27, 2019 EVENT



Project: 2019047  
Checked By: STO  
Date: 03-15-22  
Scale: 1"=800'

**PEG'S HILL LANDFILL**  
MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**



## GROUNDWATER FLOW VELOCITY CALCULATION

Facility Name: Peg's Hill Landfill  
 Sampling Event Date: December 30th, 2019

### INPUT VARIABLES: Downgradient wells <sup>(1)</sup>

Hydraulic Conductivity ( $K_h$ ) = 3.67E-08 ft/s  
 Upgradient Well Water Elev ( $h_1$ ) = 562.38 ft  
 Downgradient Well Water Elev ( $h_2$ ) = 529.30 ft  
 Flow Length ( $L$ ) = 750 ft  
 Effective Porosity ( $n_e$ ) = 0.06 unitless

### CALCULATIONS:

dh = 33.08 ft  
 Hyd. Grad.(i) = 0.044 ft/ft  
 GW Flow Velocity ( $K_h * i$ )/ $n_e$  = 2.33E-03 ft/day

### INPUT VARIABLES: Background wells <sup>(2)</sup>

$K_h$  = 3.67E-08 ft/s  
 $h_1$  = 702.43 ft  
 $h_2$  = 547.80 ft  
 $L$  = 2,012 ft  
 $n_e$  = 0.06 unitless

### CALCULATIONS:

dh = 154.63 ft  
 i = 0.077 ft/ft  
 ( $K_h * i$ )/ $n_e$  = 4.07E-03 ft/day

$$V = \frac{K_h * i}{n_e}$$

V = Groundwater flow velocity ( $\frac{\text{feet}}{\text{day}}$ )

$K_h$  = Horizontal Hydraulic Conductivity ( $\frac{\text{feet}}{\text{day}}$ )

i = Horizontal hydraulic gradient ( $\frac{\text{feet}}{\text{foot}}$ ) =  $\frac{h_1 - h_2}{L}$

