SCS ENGINEERS

Report

Hidden Valley Landfill
Annual Report for 2017

Presented to:

Pierce County Recycling, Composting & Disposal, LLC dba LRI
17925 Meridian Street East
Puyallup, Washington 98375

Presented by:

SCS ENGINEERS
2405 140th Ave NE, Ste. 107
Bellevue, Washington 98005
(425) 746-4600

March 26, 2018
File No. 04218002.03

Offices Nationwide
www.scsengineers.com

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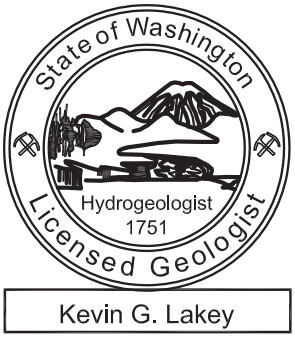

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1.0 INTRODUCTION

This document represents the 2017 Annual Monitoring Report for the Hidden Valley Landfill (HVL) prepared on behalf of Pierce County Recycling, Composting and Disposal LLC, dba LRI (LRI). The facility is a closed municipal solid waste landfill that stopped accepting waste on December 31, 1998. The Hidden Valley Landfill is located at 17925 Meridian Street East, Puyallup, Washington (Figure 1). Post-closure activities are performed consistent with Consent Decree No. 032146876 between the Washington Department of Ecology (Ecology), Pierce County (County) and LRI. Ecology is the lead agency for post-closure activities. In addition, the Tacoma-Pierce County Health Department (TPCHD) is kept informed of post-closure activities and provided with the opportunity to review and comment upon proposed remedial action plans.

1.1 FACILITY CONTACT INFORMATION

Hidden Valley Landfill
17925 Meridian East
Puyallup, Washington 98375
Facility Contact: George Duvendack (253) 847-7555

1.2 FACILITY DESCRIPTION

The landfill property is approximately 92 acres in size and is located in the north half of the northwest quarter of Section 34, Township 19N, Range 4E. The landfill includes approximately 56 acres of unlined fill and a 30-acre lined cell. Also present at the site are an office, maintenance shop, leachate pre-treatment facility, transfer station, and recycling center.

Hidden Valley Landfill began operations in the mid-1960s and accepted waste until December 31, 1998. Waste disposed of at the landfill included municipal solid waste, demolition wastes, commercial waste, industrial wastes, and small quantities of bulk liquids and sludge.

1.3 PROJECT HISTORY

The U.S. Environmental Protection Agency (EPA) conducted an environmental assessment of the Hidden Valley Landfill between 1981 and 1985 and prepared a Preliminary Assessment (PA) and a Hazard Ranking System (HRS) score of the site. As a result of the HRS, Hidden Valley Landfill was placed on the National Priority List (NPL) in April 1989.

A Remedial Investigation (RI) was conducted under Ecology Consent Order DE 86 S173. The final RI report was submitted to Ecology in March 1992. The RI found groundwater impacts downgradient of the landfill. Groundwater contaminants have included dissolved iron and manganese, chloride, ammonia, nitrate, sulfate, specific conductance, total dissolved solids, and low levels of volatile organic compounds (VOCs) including benzene, chlorobenzene, tetrachloroethene, 1,1-dichloroethane, and 1,4-dichlorobenzene.

In January 2004, Consent Decree No. 032146876 was finalized and signed. The Consent Decree and associated Cleanup Action Plan address long-term maintenance and monitoring activities at the landfill and establish groundwater cleanup levels.

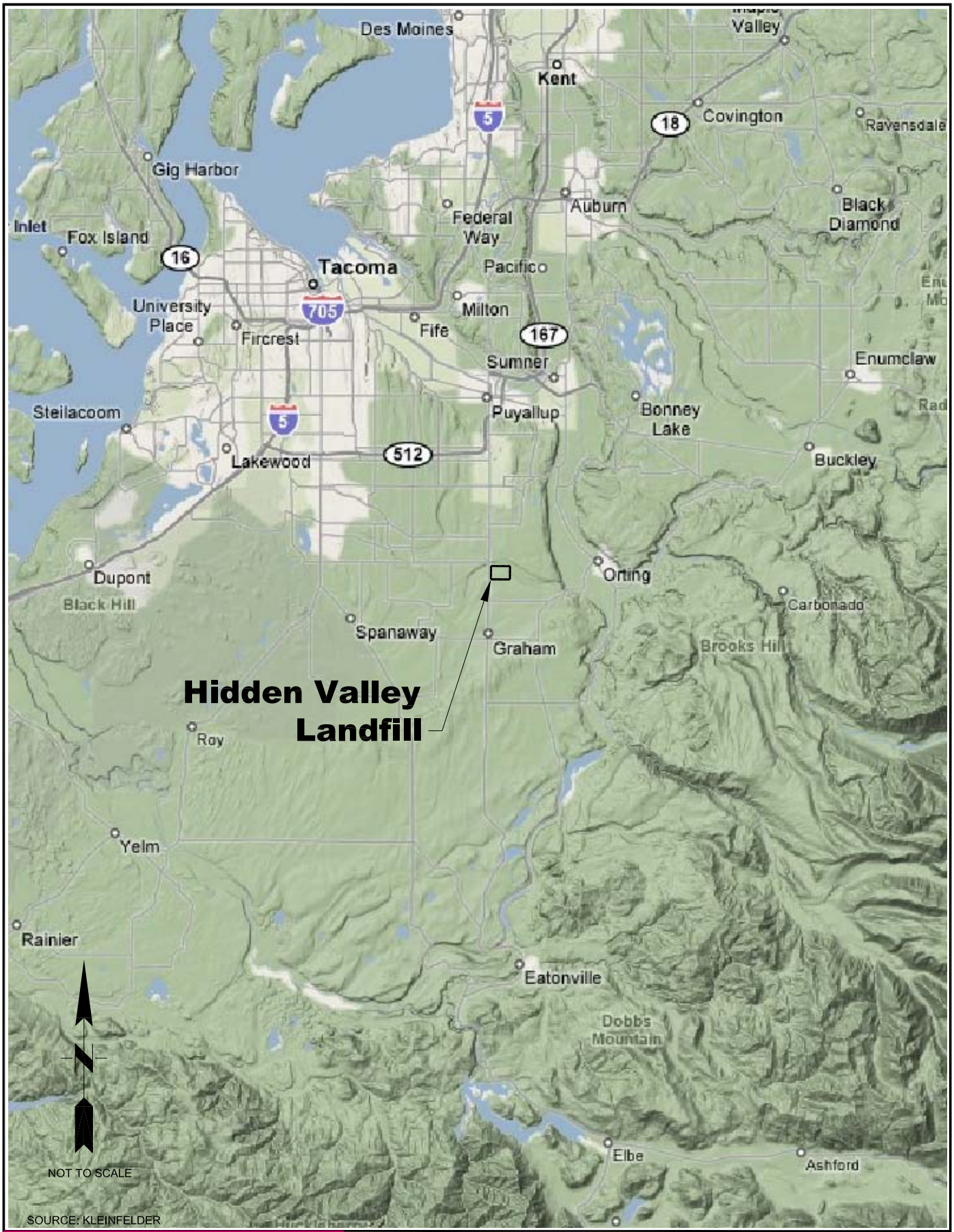
In April 2014, the Consent Decree was amended (First Amendment) to revise the groundwater monitoring plan. In August 2014, the Groundwater Monitoring Plan (GWMP) was modified to include Appendix I WAC 173-351 metals testing. This requirement included eight rounds of total and dissolved metals testing for 15 metals from 23 monitoring wells. The testing began in July 2014 and was completed in April 2016. Following completion of the required monitoring, a Groundwater Monitoring Optimization Report was submitted to Ecology and the TPCHD on December 2, 2016. Proposed modifications to the GWMP were conditionally approved by Ecology on March 24, 2017 (see Appendix J).

Consistent with the Groundwater Monitoring Optimization Report and the approval received from Ecology, the groundwater monitoring frequency was changed from quarterly to semi-annual in 2017. In addition, Appendix I metals testing will now be conducted every five years, beginning in 2021. Per the conditional approval from Ecology, one new groundwater monitoring well (MW-29S) was installed and seven monitoring wells that were no longer being used for groundwater monitoring (MW-23S, MW-23D, MW-25S, MW-25D, MW-27S, MW-27D, and MW-28S) were decommissioned in December 2017. Monitoring well MW-29S replaced former wells MW-23S and MW-28S and provides a point-of-compliance downgradient monitoring point for groundwater quality data. A letter report, which documents the well installation and decommission activities, was prepared by SCS and submitted to Ecology on January 24, 2018. A copy of the letter report is included in Appendix J.

1.4 2017 MONITORING ACTIVITIES

Groundwater monitoring was performed in January (first semi-annual monitoring event) and July (second semi-annual monitoring event) during 2017. Leachate monitoring was conducted in February. The hydraulic gradient control system located beneath the main East Lined Area sump was sampled in October. Landfill gas monitoring was performed monthly.

Monitoring results for the first semi-annual monitoring event of 2017 were previously submitted to the TPCHD and Ecology in a report dated June 12, 2017. Groundwater laboratory reports for the second semi-annual monitoring event of 2017 and an updated groundwater database will be provided to the TPCHD in a separate submittal. Groundwater data from 2017 were uploaded into Ecology's Environmental Information Management (EIM) system database.



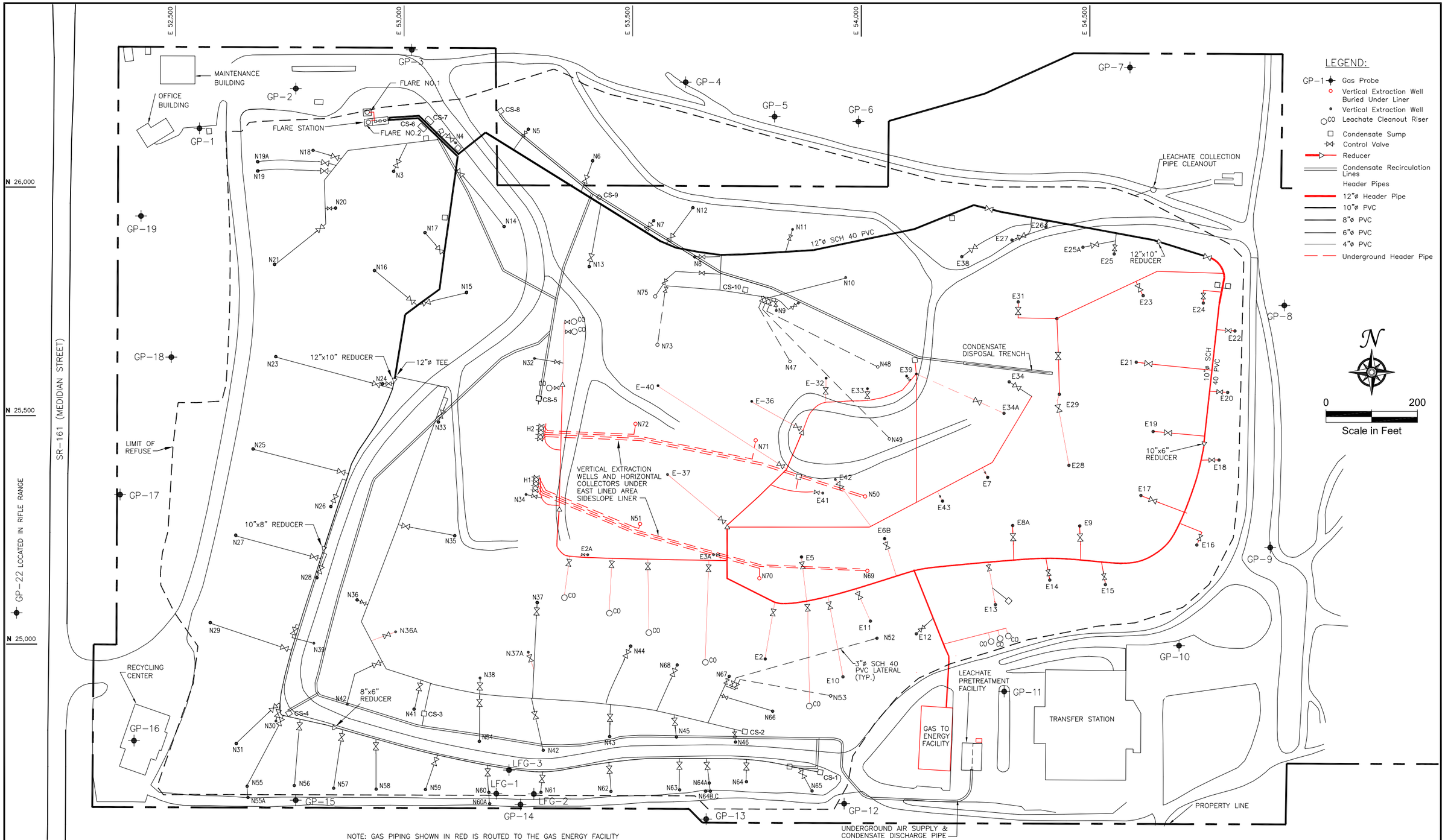
SCS ENGINEERS Environmental Consultants and Contractors 2405 140th Avenue NE, Suite 107 Bellevue, Washington 98005 (425) 746-4600 FAX: (425) 746-6747	PROJECT NO. 04218002.03	DES BY LEL	SITE LOCATION MAP HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	DATE MARCH 2018
	SCALE NOT TO SCALE	CHK BY S.G.		FIGURE 1
	CAD FILE FIGURE 1	APP BY KGL		

2.0 LANDFILL GAS MONITORING

Landfill gas probes were monitored monthly during 2017. Gas probe locations are shown on Figure 2. Parameters measured at the gas probes included carbon dioxide, oxygen, and combustible gas (measured as methane). Soil gas probe readings were less than five percent methane by volume in all probes each month in 2017, except for GP-2A in February (5.0%), and GP-13A during the February (6.8%), May (15.2%), June (10.7%), July (6.7%), and August (6.7%). After obtaining a reading greater than five percent methane by volume, the vacuum on the adjacent well field was adjusted to recapture the landfill gas. Monthly gas probe monitoring results are included in Appendix A.

Gas monitoring of building interiors was performed on March 21, June 28, September 19, and November 29, 2017. The main office, maintenance building, scale house/pay booth, leachate treatment buildings No. 1 and No. 2, recycling building, and transfer station were monitored. No detectable concentrations of combustible gas were found in any of these structures. Copies of the building survey reports are included in Appendix A.

A portion of the gas extraction system on the south slope of the landfill was shut off in September 2009 in response to a suspected area of subsurface oxidation (affected gas wells include N42, N43, N60, N61, N62, and N54). Although the suspected subsurface oxidation event has ceased and the affected landfill cover was repaired in 2014, this section of the gas extraction system will remain off-line until in-situ methane levels measured in interior waste probes LFG-1, -2, and -3, increase and stabilize.



NOTE: GAS PIPING SHOWN IN RED IS ROUTED TO THE GAS ENERGY FACILITY

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PROJECT NO. 04218002.03	DES BY KGL	GAS SYSTEM HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	DATE MARCH 2018
SCALE AS SHOWN	CHK BY S.G.		FIGURE 2
CAD FILE FIGURE 2	APP BY KGL		

3.0 LEAK DETECTION MONITORING

3.1 LEAK DETECTION SYSTEM

The East Lined Area at the Hidden Valley Landfill includes a leak detection system between the primary geosynthetic liner and the secondary composite liner in the portion of the cell that was constructed over refuse (side slope liner area). Pursuant to Section II C of the Stipulation and Agreed Order of Dismissal (Order), LRI was required to implement the March 1994 Leak Detection Response Action Plan (RAP) once refuse was placed onto the side slope liner. The RAP provides a mechanism for evaluating the performance of the side slope liner. Major components of the plan include routine monitoring of leachate quantities and fluid in the leak detection system, data analysis, record keeping, delineation of acceptable liner performance levels, response actions, and an outline of how groundwater impacts would be evaluated in the event that excessive leakage is observed in the leak detection system.

3.2 LINER PERFORMANCE STANDARD

The RAP defines an acceptable performance standard of 300 gallons per acre per day for the primary side-slope liner in the Cell 2 East Lined Area. The side slope liner covers approximately 13.5 acres of refuse, and therefore, the corresponding liner performance standard is 4,050 gallons per day.

3.3 SUMMARY OF PERFORMANCE DATA

Leachate volumes pumped from the main sump and side-slope liner sump, as well as volumes pumped from the side-slope leak detection system and rainfall totals from an on-site rain gauge, are recorded on a daily basis by on-site personnel. A summary of monthly leachate volume data is provided in Table 1, and copies of the monthly reports are included in Appendix B. The volume of fluid pumped from the side-slope liner leak detection system in 2017 remained well below the performance standard of 4,050 gallons per day defined in the RAP.

Table 1. 2017 Leachate and Side Slope Liner Volume Data

2017 Leachate & Side Slope Liner Volume Data Hidden Valley Landfill, Pierce County, Washington				
Month	Cell 1 Monthly Leachate Volume (gallons)	Cell 2 Monthly Leachate Volume (gallons)	Cell 2 Monthly Leakage Flow (gallons)	Monthly Rainfall (inches)
January	18,128	0	0	2.64
February	22,706	0	589	8.68
March	30,052	7,744	649	7.65
April	31,022	4,022	962	4.47
May	3,124	574	0	2.50
June	18,592	3,487	0	1.65
July	24,030	0	0	0.0
August	25,225	4,977	0	0.13
September	15,627	5,640	0	1.05
October	0	0	0	5.69
November	11,419	0	1,511	6.02
December	36,880	3,858	536	9.11
Totals	**236,805**	**30,302**	**4,247**	**49.59**

3.4 SUMMARY OF LEAK DETECTION MONITORING DATA

A sample of fluids in the side-slope liner leak detection system was collected on January 20, 2017. The test results from this sample were similar to previous results, except the concentrations of acetone, 2-butanone, and methylene chloride increased compared with previous results.

3.5 HYDRAULIC GRADIENT CONTROL SYSTEM MONITORING

In addition to the leak detection system, a hydraulic gradient control system is present beneath the main leachate collection sump for the East Lined Area. This system is routinely checked for the presence of liquid. When liquids are removed, the volume pumped is recorded and arrangements are made to collect a representative sample to be tested for leachate constituents.

A sample collected from the hydraulic gradient control system in January 2016 exhibited characteristics similar to landfill leachate. However, the discharge piping from the hydraulic gradient control system and the leachate system at the East Lined Area are connected to the same force main. Upon further review of the piping system, it was determined that the system needed to be upgraded. This work, which included the installation of new piping and valves, was completed in the August/September 2017 time frame.

A sample of fluids in the hydraulic gradient control system beneath the main East Lined Area leachate sump was collected on October 19, 2017. The test results from this sample are generally consistent with previous sample results obtained in 2005 and 2006, with the exception of a low-level detection of acetone. However, the laboratory report noted that the laboratory control sample exhibited a recovery of acetone above the upper control limit at 162 percent. Acetone is a common laboratory contaminant and based on the high recovery in the laboratory control sample, the reported concentration in the hydraulic gradient control sample may have been the result of laboratory contamination.

Based on the test results of the October 19, 2017 sample, which was obtained after the discharge piping and valves were replaced, it appears that the sample collected in January 2016 was not representative of the hydraulic gradient control system fluids.

4.0 GROUNDWATER LEVELS AND FLOW DIRECTIONS

4.1 LOCAL HYDROGEOLOGY

Hidden Valley Landfill is located within a Vashon age glacial melt-water channel that trends in an east-west direction and is approximately 50 to 100 feet deep and several hundred feet wide. The northern boundary of the channel lies just north of the landfill. The landfill is underlain by glacial outwash deposits consisting of coarse sand and gravel to a depth of about 55 feet below grade. North of the landfill (and the outwash channel), the outwash deposits are overlain by Vashon till (upper till unit). The outwash deposits are underlain by successive layers of Vashon till (lower till unit), Vashon advance outwash, Salmon Springs till and interglacial deposits, and Salmon Springs advance outwash.

Three aquifers underlie the Hidden Valley Landfill. The aquifers are referred to as the shallow perched aquifer, the upper regional aquifer, and the lower regional aquifer. An intermittent aquitard, referred to as the Vashon till aquitard, is present between the shallow perched aquifer and the upper regional aquifer. A thick section of low permeability deposits referred to as the Salmon Springs aquitard separates the upper regional aquifer and the lower regional aquifer.

The shallow perched aquifer is an unconfined (water table) aquifer that occurs within the Vashon recessional outwash deposit. The shallow perched aquifer represents the uppermost-saturated unit at the site. Depth to groundwater at the landfill ranges from approximately 11 to 15 feet below ground surface (bgs) in winter and spring months to about 25 feet bgs in late fall. Groundwater flow in the shallow perched aquifer beneath the site is towards the northwest with local components to the north and west. The downgradient extent of the shallow perched aquifer appears to be limited. Northwest of the landfill, the recessional outwash is either not saturated, or saturated to only a few feet. In areas where the recessional outwash is unsaturated, the uppermost zone of groundwater saturation occurs within the lower Vashon till unit.

The upper regional aquifer is present within Vashon advance outwash deposits. This aquifer is confined beneath the Vashon till aquitard and appears to be of regional extent. Groundwater flow, water level gradients, and seasonal water level fluctuations in the upper regional aquifer are similar to the shallow perched aquifer.

The lower regional aquifer is present within the Salmon Springs advance outwash deposits. The aquifer is confined and is interpreted to be of regional extent. Monitoring wells BC-4D, MW-14R, and MW-20R are completed at similar depth elevations and display similar water levels. Monitoring well MW-26R is completed approximately 80 feet higher in elevation and may be installed within a water-bearing zone in the Salmon Springs aquitard.

Detailed descriptions of the hydrogeologic units, as well as geologic cross-sections and boring logs/monitoring well details are included in the Hidden Valley Landfill Remedial Investigation Report (EMCON, 1991) and Hidden Valley Landfill Hydrogeologic Report Addendum (EMCON, 1998).

4.2 WATER LEVEL MEASUREMENTS

Static water levels were measured on January 19 and July 14, 2017. The water level database and water level contour maps are presented in Appendix C.

Groundwater flow within both the shallow perched aquifer and the upper regional aquifer was generally toward the northwest during all the 2017 monitoring events. Horizontal hydraulic gradients for both the shallow perched aquifer and the upper regional aquifer were less than 0.005 ft/ft in the central part of the site and approximately 0.025 ft/ft northwest of the landfill. This flow pattern remains consistent with previous data reported for the site. Water level gradients were similar to past measurements, indicating that the previously reported flow rates of 3.2 ft/day to 6.5 ft/day for the shallow perched aquifer and 0.5 to 1.3 ft/day for the upper regional aquifer have not changed significantly. Water level data for wells MW-14R, MW-20R, and BC-4D indicate that the groundwater flow direction in the lower regional aquifer is towards the northeast.

Background monitoring well MW-10S has a blockage approximately 5 feet down in the well. The blockage appears to be due to a compression fitting that was used to repair the pump tubing. The fitting prevents advancement of the water level probe beyond that point. An attempt to remove the pump and tubing was made during the Second Quarter 2013 sampling event; however, this attempt was unsuccessful and the pump appears to be wedged at depth. Rather than risk pulling the tubing loose from the pump, or possibly damaging the well screen, the pump will remain in place until it needs to be repaired or replaced. Until that time, there is adequate water level elevation data to determine groundwater flow directions and gradients without a measurement from MW-10S.

5.0 GROUNDWATER QUALITY

During 2017, groundwater samples were collected on a semi-annual basis from 20 monitoring wells; including ten wells completed within the shallow perched aquifer, seven wells completed within the upper regional aquifer, and three wells completed within the lower regional aquifer. Groundwater sampling locations are shown on Figure 3.

Copies of groundwater quality summary data tables for each semi-annual monitoring event are provided in Appendix D. The summary tables include field parameters, laboratory parameters, and quality control samples. Time series plots for selected water quality parameters are included in Appendix E. Trilinear diagrams for each aquifer and leachate data are included in Appendix F. Statistical calculations performed on groundwater data are presented in Appendix G. The groundwater database was provided to the TPCHD as a Microsoft Access file in electronic format (on compact disk). In addition, groundwater data generated from the Hidden Valley Landfill during 2017 were validated and input into Ecology's EIM database system.

5.1 WATER SUPPLY WELL DATA

Water quality samples were collected from water supply wells at Corliss Resources, Inc. Puyallup Sand & Gravel (Corliss) located immediately south of the landfill, and at the Paul Bunyan Rifle and Sportsman's Club (Paul Bunyan) located west of the landfill across Meridian East (see Figure 4) in January and July 2017. Water quality results for the two water supply wells in 2017 were generally typical of previous results. VOCs were not detected in samples collected from the water supply wells during 2017. Low concentrations of total metals and inorganic parameters, including chloride, sulfate, ammonia and nitrate indicate the water quality at the Corliss and Paul Bunyan water supply wells is not affected by the Hidden Valley Landfill. A summary of the laboratory test results for the water supply wells is provided in Table 2.

5.2 BACKGROUND WATER QUALITY

Background water quality at the Hidden Valley Landfill is monitored using wells MW-l0S (shallow perched aquifer) and MW-10D (upper regional aquifer). These wells have provided background water quality information since 1985.

In 2017, concentrations of inorganic parameters in samples from the background wells remained low and consistent with previous results. No detections of dissolved iron or manganese were reported above the laboratory method reporting limit in 2017.

5.3 DOWNGRADIENT WATER QUALITY

Phased closure of the unlined portion of the landfill, which began in 1989 and was completed in 1993, included capping the waste with a low permeability composite cover and installing a landfill gas collection and control system (GCCS). These closure activities were designed to minimize the infiltration of precipitation through the refuse and remove landfill gas. These actions have improved the groundwater quality in the shallow perched aquifer and the upper regional aquifer.

Time series plots for specific conductance, ammonia, nitrate, dissolved iron, and dissolved manganese, were prepared for wells in the shallow perched and upper regional aquifers that are located close to and downgradient of the landfill (MW-11S, MW-11D(2), MW-13S, MW-13D, MW-14S, MW-14D, and MW-17S, see Appendix E). These plots graphically display consistent trends of decreasing concentrations of these parameters in monitoring wells located downgradient of the landfill.

A cation-anion balance was prepared based in milliequivalents per liter (meq/L) for each water sample to determine whether it was electro-neutral (balanced cation and anion charges). A threshold of ten percent difference was used if the total sum of cations and anions were less than or equal to 5.0 meq/L, and a threshold of five percent difference was used if the total cation-anion sums was greater than 5.0 meq/L. The cation-anion balance was greater than the appropriate threshold during one or both monitoring events are MW-12S, MW-18S, FM-1, FM-2, MW-14R and MW-26R (see Appendix D).

Trilinear (Piper) diagrams were prepared for groundwater sample results from each of the three water bearing zones at the landfill; shallow perched aquifer, upper regional aquifer, and lower regional aquifer (see Appendix F). As shown on the attached trilinear diagrams, the groundwater sample results from all three aquifers plot within a consistent area of the graph, while the leachate results (sampled annually in January) plot in a second, chemically distinct area.

The Hidden Valley Landfill Consent Decree established site groundwater cleanup levels and the groundwater point of compliance. Table 3 provides a summary of the site-specific groundwater cleanup levels and identifies those wells where 2017 water quality results were greater than the site-specific cleanup levels.

Shallow perched aquifer water quality results exceeded the cleanup level for nitrate during the first semi-annual monitoring event at monitoring well MW-18S and the cleanup level for dissolved manganese both semi-annual monitoring events at MW-12S, MW-14S, MW-15S, and MW-17S. Upper regional aquifer water quality results exceeded the cleanup level for dissolved iron during both semi-annual monitoring events at MW-14D, and the cleanup level for dissolved manganese during both semi-annual monitoring events at MW-14D and MW-15D. Lower regional aquifer water quality results exceeded the cleanup level for dissolved iron during both semi-annual monitoring events at MW-26R, and the cleanup level for dissolved manganese during both semi-annual monitoring events at MW-14R and MW-26R.

Results for the lower regional aquifer are interpreted to be background water quality. As discussed in previous reports, the presence of dissolved iron and manganese in the lower regional aquifer does not appear to be related to the Hidden Valley Landfill. This interpretation is based on an overall assessment of the groundwater quality data, which include low concentrations of inorganic parameters and an absence of VOCs.

Tetrachloroethene (PCE) was reported present in samples from MW-11D(2) during both semi-annual monitoring events at a concentration range of 0.92 to 1.0 µg/L. These results are consistent with recent monitoring results and are slightly greater than the WAC 173-200 groundwater quality criteria of 0.80 µg/L, but lower than the primary drinking water standard of 5.0 µg/L. No other VOC's were reported present in groundwater samples collected at the Hidden Valley Landfill in 2017.

5.4 STATISTICAL ANALYSES

Groundwater quality data for the five-year period of January 2013 through July 2017 were statistically evaluated for all monitoring wells in the groundwater-monitoring network. A compound-specific evaluation was used to determine the data distribution type for each compound as normal, lognormal, or non-parametric. The Consent Decree established a cleanup level for 1,4-dichlorobenzene at 1.82 micrograms per liter (µg/L). Only one detection of 1,4 dichlorobenzene has been reported in samples collected over the last five years (0.73 µg/L at well MW-12S in April 2016). No other VOCs have Consent Decree defined cleanup levels for the Hidden Valley Landfill. However, the distribution of data were also determined for tetrachloroethene at well MW-11S(2) for tracking purposes. Chlorobenzene was evaluated in previous reports, however, no detections of chlorobenzene were reported over the past five years. Therefore, a statistical evaluation of chlorobenzene was discontinued.