$h_1$  and  $h_2$  = Groundwater elevation at location 1 and 2

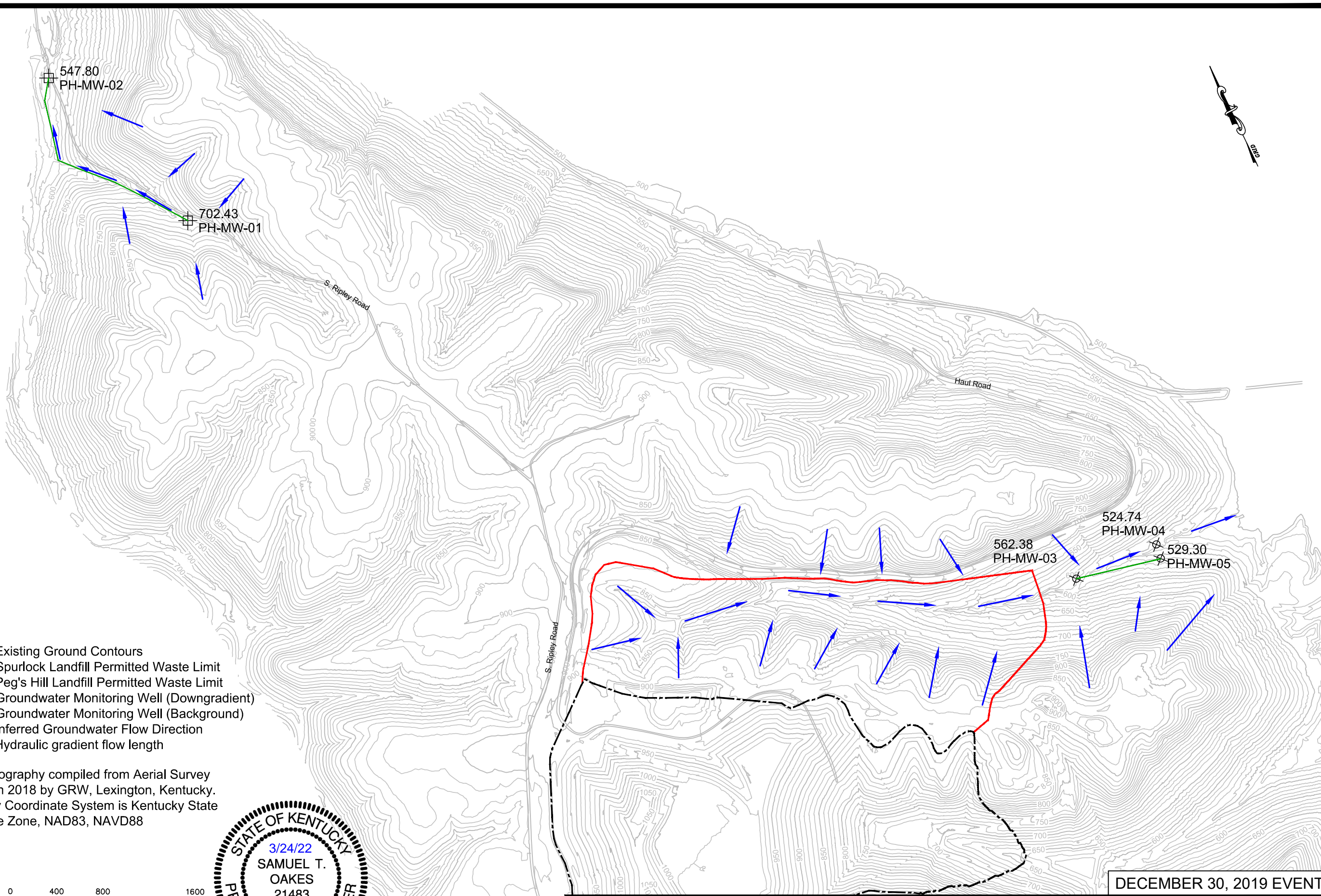
L = Distance between location 1 and 2

$n_e$  = Effective porosity

### Notes:

1. Groundwater elevation readings from the upgradient well PH-MW-03 used to determine h1. Groundwater elevation readings from downgradient well PH-MW-05 used to determine h2.
2. Groundwater elevation readings from background well PH-MW-01 used to determine h1. Groundwater elevation readings from background well PH-MW-02 used to determine h2.
3. Hydraulic conductivity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
4. Effective porosity estimates taken from the Groundwater Monitoring System and Hydrogeologic Investigation Report for Peg's Hill dated February 2019 by Geosyntec.
5. Calculations are based on available information and limited data points, therefore, the results reflect estimated values.
6. Flow Length distance (downgradient wells) calculated from PH-MW-03 to PH-MW-05.
7. Flow Length distance (background wells) calculated from PH-MW-01 to PH-MW-02.

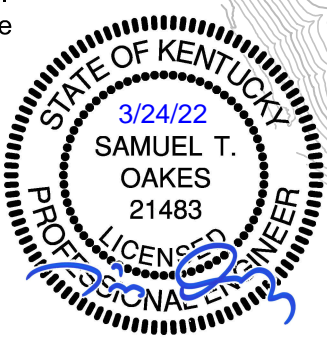
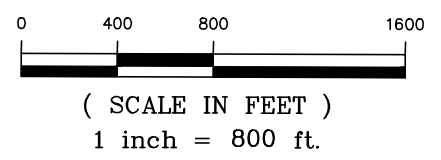




**LEGEND**

- Existing Ground Contours
- Spurlock Landfill Permitted Waste Limit
- Peg's Hill Landfill Permitted Waste Limit
- Groundwater Monitoring Well (Downgradient)
- Groundwater Monitoring Well (Background)
- Inferred Groundwater Flow Direction
- Hydraulic gradient flow length

- Note:**
- 1.) Existing topography compiled from Aerial Survey performed in 2018 by GRW, Lexington, Kentucky.
  - 2.) Topography Coordinate System is Kentucky State Plane Single Zone, NAD83, NAVD88



DECEMBER 30, 2019 EVENT



Project: 2019047  
 Checked By: STO  
 Date: 03-15-22  
 Scale: 1"=800'

**PEG'S HILL LANDFILL**  
 MASON COUNTY, KENTUCKY  
**GROUNDWATER FLOW MAP**