If the data distribution was either normal or lognormal, the upper 95 percent confidence limits of the mean (UCL 95) were calculated for each data set using MTCAStat, version 3.0 obtained from Ecology. The MTCAStat program was used to evaluate data distributions (i.e., normal, lognormal, or neither) for constituents that were detected in at least 50 percent of the sampling events. One-half the MRL was used when a parameter was not detected at a concentration above the MRL.

If the distribution was neither normal nor lognormal, the UCL 95 was determined using the method of Van der Parren (1970) as described in the Statistical Guidance for Ecology Site Managers (Ecology 1992). For the data evaluated, this procedure defaults to the highest reported value. In addition, the highest reported value was used if either lognormal or normal distributions had the UCL 95 value outside of the data sample range. The UCL 95 was not calculated (NC) when any of the evaluated parameters were either not detected for 50 percent of the sampling events, or had less than five data entries.

Table 4 provides a summary of UCL 95 values. Shallow perched aquifer UCL 95 values that exceed cleanup levels include total dissolved solids (MW-11S), nitrate (MW-11S, MW-12S, MW-17S, and FMMW-2) and dissolved manganese (MW-12S, MW-14S, MW-15S, MW-17S, and FMMW-2). Upper regional aquifer UCL 95 values that exceed cleanup levels include dissolved iron (MW-14D) and dissolved manganese (MW-14D and MW-15D). Lower regional aquifer UCL 95 values that exceed cleanup levels include dissolved iron (MW-26R) and dissolved manganese (MW-14R and MW-26R). Statistical calculations are provided in Appendix G. These statistical results are consistent with previous analyses.

Table 2. 2017 Water Supply Well Data Summary

Parameters	MRL	Corliss		Paul Bunyon	
		January-20	July-14	January-20	July-13
Volatile Organics (µg/L)					
No Detections	0.50	*	*	*	*
Total Metals (mg/L)					
Arsenic	0.005	*	*	*	*
Iron	0.030	0.045	*	0.130	*
Manganese	0.001	0.002	0.002	0.023	*
Zinc	0.010	0.022	0.024	0.025	0.017
Inorganic Parameters (mg/L)					
Chloride	0.20	5.6	5.8	5.6	6.0
Ammonia as Nitrogen	0.10	*	*	*	*
Nitrate as Nitrogen	0.20	1.6	1.6	2.1	2.2
Nitrite as Nitrogen	0.50	*	*	*	*
Sulfate	0.25	8.8	9.3	9.4	9.9
Chemical Oxygen Demand	5.0	*	*	*	*
Total Organic Carbon	1.0	*	*	*	*
Color	5.0	5.0	*	5.0	*
Field Parameters					
pH		6.05	6.45	6.42	6.98
Conductance (µS)		235	247	281	301
Temperature (^{0}C)		8.24	19.55	8.92	15.57

Table 3. 2017 Groundwater Quality Data versus Site-Specific Cleanup Levels

Shallow Perched Aquifer

Parameter	Cleanup Level	MW-10S (BG)	MW-11S	MW-12S	MW-13S	MW-14S	MW-15S	MW-17S	MW-18S	FMMW-1	FMMW-2
Inorganics (mg/L)											
Chloride	250	—	—	—	—	—	—	—	—	—	—
Sulfate	250	—	—	—	—	—	—	—	—	—	—
Nitrate	10	—	—	—	—	—	—	—	SA1	—	—
Specific Conductance	700	—	—	—	—	—	—	—	—	—	—
TDS	500	—	—	—	—	—	—	—	—	—	—
Metals (mg/L)											
Iron	0.30	—	—	—	—	—	—	—	—	—	—
Manganese	0.05	—	—	SA1, 2	—	SA1, 2	SA1, 2	SA1, 2	—	—	—
VOCs (µg/L)											
1,4-Dichlorobenzene	1.8	—	—	—	—	—	—	—	—	—	—

Upper Regional Aquifer **Lower Regional Aquifer**

Parameter	Cleanup Level	MW-10D (BG)	MW-11D (2)	MW-12D	MW-13D	MW-14D	MW-15D	MW-18D	MW-14R	MW-20R	MW-26R
Inorganics (mg/L)											
Chloride	250	—	—	—	—	—	—	—	—	—	—
Sulfate	250	—	—	—	—	—	—	—	—	—	—
Nitrate	10	—	—	—	—	—	—	—	—	—	—
Specific Conductance	700	—	—	—	—	—	—	—	—	—	—
TDS	500	—	—	—	—	—	—	—	—	—	—
Metals (mg/L)											
Iron	0.30	—	—	—	—	SA1, 2	—	—	—	—	SA1, 2
Manganese	0.05	—	—	—	—	SA1, 2	SA1, 2	—	SA1, 2	—	SA1, 2
VOCs (g/L)											
1,4-Dichlorobenzene	1.8	—	—	—	—	—	—	—	—	—	—

Notes:
— indicates results were less than cleanup level
SA indicates results were greater than cleanup level
1 & 2 indicate the semi-annual monitoring event in which results were greater than the cleanup level

Table 4. Summary of 5-Year Groundwater Statistics

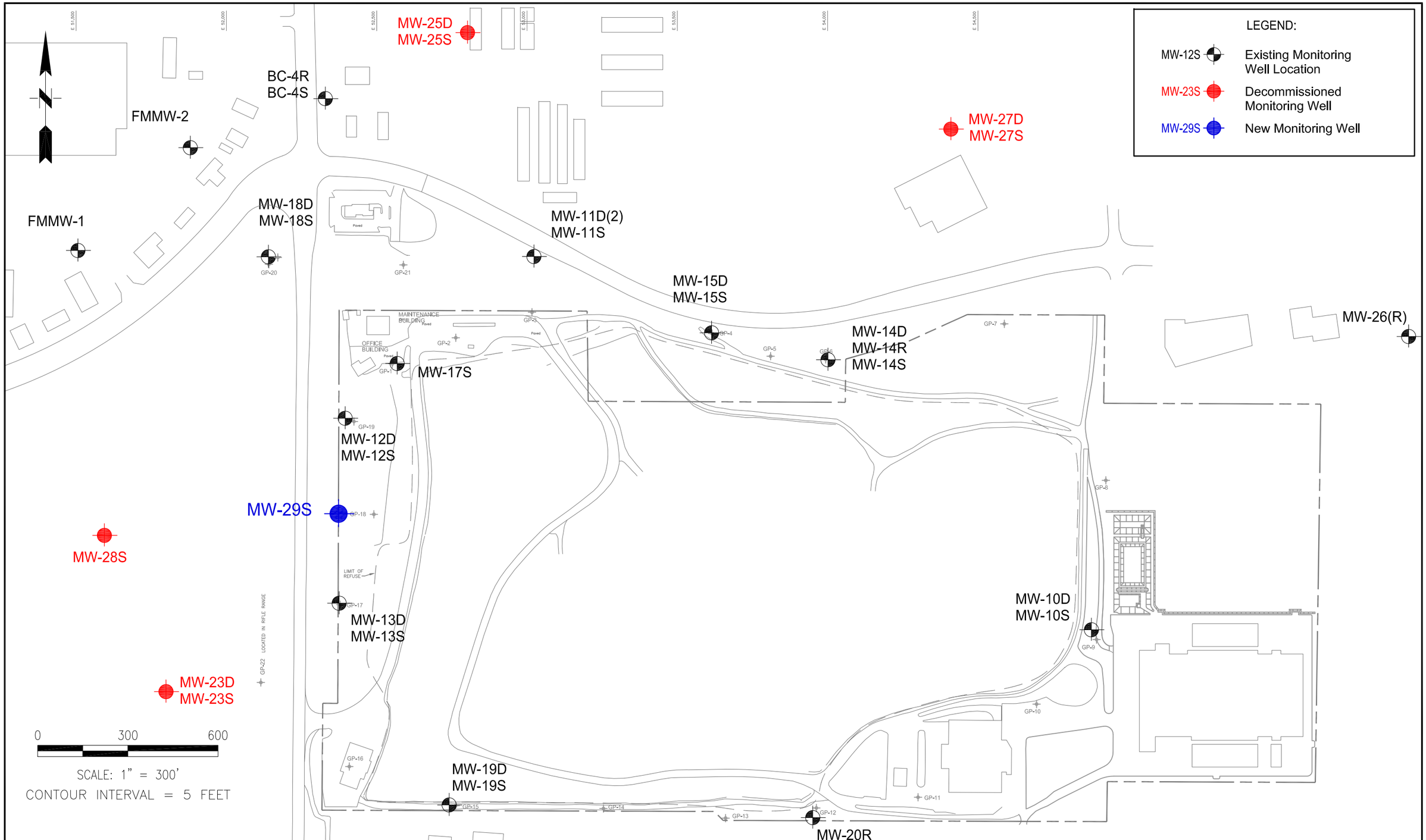
Shallow Perched Aquifer

Parameter	Cleanup Level	MW-10S (BG)	MW-11S	MW-12S	MW-13S	MW-14S	MW-15S	MW-17S	MW-18S	FMMW-1	FMMW-2
Inorganics (mg/L)											
Chloride	250	11.30	20.89	28.00*	26.48	20.02	20.00*	27.00*	25.82	23.00*	23.00*
Sulfate	250	15.0*	19.94	6.6*	22.0*	12.72	13.11	10.0*	9.2	17.0*	20.0*
Nitrate	10	1.49	**11.0***	**15.0***	8.41	2.20*	NC	**23.0***	4.57	3.10*	**17.9**
Specific Conductance	700	254*	293*	428*	420*	254*	297*	522	402.16	341*	462
TDS	500	150*	**1100***	240*	250*	160*	170*	350*	254.77	219.61	312
Metals (mg/L)											
Iron	0.30	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Manganese	0.05	NC	0.021*	**0.990***	0.033	**0.470**	**1.090**	**1.660**	NC	NC	**0.110**
VOCs (µg/L)											
1,4-Dichlorobenzene	1.8	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tetrachloroethene	—	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chlorobenzene	—	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Upper Regional Aquifer **Lower Regional Aquifer**

Parameter	Cleanup Level	MW-10D (BG)	MW-11D (2)	MW-12D	MW-13D	MW-14D	MW-15D	MW-18D	MW-14R	MW-20R	MW-26R
Inorganics (mg/L)											
Chloride	250	8.4	7.2*	13.0*	18.74	23.0*	12.4	9.6*	2.2*	2.0*	4.8*
Sulfate	250	14.0*	8.5*	7.0*	19.0*	13.0*	10.0*	6.8*	3.9*	3.2	10.0*
Nitrate	10	2.2*	1.9*	1.6*	6.0*	NC	1.0*	1.7*	NC	NC	NC
Specific Conductance	700	243*	329*	327*	379*	265*	296*	275*	106*	105*	199*
TDS	500	150*	260*	219.78	240*	150*	380*	180*	100*	200*	145.97
Metals (mg/L)											
Iron	0.30	NC	NC	NC	NC	**3.96**	NC	NC	NC	NC	**0.78**
Manganese	0.05	NC	NC	NC	NC	**1.30***	**0.300***	NC	**0.420***	NC	**1.00***
VOCs (g/L)											
1,4-Dichlorobenzene	1.8	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tetrachloroethene	—	NC	1.00*	NC	NC	NC	NC	NC	NC	NC	NC
Chlorobenzene	—	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Notes: Values shown are the upper confidence limit on the mean (UCL 95). Evaluated data are from January 2013 through July 2017.
(—) = not applicable. Bold indicates greater than Cleanup Level. (NC) = not calculated; less than 50 percent detection frequency.
(*) = maximum detected concentration listed because the UCL 95 calculated value was greater than the data range, or the distribution was neither normal nor lognormal.



SCS ENGINEERS Environmental Consultants and Contractors 2405 140th Avenue NE, Suite 107 Bellevue, Washington 98005 (425) 746-4600 FAX: (425) 746-6747			PROJECT NO. 04218003.03	DES BY SG	GROUNDWATER MONITORING WELL LOCATIONS HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON
			SCALE AS SHOWN	CHK BY KGL	DATE MARCH 2018
			CAD FILE FIGURE 3	APP BY KGL	FIGURE 3

0 400 800

APPROX SCALE IN FEET

LEGEND

WATER SUPPLY WELL LOCATION

SOURCE: KLEINFELDER

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO.	DES BY
04218002.03	LEL
SCALE	CHK BY
NOT TO SCALE	S.G.
CAD FILE	APP BY
FIGURE 4	KGL

WATER SUPPLY WELL LOCATION

HIDDEN VALLEY LANDFILL
PIERCE COUNTY, WASHINGTON

DATE
MARCH 2018

FIGURE
4

6.0 LEACHATE QUALITY

Leachate quality is monitored on an annual basis. A sample of untreated leachate was obtained from the East Lined Area leachate collection system (main sump) on February 24, 2017. The sample was analyzed for the parameters specified in WAC 173-351, Appendix IV. Leachate quality for 2017 was typical of previous results. The analytical results for the leachate sample are provided in Table 5 and included with the groundwater results in Appendix D.

Table 5. 2017 Leachate Data Summary

Parameter	Method Reporting Limit (MRL)	Leachate Main Sump
Volatile Organics (µg/L)		
2-Butanone (MEK)	6.0	7.6
Acetone	10.0	13.0
Chloroform	0.5	6.0
Toluene	0.5	0.51
m- Xylene & p-Xylene	0.5	0.77
Total Metals (mg/L)		
Antimony	0.002	0.0028
Arsenic	0.005	0.019
Barium	0.005	0.11
Calcium	0.20	28
Chromium	0.005	0.028
Cobalt	0.010	*
Copper	0.010	0.021
Iron	0.03	10.0
Lead	0.002	0.006
Magnesium	0.10	9.7
Manganese	0.005	0.43
Nickel	0.02	0.085
Potassium	2.0	49
Selenium	0.005	*
Sodium	1.0	520
Vanadium	0.010	0.025
Zinc	0.010	0.1
Inorganic Parameters (mg/L)		
Bicarbonate Alkalinity as CaCO3	5.0	1200
Ammonia	0.22	17
Chloride	4.0	80
Nitrate as N	0.50	*
Sulfate	0.2	16
Total Dissolved Solids	19	2100
Total Organic Carbon	3.1	43
Total Suspended Solids	4.0	43
Field Parameters		
pH		7.42
Specific Conductance (µS/cm)		8252
Temperature (°C)		12.2

Notes:
Analyses performed by TestAmerica, Arvada, CO
VOCs were not listed when not present at concentrations exceeding the MRL
µg/L = micrograms per liter, mg/L = milligrams per liter, * = Not detected above MRL

7.0 POST-CLOSURE MAINTENANCE

7.1 COVER SYSTEM MAINTENANCE

The landfill cover system was inspected on a quarterly basis during 2017. Informal cover inspections were also performed on an ongoing basis by LRI staff, as well as during the monthly landfill gas monitoring events. The inspections found minor areas requiring maintenance of the cover system during 2017. Copies of the inspection reports are included in Appendix I.

7.2 LANDFILL GAS COLLECTION & CONTROL SYSTEM (GCCS) MAINTENANCE

The landfill gas extraction wells, piping and blower/flare station were inspected, monitored and maintained on a monthly basis throughout 2017. In addition, the landfill gas condensate recirculation system was inspected on a quarterly basis in 2017 and the condensate sumps were observed to be working as designed. Sumps 5 and 10 did not collect condensate for a number of years, and therefore, the pumps were previously removed. Monthly records of GCCS maintenance activities and quarterly records of condensate sump inspections are included in Appendix J.

A record of the monthly volume of landfill gas combusted and the average monthly methane concentration at the flare station is provided in Table 6.

Table 6. 2017 Flare Station Data

2017 Flare Station Data Hidden Valley Landfill, Pierce County, Washington		
Month	LFG Volume Combusted (scf)	Methane (% by volume)
January	8,650,737	36.1
February	10,270,149	42.0
March	14,167,445	28.0
April	7,581,478	29.7
May	10,227,362	38.3
June	10,827,749	37.7
July	10,883,189	36.3
August	9,758,002	35.7
September	8,850,459	40.2
October	9,624,119	34.2
November	13,587,942	31.9
December	9,992,816	40.4
Totals	**124,421,447**	**35.9 (average)**
Note: (scf) indicates standard cubic feet		

7.3 GROUNDWATER WELL MAINTENANCE

Monitoring wells MW-23S, MW-23D, MW-25S, MW-25D, MW-27S, MW-27D and MW-28S (see Figure 3) were decommissioned by Cascade Drilling Company (Cascade) on December 4, 6, and 21, 2017, under the guidance of SCS. In addition, new monitoring well MW-29S was installed within the shallow perched aquifer by Cascade between November 30 and December 4. MW-29S is located near the property boundary on the west side of the landfill about half-way between wells MW-12S and MW-13S (see Figure 3). A letter report, dated January 24, 2018, was prepared by SCS to document the well installation and decommission activities. A copy of the letter report is included in Appendix J.

8.0 FIBER-OPTIC CABLE INSTALLATION

A fiber-optic cable was installed across the final cover system of the Hidden Valley Landfill between December 12, 2016 and January 13, 2017. LRI purchased and installed the fiber-optic cable, which is used to monitor and record data at the leachate pre-treatment facility. The cable installation work was performed in general accordance with a Work Plan dated November 1, 2016, which was submitted to Ecology and the TPCHD for review and approval.

The cable was routed between the scale house and the leachate pre-treatment building as shown on Figure 5. The trench started near the scale house, just off of the limit of landfill cover and was terminated on the landfill cover north of the leachate pre-treatment building (former landfill gas to energy building). Existing landfill gas piping that crosses beneath the paved haul-road was disconnected from the landfill gas header and abandoned. Conduit for the fiber-optic cable was installed within the abandoned gas line and routed into the leachate pre-treatment building.

The cable was installed in a 2-inch diameter electrical PVC conduit that was buried in a in an 8-inch deep trench within the soil cover above the final closure geomembrane. Four phases of final closure were crossed by the trench. The closure areas, from west to east, include the North Closure Area, Southwest Closure Area, East Lined Area Closure – Phase I, and the East Lined Area Partial Closure.

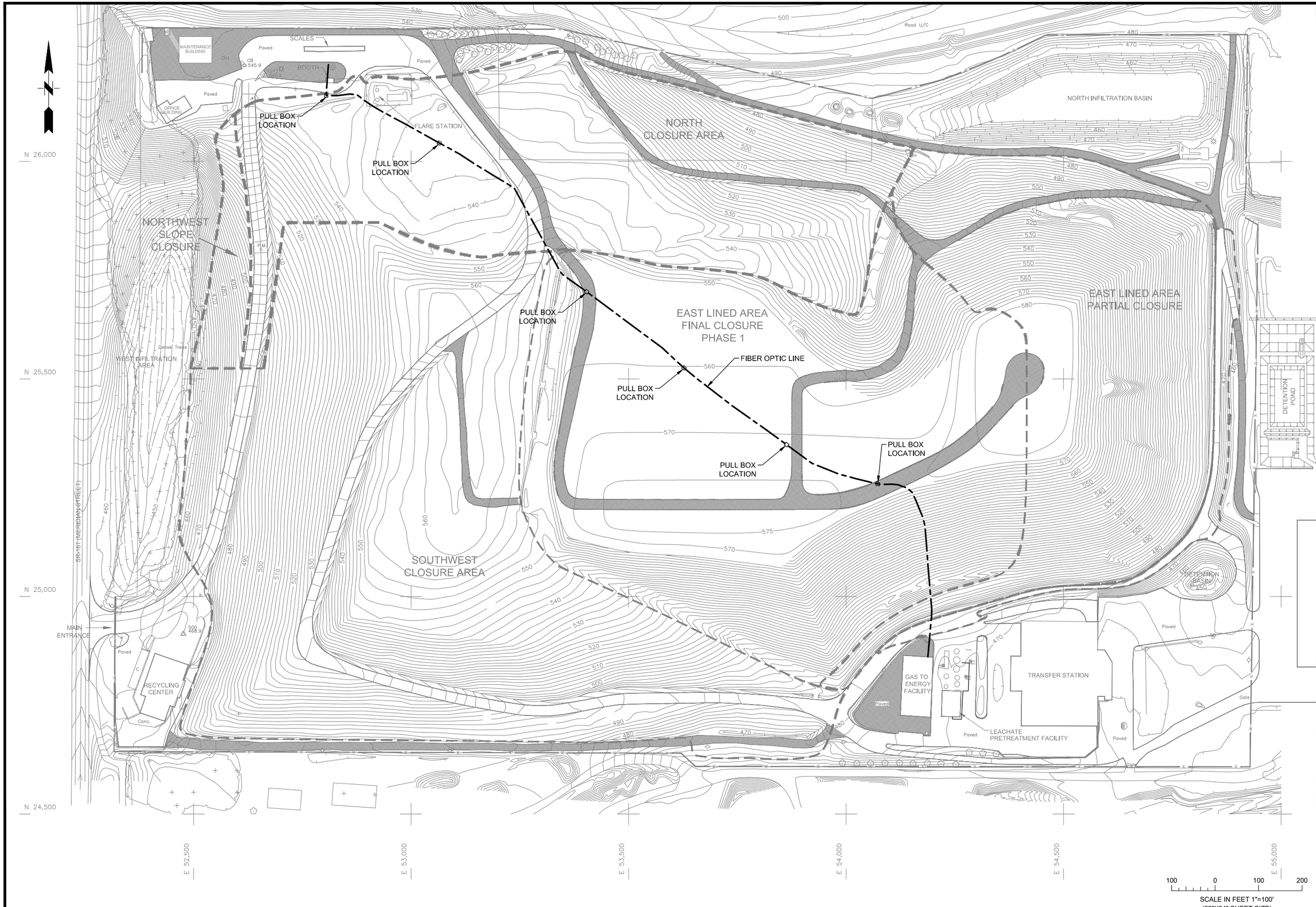
Each of the four closure areas along the trench alignment includes a 12 to 16-inch thick layer of topsoil/vegetative soil layer. The North Closure Area, Southwest Closure Area, and the East Lined Area Partial Closure, also include a non-woven geotextile filter fabric and a 12-inch thick aggregate drainage layer over a geomembrane. For these closure areas, the combined cover thickness over the geomembrane is approximately 24 to 28 inches. The East Lined Area Closure – Phase I includes a geocomposite drainage layer rather than an aggregate drainage layer over the geomembrane. Therefore, the soil cover at East Lined Area Closure – Phase I is 12-inches thick.

LRI staff used a small walk-behind skid-steer type chain trencher to excavate the trench for the fiber-optic cable conduit. Trenching was used for the entire conduit installation (no horizontal drilling was needed). Prior to excavating the conduit trench, potholes were hand excavated approximately every 200 feet along the proposed alignment or as surface conditions changed, to verify the depth of the underlying non-woven geotextile and/or geomembrane layer(s). Prior to trenching, SCS personnel verified that the underlying non-woven geotextile and/or geomembrane layers were a sufficient depth below surface grades to allow for the installation of the conduit as described in the work plan.

The alignment of the trench was modified in the field to avoid existing landfill gas extraction wells and existing headers, and to make use of existing road crossing culverts for both the paved and cover roads. At the existing paved haul-road crossing, the conduit for the fiber-optic cable was placed within the existing steel culvert. At the ditch crossings on either side of the haul road, gravel, silt and soil was removed by hand as necessary and the conduit was placed in a small steel pipe for support and protection. Where the alignment of the fiber optic cable crossed an existing section of the landfill gas collection and control system (GCCS) the trench was excavated by hand.

As observed by SCS personnel, the bottom of the 8-inch deep trench for the conduit was kept above the non-woven geotextile and/or geomembrane and no damage to the non-woven geotextile filter fabric or underlying materials was observed.

The trench alignment is marked in the field by the presence of pull boxes (vaults), which were installed approximately every 300 feet along the conduit to allow for proper installation of the fiber-optic cable. The pull boxes were set no more than 12 inches into the soil cover such that they are visible above grade. Following installation of the fiber-optic cable, the trench was backfilled using soils previously removed from the trench and covered with straw for erosion control.



NO.	REVISION	DATE
A	RECORD DRAWING	3/31/2017

SHEET TITLE: FIBER OPTIC CABLE ALIGNMENT

PROJECT TITLE: HIDDEN VALLEY LANDFILL
17925 MERIDIAN EAST
PUYALLUP, WA 98375

Pierce County
Recycling, Composting
and Disposal, LLC dba
LRI

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJ. NO.	DSN. BY:	DWN. BY:	CHK. BY:	ACAD FILE:	APP. BY:
04218002.03	GDB	GDB	BM	FIGURE 5	KGL

DATE: MARCH 2017

SCALE: AS SHOWN

FIGURE NO. 5

Appendix A

LANDFILL GAS MONITORING DATA

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04216002.02

PCRCD dba LRI

January 19, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	19-Jan-17	11:56	0.01	0.0	6.1	0.0	-	-	
GP-1B	19-Jan-17	11:59	-0.01	0.0	12.4	5.5	-	-	
GP-1C	19-Jan-17	12:03	-0.02	0.0	13.9	3.4	-	-	
GP-2A	19-Jan-17	12:10	0.00	4.7	17.0	0.0	-	-	
GP-2B	19-Jan-17	12:13	0.01	0.0	0.2	21.0	-	-	
GP-3S	19-Jan-17	12:27	-0.01	4.0	12.2	0.9	-	-	
GP-3M	19-Jan-17	12:23	0.02	0.0	3.4	4.5	-	-	
GP-3D	19-Jan-17	12:20	0.10	0.0	4.6	9.0	-	-	
GP-4A	19-Jan-17	12:32	0.00	0.0	0.5	20.3	-	-	
GP-4B	19-Jan-17	12:34	0.00	0.0	0.1	20.9	-	-	
GP-5A	19-Jan-17	12:39	-0.01	0.0	0.2	20.6	-	-	
GP-5B	19-Jan-17	12:43	0.00	0.0	0.4	20.1	-	-	
GP-6	19-Jan-17	12:47	0.00	0.0	0.1	20.8	-	-	
GP-7S	19-Jan-17	12:58	0.00	0.0	0.5	20.3	-	-	
GP-7D	19-Jan-17	12:55	0.00	0.0	0.2	20.7	-	-	
GP-8A	19-Jan-17	13:12	0.00	0.0	0.9	19.9	-	-	
GP-8B	19-Jan-17	13:13	0.00	0.0	0.2	20.8	-	-	
GP-9	19-Jan-17	13:20	0.00	0.0	2.4	15.0	-	-	
GP-10	19-Jan-17	13:25	0.00	0.0	0.2	20.6	-	-	
GP-11	19-Jan-17	13:33	0.00	0.0	4.6	9.0	-	-	
GP-12	19-Jan-17	13:39	0.00	0.0	4.8	9.6	-	-	
GP-13A	19-Jan-17	13:48	0.01	1.2	6.5	9.7	-	-	
GP-13B	19-Jan-17	13:57	0.00	0.0	0.1	20.9	-	-	
GP-14S	19-Jan-17	14:05	0.00	0.0	12.6	0.8	-	-	
GP-14D	19-Jan-17	14:02	0.00	0.0	10.5	12.0	-	-	
GP-15A	19-Jan-17	14:32	-0.07	0.0	7.9	1.2	-	-	
GP-15B	19-Jan-17	14:37	-0.02	0.0	12.3	0.0	-	-	
GP-16A	19-Jan-17	11:46	0.01	0.0	1.8	19.0	-	-	
GP-16B	19-Jan-17	11:48	0.00	0.0	1.1	19.8	-	-	
GP-17	19-Jan-17	11:24	-0.02	0.0	3.6	17.7	-	-	
GP-18	19-Jan-17	11:29	0.06	0.0	0.5	20.1	-	-	
GP-19	19-Jan-17	11:36	0.00	0.0	0.7	20.3	-	-	
LFG-1	19-Jan-17	14:10	0.03	0.3	9.7	4.0	-	-	
LFG-2	19-Jan-17	14:14	0.00	0.0	10.6	3.6	21.9	-	
LFG-3	19-Jan-17	14:21	0.05	12.4	19.2	0.0	-	-	

General Data

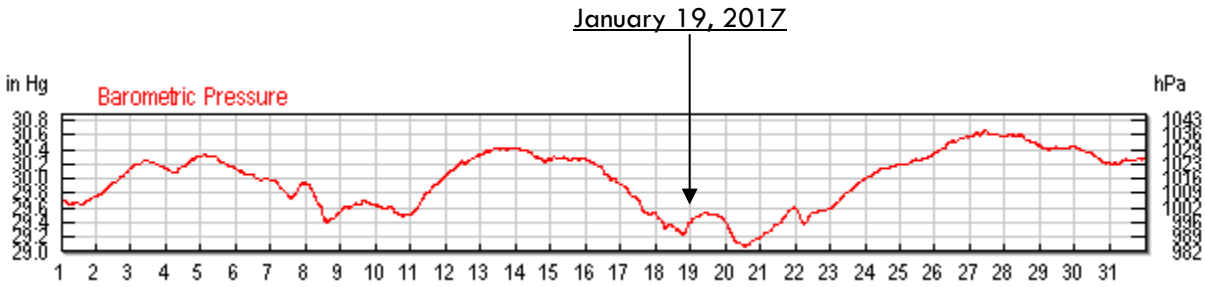
		Weather Conditions	
Monitored by:	B. McMullen	Sky Cover:	Overcast
Instruments:	GEM 2000	Wind / Rain / Snow:	Rain
Calibration Date:	19-Jan-17	Temperature (^oF):	33

Notes 1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling

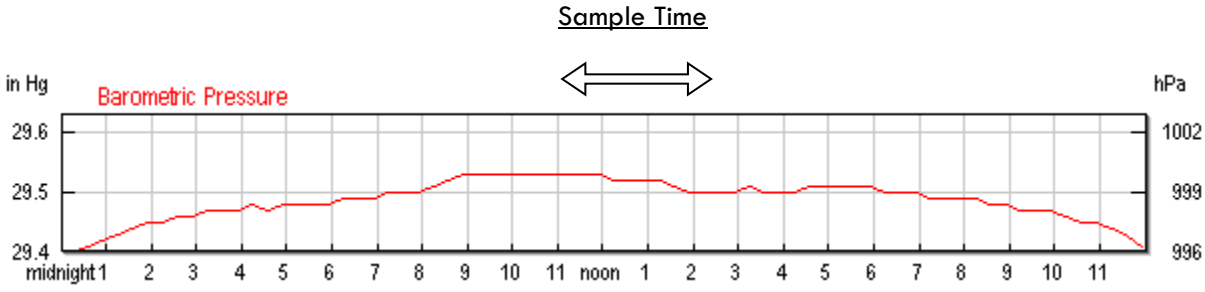
GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – January 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for January 2017



Barometric Pressure Trend for January 19, 2017



Source : KPLU
https://www.wunderground.com/history/airport/KPLU/2017/1/19/DailyHistory.html?req_city=Graham&req_state=WA&req_statename=&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04216002.02

PCRCD dba LRI

February 15, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	15-Feb-17	10:34	0.17	0.0	5.8	1.9	-	-	
GP-1B	15-Feb-17	10:37	0.02	0.0	11.7	9.1	-	-	
GP-1C	15-Feb-17	10:40	0.02	0.0	10.0	10.6	-	-	
GP-2A	15-Feb-17	10:45	0.03	5.0	16.4	1.5	-	-	
GP-2B	15-Feb-17	10:48	0.02	0.0	0.3	20.9	-	-	
GP-3S	15-Feb-17	10:53	0.19	0.0	3.7	14.2	-	-	
GP-3M	15-Feb-17	10:56	0.09	0.0	3.6	4.8	-	-	
GP-3D	15-Feb-17	11:24	0.08	1.8	11.9	1.5	-	-	
GP-4A	15-Feb-17	11:30	0.01	0.0	5.5	9.6	-	-	
GP-4B	15-Feb-17	11:32	0.13	0.0	1.5	17.1	-	-	
GP-5A	15-Feb-17	11:37	0.01	0.0	0.2	20.2	-	-	
GP-5B	15-Feb-17	11:40	0.04	0.0	0.4	19.9	-	-	
GP-6	15-Feb-17	11:44	0.01	0.0	0.2	20.3	-	-	
GP-7S	15-Feb-17	11:57	0.09	0.0	0.2	20.3	-	-	
GP-7D	15-Feb-17	11:59	2.61	0.0	0.4	20.0	-	-	
GP-8A	15-Feb-17	12:06	0.11	0.0	0.6	20.0	-	-	
GP-8B	15-Feb-17	12:09	0.09	0.0	1.5	17.7	-	-	
GP-9	15-Feb-17	12:14	0.06	0.0	2.5	16.2	-	-	
GP-10	15-Feb-17	12:18	0.00	0.0	0.2	20.4	-	-	
GP-11	15-Feb-17	12:23	0.01	0.0	2.6	16.8	-	-	
GP-12	15-Feb-17	12:28	0.00	0.0	2.6	14.2	-	-	
GP-13A	15-Feb-17	12:33	0.21	6.8	12.7	0.3	-	-	
GP-13B	15-Feb-17	12:36	0.11	0.0	0.2	20.6	-	-	
GP-14S	15-Feb-17	12:52	0.12	0.0	9.6	13.5	-	-	
GP-14D	15-Feb-17	12:56	0.07	0.0	11.5	3.6	-	-	
GP-15A	15-Feb-17	13:05	0.00	0.0	8.2	4.2	-	-	
GP-15B	15-Feb-17	13:02	0.00	0.5	12.4	0.0	-	-	
GP-16A	15-Feb-17	10:25	-0.02	0.0	3.6	17.3	-	-	
GP-16B	15-Feb-17	10:29	0.12	0.0	3.8	17.1	-	-	
GP-17	15-Feb-17	10:05	-0.45	0.0	2.3	19.1	-	-	
GP-18	15-Feb-17	10:09	-0.02	0.0	0.8	19.7	-	-	
GP-19	15-Feb-17	10:14	0.00	0.0	3.3	18.8	-	-	
LFG-1	15-Feb-17	12:48	0.01	0.2	8.2	8.0	-	-	
LFG-2	15-Feb-17	12:42	0.00	0.0	10.0	5.3	-	-	
LFG-3	15-Feb-17	12:45	0.11	10.2	16.4	2.5	-	-	

General Data

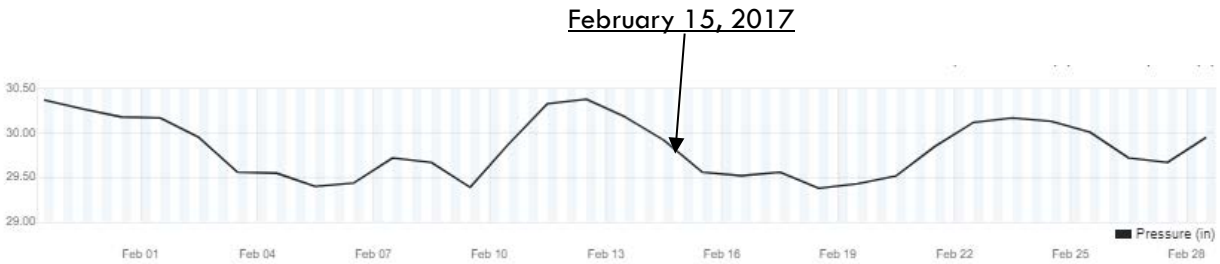
		Weather Conditions	
Monitored by:	B. McMullen	Sky Cover:	Overcast
Instruments:	GEM 2000	Wind / Rain / Snow:	Rain
Calibration Date:	15-Feb-17	Temperature (^oF):	53

Notes 1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling

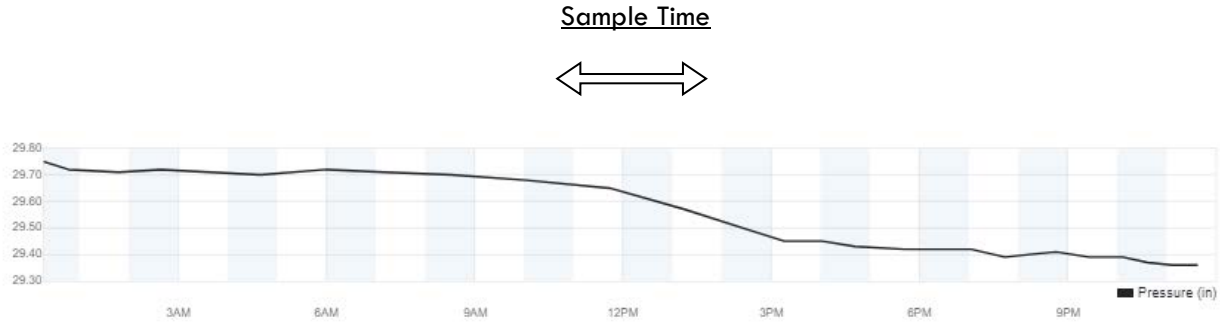
GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – February 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for February 2017*



Barometric Pressure Trend for February 15, 2017



*February 2017 barometric pressure trend for KPLU station was unavailable. Data provided in this report are from KWAPUYAL64

Source : KWAPUYAL64
https://www.wunderground.com/personal-weather-station/dashboard?ID=KWAPUYAL64#history/s20170215/e20170215/mdaily

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04216002.02

PCRCD dba LRI

March 21, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	21-Mar-17	7:14	0.09	0.0	6.0	3.3	-	-	
GP-1B	21-Mar-17	7:17	0.11	0.0	11.8	11.7	-	-	
GP-1C	21-Mar-17	7:20	0.02	0.0	1.0	20.3	-	-	
GP-2A	21-Mar-17	7:25	0.07	0.0	14.7	5.1	-	-	
GP-2B	21-Mar-17	7:27	0.00	0.0	0.4	21.0	-	-	
GP-3S	21-Mar-17	7:31	0.13	0.0	4.0	14.4	-	-	
GP-3M	21-Mar-17	7:34	0.05	0.0	4.2	2.6	-	-	
GP-3D	21-Mar-17	7:37	0.04	0.0	7.6	9.9	-	-	
GP-4A	21-Mar-17	7:43	0.00	0.0	2.6	19.5	-	-	
GP-4B	21-Mar-17	7:46	0.01	0.0	0.2	21.2	-	-	
GP-5A	21-Mar-17	7:50	0.00	0.0	0.1	21.4	-	-	
GP-5B	21-Mar-17	7:53	0.00	0.0	0.0	21.4	-	-	
GP-6	21-Mar-17	7:57	0.00	0.0	0.1	21.3	-	-	
GP-7S	21-Mar-17	8:02	-0.01	0.0	0.3	21.1	-	-	
GP-7D	21-Mar-17	8:04	0.00	0.0	0.1	21.5	-	-	
GP-8A	21-Mar-17	8:12	0.00	0.0	0.0	21.5	-	-	
GP-8B	21-Mar-17	8:15	-0.02	0.0	0.3	20.6	-	-	
GP-9	21-Mar-17	8:20	0.00	0.0	1.4	19.1	-	-	
GP-10	21-Mar-17	8:26	0.20	0.0	0.1	21.3	-	-	
GP-11	21-Mar-17	8:30	0.00	0.0	1.1	20.5	-	-	
GP-12	21-Mar-17	8:35	0.00	0.0	0.4	21.1	-	-	
GP-13A	21-Mar-17	8:39	0.01	0.0	1.5	20.0	-	-	
GP-13B	21-Mar-17	8:42	0.01	0.0	0.1	21.5	-	-	
GP-14S	21-Mar-17	8:46	0.00	0.0	6.1	15.4	-	-	
GP-14D	21-Mar-17	8:49	0.00	0.0	10.0	6.7	-	-	
GP-15A	21-Mar-17	8:53	0.0	0.0	4.4	14.1	-	-	
GP-15B	21-Mar-17	8:56	0.0	0.0	12.6	2.8	-	-	
GP-16A	21-Mar-17	9:01	0.00	0.0	3.8	16.5	-	-	
GP-16B	21-Mar-17	9:04	0.05	0.0	2.7	17.8	-	-	
GP-17	21-Mar-17	9:11	0.00	0.0	0.8	20.8	-	-	
GP-18	21-Mar-17	9:15	0.01	0.0	0.1	21.5	-	-	
GP-19	21-Mar-17	9:21	0.00	0.0	3.4	18.8	-	-	
LFG-1	21-Mar-17	8:53	0.00	0.0	4.4	14.1	-	-	
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	S. Adlington	Sky Cover:	Overcast
Instruments:	GEM 2000	Wind / Rain / Snow:	Rain
Calibration Date:	21-Mar-17	Temperature (^{o}F):	52

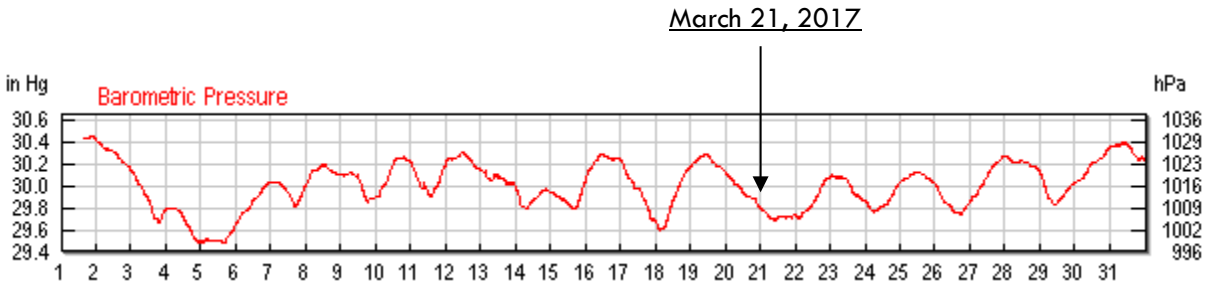
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

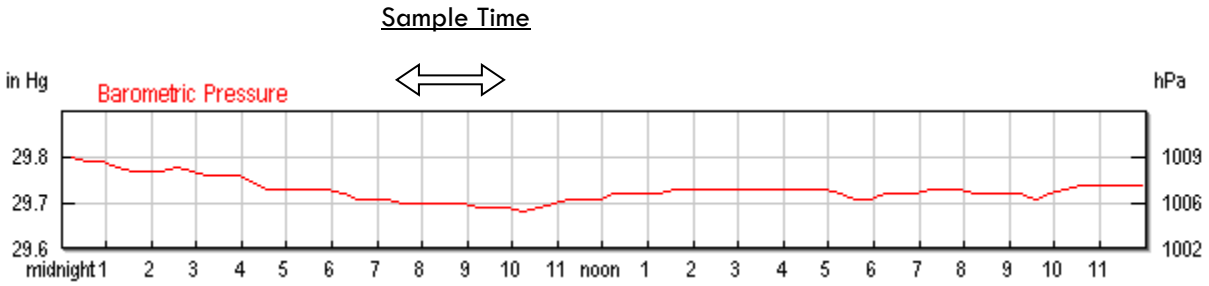
GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – March 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for March 2017



Barometric Pressure Trend for March 21, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/3/22/DailyHistory.html?req_city=Graham&req_state=WA&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04217003.02

PCRCD dba LRI

April 18, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	18-Apr-17	7:26	-0.21	0.0	5.6	4.5	-	-	
GP-1B	18-Apr-17	7:30	-0.14	0.0	9.7	14.1	-	-	
GP-1C	18-Apr-17	7:34	-0.02	0.0	0.6	21.0	-	-	
GP-2A	18-Apr-17	7:46	-0.07	0.0	13.1	9.4	-	-	
GP-2B	18-Apr-17	7:51	0.00	0.0	0.1	21.7	-	-	
GP-3S	18-Apr-17	7:57	-0.06	0.0	3.5	16.6	-	-	
GP-3M	18-Apr-17	8:01	-0.06	0.0	3.8	3.6	-	-	
GP-3D	18-Apr-17	10:30	0.00	0.0	7.1	12.7	-	-	
GP-4A	18-Apr-17	8:08	-0.05	0.0	0.1	21.6	-	-	
GP-4B	18-Apr-17	8:12	0.02	0.0	0.1	21.7	-	-	
GP-5A							-	-	*Note 3*
GP-5B							-	-	*Note 3*
GP-6	18-Apr-17	8:21	-0.03	0.0	0.2	21.6	-	-	
GP-7S	18-Apr-17	8:27	0.00	0.0	0.8	20.7	-	-	
GP-7D	18-Apr-17	8:33	0.00	0.0	0.6	20.8	-	-	
GP-8A	18-Apr-17	8:43	0.00	0.0	1.2	20.1	-	-	
GP-8B	18-Apr-17	8:46	0.00	0.0	0.4	20.9	-	-	
GP-9	18-Apr-17	8:52	0.00	0.0	1.7	19.3	-	-	
GP-10	18-Apr-17	8:59	0.00	0.0	0.2	21.3	-	-	
GP-11	18-Apr-17	9:05	0.00	0.0	1.5	19.6	-	-	
GP-12	18-Apr-17	9:17	0.00	0.0	0.2	20.8	-	-	
GP-13A	18-Apr-17	9:22	0.00	0.0	0.0	21.0	-	-	
GP-13B	18-Apr-17	9:26	0.00	0.0	0.0	21.1	-	-	
GP-14S	18-Apr-17	9:34	0.00	0.0	3.3	18.9	-	-	
GP-14D	18-Apr-17	9:37	0.00	0.0	10.4	5.1	-	-	
GP-15A	18-Apr-17	9:45	0.0	0.0	0.7	19.9	-	-	
GP-15B	18-Apr-17	9:48	0.0	0.0	10.6	5.0	-	-	
GP-16A	18-Apr-17	9:57	0.34	0.0	1.0	19.8	-	-	
GP-16B	18-Apr-17	10:00	-0.01	0.0	0.9	20.0	-	-	
GP-17	18-Apr-17	10:07	0.00	0.0	0.1	21.1	-	-	
GP-18	18-Apr-17	10:12	0.00	0.0	0.0	21.1	-	-	
GP-19							-	-	*Note 3*
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	S. Adlington	Sky Cover:	Overcast
Instruments:	GEM 2000	Wind / Rain / Snow:	Rain
Calibration Date:	18-Apr-17	Temperature (^{0}F):	51

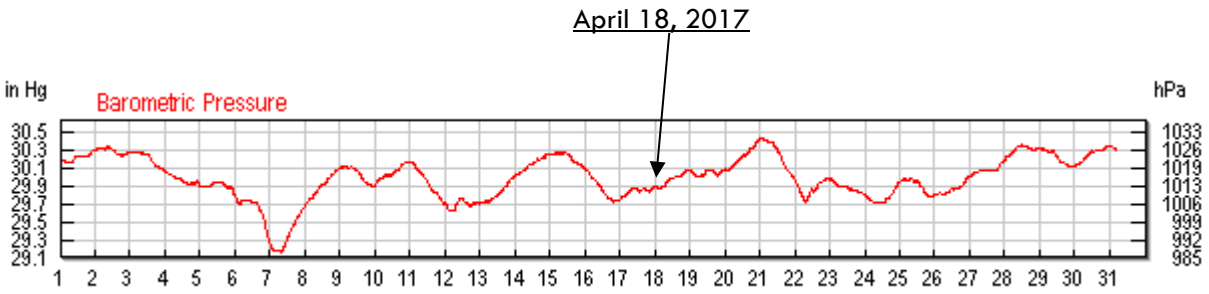
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.
3. Not monitored. Unable to open probe casing.

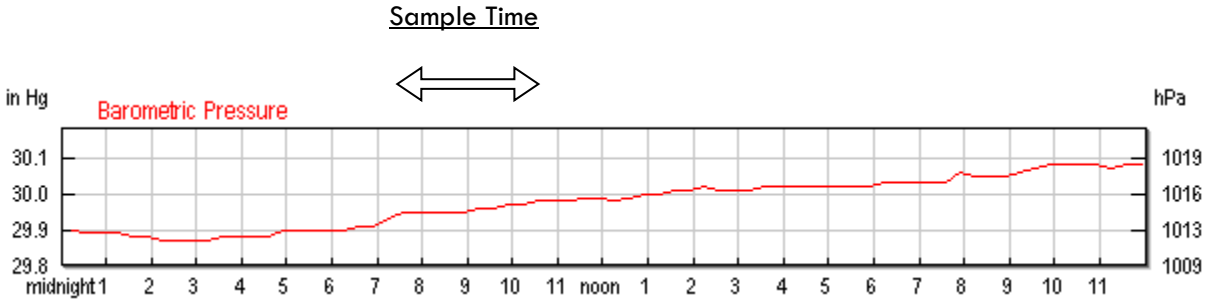
GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – April 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for April 2017



Barometric Pressure Trend for April 18, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/4/18/MonthlyHistory.html?req_city=Graham&req_state=WA&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04217003.02

PCRCD dba LRI

May 25, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	25-May-17	7:39	0.27	0.0	5.5	3.1	-	-	
GP-1B	25-May-17	7:42	0.55	0.0	7.9	15.8	-	-	
GP-1C	25-May-17	7:46	0.17	0.0	2.4	19.6	-	-	
GP-2A	25-May-17	7:51	0.35	0.0	1.3	20.4	-	-	
GP-2B	25-May-17	7:54	0.36	0.0	0.2	21.8	-	-	
GP-3S	25-May-17	8:01	0.48	0.0	1.9	18.9	-	-	
GP-3M	25-May-17	8:05	0.44	0.0	3.4	3.4	-	-	
GP-3D	25-May-17	8:08	0.91	0.0	7.8	9.9	-	-	
GP-4A	25-May-17	8:16	0.01	0.0	1.4	21.0	-	-	
GP-4B	25-May-17	8:19	0.17	0.0	0.4	21.3	-	-	
GP-5A	25-May-17	8:24	0.00	0.0	0.4	21.3	-	-	
GP-5B	25-May-17	8:27	0.00	0.0	0.2	21.5	-	-	
GP-6	25-May-17	8:33	0.00	0.0	0.5	21.3	-	-	
GP-7S	25-May-17	8:40	0.27	0.0	0.8	20.8	-	-	
GP-7D	25-May-17	8:43	0.00	0.0	1.0	20.2	-	-	
GP-8A	25-May-17	8:51	0.37	0.0	2.1	17.9	-	-	
GP-8B	25-May-17	8:54	0.89	0.0	2.3	19.5	-	-	
GP-9	25-May-17	9:03	0.33	0.0	2.1	18.8	-	-	
GP-10	25-May-17	9:18	-0.27	0.0	0.2	21.7	-	-	
GP-11	25-May-17	9:12	-0.36	0.0	1.4	20.1	-	-	
GP-12	25-May-17	9:30	0.00	0.0	0.3	21.3	-	-	
GP-13A	25-May-17	9:38	0.25	15.2	12.0	0.0	-	-	
GP-13B	25-May-17	9:42	0.09	0.0	0.5	21.3	-	-	
GP-14S	25-May-17	9:51	0.38	0.0	4.5	17.7	-	-	
GP-14D	25-May-17	9:54	0.28	0.0	10.2	3.0	-	-	
GP-15A	25-May-17	9:59	0.0	0.0	2.0	19.4	-	-	
GP-15B	25-May-17	10:02	0.0	0.0	7.7	8.7	-	-	
GP-16A	25-May-17	10:09	0.00	0.0	0.9	21.1	-	-	
GP-16B	25-May-17	10:12	0.10	0.0	0.9	21.2	-	-	
GP-17	25-May-17	10:19	0.73	0.0	5.5	16.3	-	-	
GP-18	25-May-17	10:24	0.00	0.0	5.4	15.1	-	-	
GP-19	25-May-17	10:30	0.02	0.0	2.3	20.5	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	S. Adlington	Sky Cover:	Sunny
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	25-May-17	Temperature (^{0}F):	55

Notes

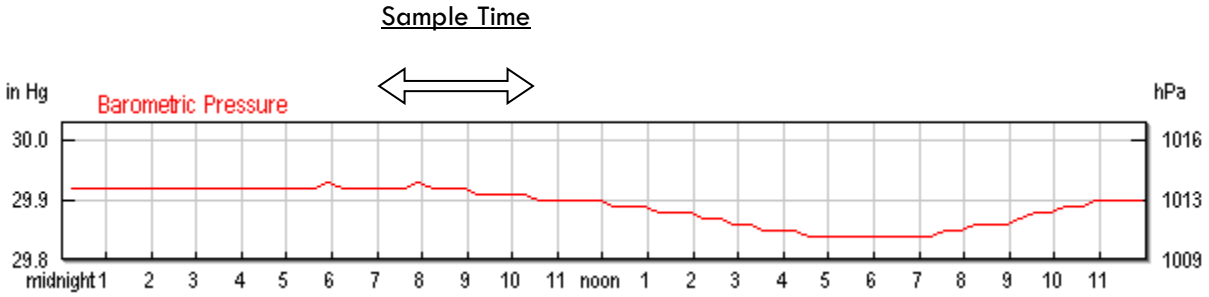
1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – May 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for May 2017

Barometric Pressure Trend for May 25, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/5/25/DailyHistory.html?req_city=Graham&req_state=WA&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 04217003.02

PCRCD dba LRI — June 23, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	23-Jun-17	8:22	0.00	0.0	5.2	2.9	-	-	
GP-1B	23-Jun-17	8:27	0.00	0.0	8.9	11.9	-	-	
GP-1C	23-Jun-17	8:30	0.06	0.0	1.5	19.2	-	-	
GP-2A	23-Jun-17	8:36	0.00	0.0	0.4	20.0	-	-	
GP-2B	23-Jun-17	8:39	1.15	0.0	0.2	20.3	-	-	
GP-3S	23-Jun-17	8:48	0.00	0.0	1.5	18.5	-	-	
GP-3M	23-Jun-17	8:51	0.73	0.0	3.1	4.8	-	-	
GP-3D	23-Jun-17	8:55	0.85	0.0	4.7	15.6	-	-	
GP-4A	23-Jun-17	9:12	0.00	0.0	1.1	19.9	-	-	
GP-4B	23-Jun-17	9:15	0.11	0.0	0.4	20.3	-	-	
GP-5A	23-Jun-17	9:26	0.00	0.0	0.4	19.8	-	-	
GP-5B	23-Jun-17	9:29	0.00	0.0	0.2	20.0	-	-	
GP-6	23-Jun-17	9:35	0.00	0.0	0.4	19.6	-	-	
GP-7S	23-Jun-17	9:45	0.00	0.0	0.5	19.7	-	-	
GP-7D	23-Jun-17	9:50	0.00	0.0	0.7	19.1	-	-	
GP-8A	23-Jun-17	10:01	0.33	0.0	2.1	18.7	-	-	
GP-8B	23-Jun-17	10:04	0.00	0.0	1.4	19.5	-	-	
GP-9	23-Jun-17	10:11	0.05	0.0	1.4	17.6	-	-	
GP-10	23-Jun-17	10:32	0.04	0.0	0.3	20.4	-	-	
GP-11	23-Jun-17	10:25	0.41	0.0	1.0	19.7	-	-	
GP-12	23-Jun-17	10:51	0.00	0.0	0.3	19.4	-	-	
GP-13A	23-Jun-17	10:59	0.02	10.7	11.6	0.0	-	-	
GP-13B	23-Jun-17	11:03	0.02	0.0	0.7	19.9	-	-	
GP-14S	23-Jun-17	11:13	0.01	0.0	4.0	17.5	-	-	
GP-14D	23-Jun-17	11:16	0.00	0.0	9.3	3.6	-	-	
GP-15A	23-Jun-17	11:24	0.0	0.0	2.9	17.5	-	-	
GP-15B	23-Jun-17	11:27	0.0	0.0	5.1	14.3	-	-	
GP-16A	23-Jun-17	11:38	0.00	0.0	0.8	19.7	-	-	
GP-16B	23-Jun-17	11:41	0.13	0.0	0.6	19.9	-	-	
GP-17	23-Jun-17	11:51	0.00	0.0	5.5	15.5	-	-	
GP-18	23-Jun-17	11:56	0.00	0.0	7.0	11.8	-	-	
GP-19	23-Jun-17	12:03	0.00	0.0	2.3	18.9	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	A. Deep	Sky Cover:	Sunny
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	23-Jun-17	Temperature (^{0}F):	64

Notes

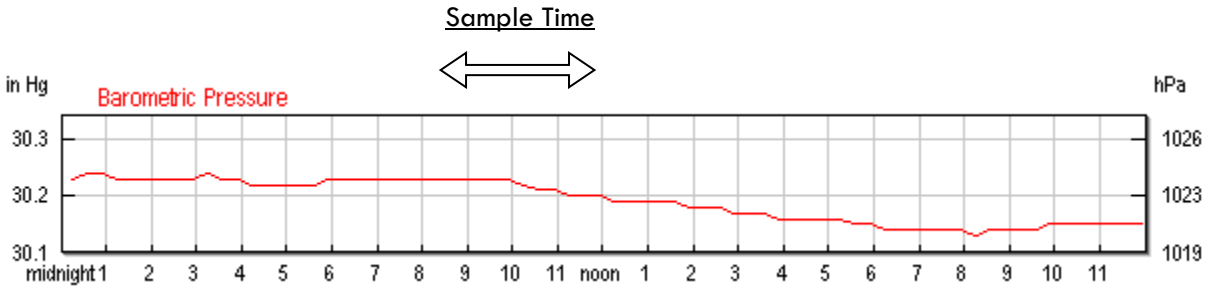
1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – June 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for June 2017

Barometric Pressure Trend for June 23, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/6/23/MonthlyHistory.html?req_city=Graham&req_state=WA&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4217003.02

PCRCD dba LRI — July 26, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	26-Jul-17	11:46	0.00	0.0	4.9	1.9	-	-	
GP-1B	26-Jul-17	11:49	0.35	0.0	11.0	8.3	-	-	
GP-1C	26-Jul-17	11:52	-0.01	0.0	2.3	18.3	-	-	
GP-2A	26-Jul-17	8:29	0.76	0.2	4.4	12.7	-	-	
GP-2B	26-Jul-17	8:33	0.01	0.0	0.3	20.4	-	-	
GP-3S	26-Jul-17	8:41	0.00	0.0	0.6	19.7	-	-	
GP-3M	26-Jul-17	8:44	0.01	0.0	2.8	9.8	-	-	
GP-3D	26-Jul-17	8:47	1.02	0.0	2.9	19.1	-	-	
GP-4A	26-Jul-17	8:56	0.00	0.0	0.3	20.5	-	-	
GP-4B	26-Jul-17	8:59	0.00	0.0	0.5	19.8	-	-	
GP-5A	26-Jul-17	9:05	0.00	0.0	0.6	19.2	-	-	
GP-5B	26-Jul-17	9:09	0.00	0.0	0.4	19.6	-	-	
GP-6	26-Jul-17	9:14	0.00	0.0	0.6	19.5	-	-	
GP-7S	26-Jul-17	9:23	0.04	0.0	0.9	18.9	-	-	
GP-7D	26-Jul-17	9:27	0.01	0.0	0.9	18.6	-	-	
GP-8A	26-Jul-17	9:40	0.00	0.0	3.3	14.7	-	-	
GP-8B	26-Jul-17	9:43	0.43	0.0	2.7	16.8	-	-	
GP-9	26-Jul-17	9:49	0.05	0.0	1.7	16.7	-	-	
GP-10	26-Jul-17	10:06	-0.04	0.0	0.4	19.1	-	-	
GP-11	26-Jul-17	10:12	0.05	0.0	0.7	19.5	-	-	
GP-12	26-Jul-17	10:24	0.00	0.0	1.2	18.7	-	-	
GP-13A	26-Jul-17	10:33	0.00	6.7	12.2	0.0	-	-	
GP-13B	26-Jul-17	10:37	0.00	0.0	0.9	18.9	-	-	
GP-14S	26-Jul-17	10:45	0.01	0.0	4.5	16.5	-	-	
GP-14D	26-Jul-17	10:47	0.00	0.0	9.6	3.0	-	-	
GP-15A	26-Jul-17	10:55	0.0	0.0	3.3	16.7	-	-	
GP-15B	26-Jul-17	10:57	0.0	0.0	3.6	16.5	-	-	
GP-16A	26-Jul-17	11:06	0.00	0.0	0.5	19.6	-	-	
GP-16B	26-Jul-17	11:09	0.12	0.0	0.3	19.8	-	-	
GP-17	26-Jul-17	11:19	0.00	0.0	5.6	14.5	-	-	
GP-18	26-Jul-17	11:24	0.00	0.0	10.0	5.0	-	-	
GP-19	26-Jul-17	11:32	0.00	0.0	0.9	19.6	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	A. Deep	Sky Cover:	Sunny
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	26-Jul-17	Temperature (^{0}F):	69

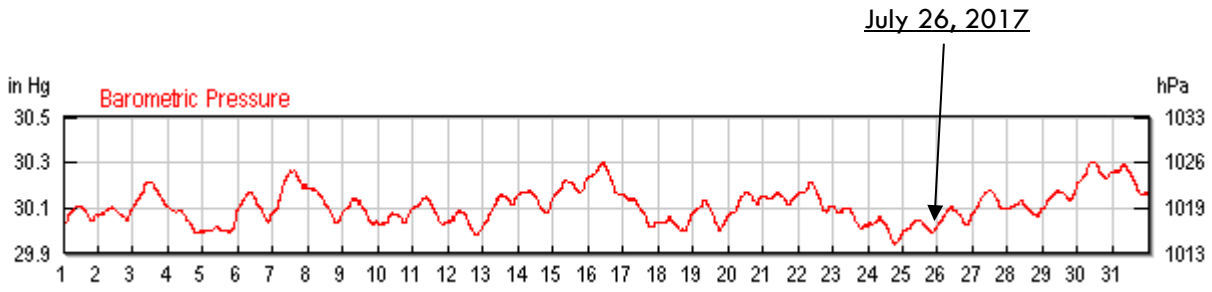
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

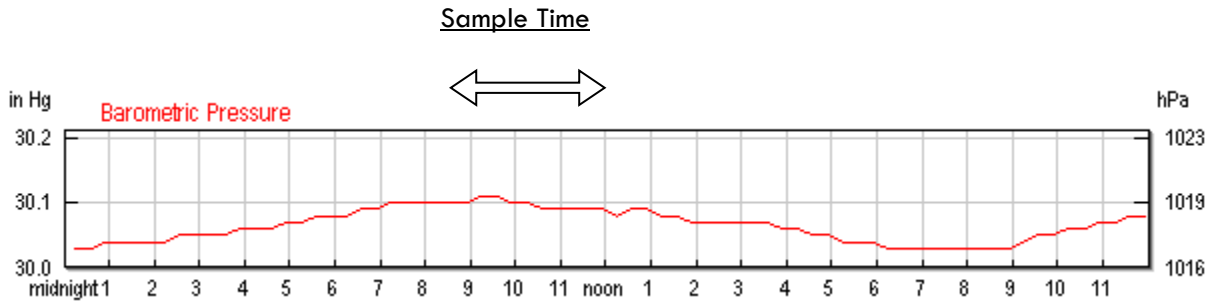
GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – July 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for July 2017



Barometric Pressure Trend for July 26, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/7/26/DailyHistory.html?req_city=Graham&req_state=WA&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4217003.02

PCRCD dba LRI — August 29, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	29-Aug-17	8:08	0.00	0.0	5.5	0.5	-	-	
GP-1B	29-Aug-17	8:12	0.22	0.0	11.2	7.0	-	-	
GP-1C	29-Aug-17	8:16	0.00	0.0	1.3	19.1	-	-	
GP-2A	29-Aug-17	8:24	-0.01	0.1	0.6	19.1	-	-	
GP-2B	29-Aug-17	8:26	0.44	0.0	0.2	20.2	-	-	
GP-3S	29-Aug-17	8:34	0.00	0.0	0.5	19.5	-	-	
GP-3M	29-Aug-17	8:37	0.07	0.0	2.4	14.7	-	-	
GP-3D	29-Aug-17	8:40	0.00	0.0	2.2	18.0	-	-	
GP-4A	29-Aug-17	8:49	0.00	0.0	0.6	19.6	-	-	
GP-4B	29-Aug-17	8:53	0.06	0.0	1.0	18.8	-	-	
GP-5A	29-Aug-17	9:01	0.00	0.0	1.0	18.7	-	-	
GP-5B	29-Aug-17	9:04	0.00	0.0	0.9	18.3	-	-	
GP-6	29-Aug-17	9:10	0.00	0.0	0.9	17.1	-	-	
GP-7S	29-Aug-17	9:20	0.21	0.0	1.2	18.8	-	-	
GP-7D	29-Aug-17	9:23	0.00	0.0	0.8	19.1	-	-	
GP-8A	29-Aug-17	9:34	0.18	0.0	4.1	15.0	-	-	
GP-8B	29-Aug-17	9:36	0.00	0.0	3.5	16.0	-	-	
GP-9	29-Aug-17	9:43	0.00	0.0	1.8	14.9	-	-	
GP-10	29-Aug-17	10:24	0.00	0.0	0.6	18.2	-	-	
GP-11	29-Aug-17	10:12	0.71	0.0	0.6	19.3	-	-	
GP-12	29-Aug-17	10:35	0.00	0.0	1.9	16.1	-	-	
GP-13A	29-Aug-17	10:44	0.00	6.7	13.9	0.0	-	-	
GP-13B	29-Aug-17	10:49	0.00	0.0	0.1	19.8	-	-	
GP-14S	29-Aug-17	10:57	0.00	0.0	3.8	16.9	-	-	
GP-14D	29-Aug-17	11:00	0.00	0.0	10.1	2.5	-	-	
GP-15A	29-Aug-17	11:06	0.0	0.0	0.8	19.0	-	-	
GP-15B	29-Aug-17	11:09	0.0	0.0	3.9	14.6	-	-	
GP-16A	29-Aug-17	11:21	0.00	0.0	0.7	19.0	-	-	
GP-16B	29-Aug-17	11:24	0.13	0.0	0.5	19.3	-	-	
GP-17	29-Aug-17	11:34	0.00	0.0	9.3	3.9	-	-	
GP-18	29-Aug-17	11:40	0.00	0.0	11.2	3.8	-	-	
GP-19	29-Aug-17	11:48	0.00	0.0	0.2	20.1	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	A. Deep	Sky Cover:	Sunny
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	29-Aug-17	Temperature (^{0}F):	72

Notes

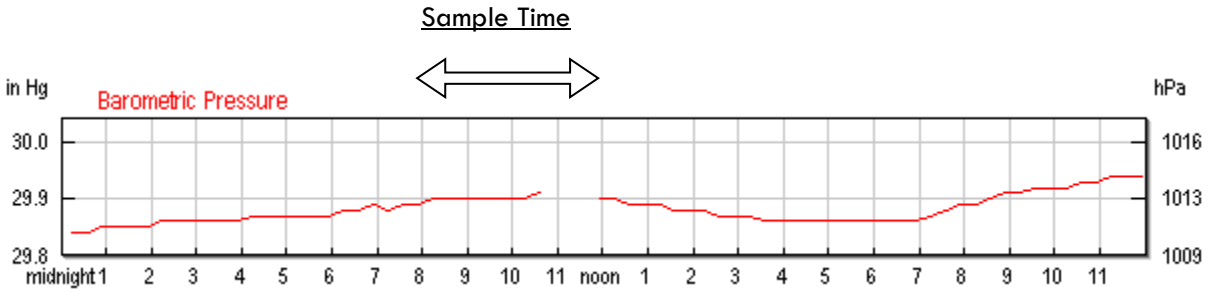
1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – August 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for August 2017

Barometric Pressure Trend for August 29, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/8/29/MonthlyHistory.html?req_city=Graham&req_state=WA&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4217003.02

PCRCD dba LRI — September 19, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	19-Sep-17	8:08	0.47	0.1	5.6	0.0	-	-	
GP-1B	19-Sep-17	8:10	0.44	0.0	10.6	7.2	-	-	
GP-1C	19-Sep-17	8:13	0.00	0.0	2.3	17.7	-	-	
GP-2A	19-Sep-17	8:19	0.01	0.3	1.6	16.7	-	-	
GP-2B	19-Sep-17	8:22	0.57	0.0	0.3	20.0	-	-	
GP-3S	19-Sep-17	8:31	0.01	0.0	0.8	19.1	-	-	
GP-3M	19-Sep-17	8:34	0.19	0.0	2.3	15.7	-	-	
GP-3D	19-Sep-17	8:36	0.01	0.0	2.6	17.2	-	-	
GP-4A	19-Sep-17	11:23	0.00	0.0	0.2	19.5	-	-	
GP-4B	19-Sep-17	8:51	0.10	0.0	0.9	18.9	-	-	
GP-5A	19-Sep-17	8:56	0.00	0.0	1.0	18.5	-	-	
GP-5B	19-Sep-17	8:59	0.00	0.0	1.1	18.1	-	-	
GP-6	19-Sep-17	9:04	0.00	0.0	0.8	19.2	-	-	
GP-7S	19-Sep-17	9:12	0.01	0.0	1.0	19.4	-	-	
GP-7D	19-Sep-17	9:15	0.00	0.0	1.0	18.8	-	-	
GP-8A	19-Sep-17	9:26	0.02	0.0	4.8	15.0	-	-	
GP-8B	19-Sep-17	9:29	0.49	0.0	1.5	18.8	-	-	
GP-9							-	-	*Note 3*
GP-10	19-Sep-17	9:40	0.03	0.0	0.9	19.1	-	-	
GP-11	19-Sep-17	9:52	-0.02	0.0	1.1	17.4	-	-	
GP-12	19-Sep-17	9:59	0.00	0.0	3.1	14.0	-	-	
GP-13A	19-Sep-17	10:08	0.00	1.4	11.4	2.6	-	-	
GP-13B	19-Sep-17	10:12	0.01	0.0	0.2	19.8	-	-	
GP-14S	19-Sep-17	10:22	0.01	0.0	5.3	12.4	-	-	
GP-14D	19-Sep-17	10:25	0.63	0.0	11.1	1.3	-	-	
GP-15A	19-Sep-17	10:30	0.0	0.0	0.6	19.2	-	-	
GP-15B	19-Sep-17	10:33	0.0	0.0	6.4	9.6	-	-	
GP-16A	19-Sep-17	10:41	0.00	0.0	1.5	17.4	-	-	
GP-16B	19-Sep-17	10:44	0.10	0.0	1.3	17.6	-	-	
GP-17	19-Sep-17	10:53	0.58	0.0	10.3	3.6	-	-	
GP-18	19-Sep-17	10:57	0.00	0.0	9.1	11.2	-	-	
GP-19	19-Sep-17	11:04	0.00	0.0	0.4	19.7	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	A. Deep	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	Rain
Calibration Date:	19-Sep-17	Temperature (^{o}F):	54

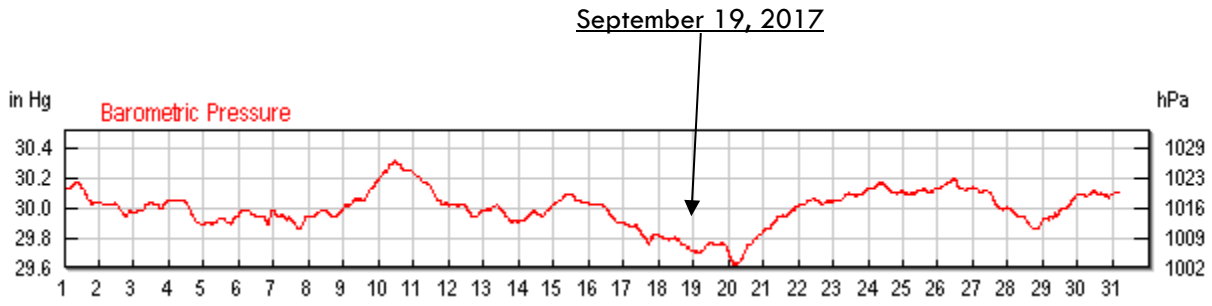
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.
3. Not monitored.

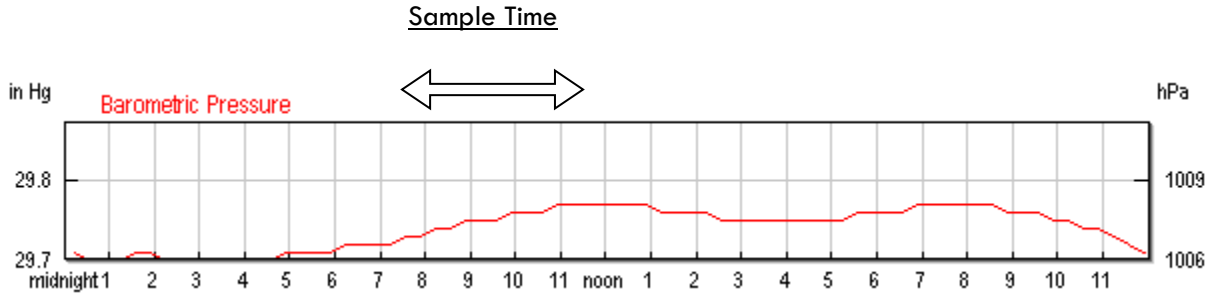
GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – September 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for September 2017



Barometric Pressure Trend for September 19, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/9/19/MonthlyHistory.html?req_city=Graham&req_state=WA&req_statename=&reqdb.zip=98338&reqdb.magic=1&reqdb.wmo=99999

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4217003.02

PCRCD dba LRI — October 25, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	25-Oct-17	7:46	0.00	0.0	5.8	0.7	-	-	
GP-1B	25-Oct-17	7:48	0.04	0.0	9.7	10.8	-	-	
GP-1C	25-Oct-17	7:52	0.00	0.0	5.2	16.0	-	-	
GP-2A	25-Oct-17	7:58	0.35	0.0	1.0	21.3	-	-	
GP-2B	25-Oct-17	8:01	0.23	0.0	0.3	21.1	-	-	
GP-3S	25-Oct-17	8:10	0.00	0.0	1.1	21.8	-	-	
GP-3M	25-Oct-17	8:13	0.02	0.0	2.4	15.4	-	-	
GP-3D	25-Oct-17	8:16	0.02	0.0	3.1	15.4	-	-	
GP-4A	25-Oct-17	8:32	0.00	0.0	3.7	13.9	-	-	
GP-4B	25-Oct-17	8:35	0.00	0.0	0.3	21.3	-	-	
GP-5A	25-Oct-17	8:41	-0.01	0.0	0.5	21.1	-	-	
GP-5B	25-Oct-17	8:44	-0.01	0.0	0.6	21.5	-	-	
GP-6	25-Oct-17	8:49	0.00	0.0	0.4	21.1	-	-	
GP-7S	25-Oct-17	9:02	0.00	0.0	0.4	21.0	-	-	
GP-7D	25-Oct-17	9:05	0.00	0.0	0.9	22.1	-	-	
GP-8A	25-Oct-17	9:14	0.00	0.0	3.7	18.0	-	-	
GP-8B	25-Oct-17	9:16	0.21	0.0	0.7	22.1	-	-	
GP-9	25-Oct-17	9:22	0.00	0.0	3.5	15.0	-	-	
GP-10	25-Oct-17	9:31	-0.48	0.0	0.6	22.5	-	-	
GP-11	25-Oct-17	9:46	0.03	0.0	2.3	14.7	-	-	
GP-12	25-Oct-17	9:52	0.00	0.0	4.9	11.7	-	-	
GP-13A	25-Oct-17	9:59	0.00	0.8	12.2	0.1	-	-	
GP-13B	25-Oct-17	10:03	0.01	0.0	0.7	21.2	-	-	
GP-14S	25-Oct-17	10:10	0.00	0.0	8.5	11.0	-	-	
GP-14D	25-Oct-17	10:12	0.00	0.0	10.0	5.3	-	-	
GP-15A	25-Oct-17	10:18	0.01	0.0	2.1	18.6	-	-	
GP-15B	25-Oct-17	10:21	0.00	0.0	8.5	8.4	-	-	
GP-16A	25-Oct-17	10:29	0.00	0.0	1.6	20.5	-	-	
GP-16B	25-Oct-17	10:32	0.04	0.0	0.5	22.1	-	-	
GP-17	25-Oct-17	10:42	0.00	0.0	7.5	13.4	-	-	
GP-18	25-Oct-17	10:47	0.00	0.0	1.5	20.7	-	-	
GP-19	25-Oct-17	10:54	0.00	0.0	0.9	21.2	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	A. Deep	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	25-Oct-17	Temperature (^{0}F):	51

Notes

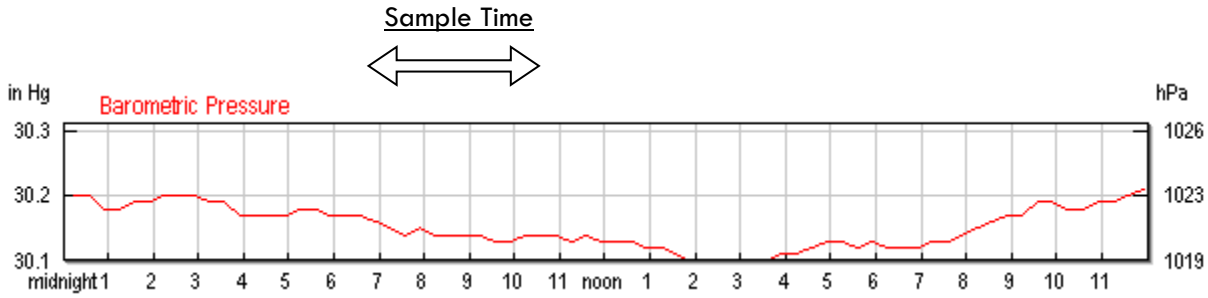
1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – October 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for October 2017

Barometric Pressure Trend for October 25, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/10/25/DailyHistory.html?req_city=&req_state=&req_statename=&reqdb.zip=&reqdb.magic=&reqdb.wmo=

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4217003.02

PCRCD dba LRI — November 29, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	29-Nov-17	9:33	0.11	0.0	5.9	3.5	-	-	
GP-1B	29-Nov-17	9:36	0.12	0.0	8.9	13.9	-	-	
GP-1C	29-Nov-17	9:38	0.15	0.0	3.2	20.4	-	-	
GP-2A	29-Nov-17	9:45	0.20	0.0	0.2	0.0	-	-	
GP-2B	29-Nov-17	9:47	0.04	0.0	0.1	0.0	-	-	
GP-3S	29-Nov-17	9:54	0.08	0.0	2.1	21.5	-	-	
GP-3M	29-Nov-17	9:56	0.12	0.0	2.7	15.5	-	-	
GP-3D	29-Nov-17	9:59	-0.03	0.0	6.2	16.2	-	-	
GP-4A	29-Nov-17	10:10	0.00	0.0	0.1	0.0	-	-	
GP-4B	29-Nov-17	10:12	0.00	0.0	0.4	24.8	-	-	
GP-5A							-	-	*Note 2*
GP-5B							-	-	*Note 2*
GP-6	29-Nov-17	10:20	0.00	0.0	0.1	0.0	-	-	
GP-7S	29-Nov-17	10:28	0.10	0.0	0.9	24.4	-	-	
GP-7D	29-Nov-17	10:31	0.00	0.0	0.7	24.3	-	-	
GP-8A	29-Nov-17	10:40	0.07	0.0	1.7	23.9	-	-	
GP-8B	29-Nov-17	10:42	0.13	0.0	0.2	0.0	-	-	
GP-9	29-Nov-17	10:47	0.02	0.0	3.2	17.8	-	-	
GP-10	29-Nov-17	10:55	0.41	0.0	0.2	0.0	-	-	
GP-11	29-Nov-17	11:00	0.41	0.0	1.6	23.5	-	-	
GP-12	29-Nov-17	11:05	0.00	0.0	1.4	21.8	-	-	
GP-13A	29-Nov-17	11:12	0.04	1.7	11.6	0.5	-	-	
GP-13B	29-Nov-17	12:13	0.00	0.0	0.2	0.0	-	-	
GP-14S	29-Nov-17	11:22	0.13	0.0	7.8	13.5	-	-	
GP-14D	29-Nov-17	11:25	0.13	0.0	10.7	3.9	-	-	
GP-15A	29-Nov-17	11:29	0.00	0.0	1.9	22.6	-	-	
GP-15B	29-Nov-17	11:31	0.00	0.0	7.9	10.6	-	-	
GP-16A	29-Nov-17	11:39	0.00	0.0	0.9	24.3	-	-	
GP-16B	29-Nov-17	11:41	0.02	0.0	1.6	23.2	-	-	
GP-17	29-Nov-17	11:49	0.16	0.0	5.2	18.7	-	-	
GP-18	29-Nov-17	11:53	0.00	0.0	1.0	24.5	-	-	
GP-19	29-Nov-17	11:59	0.00	0.0	0.1	0.0	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	A. Deep	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	29-Nov-17	Temperature (^{0}F):	45

Notes

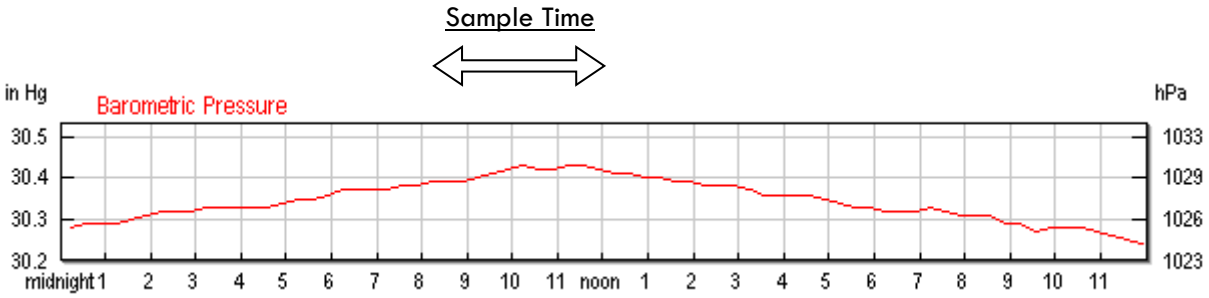
1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – November 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for November 2017

Barometric Pressure Trend for November 29, 2017



Source :
https://www.wunderground.com/history/airport/KPLU/2017/11/29/DailyHistory.html?req_city=&req_state=&req_statename=&reqdb.zip=&reqdb.magic=&reqdb.wmo=

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

4217003.02

PCRCD dba LRI

December 21, 2017

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	21-Dec-17	8:16	0.19	0.0	6.3	6.1	-	-	
GP-1B	21-Dec-17	8:19	1.38	0.0	10.2	10.7	-	-	
GP-1C	21-Dec-17	8:23	0.28	0.0	10.3	10.4	-	-	
GP-2A	21-Dec-17	11:47	0.06	0.0	13.3	4.5	-	-	
GP-2B	21-Dec-17	8:31	0.16	0.0	0.1	20.9	-	-	
GP-3S	21-Dec-17	8:45	0.20	0.0	3.8	15.0	-	-	
GP-3M	21-Dec-17	8:48	0.27	0.0	3.3	10.0	-	-	
GP-3D	21-Dec-17	8:50	0.30	0.0	7.2	8.4	-	-	
GP-4A	21-Dec-17	11:26	0.00	0.0	3.7	14.5	-	-	
GP-4B	21-Dec-17	11:28	0.00	0.0	0.1	20.5	-	-	
GP-5A	21-Dec-17	11:34	0.00	0.0	0.3	20.4	-	-	
GP-5B	21-Dec-17	11:38	0.00	0.0	1.0	19.2	-	-	
GP-6	21-Dec-17	9:14	0.00	0.0	0.2	20.4	-	-	
GP-7S	21-Dec-17	9:21	0.28	0.0	0.5	20.2	-	-	
GP-7D	21-Dec-17	9:24	0.00	0.0	0.7	19.8	-	-	
GP-8A	21-Dec-17	9:39	0.20	0.0	1.1	20.0	-	-	
GP-8B	21-Dec-17	9:42	0.22	0.0	0.2	20.5	-	-	
GP-9	21-Dec-17	9:49	0.28	0.0	3.8	13.4	-	-	
GP-10	21-Dec-17	9:55	0.04	0.0	0.1	20.5	-	-	
GP-11	21-Dec-17	10:00	0.73	0.0	2.4	17.8	-	-	
GP-12	21-Dec-17	10:07	0.00	0.0	2.1	17.6	-	-	
GP-13A	21-Dec-17	10:16	0.05	0.2	6.8	8.7	-	-	
GP-13B	21-Dec-17	10:23	0.00	0.0	0.1	20.7	-	-	
GP-14S	21-Dec-17	10:33	0.15	0.0	8.6	12.3	-	-	
GP-14D	21-Dec-17	10:36	0.24	0.0	11.3	3.0	-	-	
GP-15A	21-Dec-17	10:40	0.01	0.0	2.9	12.8	-	-	
GP-15B	21-Dec-17	10:43	0.00	0.0	11.7	1.3	-	-	
GP-16A	21-Dec-17	10:51	-0.07	0.0	2.8	18.1	-	-	
GP-16B	21-Dec-17	10:53	0.02	0.0	3.0	17.8	-	-	
GP-17							-	-	*Note 3*
GP-18	21-Dec-17	11:04	0.00	0.0	0.9	20.1	-	-	
GP-19	21-Dec-17	11:10	0.00	0.0	2.9	18.5	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

		Weather Conditions	
Monitored by:	A. Deep	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	21-Dec-17	Temperature (^{o}F):	32

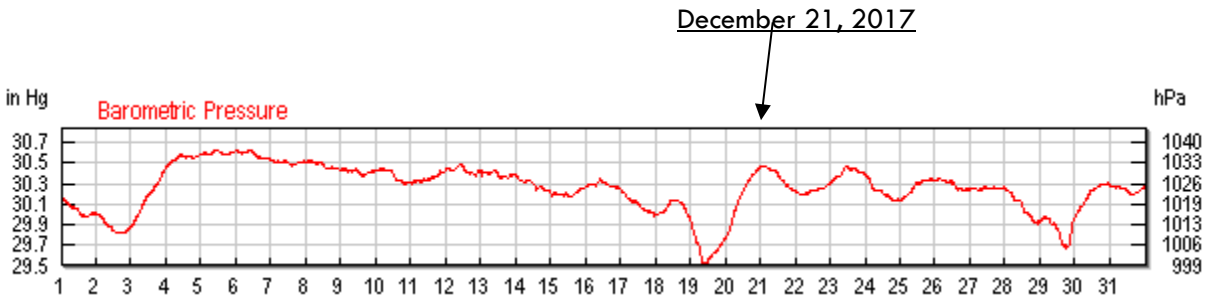
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.
3. Not monitored due to ice in probe.

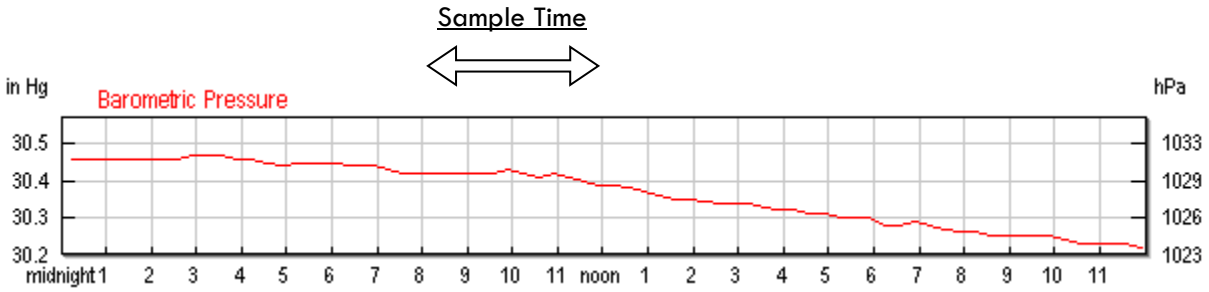
GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend – December 2017
Hidden Valley Landfill, Pierce County, Washington

Barometric Pressure Trend for December 2017



Barometric Pressure Trend for December 21, 2017



Source:
https://www.wunderground.com/history/airport/KPLU/2017/12/21/MonthlyHistory.html?&reqdb.zip=&reqdb.magic=&reqdb.wmo=

1/1

04217003.02

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Date: 3/21/2017
Weather Conditions: OVERCAST
Instrument: PHOTO VAC MICRO FID
Measured By: SAM ADLINGTON

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:
- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [x] Main Office - individual office spaces, storage areas and within open crawl-space area.
- [x] Repair Shop – survey atmosphere conditions throughout (lower height levels).
- [x] Pay/Scale Booth – interior of building.
- [x] Recycle Building – throughout facility and water drainage areas.
- [x] Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas.
- [x] Gas to Energy Building – central monitoring/control room, engine room and storage cabinets.
- [x] Transfer Station Building – throughout entire building and lower levels.

UPWIND = 6.3ppm AT BFS

DOWNWIND = 4.3 AT TRANSFER STATION

Signature

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Date: 6/28/2017
Weather Conditions: OVERCAST ~60°F
Instrument: PHOTOVAC MICRO FID
Measured By: SAM ADLINGTON

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:
- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [x] Main Office - individual office spaces, storage areas and within open crawl-space area.
- [x] Repair Shop – survey atmosphere conditions throughout (lower height levels).
- [x] Pay/Scale Booth – interior of building.
- [x] Recycle Building – throughout facility and water drainage areas.
- [x] Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas.
- [x] Gas to Energy Building – central monitoring/control room, engine room and storage cabinets.
- [x] Transfer Station Building – throughout entire building and lower levels.

Signature

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Date: 9/19/17
Weather Conditions: 10 MY
Instrument: MicroFID
Measured By: Alexa Deep

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:
- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [x] Main Office - individual office spaces, storage areas and within open crawl-space area.
- [x] Repair Shop – survey atmosphere conditions throughout (lower height levels).
- [x] Pay/Scale Booth – interior of building.
- [x] Recycle Building – throughout facility and water drainage areas.
- [x] Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas.
- [x] Gas to Energy Building – central monitoring/control room, engine room and storage cabinets.
- [x] Transfer Station Building – throughout entire building and lower levels.

Alexa Deep
Signature

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Date: 11/29/17
Weather Conditions: Sunny
Instrument: Micro FID
Measured By: APX & DeTD

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:

- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [x] Main Office - individual office spaces, storage areas and within open crawl-space area.
- [x] Repair Shop – survey atmosphere conditions throughout (lower height levels).
- [x] Pay/Scale Booth – interior of building.
- [x] Recycle Building – throughout facility and water drainage areas.
- [x] Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas.
- [x] Gas to Energy Building – central monitoring/control room, engine room and storage cabinets.
- [x] Transfer Station Building – throughout entire building and lower levels.

Signature

Appendix B

LEACHATE TREATMENT &
SIDE-SLOPE LINER SYSTEM DATA

Table 1. 2017 Main Sump and Side-Slope Liner Area Performance Data
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Month	Main Sump Monthly Leachate Volume - Cell 1 (gallons)	Side-Slope Sump Monthly Leachate Volume - Cell 2 (gallons)	Side-Slope Sump Monthly Leakage Flow[a] - Cell 2 (gallons/month)	Monthly Rainfall (inches)
January	18,128	0	0	2.64
February	22,706	0	589	8.68
March	30,052	7,744	649	7.65
April	31,022	4,022	962	4.47
May	3,124	574	0	2.50
June	18,592	3,487	0	1.65
July	24,030	0	0	0.00
August	25,225	4,977	0	0.13
September	15,627	5,640	0	1.05
October	0	0	0	5.69
November	11,419	0	1,511	6.02
December	36,880	3,858	536	9.11
Year to date:	236,805	30,302	4,247	49.59

Notes:

a = Leakage is fluid pumped from the leak detection sump as recorded by LRI staff.

LEACHATE DAILY LOG #2

Month: JANUARY 2017

Year: ~~2016~~

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP MIN	S-SL	CELL1	TS/GL	TRAN P	BLW AVG	E-PH	DAILY EFFLUENT
1	12 PM	4076721	4476439	36336	60	.08	NOT working	906	71282	274462	57919		18411	868	32587
2	12	4108320	4509027	36360	60	0	off	11	11	11	11		18436	870	32587
3	12	4139251	4541611	36383	off	0	11	909	11	11	5795		18462	870	32587
4	12	4170519	4574199	36407	60	0	11	911	11	11	11		18487	869	32587
5	12	4202119	4606786	36432	60	0	11	914	11	11	57954		18512	866	32586
6	12	4233302	4639326	36456	60	0	11	917	11	11	11		18538	865	32587
7	12	4264744	4671959	36480	60	0	11	920	11	11	11		18563	866	32588
8	12	4297374	4704548	36504	60	0	11	11	11	11	11		18588	863	32588
9	12	4327846	4737135	36527	61	.26	11	922	11	11	57929		18613	863	32588
10	12	4358529	4769721	36551	60.5	.15	11	924	11	11	58043		18639	868	32588
11	12	4391295	4802309	36575	60.1	.25	11	927	11	11	58071		18664	872	32587
12	12	4422541	4834896	36599	60.4	1	11	930	11	11	11		18690	873	32586
13	12	4453229	4867483	36624	2	0	11	933	11	11	11		18715	868	32589
14	12	4484747	4900070	36648	61	0	11	936	11	11	11		18740	869	32588
15	12	4515461	4932659	36671	61	0	NOT WORKING	11	11	11	11		18765	868	32586
16	12	4547197	4965245	36695	61	0	11	938	11	11	58128		18790	867	32587
17	12	4578151	4997831	36719	60.5	.15	11	941	11	11	58163		18816	8.7	32587
18	12	4608117	5030419	36744	60.4	1.5	11	944	11	11	58193		18841	8.7	32587
19	12	4639744	5063007	36768	59.9	.1	11	947	11	11	58204		18867	8.7	32587
20	12	4668273	5095593	36791	60.2	.05	11	950	11	11	58225		18892	877	32587
21	12	4698950	5128180	36815	61	0	11	953	11	11	58277		18917	874	32588
22	12	4729136	5160767	36839	61	.08	11	11	11	11	11		18942	874	32587
23	12	4758472	5193354	36863	60	0	11	955	11	11	11		18967	874	32587
24	12	4788868	5225941	36887	off	0	11	958	11	11	58292		18993	877	32587
25	12	4820777	5258528	36911	54.2	0	11	961	11	11	59038		19018	877	32585
26	12	4851924	5291113	36935	60	.02	11	967	11	11	11		19043	876	32585
27	12	4883812	5323698	36959	60	0	2352	970	11	274579	59125		19069	876	32586
28	12	4915311	5356284	36983	60	0	2230	972	11	281238	59146		19094	879	32587
29	12	4947999	5388871	37008	60	0	2261	11	71282	287068	59185		19120	877	32589
30	12	4980185	5421460	37032	60	0	2170	976	11	11	59211		19145	871	32587
31	12	5011374	5454047	37055	60.1	0	2084	478	11	292590	59295		19170	8.81	32586

~~2.64~~ 2.64

0 18128

LEACHATE DAILY LOG #1

Month: JANUARY 2017
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/02	D/SL/P	P-4A	P-4B	P-5A	P-5B	CO2/H	M/H2O
1	12pm	1288	1227	17688	11258	17288	9877	15.8	1.9 2.3	540	4413	4004	7157	7383	785	767
2	12	1290	"	17700	11261	17292	9892	"	1.5 1.4	543	4422	"	7168	10	774	752
3	12	1292.5	1227.9	17715	[illegible]	17312	9923	"	4/1.2	541.2	4429.3	[illegible]	7182	10	[illegible]	[illegible]
4	12	1294.7	"	17741	11285	17313	9917	15.9	4.2/1	545.6	"	4012	7188.3	10	7.78	750
5	12	1296	"	17739	11288	17327	9916	15.9	1.6 .6	548	"	4018	7198	10	775	756
6	12	1299	[illegible]	"	11307	17338	[illegible]	"	2.2 1.2	550	"	4021	7208	10	779	761
7	12	"	1230	17757	11309	17341	[illegible]	"	[illegible]	552	4433	[illegible]	7218	11	776	755
8	12	"	1232	17764	11322	17726	"	"	1.6 .6	555	4442	"	7229	10	775	759
9	12	"	1233	17773	11332	17364	9956	15.9	1.2 .05	557	4450	4027	7239	10	776	762
10	12	2986	1234	17789	11335	17375	9963.7	"	4/0	559.9	4450.8	4033.5	7249.3	10	7.8	765
11	12	"	1237.9	"	11356	17389	9969.8	"	3/0	562.6	4460.8	4038.8	7259.4	10	7.73	7.49
12	12	"	1239.9	17809	11356	17390	9971.4	"	1.4/.0	[illegible]	[illegible]	[illegible]	7269.6	10	7.77	7.54
13	12	"	1241	17814	11370	17409	9987	"	2.3 .05	566	4453	4049	7279	10	776	764
14	12	"	1243	17824	11380	17414	10002	16	1.9 .03	567	4462	"	7289	11	780	755
15	12	"	1245	17840	11384	17423	10011	"	2.2 .02	570	4470	"	7300	10	776	764
16	12	"	1247	"	11404	17439	10015	"	1.8 .06	572	4472	4054	7310	10	779	760
17	12	"	1249.3	17859	"	"	10034	"	1.3/.5	575.1	4472.8	4061.2	7320.3	10	7.8	753
18	12	"	1251.5	17885	11417	17457	10035	"	1.5/.3	577.5	"	4067.3	7330.3	10	7.97	75
19	12	3002	"	17894	11428	17469	10046	"	"/.15	579.9	4474.4	4072.2	7340.8	10	8.05	7.7
20	12	1302	"	17890	11430	17470	10059	16	4.2 .38	581	4482	"	7350	10	798	767
21	12	1303	"	"	11449	17489	"	"	2.3 .9	582	4490	"	7360	10	797	757
22	12	1305	"	17907	11452	"	10077	"	1.4 .22	584	4493	4076	7370	10	801	764
23	12	1307	"	17916	11462	17502	10082	"	6.2 1.6	587	"	4082	7381	11	805	769
24	12	1309.5	"	17921	11476	17510	10089	"	1.7/.2	589.5	4493.3	4088.7	7391.1	10	8.01	7.57
25	12	1311.5	"	17941	11476	17516	10105	"	2.3/2.6	589.8	4493.6	4094.8	7401.2	10	7.97	7.49
26	12	1313	"	"	11495	17536	"	16	2.5 2.7	592	4501	4094	7411	10	795	754
27	12	1315	"	17957	11500	17540	10122	16	2.3 2.1	594	4510	"	7421	10	799	762
28	12	1316	"	17966	11510	17550	10130	"	3.9 3.1	597	4514	4098	7431	10	802	758
29	12	1318	"	17974	11524	17565	10135	"	6.1 4.3	599	"	4104	7441	10	8	761
30	12	1320	"	17991	11526	"	10154	16	3.6 2.8	602	"	4110	7452	11	798	761
31	12	1321.7	1251.8	"	11546	17583	"	"	3/3.4	604.5	4514.3	4112.2	7462.2	10	798	756

LEACHATE DAILY LOG #2

LEAK DET 589 GAL 2/22

Month: February

Year: 2016 17

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	LB LVL	GP MIN	S-SL	CELL	TS/GL	TRANS	BLW AVG	E-PH	DAILY EFFLUENT
1	12	5041774	5486633	37079	59.1	0	20.99	481	71282	292590	59411		19195	8.73	32587
2	12	5073165	5519220	37104	60	0	1970	984	"	301381	"		19223	881	31006
3	800 AM		5554097	37128	59		18.64	987	"	308774	59548		19255	8.85	32589
4	12	5137064	5582815	37152	59	.50	1860	989	"	"	59371		19271	873	32577
5	12	5168365	5615402	37176	60	.75	1867	"	"	"	59423		19296	879	32587
6	12	5199705	5647990	37200	59		1880	991	"	"	59492		19322	877	32595
7	12	5224607	5680575	37223	60.1	2	18	"	"	"	59521		19347	8.83	32586
8	12	5261387	5713161	37247	58.7	0	18.[illegible]	"	"	"	59580		19372	884	32586
9	12	5293178	5745746	37271	60	.65	1910	1000	"	"	59606		19398	881	32586
10	12	5324768	5778332	37295	60	1.0	1899	1003	"	"	59722		19423	876	32587
11	12	5357152	5810919	37319	61	.05	1915	1005	"	"	"		19448	881	32587
12	12	5390167	5843507	37343	60	0	1924	1005	"	"	59800		19474	884	32586
13	12	5422134	5876094	37367	60	0	1944	1008	"	"	59870		19499	876	32587
14	12	5453189	5908679	37391	off	0	1949	1011	"	"	60348		19524	8.82	32588
15	12	5485150	5941265	37415	60	.25	1954	"	"	"	60193		19549	882	32587
16	12	5516181	5973851	37439	59.9	0	1954	"	"	"	60307		19574	881	32585
17	12	5548646	6006438	37463	60	2	1981	1020	"	"	60437		19600	882	32588
18	12	5582612	6039026	37487	60	0	2005	"	"	"	"		19625	881	32586
19	12	5615459	6071613	37511	60	.3	2046	1023	"	"	60444		19651	879	32587
20	12	5646376	6104199	37535	60		2053	1026	"	"	60478		19676	883	32585
21	12	5678057	6136784	37559	60	.45	20.57	1028	"	"	60552		19701	8.8	32586
22	12	5704837	6169370	37583	60	.5	20.61	1032	"	"	60667		19726	8.8	32587
23	12	5741182	6201957	37607	60	0	1988	1035	71871	315154	60677		19752	881	32586
24	12	5773890	6234543	37631	60	.125	2099	1037	"	"	60704		19777	881	32587
25	12	5807485	6267131	37655	60	0	2061	1040	"	315296	"		19802	877	32588
26	12	5839316	6299718	37679	60	0	2069	"	"	"	60761		19828	875	32587
27	12	5870081	6332305	37703	60		2027	1043	"	"	60859		19853	874	32587
28	12	5901501	6364892	37724	60	.1	20.43	1046	"	"	60928		19878	8.79	32587
29															
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8.675

589 22,706

Leak detec. - 589

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LEACHATE DAILY LOG #1

Month: february
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/02	B/SL/P	P-4A	P-4B	P-5A	P-5B	[illegible]	[illegible]
1	12	1321.7	1253.8	18009	11547	17589	10166	16	3.7/4.2	607	4521.9	4117.4	7472 10	7383.0	8.02	7.71
2	12	11	1255	18017	11560	17596	10177	11	4.1 5.9	609	4530	4117	7482 11	7383	796	756
3	8:00 am	1321	1256	18026	11571	17614	10179	16	7.3/6.4	611	4535	4120	7493	8 11	7.8	7.4
4	12	11	1258	18041	11	11	10193	11	.8 .01	613	11	4125	7501	10 11	785	739
5	12	11	1260	18042	11590	17626	10201	11	2.1 2.1	616	11	4131	7511	10 11	795	766
6	12	11	1262	18057	11595	17639	10207	16	2.4 3.8	618	4535	4137	7521	11 11	796	768
7	12	1321.7	1264.4	18067	11594	17639	10225	11	3 / 4.2	621.3	4541.6	4139.4	7532	10 383	7.87	[illegible]
8	12	11	1266	18077	11614	17659	11	11	2 3	622.7	4550.1	11	7542.7	10 11	7.85	7.41
9	12	11	1268	18092	11619	17665	10238	11	2.9 4.1	626	4556	4140	7552	11 11	787	747
10	12	11	1270	18093	11638	17673	10249	16	1.8 3.6	628	11	4146	7563	10 11	794	757
11	12	11	1272	18108	11643	17690	10251	11	2.4 3.1	631	11	4152	7573	10 11	794	745
12	12	11	1274	18118	11654	11	10270	11	2.6 5.3	633	11	4159	7583	10 11	789	748
13	12	1323	11	18125	11667	17708	10272	11	4.0 6.5	636	4562	4161	7593	10 11	796	766
14	12	1325.3	1274.0	18143	11689	17715	10287	11	4 / 6	638.1	4570.2	4161.4	7603.6	10 11	7.9	7.45
15	12	1327.1	1274.6	11	11688	17722	10296	11	3 / 5	639.3	4578.2	4161.7	7613.7	10 11	7.92	7.5
16	12	1329.1	11	18186	11691	17740	10297	11	2 / 3.6	641.8	11	4167.5	7623.9	10 11	7.88	7.49
17	12	1331	11	18169	11703	17740	10316	11	2.8 3.8	644	4578	4173	7634	10 11	790	766
18	12	1333	11	18179	11715	17757	10320	11	2 2.1	647	11	4179	7644	10 11	789	761
19	12	1336	11	18185	11720	17765	10331	16	2.4 3.6	649	4581	4183	7654	10 11	793	779
20	12	1337	11	18195	11738	17772	10343	11	2.9 3.6	650	4590	11	7664	10 11	791	769
21	12	1339.4	11	18215	11	17790	10365	11	2.7/3.5	652.1	4598.7	11	7674.7	10 11	7.94	7.48
22	12	1341.7	11	18219	11754	11	10363	11	2.8/3.8	654.5	4599.4	4188.7	7684.8	10 11	7.88	7.40
23	12	1343	11	18231	11762	17804	10367	16	4.8 4.7	656	4599	4194	7694	11 11	792	760
24	12	1345	1275	18244	11770	17815	10377	16	3.6 3.6	659	11	4200	7705	10 11	788	739
25	12	11	1277	18249	11786	17821	10391	11	3.4 3.2	661	4602	4205	7715	10 1	786	7[illegible]
26	12	11	1278	18269	11	17840	10392	11	3.3 3.2	664	4610	11	7725	10	795	771
27	12	11	1280	18270	11805	11	10410	16	3.4 2.2	665	4618	11	7735	10	797	784
28	12	11	1282.8	18284	11810	17855	10415	11	4 / 1.1	667.9	4620.9	4209.4	7745.6	10	7.87	7.67
29																
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LEACHATE DAILY LOG #2 LEAK DET. 649 GAL 3/27

Month: March
Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	5933547	6397478	37751	60	0	21.12	1049	71871	315296	60936		19094	8.8	32586
2	12	5965312	6430065	37775	60	.125	2022	1052	71905	318533	60975		19929	873	32587
3	12	5997141	6462652	37799	60	.125	1957	1055	"	320696	61006		19954	875	32588
4	12	6029833	6495239	37823	1.9	.30	1984	1058	"	"	"		19979	875	32586
5	12	6061224	6527825	37847	61	.05	2008	"	"	"	"		20005	875	32586
6	12	6089010	6560412	37871	60	.20	1996	"	"	"	61105		20030	874	32586
7	12	6120916	6592998	37895	61.3	.4	20.45	1061	"	"	61171		20	8.76	32586
8	12	6152206	6625584	37919	61	.6	20.59	1108	"	"	61238		20100	874	32586
9	12	6184213	6658170	37943	60.5	.25	20.76	1115	"	"	61414		20206	8.77	32587
10	12	6217253	6690756	37967	2.1	1.1	2086	1118	"	"	"		20231	877	32588
11	12	6250379	6723344	37991	66	0	2115	1121	"	"	61506		20256	877	32586
12	12	6280989	6755930	38015	66	.25	1986	"	"	326743	"		20281	879	32586
13	12	6314321	6788516	38039	65	0	1894	1124	71905	333016	61531		20305	88?	32582
14	12	6346867	6821104	38063	66	.75	1904	1127	"	"	61613		20331	873	32588
15	12	6378648	6853692	38087	65	.35	1919	1130	"	"	61687		20356	876	32588
16	12	6409725	6886280	38111	65	.9	1889	1133	"	336377	61764		20382	880	32588
17	12	6441561	6918868	38135	65	0	1875	1137	"	339457	61796		20407	878	32588
18	12	6474907	6951456	38159	66	.5	1884	1140	"	"	61836		20432	877	32586
19	12	6505592	6984043	38183	1.8	.4	1887	"	"	"	61912		20457	876	32586
20	12	6537995	7016629	38207	65	0	1917	1143	"	"	62090		20483	874	32588
21	12	6569878	7049216	38230	64.9	0	19.48	1146	73031	"	"		20508	877	32586
22	12	6601084	7081803	38254	64.7	.25	19.63	1149	"	"	62138		20533	873	32588
23	12	6633189	7114392	38278	66	0	1927	1151	77066	342440	"		20558	877	32586
24	12	6664851	7146979	38302	66	.20	1900	1154	"	"	"		20584	875	32588
25	12	6696337	7179567	38326	66	.10	1901	1157	"	"	"		20609	877	32590
26	12	6729599	7212155	38350	69	.10	1910	1159	"	"	62128		20634	877	32586
27	12	6759966	7244650	38374	66		1920	1161	"	"	"		20660	877	32588
28	12	6791340	7277330	38398	69.7	.1	19.31	1164	77715	"	"		20685	878	32590
29	12	6822835	7309917	38422	70.2	.25	19.42	1167	"	"	"		207	875	32588
30	12	6856792	7342504	38446	72	.35	1961	1170	80264	345348	"		20736	880	32588
31		6887821	7375092	38470	73		1931	1172	"	"	"		20761	873	32588

7.65

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LEACHATE DAILY LOG #1

Month: march
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/OZ	D/SL/P	P-4A	P-4B	P-5A	P-5B	GPM/PH	MG/DPH
1	12	13451	1285	18295	11820	17865	10424	16	4/.53	670.5	4620.9	4215.7	7755.8	107383	7.81	7.57
2	12	11	1286	18300	11834	17869	10438	16	3.2/.4	672	4620	4221	7765	11 11	798	763
3	12	11	1288	18320	11835	17889	11	11	3.4/.3	675	4621	4227	7776	10 11	792	768
4	12	11	1290	11	11854	17890	10456	11	3.1/.4	677	4630	11	7786	10 11	796	768
5	12	11	1292	18337	11858	17904	10462	11	2.1/.5	679	4639	4227	7796	10 11	796	771
6	12	11	1294	18345	11867	17915	10468	16	3.1/.7	681	4642	4230	7806	10 11	799	778
7	12	11	12963	18351	11882	17916	10484	11	4.4/3.0	6838	4642.2	4236.7	7816.6	10 11	787	7.71
8	12	11	1298.1	18371	11	17935	11	16.1	2.5/3.0	6862	11	4242.5	7821.1	107386.8	7.4	7.33
9	12	13479	11	11	11902	17940	10499	11	2.2/3.0	688.7	11	42486	11 11	7399.1	7.41	7.68
10	12	1350	1298	18388	11906	17949	10509	16.3	2.8 3.1	691	4649	4249	7821.9	7409	792	767
11	12	1351	11	18396	11918	17965	10513	11	2.2 2.7	692	4658	11	11 10	7419	785	762
12	12	1353	11	18404	11929	11	10530	16.4	3.1 3.4	695	4663	4251	11 10	7429	785	765
13	12	1354	11	18422	11933	17981	10533	11	3.8 2.6	697	11	4257	10	7439	791	739
14	12	1357	11	11	11953	17990	10543	11	2.6 1.7	700	11	4263	11	7450	781	768
15	12	1359	11	18442	11	17996	10556	11	2.2 2.0	702	11	4269	10	7460	793	772
16	12	1361	11	18447	11968	18015	11	11	3.7 2.9	704	4670	4270	10	7470	781	752
17	12	1363	11	18457	11977	11	10574	11	4.6 4.0	707	4678	11	10	7480	788	766
18	12	1366	11	18472	11984	18030	10580	16.4	4.0 2.7	709	4685	4272	10	7490	773	755
19	12	1368	11	18474	12001	18040	10588	11	3.7 2.8	712	11	4278	11	7501	793	762
20	12	11	1300	18495	11	18045	10604	11	2.8 1.6	713	11	4284	10	7511	790	779
21	12	13687	13025	18497	12018	18064	10604	11	2.3/.15	716	11	4290.8	10	7521.3	7.81	756
22	12	11	13098	18510	12025	18066	10521	11	7.7/.07	718.5	4690.1	42928	10	7531.4	7.53	7.61
23	12	11	1306	18523	12033	18078	10628	16.4	4.1 .1	720	4698	4292	10	7541	788	751
24	12	11	1308	18526	12049	18091	10635	11	3.7 .08	723	4706	4293	10	7551	779	775
25	12	11	1310	18547	11	18093	10651	11	3.0 .05	726	11	4299	11	7561	787	757
26	12	11	1313	18548	12068	18114	11	11	2.2 .06	728	11	4305	10	7572	788	751
27	12	11	1315	18563	12073	18116	10667	16.4	2.3 .09	731	11	4311	10	7582	796	785
28	12	11	1317.2	18573	12083	18127	10675	11	1.8 .15	733.5	4710	4314.8	10	7592.3	7.89	7.67
29	12	11	1319.3	18578	12097	18141	10680	16.5	1.6/.2	736	4716.3	4314.8	10	7602.3	8.00	7.6
30	12	11	1320	18599	12098	18141	10698	16.6	2.1 .6	738	4727	11	10	7612	724	7.5
31	12	1370	1321	11	12117	18161	11	11	2.1 .3	741	11	4320	10	7622	785	7.7

LEACHATE DAILY LOG #2

ABH 1886

LK. DET. 962 GAL 4/26

Month: APRIL

Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	6920644	7407680	38434	73	0	1927	1175	[illegible]	345348	62128		20786	876	[illegible]
2	12	6951609	7440266	38518	76	.1	1946	1175	"	"	"		20811	[illegible]	32576
3	12	6984626	7472853	38542	76	.05	1887	1178	"	"	"		20837	870	32590
4	12	7015630	7505441	38566	685	0	18.96	1180	"	"	"		20862	8.7	32588
5	12	7046[illegible]	7538329	38590	68.7	0	19.00	1184	"	"	"		20887	8.72	32586
6	12	7079655	7570617	38614	68.6	.5	18.19	1186	84286	[illegible]	"		20913	8.71	32588
7	12	7112274	7603205	38638	70	.1	17.66	1188	"	359344	"		20938	872	32586
8	12	7143549	7635791	38662	70	0	17.31	"	"	359037	"		20963	870	32586
9	12	7174578	7668377	38686	70	.1	17.47	1190	"	"	"		20989	869	32589
10	12	7207711	7700966	38710	71	0	1765	1191	"	"	"		21014	869	32588
11	12	7238608	7733555	38734	71.2	.2	17.69	1192	"	"	"		21040	8.68	32588
12	12	7269835	7766143	38758	70.1	0	17.97	1194	"	"	"		21065	87	32586
13	12	7301913	7798[illegible]29	38782	703	.75	1666	1196	"	366195	"		21090	8.73	32588
14	12	7334458	7831317	38806	72	.25	1677	1199	84286	366195	"		21115	868	32586
15	12	7366117	7863904	38830	72	.25	1689	1202	"	"	62128		21140	868	32588
16	12	7399389	7896491	38854	74	0	1701	1205	"	"	"		21166	866	32586
17	12	7430019	7929078	38878	73	0	1706	1208	"	"	"		21191	868	32588
18	12	7461574	7961665	38902	707	0	17.14	1208	"	"	32190		21216	8.68	32588
19	12	7494644	7994254	38926	704	.5	17.17	1214	"	"	"		21242	8.65	32586
20	12	7526131	8026842	38950	73	.3	1613	1216	"	371707	62195		21267	870	32586
21	12	7557523	8059428	38974	73	.2	1623	1219	"	"	"		21292	865	32586
22	12	7589365	8092014	38998	73	0	1650	1222	"	"	62200		21317	869	32590
23	12	7622870	8124600	39022	72	.05	1666	1225	"	"	"		21343	868	32586
24	12	7653847	8157188	39046	73	.45	1685	1227	"	"	"		21368	868	32588
25	12	7685[illegible]	8189[illegible]	39070	72	[illegible]	17.64	1230	"	"	62214		21393	870	32586
26	12	7717458	8222362	39094	72	.1	17.14	1231	"	"	"		21419	8.68	32586
27	12	7750461	8254949	39118	72	.05	1643	1234	85248	376370	62218		21444	873	32586
28	12	7781910	8287535	39142	72	.12	1661	1236	"	"	"		21469	866	32588
29	12	7813414	8320122	39166	72	0	1669	1238	"	"	"		21495	868	32588
30	12	7845355	8352710	39190	72	.2	1679	1241	"	"	62236	B*	2073	845	32588
31															

4.47

4,984
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31,022

LEACHATE DAILY LOG #1

Month: APRIL
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/O2	D/SL/P	P-4A	P-4B	P-5A	P-5B	CO2 PPM	H2S PPM
1	12	1372	1321	18617	12121	18166	10713	16.6	1.3,08	743	4727	4326	7821 10	7633	790	760
2	12	1374	11	18624	12133	18175	10722	11	2.2 .2	746	11	4332	11 10	7643	795	773
3	12	1377	11	11	12144	18191	10726	11	2.5 .6	748	4730	4336	10	7653	789	761
4	12	1379.3	1321.5	18649	12148	11	10744	11	2.5/1.6	750.8	4738.6	11	10	7683.4	7.87	7.71
5	12	1381.5	1321.5	11	12162	18209	10745	11	1.5/.7	753.4	4747.2	11	10	7673.6	7.85	7.6
6	12	1383	11	7569	11	18216	10750	11	2.4/.9	755.7	4749.3	4349	10	76838	7.83	7.57
7	12	1384	1321	18674	12183	18222	10769	16.6	3/.2	758	11	4347	11	7693	782	739
8	12	1386	11	18685	12192	18241	11	11	3.3.4	760	11	4357	10	7704	792	741
9	12	1389	11	18700	12197	11	10788	11	3.0 .2	763	4750	4358	10	7714	792	773
10	12	1391	11	18701	12216	18257	10773	11	2.5 .1	765	4758	11	10	7724	789	770
11	12	1392.2	1322.1	18722	11	18266	10813	11	1.5/.5	7.6	4767.3	11	10	77345	7.92	7.72
12	12	11	1323.2	18725	12232	18271	10817	11	2.1/.3	770.4	4771	4361.4	10	7744	7.93	7.73
13	12	11	1325.1	18737	12240	18284	11	11	4/.5	772.5	4771	4367	11	7754	7.95	7.55
14	12	1392	1327	18750	12248	18291	10834	16.6	3.7 .1	775	4771	4373	10	7765	791	762
15	12	11	1329	18754	12264	18301	10840	11	3.7 .1	777	11	4379	10	7775	792	744
16	12	11	1331	18775	11	18316	10849	11	3.1 2.0	780	4779	11	10	7785	788	759
17	12	11	1333	18776	12288	18319	10864	11	3.2 1.5	782	4787	11	10	7795	789	764
18	12	11	1335.5	18790	12288	18338	10864	11	1.7/.1	784.4	4792.5	4381.7	10	7805	7.80	7.61
19	12	11	1337	18801	12298	18341	10880	11	2/.04	787.5	4792.6	4387.8	10	7815	7.87	7.63
20	12	11	1338	18807	12312	18352	10882	16.6	1.8 .1	789	11	4393	7821.11	7825	791	752
21	12	11	1340	18826	12313	18366	10893	11	1.1 1.1	792	11	4399	10	7836	792	774
22	12	11	1342	11	12332	18366	10911	11	.9 .6	794	4799	4401	10	7846	794	776
23	12	11	1344	18844	12335	18387	109	11	1.1 .2	797	4807	11	10	7856	794	737
24	12	1393	1345	18851	12345	18392	10925	11	2.2 1.9	799	4813	4402	10	7866	795	763
25	12	1395.4	11	18860	12357	18401	10937	11	1.1 .07	802.3	11	4409	7821.10	78768	7.83	7.54
26	12	1397.3	11	18877	12363	18417	10939	11	2.6/.17	804.8	11	4414.9	10	78869	7.94	7.76
27	12	1399	11	18877	12383	11	10957	16.6	4.2 .4	807	11	4421	11	7897	782	776
28	12	1401	11	18897	11	18434	10959	11	3.3 .2	809	4819	4423	10	7907	796	774
29	12	1403	11	18902	12398	18442	10970	11	2.9 .3	812	4828	4423	10	7917	791	767
30	12	1405	11	18913	12407	18448	10982	16.6	3.1 .3	814	4835	4424	10	7927	791	781
31																

LEACHATE DAILY LOG #2

Month: MAY

Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	7876948	8385298	39214	72	0	1693	1240	85248	376370	62236		20098	867	32586
2	12	79 09221	84117828	39238	70.2	[illegible]	17 02	1244	11	11	11		20123	8 70	32582
3	12	7934241	8450471	39262	71.3	.1	17.10	1247	11	11	11		20149	8.69	32586
4	12	79[illegible]	84[illegible]	3[illegible]	[illegible]		165[illegible]	[illegible]		379494	11			[illegible]	[illegible]
5	[illegible]	[illegible]	85[illegible]	[illegible]	69.3	-	[illegible]	[illegible]	11	11	11		[illegible]	[illegible]	32586
6	12	80345 35	8548232	39334	71	.75	16.82	1252	11	11	11		20224	8.8	32588
7	12	8067423	8580818	39356	70.6	0	16.94	125[illegible]	11	11	11		20250	8.84	32586
8	12	80 98 309	8613 406	39380	70	0	17.04	1256	11	11	11		20275	8.82	32588
9	12	8131230	8645942	39404	70	0	17.17	1259	11	11	11		20300	8.82	32586
10	12	8162583	8678580	39428	67.2	0	17.27	1262	11	11	11		20325	8.83	32586
11	12	8193295	87 11166	39452	67.3	0	17.36	1264	11	11	11		20351	8.82	32586
12	12	8225010	8743752	39476	69	.4	1751	1267	85248	379494	62236		21527	885	32586
13	12	8257035	8776338	39500	69	.15	.1759	1270	11	11	11		21552	886	32590
14	12	8290497	8809826	39524	69	0	1768	1273	11	11	11		21578	880	32586
15	12	8322180	8841512	39548	69	.2	1776	1276	11	11	11		21603	880	32588
16	12	8353456	8874100	39572	67.4	.4	17.87	1278	11	11	11		21629	8.80	32586
17	12	8384530	89 06420	39596	67.3	.5	17.93	1280	11	11	11		21653	8.81	32528
18	12	8418046	8939276	39519	69	0	1807	1283	11	11	11		21679	882	32588
19	12	8449228	8971862	39543	69	0	1820	1286	11	11	11		21704	879	32588
20	12	8481216	9004452	39567	69	0	1828	1288	11	11	11		21730	878	32586
21	12	8513956	9037038	39591	68	0	1836	11	11	11	11		21755	881	32586
22	12	8545942	9069628	39615	69	0	1844	1289	11	11	11		21780	88[illegible]	32540
23	12	8577022	9102214	39734	66.7	0	18.48	1295	11	11	11		21806	8.74	32584
24	12	8608556	9134802	39763	67	0	18.52	1291	11	11	11		21831	8.82	32586
25	12	8639944	9167388	39786	69	0	1870	1295	85822	379494	62236		21856	886	32588
26	12	8673718	9199976	39810	74	0	1875	1297	11	11	11		21881	882	32586
27	12	8704666	9232564	39834	75	0	1882	1299	11	11	11		21907	881	32588
28	12	8735836	9265150	39858	75	0	1888	1301	11	11	11		21932	875	32588
29	12	8768720	9297738	39882	75	0	1897	1304	11	11	62267		21957	877	32588
30	12	8799[illegible]	9330326	39906	73.1	0	19.03	11	11	11	11		21983	8.75	32586
31	12	8831692	9362912	39930	72.7	0	19.10	1306	11	11	62271		22009	8.81	32592
						2.50			574	3,124					

LEACHATE DAILY LOG #1

Month: MAY
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/02	D/SL/P	P-4A	P-4B	P-5A	P-5B	CO2 PH	METER PH
1	12	1407	1345	18927	12413	18467	10983	16.6		816	4835	4430	7821	7937	789	768
2	12	1410.2	11	18928	12431	11	11002	11	2.2/1.7	819.4	11	44366	11	7948	7.94	7.57
3	12	1412.2	1345	18949	11	18481	11006	11	2.3/1.7	821.7	11	4442.4	11	7958	7.87	7.67
4	12	1413.8	1345	10953	12447	18472	11012	11	2.2/1.7	824	4539	4445.3	11	7958.2	7.85	7.7
5	12	1415.8	11	18965	12455	18494	11029	11	5/3	826.5	4878	11	11	7965.2	-	7.64
6	12	1417.7	11	18974	12465	18495	11046	11	1.1/2.3	828.9	4856	11	11	7982.6	7.97	7.68
7	12	1420.1	11	18992	12479	18512	11056	11	1.1/1.5	831.6	11	4451.4	11	7998.8	7.95	7.59
8	12	1422.4	11	11	12486	18520	11059	11	1.4/1	833.8	11	4457	11	8008.8	8	7.6
9	12	1424.7	11	19011	12489	18528	11074	11	4/.7	836.5	11	4463.4	11	8018.9	7.98	7.67
10	12	1426.9	11	19017	12502	18545	11	11	1.4/1	839	4859	4467.2	11	8029	7.91	7.61
11	12	1429.1	11	19026	12513	18546	11091	11	5/.57	841.3	4867.1	4467.2	11	8039.4	7.88	7.59
12	12	1431	1345	19043	12516	18559	11097	16.7	1.3	843	4875	4467	/	8049	794	760
13	12	1433	11	19043	12536	18571	11105	11	1.4	846	4877	4471		8059	854	790
14	12	1435	11	19063	12537	18575	11121	11	1.4,6	849	11	4478		8069	850	801
15	12	1437	11	19068	12552	18595	11	11	1.3,3	851	11	4484		8080	860	793
16	12	1438.7	1345.8	19079	12561	18596	11138	11	1.1/.03	853.8	4879.2	4489.6	11	8090.2	8.45	7.93
17	12	11	1348.5	19093	12566	18607	11145	11		856.1	4887.4	4489.6	11	8100.4	8.44	7.76
18	12	11	1350	19096	12585	18621	11150	16.7	1.8.1	858	4896	4489	/	8110	841	769
19	12	11	1352	19116	11	11	11168	11	2.1,2	860	4898	4493		8120	851	788
20	12	11	1354	19118	12602	18640	11	16.8	1.6,1	863	11	4500		8130	850	787
21	12	11	1355	19133	12608	18646	11181	11	1.4,1	865	11	4506		8141	850	793
22	12	11	1357	19144	12618	18653	11192	11	1.1,5	868	4900	4511		8151	847	789
23	12	11	1360	19148	12632	18671	11193	11	.6/.4	870.7	4908.3	4514	11	8161.4	8.45	7.78
24	12	11	1361.8	19169	12652	11	11210	16.9	3.3/.5	872.7	4916.5	11	11	8171.7	7.71	7.72
25	12	11	1363	11	12651	18684	11215	16.9	1.4,8	875	4920	4515	/	8181	789	773
26	12	11	1365	19186	12656	18696	11224	11	1.1,4	877	11	4521		8192	785	766
27	12	11	1367	19194	12667	18699	11239	11	1.1,4	880	11	4528		8202	785	771
28	12	1439	1368	19201	12680	18718	11	17	1.2,5	881	11	4533		8212	796	779
29	12	1441	11	19220	12683	18721	11255	11	1.1,5	884	4928	4534		8222	787	773
30	12	1443.7	11	19220	12701	18731	11262	11	1.1/.06	886.7	4436	11	11	8232.4	7.85	7.6
31	12	1445.9	11	19237	12704	18746	11282	17.1	1.3/.31	889.1	4941.2	4536.5	11	8243	7.82	7.55

LEACHATE DAILY LOG #2

Month: June

Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	8865150	9395502	39954	73	.15	19.21	1310	858 22	379494	62271		22033	8.8	32586
2	12	8896972	9428088	39978	75	.05	1931	1312	"	"	"		22058	887	32588
3	12	8928610	9460676	40002	75	0	1946	1316	"	"	"		22084	886	32586
4	12	8960954	9493264	40026	74	0	1965	"	"	"	"		22109	889	32586
5	12	8993706	9525850	400 50	75	0	2044	1319	"	"	62285		22134	888	32588
6	12	9026330	9558438	40074	74	0	21.67	1322	"	"	62289		22160	8.82	32586
7	12	9057396	9591024	40096	74	0	22.15	1325	"	"	62292		22185	8.83	32586
8	12	9089226	9623610	40121	73	0	21.46	1329	"	381857	"		22210	8.82	32586
9	12	9121538	9656196	40145	74	.1	2150	1334	"	"	"		22235	889	32588
10	12	9155558	9688784	40169	74	.75	2138	1337	"	"	"		22261	885	32586
11	12	9186946	9721370	40193	74	0	2139	1339	"	"	"		22286	887	32588
12	12	9220942	9753956	40217	73	0	2161	"	"	"	"		22311	883	32588
13	12	9252628	9786544	40241	69.1	0	21.70	1341	"	"	62302		22337	8.8	32588
14	12	9284342	9819132	40265	69	0	21.48	1345	"	383857	62307		22363	8.8	32588
15	12	9317550	9851720	40289	71	0	2075	1347	85822	389009	"		22387	884	32588
16	12	9348771	9884310	40313	71	.45	2068	1349	"	"	"		22413	882	32586
17	12	9380206	9916896	40337	72	.1	2071	1351	"	"	"		22438	885	32586
18	12	9414290	9949482	40361	71	.05	2066	1354	"	"	"		22463	885	32588
19	12	9444094	9982436	40385	68	0		1356	"	"	62313		22489	878	32540
20	12	9478116	14655	40409	68.6	0	21.33	1161	"	"	"		22514	8.78	32586
21	12	9510130	47242	40433	653	0	21.03	1167	"	"	"		22538	8.84	32586
22	12	9542186	79829	40457	67	0	2023	1372	"	392094	"		22564	888	32586
23	12	9574996	112415	40481	68	0	2014	1375	"	"	"		22590	881	32588
24	12	9607431	145003	40505	67	0	2013	1380	"	392094	"		22615	881	32588
25	12	9640810	177590	40529	68	0	2095	1382	"	"	"		22640	878	32588
26	12	9672686	210179	40553	68	0	2051	1385	"	"	"		22665	878	32588
27	12	9704806	242767	40577	68	0	2076	1387	"	"	"		22691	887	32586
28	12	9736772	275354	40601	68	0	2085	1389	89309	"	"		22716	887	32586
29	12	9770872	309527	40625	69	0	1993	1391	"	398086	"		22742	890	32586
30	12	9800258	340527	40649	71	0	1977	1395	"	"	22318	*B	20377	886	32588
31															
						1.65			3,487	18,592					

LEACHATE DAILY LOG #1

Month: June

Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/O2	D/SL/P	P-4A	P-4B	P-5A	P-5B	GP2PH	MTUPH
1	12	1448.2	1368.8	19245	12718	18747	11286	17.1	2.2/.08	891.6	4941.2	4543	7821.1 10	8253.2	7.84	7.52
2	12	1450	"	19255	12728	18767	11286	"	1.1 1.6	894	"	4549	" 10	8263	791	771
3	12	1452	"	19270	12733	18771	11301	"	2.0 1.5	896	4941	4555	" 10	8273	785	769
4	12	1454	"	19271	12752	18781	11310	"	2.4 1.0	899	4948	"	" 11	8283	796	775
5	12	1456	"	19293	"	18796	11315	17.1	2.7 1.6	901	4956	"	" 10	8294	788	767
6	12	1459	"	19295	12769	"	11334	"	1.3/.04	903.4	49625	4558	" 10	8304.3	7.87	7.53
7	12	1461	"	19309	12776	18816	"	"	1.1/.4	906.3	49625	4563.9	" 10	8314.5	7.9	7.68
8	12	1462	1369.7	19321	12784	18821	11346	"	1/.08	908.8	49625	45698	" 11	8324.9	7.87	7.45
9	12	"	1371	19325	12800	18830	11357	17.1	1.9 1.4	911	4962	4575	" 10	8335	791	773
10	12	"	1373	19346	12800	18846	11362	"	1.1 .09	913	4968	4577	" 10	8345	780	753
11	12	"	1375	"	12820	"	11380	"	.8 1.3	916	4976	"	" 10	8355	790	764
12	12	"	1377	19364	12823	18866	11381	17.4	.8 .3	918	4983	4579	" 10	8365	780	748
13	12	"	1379	19371	12836	18871	11394	"	1.2/.21	920.6	"	4585.5	" 10	8375.9	7.83	7.43
14	12	"	1381.2	19380	12847	18879	11404	"	1.67/.3	922.9	49837	4591.2	" 11	8386.1	7.8	7.45
15	12	"	1382	19397	12852	18896	11407	"	2.1 1.8	925	4983	4597	" 10	8396	791	757
16	12	"	1384	"	12871	"	11426	"	1.2 .8	927	4988	4599	" 10	8406	796	776
17	12	"	1386	19417	"	18913	11428	17.5	1.3 .4	930	4997	"	10	8416	789	755
18	12	"	1388	19422	12888	18921	11440	"	1.2 .3	932	5005	4600	" 11	8426	786	751
19	12	"	1390	19433	12895	18927	11452	"	1.7 .3	935	"	4606	" 10	8437	789	767
20	12	"	1392	19447	12903	18936	11454	"	.63/.04	937.8	"	4612	" 10	8447.1	7.86	7.59
21	12	1464.6	"	14451	12919	"	11472	"		940.2	"	4617.9	" 10	8457.4	7.87	7.69
22	12	1466	1392	19472	12919	18961	11475	17.5	1.7 3.8	942	5009	4620	" 10	8467	790	769
23	12	1468	"	"	12938	18971	11486	17.6	.9 .8	945	5018	"	" 11	8477	793	772
24	12	1470	"	19489	12943	18977	11499	"	.9 .5	947	5026	4621	" 10	8488	798	768
25	12	1473	"	19498	12955	18996	11500	"	.7 .3	950	"	4627	" 10	8498	785	770
26	12	1475	"	19506	12967	"	11519	"	.8 1.1	952	"	4633	" 10	8508	790	756
27	12	1477	"	19523	12970	19012	11523	17.6	1.0 .06	955	"	4639	" 10	8518	777	749
28	12	1479	"	"	12990	19021	11534	"	1.4 1.4	957	5030	4642	" 10	8528	778	760
29	12	1481	"	19545	12991	19029	11547	"	1.3 .2	960	5039	4642	" 11	8539	789	743
30	12	1483	1392	19548	13005	19046	11548	17.6	.8 .9	962	5047	"	7825 10	8545	791	769
31													7835			

LK. DET 1,232 GAL 7/21

LEACHATE DAILY LOG #2

Month: July
Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P.	BLW A/B	E-PH	DAILY EFFLUENT
1	12	9832686	373113	40673	71	0	1994	1397	89309	398086	62318		2040	881	32588
2	12	9863496	405655	40697	72	0	2008	1402	11	11	11		20428	887	32588
3	12	9896274	438288	40721	72	0	2029	1404	11	11	11		20454	891	32588
4	12	9926032	470876	40744	69.1	0	20.51	1409	11	11	11		20479	8.9	32586
5	12	9959492	503464	40768	70	0	21.88?	1413	11	11	11		20504	8.9	32586
6	12	9990050	536050	40792	69.5	0	20.33	1416	11	403261	11		20530	8.86	32588
7	12	24081	568637	40815	70	0	2051	1422	11	11	11		20555	884	32588
8	12	54571	601225	40839	70	0	2063	1424	11	11	11		20580	892	32590
9	12	86684	633814	40863	69	0	2069	1425	11	11	11		20605	888	32586
10	12	119931	666401	40887	70	0	2073	1427	11	11	62332		20631	890	32586
11	12	150734	698987	40910	69	0	20.49	1429	11	11	11		20656	8.9	32588
12	12	182406	731574	40934	69	0	20.49	1431	11	11	11		20681	8.87	32588
13	12	213792	764085	40958	69	0	1945	1434	89309	406174	62332		20706	886	32588
14	12	244037	796750	40982	69	0	1952	1436	11	11	11		20732	888	32588
15	12	275198	829339	41006	69	0	1973	1439	11	11	11		20757	884	32588
16	12	305826	861927	41030	69	0	2007	1441	11	11	11		20782	889	32586
17	12	336366	894515	41054	69	0	1994	1471	11	11	11		20808	889	32590
18	12	367053	927102	41077	70	0	20.38	1490	11	11	62344		20833	8.81	32588
19	12	398577	959690	41101	68.2	0	22.38	11	11	409174	11		20858	8.84	32586
20	12	429309	992277	41125	70	0	2127	1497	11	413325	62348		20884	886	32588
21	12	460717	1024865	41149	70	0	1992	1502	11	417580	62384		20909	886	32586
22	12	490459	1057452	41173	70	0	1688	1504	90541	419215	11		20934	883	32586
23	12	520966	1090038	41197	69	0	1694	1511	11	11	11		20959	878	32586
24	12	552006	1122624	41221	70	0	1861	1513	11	11	62959		20985	883	32586
25	12	583502	1155117	41245	69	0	1718	1518	11	11	11		21010	879	32588
26	12	613885	1187797	41268	69	0	17.21	1527	11	11	62981		21036	8.72	32586
27	12	644218	1220385	41292	69	0	16.50	1531	11	422116	63003		21061	8.72	32586
28	12	675024	1252971	41315	69	0	17.55	1537	11	11	63140		21086	8.79	32588
29	12	707145	1285557	41339	69	0	17.54	1541	11	11	11		21111	8.79	32588
30	12	737071	1318144	41363	69	0	17.47	1544	11	11	63210		21136	8.76	32586
31	12	768297	1350732	41387	69	0	17.54	1546	11	11	63246		21161	8.8	32588

24,030

0

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-1,232
=0

LEACHATE DAILY LOG #1

Month: July
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/02	D/SL/P	P-4A	P-4B	P-5A	P-5B	GO2PH	TMTUPH
1	12	1485	1392	19559	13014	19046	11567	17.6	.7 .06	965	5048	4648	7835	10 545	794	768
2	12	11	1394	19573	13020	19063	11570	11	1.0 .1	967	11	4654	7845	10 11	787	779
3	12	11	1396	19575	13038	19072	11581	17.7	1.1 .2	970	11	4660	7856	10	787	772
4	12	11	1398.2	19595	11	19077	11594	11	1.3 1.1	972.7	5050.7	4664.3	7866	10	7.79	7.32
5	12	11	1400	19599	13055	19097	11595	17	) 2	975.2	5059	11	7876	10	7.82	7.54
6	12	11	1401.8	19611	13062	11	11612	17.9	1.4 1.6	977.4	5067.5	11	7886.5	10	7.84	7.5
7	12	11	1403	19624	13071	19111	11618	11	.8 .4	980	5069	4669	7896	10	780	761
8	12	11	1405	19628	13086	19122	11625	11	1.5 2.2	982	11	4675	7906	11	783	745
9	12	11	1407	19649	13087	19126	11641	11	.9 3.3	985	11	4681	7917	10	777	768
10	12	11	1409	11	13106	19145	11	11	1.1 2.4	987	5070	4686	7927	9	778	773
11	12	11	19 11	19665	13110	19147	11658	18	12 1.2	989.9	5079.5	4686	7436.9	11	7.76	7.75
12	12	11	1413.1	19675	13120	19159	11665	11	.5 .1	992.2	5088	4686	7947	10	7.69	7.46
13	12	11	1414	19681	13134	19172	11671	18	1.6 1.2	994	5090	4690	7957	10	783	769
14	12	1486	1415	19700	11	11	11688	11	1.6 .3	996	11	4696	7967	10	795	769
15	12	1488	11	11	13153	19191	11689	18.1	1.5 1.3	999	11	4702	7977	10	794	753
16	12	1490	11	19715	13158	19197	11701	11	1.6 3.2	1001	5091	4708	7987	11	785	771
17	12	1492	11	19725	13167	19204	11712	11	1.5 1.9	1004	5099	11	7998	10	795	766
18	12	1494.7	11	19730	13182	19222	11713	11	1.3 .5	1006	5107.3	11	8008.2	10	7.92	7.45
19	12	1496.7	11	19750	13182	19222	11731	11	2 .09	1009	5111.6	4711.2	8018	10	7.9	7.45
20	12	1498	11	11	13200	19235	11736	18.1	3.7 1.1	1011	5111	4717	8028	10	791	771
21	12	1500	11	19765	13205	19247	11742	18.2	2.5 .1	1013	11	4723	8038	10	793	774
22	12	1502	11	19776	13214	11	11759	11	1.5 .1	1015	11	4729	8048	10	791	776
23	12	1503	11	19779	13229	19265	11760	11	.2 .09	1018	5118	4730	8058	10	782	780
24	12	1505	11	19799	11	19272	11772	11	.2 .09	1020	5127	11	8068	11	796	775
25	12	1507	1415	19801	13247	19279	11783	18.2	.1 .1	1023	5133	4732	8079	10	792	774
26	12	1508.7	1416	19814	13253	19297	11784	11	.3 .3	1025	11	4738	8089	10	7.84	725
27	12	11	1417.6	19826	13260	19297	11801	18.4	.6 .07	1027.7	11	4744	8099	10	7.72	7.31
28	12	11	1419.3	19829	13277	19310	11807	11	.33 -.06	1030.1	11	4750	8109	10	7.87	7.38
29	12	11	1421.2	19849	11	19322	11813	18.9	.36 .06	1032.5	5139.2	4752.5	8119	10	7.85	7.88
30	12	11	1422.9	19852	13293	11	11830	11	.39 -.07	1034.7	5147.4	11	8129.8	10	7.84	776
31	12	11	1424.7	19863	13301	19341	11830	18.9	.31 .07	1037	5154.9	47532	8139.9	10	7.79	776

LEACHATE DAILY LOG #2

Lockout
Press Help

Month: August
Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	798421	1383318	41411	69	0	17.64	1549	90541	422116	63246	B	21187	8.75	32588
2	12	824097	1415408	41435	65.5	0	18.00	1551	11	11	11		21213	8.8	32586
3	12	858976	1448494	41459	65	0	17.57	1555	11	426001	63336		21238	8.8	32588
4	12	890368	1481081	41482	67	0	1766	1556	11	11	11		21263	875	32586
5	12	920777	1513669	41506	66	0	1774	1556	11	11	11		21288	875	32586
6	12	951807	1546255	41530	66	0	1720	1557	11	427534	63412		21314	878	32588
7	12	982463	1578842	41554	66	0	1734	1557	11	11	63510		21339	878	32586
8	12	1012851	1611427	41577	66	0	17.30	1559	11	11	63529		21364	8.77	32586
9	12	1042214	1644014	41601	66	0	16.57	1561	11	429795	63536		21390	8.76	32588
10	12	1074580	1676600	41625	67	0	1553	1564	92168	434001	11		21415	875	32588
11	12	1103837	1709188	41649	68	0	1570	1565	11	11	63619		21440	874	32586
12	12	1134301	1741800	41673	68	0	1596	1566	11	11	11		21465	878	32586
13	12	1165721	1774311	41697	68	0	1614	1568	11	11	11		21491	881	32588
14	12	1197495	1806950	41721	68	.125	1633	11	11	11	63707		21516	879	32588
15	12	1228368	1839537	41745	68	0	1646	11	11	11	11		21541	879	32588
16	12	1260300	1872160	41769	69	0	1648	1569	11	11	11		21567	876	32590
17	12	1290441	1904714	41793	69	0	1659	1570	93969	436642	63794		21592	877	32586
18	12	1320642	1937302	41817	68	0	1585	1571	11	11	11		21617	875	32588
19	12	1352618	1969888	41841	67	0	1528	11	11	11	11		21642	875	32586
20	12	1382452	2002475	41865	68	0	1557	1573	11	11	63822		21668	877	32586
21	12	1414086	2035062	41889	68	0	1580	11	11	11	11		21693	877	32586
22	12	1446996	2067648	41913	68	0	1588	11	11	11	11		21718	876	32588
23	12	1477082	2100236	41937	68	0	1525	1576	95491	438116	63931		21743	873	32586
24	12	1507682	2132822	41961	67	0	1543	1579	11	11	11		21769	879	32588
25	12	1538285	2165410	41985	68	0	1477	1580	11	439905	64143		21794	884	32586
26	12	1569820	2197997	42006	68	0	1485	1581	11	11	11		21819	880	32586
27	12	1601421	2230583	42030	69	0	1495	11	11	11	11		21844	877	32588
28	12	1632349	2263169	42052	68	0	1530		95517	11	11		21868	874	32588
29	12	1661941	2295756	42076	68	0	14.80	1586	11	442124	64148		21893	8.74	32588
30	12	1692699	2328345	42100	68	0	14.29	1587	11	444828	11		21918	8.73	32586
31	12	1723113	2360931	42124	67	0	13.53	1589	95518	447391	11		21943	8.68	32586
						0.143		1590	4,977	25,225					

LEACHATE DAILY LOG #1

Month: August
Year: 2017

6725

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/02	D/SL/P	P-4A	P-4B	P-5A	P-5B	GB2PH	MTUPH
1	12	1508.7	1426.4	19877	13306	19347	11842	18.9	.3 .07	1039.2	5154.9	4759.1	8150.1	8545	7.81	7.71
2	12	11	1426.3	19878	13325	19353	11854	19	.25 .17	1041.3	11	4765.3	8160.1	10 11	7.79	7.79
3	12	11	1429.7	19897	11	19370	11	11	5.4 3.2	10436	11	4771.1	8170.3	10 11	7.9	7.77
4	12	11	1431	19902	13339	19372	11871	19.1	3.0 1.8	1046	5158	4774	8180	10	783	780
5	12	11	1433	19912	13349	19384	11878	11	.5 .08	1048	5167	11	8190	10	772	763
6	12	11	1435	19928	13353	19397	11883	11	4.3 3.7	1050	5176	11	8200	10	785	799
7	12	11	1437	11	13372	11	11901	11	4.0 3.0	1053	11	4780	8210	11	785	800
8	12	15095	14385	19946	11	19415	11	11	.37 .08	10558	5176.8	47863	8221	10	7.85	7.82
9	12	1511.2	11	19957	13384	19422	11912	11	1.6 .1	1058.1	11	4792.1	8231.3	10	7.85	7.08
10	12	1512	1438	19961	13396	19427	11925	19.1	5.0 .3	1060	5178	4797	8241	10	781	774
11	12	1514	|	19978	13398	19445	11	19.2	4.7 2.8	1062	5187	11	8251	10	790	781
12	12	1516	|	11	13417	19447	11941	11	1.9 2.3	1065	5196	11	8261	11	781	780
13	12	1519	|	19995	13420	19459	11948	11	.8 2.9	1067	5198	4801	8272	10	792	795
14	12	1521	|	20004	13432	19472	11954	19.4	.9 3.2	1070	11	4807	8282	10	790	794
15	12	1523	|	20011	13444	11	11972	11	1.6 3.9	1072	11	4813	8292	10	782	795
16	12	1525	|	20029	13447	19491	11	11	2.1 3.3	1074	5199	4819	8302	10	781	778
17	12	1527	|	11	13465	19497	11984	19.4	6.3 4.5	1077	5207	11	8312	10	789	792
18	12	1529	|	20045	13468	19503	11996	11	4.1 3.7	1079	5215	11	8322	11	796	8
19	12	1531	|	20054	13479	19522	11	11	2.1 3.2	1082	5219	4822	8333	10	785	790
20	12	1532	1439	20060	13492	11	12014	19.6	3.8 4.0	1084	11	4828	8343	10	780	793
21	12	11	1441	20079	13493	19535	12019	11	4.2 2.9	1086	11	4834	8353	10	777	789
22	12	|	1443	11	13513	19547	12026	11	4.2 3.2	1089	11	4840	8363	10	782	783
23	12	|	1445	20096	13516	19548	12043	19.8	3.4 1.1	1091	5227	4841	8373	10	776	772
24	12	|	1447	20105	13527	19566	11	11	.9 .08	1093	5235	11	8383	10	791	788
25	12	|	1449	20111	13540	19572	12055	11	2.7 1.7	1096	5241	4843	8393	11	779	794
26	12	|	1451	20130	13541	19579	12066	11	4.2 .07	1098	11	4849	8404	10	788	789
27	12	|	1453	11	13560	19597	12068	11	2.2 .07	1101	11	4855	8414	10	790	792
28	12	|	1455	20146	13563	19600	12083	19.8	.7 .07	1103	5242	4860	8424	10	787	779
29	12	11	1457	20155	13573	19604	12095	11	.7 .08	1104.6	5243	4866	8434	10 11	7.86	7.78
30	12	11	1459	20161	13587	19611	12106	11	2.4 .5	1106.9	11	4872	8444	10 11	7.74	7.58
31	12	11	1461	20180	11	19617	12118	11	1.2 .07	1109.2	11	4877	8454.8	10 11	777	7.66

LEACHATE DAILY LOG #2

Month: September
Year: 2017

LEAK CELL 1

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	1753813	2393519	42147	68	0	1293	1590	95518	448766	64149	LEAK	21968	874	32588
2	12	1786681	2426105	42171	68	0	1291	11	11	11	11		21994	871	32586
3	12	1816711	2458693	42195	69	0	1278	1591	11	11	11		22019	869	32586
4	12	1848553	2491279	42219	68	0	1293	1592	11	11	11		22044	870	32588
5	12	1879575	2523866	42242	66	0	13.13	1593	11	11	11		22070	8.72	32586
6	12	1909206	2556453	42266	66	0	13.42	1594	11	11	11		22095	8.69	32586
7	12	1940099	2589039	42289	68	0	1173	1595	96769	453028	11		22120	869	32586
8	12	1970376	2621623	42313	68	0	1165	1596	99573	11	11	1749	22146	869	32588
9	12	2002298	2654211	42337	69	0	1170	11	11	11	64158	1737	22171	870	32588
10	12	2031797	2686799	42361	68	0	1110	1597	11	11	11	1745	22196	877	32588
11	12	2063290	2719386	42385	68	0	1144	1598	11	11	11	1771	22221	869	32586
12	12	2092821	2751974	42408	66	0	11.37	1600	11	455328	11	17.78	22247	8.65	32588
13	12	2124236	2784562	42432	66	0	11.43	1601	11	11	11	1785	22272	8.76	32588
14	12	2155580	2817171	42456	67	0	1171	1602	11	11	11		22297	879	32586
15	12	2186240	2849737	42480	70	0	1186	1604	11	11	11	1773	22323	877	32588
16	12	2216714	2882324	42504	70	0	1204	1605	11	11	11	1790	22348	882	32588
17	12	2247867	2914911	42528	69	0	1197	1607	11	11	11	1788	22373	881	32588
18	12	2277869	2947499	42552	72		1180	1608	101158	11	11	1801	22399	884	32586
19	12	2307741	2980086	42576	70	.5	11.83	11	11	11	11	17.97	22424	8.78	31558
20	12	2336219	3012560	42600	off	.25	11.82	1609	11	11	11	18.10	22450	8.84	32586
21	12	2366428	3044310	42624	off	.25	12.14	1610	11	11	11		22475	8.81	32588
22	12	2397358	3076818	42648	69	0	1105	1611	11	458306	11	1776	22500	881	32588
23	12	2429632	3109405	42672	69	0	898	1612	11	462968	11	1779	22525	881	32588
24	12	2459736	3141992	42696	off	0	915	11	11	11	64183	1789	22550	872	32586
25	12	2490887	3174580	42720	68	0	953	1623	11	11	64196	11	22576	873	32588
26	12	2519623	3207167	42744	66	0	9.98	1667	11	11	11	1793	22601	8.68	32588
27	12	2551152	3239755	42768	68	0	10.11	1668	11	11	11	17.81	22626	8.71	32588
28	12	2580922	3272343	42791	66	0	10.37	1669	11	11	11	17.91	22651	8.77	32588
29	12	2613946	3304933	42816	68	0	1093	1671	11	11	11	1407	22677	875	32586
30	12	2643715	3337518	42840	off	.05		1671	101158	462968	64196		22702	884	32586
31															
						1.05		1672	5,640	15,627					

LEACHATE DAILY LOG #1

Month: September
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/O2	D/SL/P	P-4A	P-4B	P-5A	P-5B	CO2 PH	MW PH
1	12	1533	1461	20180	13606	19635	12118	20	1.2 .1	1111	5244	4883	8464	8545	777	773
2	12	1535	"	20196	13611	19642	12130	"	.7 .07	1114	5254	"	8474	10 "	790	764
3	12	1537	"	20206	13621	19649	12141	"	1.7 .09	1116	5262	"	8484	"	784	793
4	12	1539	"	20211	13635	19667	12142	"	1.7 .1	1118	5264	4887	8495	10	788	783
5	12	1541	"	20231	13635	"	12160	"	.5 .08	1121	5264	4894	8505.7	10	7.84	7.40
6	12	1544	"	20231	13654	19679	12165	"	1 .08	1123	"	4899.5	8515	10 "	7.95	7.63
7	12	1545	"	20245	13659	19692	12169	20	.6 .08	1125	5265	4905	8525	"	788	774
8	12	1547	"	20256	13667	"	12187	"	3.8 .1	1127	5274	"	8536	10	787	771
9	12	1548	"	20260	13683	19709	12188	"	1.0 .07	1130	5283	"	8546	10	775	750
10	12	1550	"	20280	"	19717	12198	"	3.8 4.5	1132	5286	4908	8556	10	791	784
11	12	1552	"	20281	13703	19723	12212	"		1134	5286	4914	8566	10	776	777
12	12	1554.2	"	20298	13707	19742	12212	20.1	.77 .84	1137.4	5286.7	4920.1	8576.7	10	7.7	7.3
13	12	1555-6	1462-4	20307	13719	"	12231	20.2	1 .09	1139.6	"	4925.6	8586.8	11 "	7.86	7.43
14	12	"	1464	20317	13731	19758	12235	"	.7 .1	1142	5295	4925	8597	8545	787	734
15	12	"	1466	20332	13736	19766	12247	"	1.1 .1	1144	5303	"	8607	10	781	745
16	12	"	1468	20334	13754	19774	12259	"	1.7 .07	1147	5308	4928	8617	10	779	772
17	12	"	1470	20356	"	19791	12262	"	2.3 .07	1150	"	4934	8627	10	790	780
18	12	"	1472	20357	13773	"	12281	"	.3 .07	1152	5308	4940	8637	10	763	762
19	12	"	1473.8	20373	13778	19810	12282	20.4	.37 .06	1155-1	"	4945	8647.9	10 "	7.5	7.51
20	12	"	1475.	20382	13781	19816	12287	"	1.65 2.8	1156	5314	4946	8657.7	10 "	7.77	7.11
21	12	"	1477.2	"	13799	"	12305	"	1.3 .06	"	53175	"	8667.8	10 "	7.32	7.32
22	12	"	1478	20400	13802	19833	12306	20	.8 .105	1156	5323	4948	8677	" "	778	756
23	12	"	1479	20408	13814	19841	12314	"	7.3 6.3	1159	"	4955	8688	10 "	778	728
24	12	"	1481	20415	13826	19843	12329	"	8.5 .1	1161	"	4961	8698	10 "	781	771
25	12	"	1482	20433	13828	19862	12329	"	8.2 3.2	1162	"	4967	8708	9	764	780
26	12	"	1483.6	"	13845	19865	12342	20.4	7.8 2.52	1164.5	5323.4	4972.9	8717	10	8.01	7.12
27	12	"	1485.4	20449	13850	19874	12353	"	3.4 .06	1167.1	"	4974.2	8727.3	9	7.9	7.66
28	12	1557.8	"	20458	13859	19891	12355	"	2.1 .06	1169.4	"	4985	8736.9	10	7.9	7.78
29	12	1559	1485	20464	13873	19891	12373	"	1.4 .09	1171	5323	4991	8746	10	789	774
30	12	1561	1485	20484	13874	19906	12377	20.4	1.1 .06	1174	5323	4997	8756	10	791	796
31																

LEACHATE DAILY LOG #2

3334
Take oil sample

Month: OCTOBER
Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	~~TRANS~~ CELL LEAK	BLW A/B	E-PH	DAILY EFFLUENT
1	12	2672539	3370105	42864	69	.35	11.21	1672	101158	462968	64196	1348	22727	882	32590
2	12	2704102	3402693	42888	68	.05	11.45	1673	"	"	"	1360	22752	881	32588
3	12	2734491	3435282	42911	67	0	11.48	1674	"	"	64205	13.89	22778	8.77	32586
4	12	2764504	3467868	42935	67	0	11.56	1675	"	"	64297	13.74	22803	8.76	32586
5	12	2794101	3506453	42959	69	0	11.63	1676	"	"	64452	13.65	22828	8.73	32588
6	12	2824985	3533041	42981	68	0	11.79	1677	"	"	64546	13.75	22872	8.76	32586
7	12	2856395	3565629	43005	67.6	0	11.82	1678	"	"	64621	14.11	22743	8.7	32586
8	12	2886922	3598214	43030	67	.12	12.00	1679	"	"	64725	14.35	22819	8.72	32588
9	12	2918420	3630802	43054	67	0	12.05	1680	"	"	64786	14.61	22844	8.74	32586
10	12	2948254	3663389	43078	67	0	12.40	1681	"	"	64801	15.30	22869	8.72	32585
11	12	2979504	3695974	43102	67	0	12.59	1683	"	"	64824	15.05	22895	8.71	32586
12	12	3011745	3728561	43127	off	.15	1309	1684	"	"	64852	15 21	22920	875	32586
13	12	3041226	3761145	43151	66	.25	1353	1685	"	"	64870	1517	22945	871	32586
14	12	3072984	3793732	43175	67	0	1372	"	101158	462968	64913	1515	22970	873	32586
15	12	3103207	3826318	43199	67	0	1395	"	"	"	"	1558	22996	863	32588
16	12	3134052	3858906	43223	67	0	1412	1686	"	"	"	1543	23021	863	32588
17	12	3165481	3891493	43247	66	0	1426	1689	"	"	"	1569	23046	864	32588
18	12	3196710	3924081	43271	67	0	1439	1690	"	"	65780	1571	23071	867	32588
19	12	3226611	3956670	43295	67	.5	1457	1691	"	"	65816	1549	23097	868	32586
20	12	3257508	3989256	43319	67	1.1	1442	1692	"	"	65975	1532	23122	869	32586
21	12	3288565	4021843	43343	66	.2	1466	1693	"	"	66034	1554	23147	866	32586
22	12	3318523	4054428	43367	67	2.25	1487	"	"	"	66162	1518	23173	865	32590
23	12	3350676	4087017	43391	67	.6	1520	1694	"	"	66254	1517	23198	861	32588
24	12	3380867	4119604	43315	67	0	1542	1695	"	"	66377	1551	23223	872	32586
25	12	3411386	4152192	43339	67	0	1597	1696	"	"	66436	1575	23249	868	32586
26	12	3441618	4184778	43363	66	.12	1622	1697	"	"	66510	1516	23274	867	32588
27	12	3471694	4217366	43387	68	0	1700	1698	"	"	66549	1552	23299	868	32586
28	12	3501652	4249952	43411	69	0	1774	1699	"	"	66553	1552	23324	871	32586
29	12	3532418	4282538	43435	69	0	1839	1699	"	"	"	1533	23350	872	32588
30	12	3563773	4315125	43459	off	0	1924	1700	"	"	66593	1531	23375	873	32588
31	12	3593632	4347714	43483	65.8	0	1975	1701	"	"	66657	1530	23400	871	32586
						5.69		1703							
									0	0					

LEACHATE DAILY LOG #1

Month: OCTOBER
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/O2	D/SL/P	P-4A	P-4B	P-5A	P-5B	GO2PH	MEQ/PH
1	12	1562	1485	20484	13891	19920	12380	20	1.3 .1	1174	5323	5003	8765a	8545	789	791
2	12	11	1487	20498	13897	19937	12382	11	1.8 .1	1176	11	5010	8774	10	788	789
3	12	11	1488.9	20509	13905	19937	12400	20.5	2.8 .4	1179	11	5016.2	8784.2	9 11	7.9	7.76
4	12	11	1490.1	20512	13921	19952	12403	20.7	2.6 1	1181	11	5022	8793	9 11	7.75	768
5	12	11	1491.2	20531	11	19962	12410	11	1.8 .38	1183	11	5028	88028	9 11	7.81	773
6	12	11	1492.5	20534	13937	11	12427	11	3.8 .5	1185	11	5034	8806.6	8550 10	7.9	7.73
7	12	11	1494.4	20546	13945	19983	12427	11	1 .07	1188	11	5040	8806.6	85509	7.8	7.55
8	12	11	1496	20559	13951	19987	12440	11	.5 .06	1190	11	5046	11	85699	7.84	7.61
9	12	11	1497.9	20561	13969	19995	12451	20.8	1.8 .12	1193.2	11	5052	11	8557 10	7.86	7.44
10	12	11	1499	20580	11	20012	12452	21.1	1.8 .07	1195.4	11	5058	11 9	8558	7.9	7.67
11	12	11	1501.1	20585	13984	11	12469	11	1.3 .06	1197.7	5324.1	50646	11 9	85976	7.87	7.66
12	12	1563	1502	20596	13993	20027	12474	21	1.7 .07	1200	5324	5071	11 10	8607	789	7.57
13	12	1564		20610	13998	20037	12482	11	2.5 .09	1201	11	5077	9	8616	787	768
14	12	1566		20611	14017	20039	12498	11	2.6 .2	1204	11	5083	10	8625	778	731
15	12	1568		20630	11	20057	11	11	3.9 .4	1206	11	5089	9	8635	788	788
16	12	1570		20635	14031	20062	12510	11	3.8 .5	1208	11	5095	10	8644	794	790
17	12	1571		20646	14041	20069	12521	11	2.9 .2	1211	11	5101	9	8654	793	767
18	12	1572		20660	14046	20087	12522	21	1 .09	1213	11	5107	9	8663	771	771
19	12	1574		11	14064	11	12539	11	.8 .07	1215	5329	5110	9	8672	789	776
20	12	1575		20680	11	20099	12545	11	2.1 .06	1217	11	5116	10	8681	779	762
21	12	1577		20686	14078	20112	12548	21	3.3 .3	1220	11	5123	9	8691	781	780
22	12	1578		20695	14088	11	12565	21	5.2 .4	1222	11	5129	9	8700	776	757
23	12	1580		20711	14093	20129	12568	21	2 .06	1224	11	5135	10	8709	777	753
24	12	1583		11	14111	20137	12578	11	2.1 .07	1227	11	5141	9	8719	776	766
25	12	1585		20730	14112	20141	12592	11	2.7 .1	1229		5148	10	8728	780	766
26	12	11	1503	20736	14124	20160	11	11	2.5 .1	1231		5154	9	8738	776	775
27	12	11	1505	20743	14136	20162	12608	11	1.9 .1	1233		5160	9	8747	773	773
28	12	11	1507	20762	14137	20173	12615	21	1.2 .08	1236		5166	10	8756	789	779
29	12	11	1509	11	14156	20187	12621	11	.9 .08	1238		5173	9	8766	786	773
30	12	11	1511	20778	14160	11	12639	11	.6 .06	1241		5179	10	8775	779	776
31	12	11	1512.7	20787	14170	20206	12639	21.4	.5 .07	12429		5185.7	11 9	8785	7.82	7.69

8794

S/S LK. DET. 703 GAL 11/7
808 GAL 11/30
1,511 TOTAL

LEACHATE DAILY LOG #2

Month: november
Year: 2017

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS (Sewer)	S-SL	CELL1	TS/GL	~~[illegible]~~ (cell 2 leak Det.)	BLW A/B	E-PH	DAILY EFFLUENT
1	12	3624213	4380301	43606	65.7	0	20.26	1703	101158	462968	66688	15.55	23425	8.71	32588
2	12	3656395	4412888	43631	off	.12	2068	1704	〃	462977	66877	1533	23451	867	32588
3	12	3686223	4445474	43655	67	0	2104	1705	〃	462977	〃	1522	23476	863	32588
4	12	3717295	4478062	43679	67	.05	2144	〃	〃	〃	〃	1536	23502	870	32586
5	12	3747573	4510650	43703	67	.25	2180	1706	〃	〃	〃	1550	23527	861	32586
6	12	3781108	4543236	43727	66		2212	1707	〃	〃	67046	1507	23553	866	32588
7	12	3812580	4575824	43752	65	0	22.27	1709	〃	〃	67121	15.33	23578	8.74	32586
8	12	3846282	4608411	43776	65	0	21.46	1711	101861	〃	〃	15.41	23603	8.71	32588
9	12	3879937	4640997	43800	69	.35	2065	1712	〃	462989	67234	1558	23629	869	32588
10	12	3913764	4673584	43824	67	.1	2115	1714	〃	〃	67260	1539	23654	872	32590
11	12	3947167	4706177	43848	off	0	2119	1715	〃	〃	67276	1524	23680	870	32588
12	12	3979500	4738766	43872	66	0	2128	〃	〃	〃	〃	1533	23705	859	32588
13	12	4012955	4771353	43896	65		2135	1717	〃	〃	67345	1599	23730	[illegible]	32586
14	12	4046210	4803939	43920	65	.8	20.35	1717	〃	468,182	57444	14.41	23755	8.73	32588
15	12	4080682	483[illegible]	43944	68.6	0	19.18	1718	〃	474,386	67611	15.54	23781	8.7	32588
16	12	4113587	4869[illegible]	43967	68	.6	19.32	1719	〃	〃	67700	15.10	23806	8.64	32588
17	12	4147330	4901698	43991	off	.25	1958	1720	〃	〃	67729	1485	23831	868	32588
18	12	4179936	4934286	44015	67	0	1969	〃	〃	〃	67743	1508	23857	867	32588
19	12	4212705	4966874	44039	69	0	1975	1721	〃	〃	67757	1525	23882	854	32590
20	12	4245393	4999463	44063	68	.40	1988	〃	101861	474387	67913	1532	23907	853	32588
21	12	4278501	5032048	44087	72	.30	1997	1723	〃	〃	68030	1522	22853*	849	32590
22	12	4309556	5064645	44111	72	.80	2011	1724	〃	〃	68209	1499	22878	863	32586
23	17	4342339	5097233	44135	77	.40	2027	1726	〃	〃	68285	1496	22903	862	32588
24	12	4373853	5129819	44159	81	.40	2057	〃	〃	〃	68327	1468	22929	856	32586
25	12	4407283	5162408	44183	72	0	2076	1728	〃	〃	68371	1516	22954	868	32586
26	12	4441593	5194993	44207	73	.15	2074	1730	〃	〃	68435	1521	22979	866	32586
27	12	4473795	5277579	44231	73	.55	2101	〃	〃	〃	68524	1502	23005	861	32586
28	12	4507173	5260166	44255	72	0	2115	1731	〃	〃	68571	1507	23030	8.67	32586
29	12	4539411	5292750	44279	73.6	.5	2132	1733	〃	〃	68638	1455	23056	8.69	32588
30	12	4573633	5325337	44303	73.1	0	2214	1734	〃	〃	68769	1541	23080	8.69	32588
31															

*Blower B

6.02 (RAIN)
1739 (GP HRS)
7.03
-7.03
= 0
80
76
11,419
69
Eff

LEACHATE DAILY LOG #1

42
48
65
75

Month: November
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/02	D/SL/P	P-4A	P-4B	P-5A	P-5B	CO2 PH	MTU PH
1	12	1585.9	1513.9	20792	14184	20212	12650	21.4	-7 -13	1245.2	5324.6	5191.6	8806.69	87944	7.81	7.58
2	12	11	1515	20812	11	20218	12663	11	1.1 .09	1247		5197	10	8803	783	753
3	12	11	1517	11	14203	20237	11	11	.9 .1	1249		5204	9	8813	792	776
4	12	11	1519	20827	14208	11	12680	11	1.0 .3	1251		5210	9	8822	787	763
5	12	11	1520	20837	14216	20249	12686	11	1.4 .6	1253		5215	10	8831	802	781
6	12	11	1521	20843	14232	20262	12693	11	1.3 1.0	1256		5221	9	8841	783	767
7	12	11	1523	20860	11	11	12707	21.7	.3 1.5	1257.7		5225.9	9	8850.2	7.8	7.5
8	12	11	1525.2	20863	14250	20280	12710	12.8	-3 -2	1260		5229	10	8859	7.6	7.3
9	12	1586	11	20879	14255	20287	12721	21	5.2 .2	1262		5234	9	8869	735	718
10	12	1588	11	20888	14267	20293	12733	11	6.1 .1	1265		5240	9	8878	780	744
11	12	1589	11	20897	14279	20312	12734	11	9.0 .05	1267		5245	10	8887	781	750
12	12	1590	11	20913	14283	11	12752	22.1	8.0 .2	1268		5251	9	8897	788	775
13	12	1592	11	11	14303	20327	12757	11	6.6 .1	1271		5257	9	8906	794	769
14	12	1593.6	11	20935	11	11	12765	11	5.7 .08	1273		52628	10	8915.9	7.7	7.36
15	12	1594.5	11	20938	14320	20341	12780	11	5.7 .06	1276	11	52684	11 9	8925.1	7.57	7.43
16	12	1596.3	11	20953	14327	20362	12780	22.2	4.9 .06	1278	11	5274	11 10	8934.7	7.79	7.52
17	12	1597	11	20964	14338	20363	12798	11	1.7 .04	1281		5279	9	8944	777	735
18	12	1599	11	20971	14351	20377	12803	11	3.7 .04	1283		5285	9	8953	784	742
19	12	1600	11	20989	14352	20388	12810	11	1.8 .04	1285		5290	7	8962	786	775
20	12	1601	11	11	14366	11	12823	11	4.4 .04	1287		5294	8	8969	789	769
21	12	1603	11	20994	14375	20397	12827	11	7.0 .07	1288		5297	8809 9	8974	786	768
22	12	1604	11	21014	11	20412	12830	11	5.5 .05	1291		5303	8818. 10	11	802	764
23	12	1605	11	11	14395	11	12848	11	5.5 .05	1293		5308	8828 7	1	795	760
24	12	1607	1525	21024	14399	20423	12850	22	7.6 .05	1295		5311	8835 9		781	771
25	12	1608	11	21039	14404	20437	12855	11	3.1 .04	1297		5315	8844 10		759	757
26	12	1609	1526	21043	14422	20438	12874	11	4.7 .04	1300		5320	8854 9		785	743
27	12	11	1527	21064	11	20457	11	11	7.3 .04	1302		5324	8863 9		790	775
28	12	1609.2	1528.2	21065	14442	20462	12887	22.7	4.4/0.04	1305.2	5329.6	5329.4	8872.7	8974.9	7.87	7.56
29	12	1609.2	1529.3	21082	14446	20471	12897	22.7	7.2/0.04	1307.6	5329.4	5333.4	8882.1	8974.9	785	7.65
30	12	1609.2	1530	21090	14459	20485	12901	22.9	4.0/0.04	1310.2	11	5338	8891 9	8974	7.80	7.52
31																

LEACHATE DAILY LOG #2

LEAK DET. 12/29 536GAL

Month: December
Year: 2017

Cell 2 Leak Det.

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	[illegible]	BLW A/B	E-PH	DAILY EFFLUENT
1	12	4606610	5357927	44327	74	.20	2217	17.39	102669	474387	68802	1494	23106	866	32588
2	12	4639506	5390513	44351	off	.2	2101	11	11	479409	68846	1501	23131	871	32586
3	12	4673096	5423101	44375	76	.5	2095	1740	11	11	68932	1477	23156	864	32588
4	12	4706294	5455688	44399	73	.2	2106	11	11	11	69004	1461	23182	861	32585
5	12	4739714	5488276	44422	72.8	0	2108	29	102669	479409	69032	1485	23917	8.70	32586
6	12	4771130	5520864	44446	73.3	0	2113	1741	102669	479409	69073	1492	23232	863	32588
7	12	4806132	5553450	44471	72	0	2050	1746	102669	483019	11	1510	23258	871	32590
8	12	4838332	5586040	44495	73	0	2038	1748	11	11	11	1494	23283	865	32588
9	12	4870380	5618627	44519	72	0	2056	1749	105128	483020	11	1494	23308	864	32588
10	12	4904277	5651215	44543	73	0	2071	11	11	11	11	1483	23333	859	32588
11	12	4938538	5683804	44566	72	0	2091	1750	11	11	11	1508	23356	863	32588
12	12	4971518	5716392	44590	74	0	2105	1751	105128	483020	69073	1470	23384	862	32588
13	12	5005318	5748980	44614	74.3	0	2110	1752	105128	483020	69073	1485	23409	864	32590
14	12	5036981	5781568	44638	74	0	2124	1754	105128	483020	69073	1500	23434	8.61	32586
15	12	5071085	5814156	44662	73	0	2003	1758	11	483391	11	1520	23460	869	32590
16	12	5104434	5846743	44686	73	.1	2000	1761	11	11	11	1477	23485	862	32586
17	12	5136691	5879330	44710	73	.1	2020	11	11	11	11	1504	23511	856	32588
18	12	5169319	5911918	44734	73	0	2034	1762	11	11	11	1485	23536	861	32588
19	12	5203844	5944506	44758	71.3	1.4	2038	1763	11	11	11	1533	23561	9.63	32588
20	12	5234594	5977094	44782	off	2.6	1936	1765	105128	483960	69073	1447	23586	8.73	32588
21	12	5267058	6009682	44806	73.7	0.4	1951	1767	105128	493960	69073	1460	23612	8.51	32588
22	12	5300447	6042271	44830	73	.1	1964	1769	11	11	11	1494	23637	854	32588
23	12	5332672	6074859	44854	73	.3	1971	1772	11	11	11	1468	23662	862	32590
24	12	5365762	6107446	44878	72	0	1976	11	11	11	11	1503	23688	865	32588
25	12	5397309	6140034	44902	73	.2	1983	1773	11	11	11	1493	23713	860	32588
26	12	5430763	6172624	44926	76.6	0.4	1720	1773	105128	502815	69073	1450	23738	8.55	32588
27	12	5462322	6205212	44950	71.9	Ø	1620	1775	105128	511267	69073	1490	23763	8.57	32588
28	12	5496257	6237800	44974	74	.1	1630	1776	11	11	69621	1495	23789	855	32588
29	12	5529533	6270387	44998	73	1.0	1642	1777	11	11	69871	1494	23814	858	32588
30	12	5564079	6302976	45022	73	1.2	1653	11	107871	11	69948	1419	23839	868	32590
31	12	5597116	6335564	45046	73	.3	1679	1779	107871	511267	70053	1496	23865	870	32588
						9.11		1780	5,202	36,880					
									-536						
									-808						
									= 3,858						

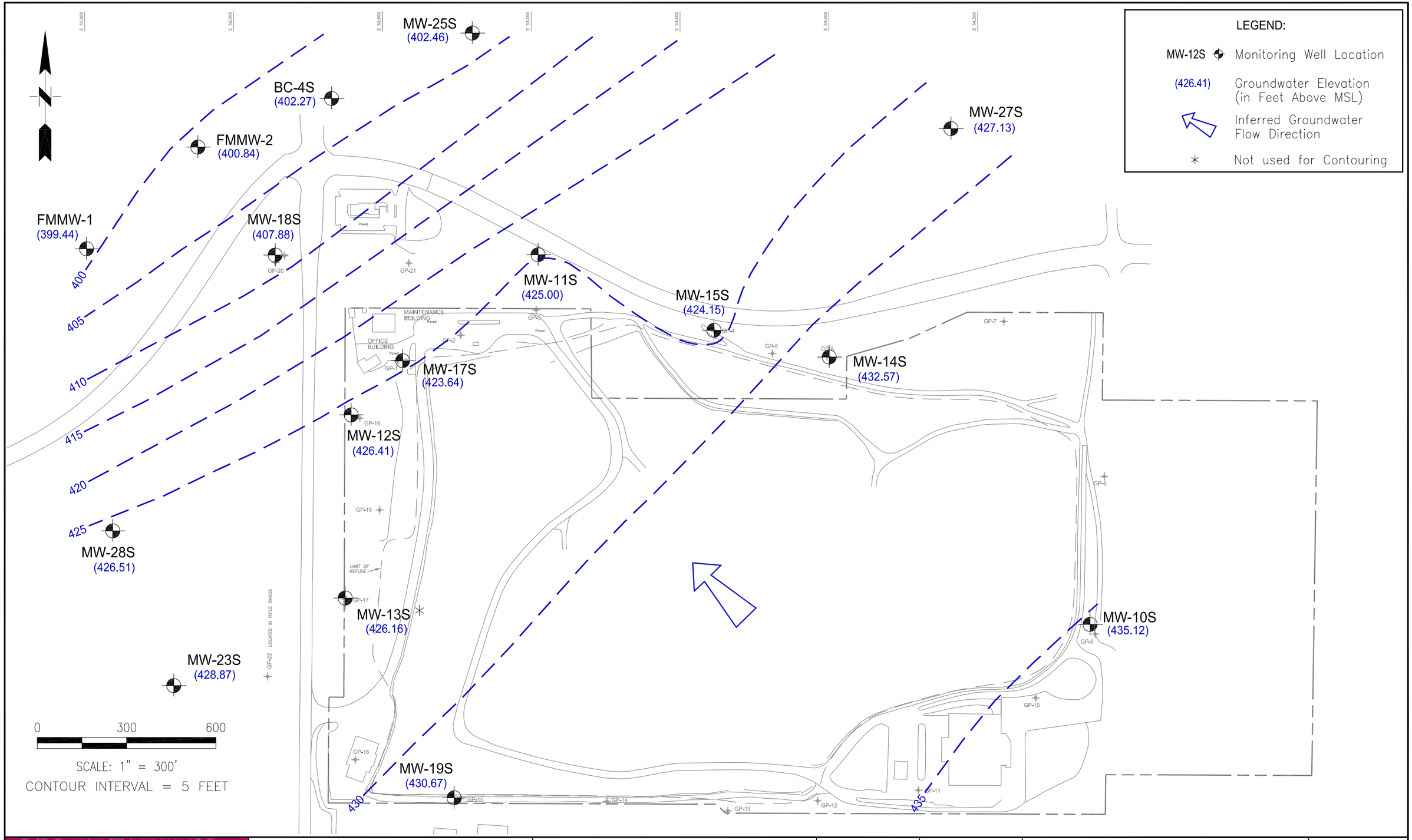
LEACHATE DAILY LOG #1

Month: December
Year: 2017

Date	Time	P-1A	P-1B	P-2A	P-2B	P-3A	P-3B	M/SL/P	D/O2	D/SL/P	P-4A	P-4B	P-5A	P-5B	CO2 PH	M U PH
1	12	1609	1531	21100	14470	20487	12920	22	7.3 .05	1312	5329	5342	8900 10	8974	781	764
2	12	"	1532	21115	14476	20505	12921	"	8.1 .23	1315		5347	8910 9		781	767
3	12		1534	21118	14494	20512	12934	"	10.3 .18	1316		5351	8919 9		778	758
4	12		1535	21140	"	20520	12944	"		1319		5356	8928 10		786	780
5	12		1536	21141	14514	20537	12947	23	8.33/.09	1321.6		5360	8938 9		7.65	7.55
6	12		1537	21157	14518	20537	12965	23	12.09/.39	1324		5364	8947 9		7.64	7.80
7	12		1538	21166	14531	20553	12968	"	5.4 .09	1326		5369	8956 10		763	748
8	12		1539	21175	14542	20561	12978	"	8.9 .2	1329		5373	8966 8		776	771
9	12		1540	21191	14545	20566	12992	"	9.1 .09	1330		5377	8974 9		787	757
10	12		1541	21192	14566	20586	"	"	9 .05	1332		5382	8983 9		781	774
11	12		1543	21214	"	"	13010	23	6.7.04	1335		5387	8992 8		758	753
12	12		1544.2	21216	14584	20601	13015	23	6.45/.04	1337.6		5391	9000 9		7.76	7.58
13	12		1545	21232	14590	20611	13024	23.2	4.53/.04	1340		5395	9009 9		7.43	7.60
14	12		1547	21242	14600	20615	13029	23.2	6.54/.01	1342		5400	9018 8		7.65	7.61
15	12	1609	1547	21249	14613	20634	13039	"	6.6 .04	1345		5404	9026 9		783	773
16	12	"	1548	21267	14617	20636	13056	"	5.9 .04	1347		5409	9035 8		781	763
17	12	1611	"	21267	14637	20649	13062	"	7.1 .08	1350		5413	9043 9		775	781
18	12	1612	"	21288	"	20661	13069	"	8.8 2.4	1352		5417	9052 9		778	774
19	12	1614.1	"	21292	14653	20661	13086	23.4	6.17/.68	1354.2		5422	9061 8		7.65	7.68
20	12	1614.9	1548	21299	14661	20675	13086	23.4	5.52/2.63	1355.9	5329.6	5425.8	9069 9	174.9	7.85	7.78
21	12	1615.9	1548.7	21317	14663	20686	13094	23.4	5.83/.37	1358.2	5329.6	5430.2	9078.5	9 174.9	7.84	7.75
22	12	1617	"	21317	14680	20687	13109	"	6.0 .19	1360	"	5433	9087	8 "	789	777
23	12	1619	"	21332	14685	20705	"	"	4.5 .15	1362		5438	9095	10 "	782	770
24	12	1621	"	21343	14695	20711	13123	"	5.0 .11	1365		5442	9105	9 "	785	778
25	12	1623	"	21349	14709	20719	13133	"	10.2 .05	1367		5446	9114	1 "	786	790
26	12	1624.7	1548.7	21363	14709	20732	13133	23.4	1.64/.04	1369.4	5329.4	5449.4	9121.9	9 49	7.28	7.42
27	12	1629	1548	21368	14723	20735	13144	23.6	6.97/.04	1371.3	5329	5453	9130	9 14	7.64	7.74
28	12	1632	"	21379	14733	20743	13156	"	5.5.04	1373	"	5458	9139	8 1	776	774
29	12	1632	1550	21393	14738	20761	13158	"	3.7 .05	1376	"	5463	9147	9 "	777	767
30	12	"	1551	"	14756	"	13177	"	20.0.05	1378	"	5468	9156	9 "	776	758
31	12	"	1553	21416	14756	20777	13180	23.7	3.8.04	1381	5329	5473	9165 8	8974	758	769
													9173			

Appendix C

WATER LEVEL DATABASE



SCS ENGINEERS
Environmental Consultants and Contractors
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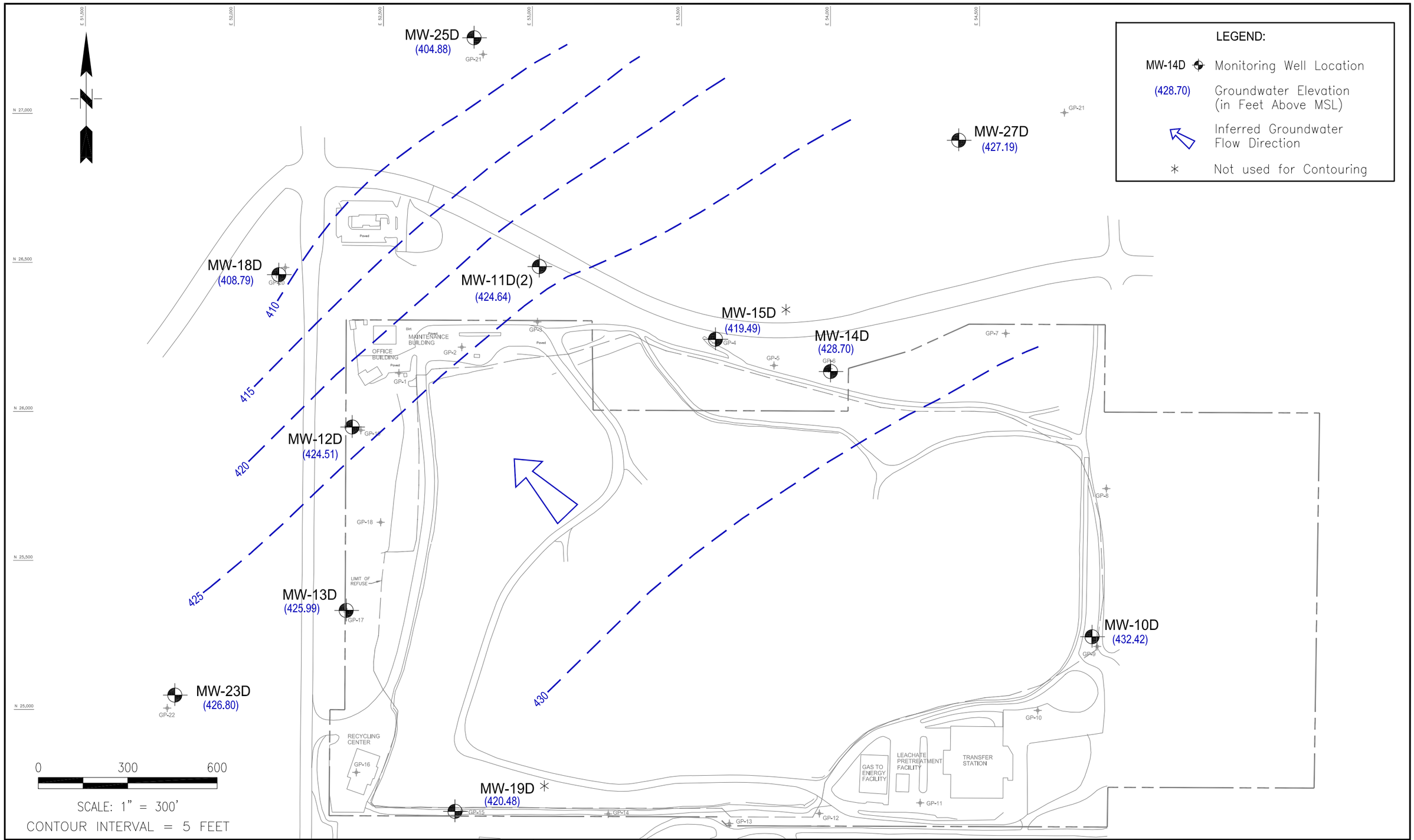
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04217003.03	DES BY SG	SHALLOW PERCHED AQUIFER WATER LEVEL MAP JANUARY 19, 2017	DATE MAY 2017
SCALE AS SHOWN	CHK BY KGL		FIGURE 1
CAD FILE FIGURE 1	APP BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	



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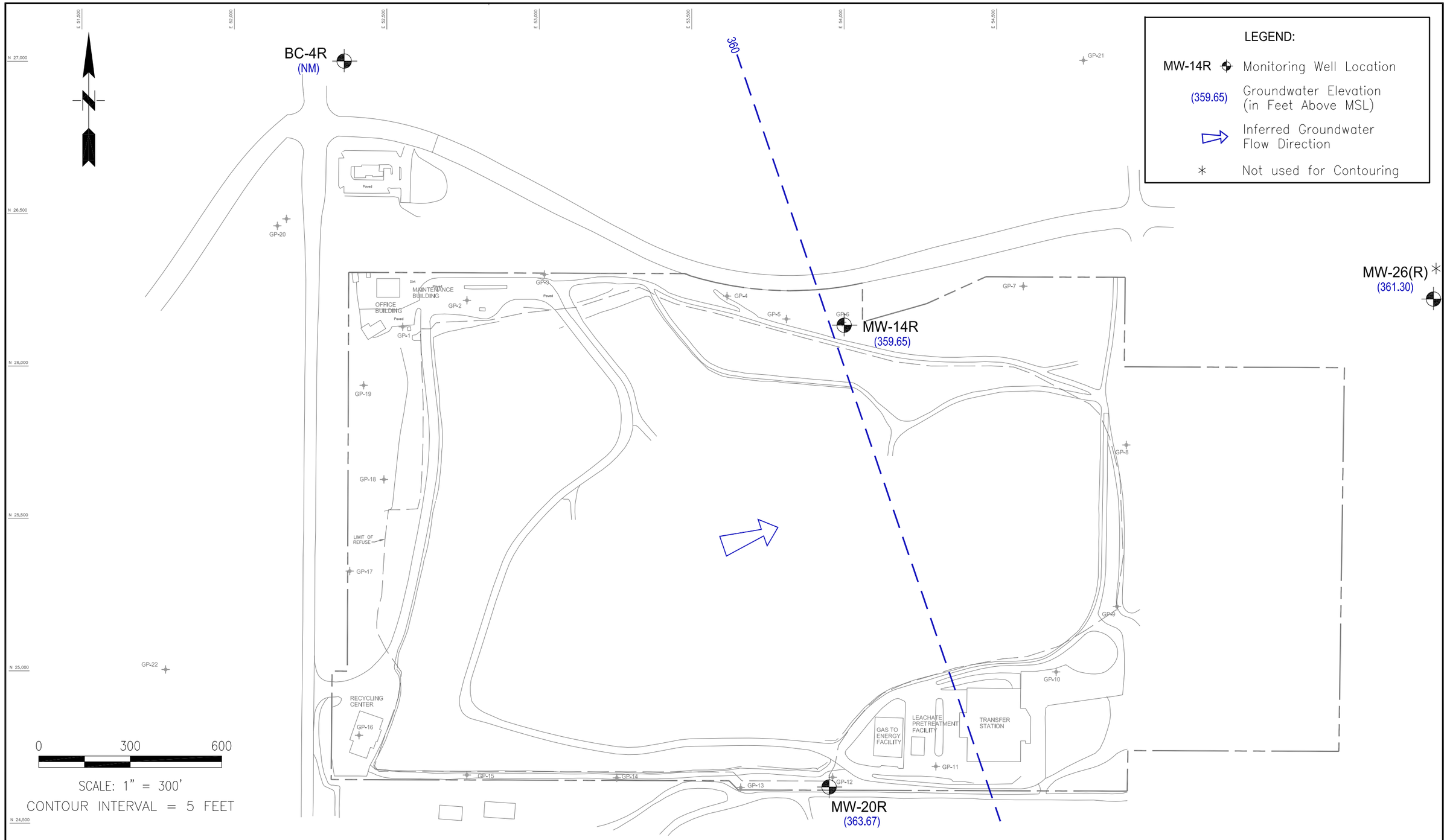
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04217003.03	DES BY SG	UPPER REGIONAL AQUIFER WATER LEVEL MAP JANUARY 19, 2017	DATE MAY 2017
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 2
CAD FILE FIGURE 2	APP BY KGL		



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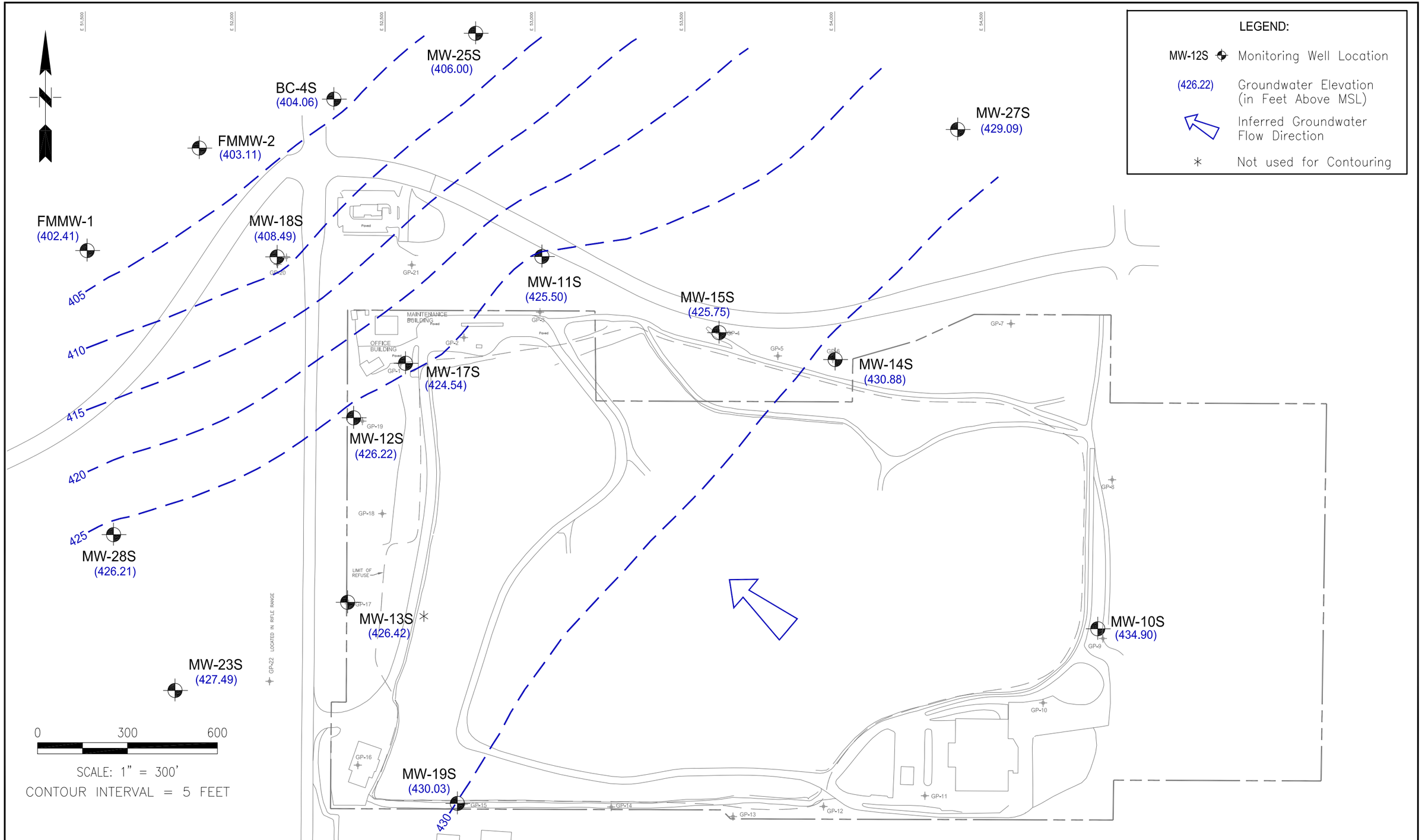
PROJECT NO. 04217003.03	DES BY SG	LOWER REGIONAL AQUIFER WATER LEVEL MAP JANUARY 19, 2017	DATE MAY 2017
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 3
CAD FILE FIGURE 3	APP BY KGL		



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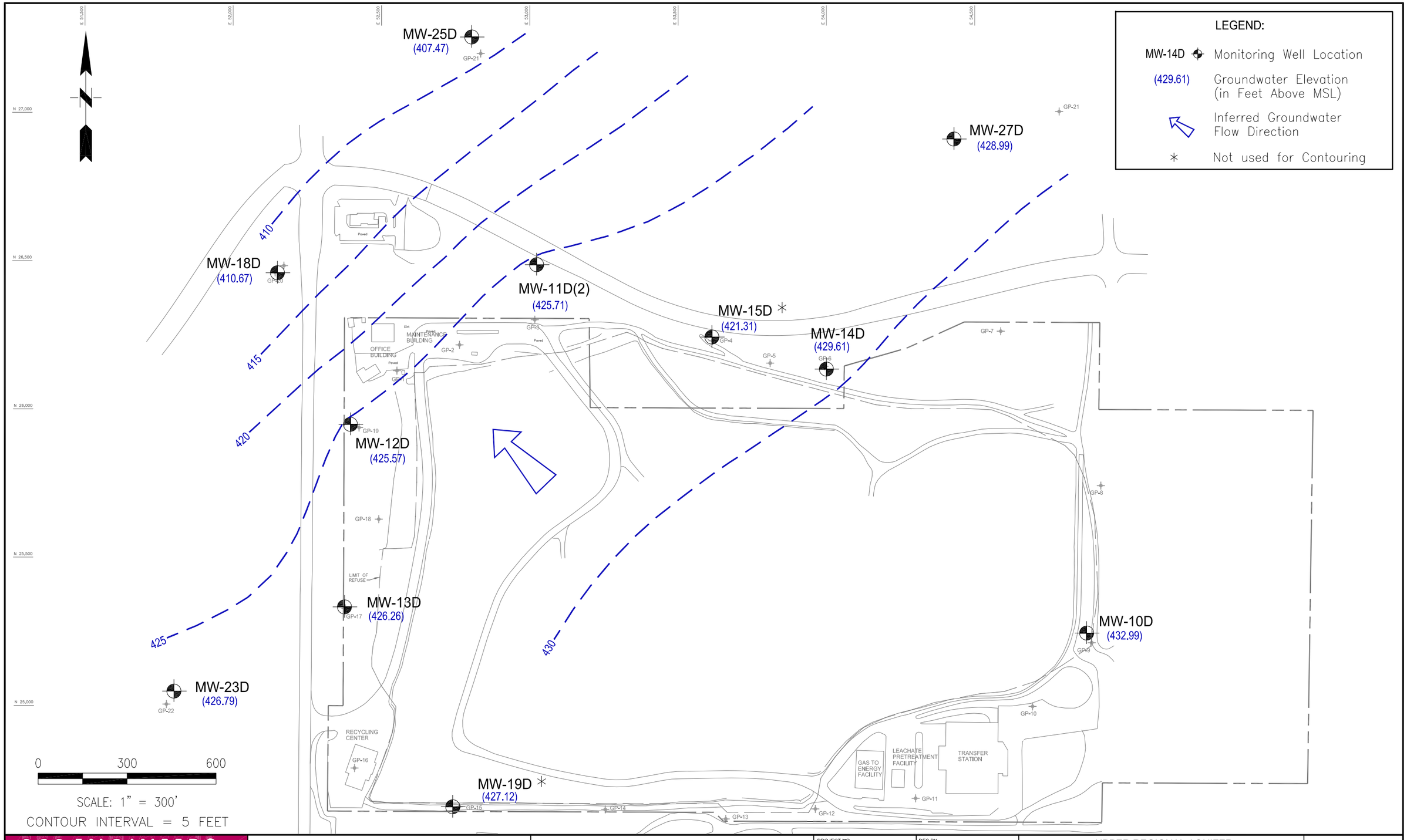
PROJECT NO. 04218002.03	DES BY SG	SHALLOW PERCHED AQUIFER WATER LEVEL MAP JULY 14, 2017	DATE FEBRUARY 2018
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 1
CAD FILE FIGURE 1	APP BY KGL		



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PROJECT NO. 04218002.03	DES BY SG	UPPER REGIONAL AQUIFER WATER LEVEL MAP JULY 14, 2017	DATE FEBRUARY 2018
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 2
CAD FILE FIGURE 2	APP BY KGL		

LEGEND:

MW-14R — Monitoring Well Location

(358.15) — Groundwater Elevation (in Feet Above MSL)

Inferred Groundwater Flow Direction

* Not used for Contouring

BC-4R (370.39)

MW-14R (358.15)

MW-26(R) * (359.10)

MW-20R (360.61)

370

360

GP-1 GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17 GP-18 GP-19 GP-20 GP-21 GP-22

OFFICE BUILDING

MAINTENANCE BUILDING

LIMIT OF REFUSE

RECYCLING CENTER

GAS TO ENERGY FACILITY

LEACHATE PRETREATMENT FACILITY

TRANSFER STATION

E 51,500 E 52,000 E 52,500 E 53,000 E 53,500 E 54,000 E 54,500

N 27,000 N 26,500 N 26,000 N 25,500 N 25,000 N 24,500

0 300 600

SCALE: 1" = 300'

CONTOUR INTERVAL = 5 FEET

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PROJECT NO. 04218002.03	DES BY SG	LOWER REGIONAL AQUIFER WATER LEVEL MAP JULY 14, 2017 HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	DATE FEBRUARY 2018
SCALE AS SHOWN	CHK BY KGL		FIGURE 3
CAD FILE FIGURE 3	APP BY KGL		

Water Level Measurements
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	TOC ELEV	01/15/88	02/23/88	02/24/88	04/26/88	05/24/88	06/24/88	07/18/88	07/19/88	07/20/88	07/21/88	08/30/88	08/31/88	09/15/88	09/16/88	10/25/88	12/01/88	12/02/88
MW-10S	460.17	424.51	424.01		432.03	432.97	432.63		431.58			428.77		427.30		424.60	430.21	
MW-10D	460.69		421.96		428.06	428.55	389.19		363.77			373.41		423.54		398.74	351.73	
MW-11S	516.44			DRY	422.20	422.59	422.18				420.95					DRY		420.70
MW-11D	516.56			417.65	422.07	422.43					420.79		418.18	417.20		416.27		
MW-11D(2)	515.53																	
MW-12S	489.94		DRY		427.23	DRY				423.27						DRY		
MW-12D	489.97	415.92	416.57		420.16	421.39	421.65			419.80			417.59	416.82		415.66		418.69
MW-13S	448.81			422.29	424.75	425.23	424.71			422.90			420.86		420.33	419.52	422.41	
MW-13D	448.94	418.89		418.12	422.54	422.91				421.28						417.59		
MW-14S	477.95		DRY		427.06	427.33	426.95	425.55					423.05	422.39		DRY	425.35	
MW-14D	477.98	418.33	419.33		424.34	423.65	423.90	422.78					420.45	419.83		418.30	421.39	
MW-14R	476.84				363.04	363.31		362.42								360.31		
MW-15S	498.76				426.86			425.43								421.83		
MW-15D	498.52				423.32			421.73								417.40		
MW-16S	480.27				427.52				425.92							421.67		
MW-16D	480.73				425.67				423.45							419.52		
MW-17S	552.44				422.10					421.14						416.31		
MW-18S	538.40				405.27						404.36	402.61			402.03	401.68		403.28
MW-18D	539.00				406.43						405.61					402.91		
MW-19S	485.71				430.35				429.41							427.19		
MW-19D	485.82				422.65				419.88							416.22		
MW-20R	469.43				361.05				371.54							368.72		
MW-22U	545.92																	
MW-22L	546.07																	
MW-23S	448.34																	
MW-23D	448.25																	
MW-25S	527.80																	
MW-25D	527.52																	
MW-26R	481.81																	
MW-27S	531.81																	
MW-27D	531.92																	
MW-28S	466.87																	
BC-4S	526.68			399.00	401.24								399.08			397.82		
BC-4D	526.94			366.39	369.12							367.19				366.16		
FM-1	542.59																	
FM-2	536.40																	

Notes: Before June 1996 well elevations were: MW-11s 501.48; MW-11d 501.45; MW-15s 490.53; MW-15d 490.61
Between June 1996 and March 2001 well elevations were: MW-11s 512.13; MW-11d 512.06
Before October 30, 1999 well elevations were: MW-27s 531.81; MW-27d 531.92
Before January 21, 2000 well elevations were: MW-10s 455.45; MW-10d 456.19
Before May 18, 2001 well elevations were: MW-23s 449.92; MW-23d 449.96
Before September 2000, well elevations were: BC-4S 524.35; BC-4D 524.46
Before November 19, 2004 well elevations were: MW-25S 526.54; MW-25D 526.66
Before August 2005 well elevations were: MW-18S 546.88; MW-18D 546.01, new elevations are field measurements, not survey results

Water Level Measurements
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	12/22/88	01/24/89	03/02/89	03/04/89	03/15/89	03/16/89	04/25/89	05/25/89	06/29/89	06/30/89	07/17/89	07/18/89	07/19/89	09/05/89	10/04/89	10/25/89	10/26/89	10/27/89
MW-10S	429.60	432.60	434.17			436.30	441.21	439.43	435.95		434.50			430.93	428.49	426.70		
MW-10D	398.87	408.23	429.90			432.07	436.45	434.36	374.97		430.18			426.24	424.33	423.15		
MW-11S		422.63		424.13	425.88		430.40	429.02	426.38			425.10		420.67	DRY		DRY	
MW-11D	420.40	422.47					429.35					424.90			418.55		417.12	
MW-11D(2)																		
MW-12S		425.65			428.93		432.23			423.02			427.23	DRY	DRY		DRY	
MW-12D	419.12	421.29	422.67		424.63		428.79	427.21					423.07	419.27	417.66		416.67	
MW-13S	421.86	423.34	424.15		426.35		430.41	428.80		426.41		425.48		422.40	421.35		420.52	
MW-13D		422.76					430.10					424.49						418.22
MW-14S	425.17	427.42		429.20		431.77	437.32	435.15	424.33		429.96			424.96	423.11	DRY		
MW-14D	421.96	424.47		425.58		428.09	432.40	430.60			426.31					419.47		
MW-14R		362.86					368.74					361.22				361.30		
MW-15S		427.43			431.53		436.43			430.68	425.18			424.68	422.97		421.85	
MW-15D		423.45					431.47				429.71						418.47	
MW-16S		427.90					439.37					431.22				422.35		
MW-16D		425.63					433.43					427.26				420.66		
MW-17S		423.04			426.88		430.72			426.88		424.79		420.99	419.02		417.57	
MW-18S	404.51	406.58	407.63		408.64		412.41	411.88		409.73			408.62	406.68	404.41			403.69
MW-18D		406.66					412.61						408.48					403.73
MW-19S		432.97					437.37					432.38						426.78
MW-19D		421.87					428.59					423.90						417.94
MW-20R		371.50					377.61						365.39				369.50	
MW-22U																		
MW-22L																		
MW-23S																		
MW-23D																		
MW-25S																		
MW-25D																		
MW-26R																		
MW-27S																		
MW-27D																		
MW-28S																		
BC-4S		401.83					406.95						403.42					399.12
BC-4D		369.06					374.72						370.05					367.40
FM-1																		
FM-2																		

Water Level Measurements
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	11/15/89	12/18/89	01/03/90	01/15/90	01/24/90	01/29/90	02/12/90	02/27/90	03/12/90	03/26/90	04/09/90	04/25/90	05/07/90	05/21/90	06/04/90	06/18/90	07/02/90	07/24/90
MW-10S	427.78	429.68	428.78	435.27		438.49	441.52	442.60	442.83	442.22	441.27	440.44	439.68	438.34	438.12	425.45	436.65	435.11
MW-10D						434.58				437.30		435.54		433.69		433.14		431.02
MW-11S	DRY	420.88	420.15	426.26		427.82	430.91	431.60	431.25	430.89	430.10	429.34	428.78	427.82	427.27	427.53	426.82	425.44
MW-11D						427.58						429.20						425.17
MW-11D(2)																		
MW-12S	DRY	DRY	DRY	428.56	429.00	430.59	433.16	433.09	433.02	432.74	431.96	431.22	430.90	429.95	429.69	429.79	428.89	426.32
MW-12D						426.75						428.24						423.97
MW-13S	421.39	422.37	421.75	427.85	427.90	429.29	432.16	432.60	432.43	431.81	431.07	430.51	429.68	429.34	429.21	429.07	428.27	426.86
MW-13D						428.30						430.42						425.44
MW-14S	423.25	425.29	424.95	432.01	434.11	434.81	438.30	439.52	439.50	438.70	437.47	436.42	435.51	434.01	433.00	433.54	432.42	430.71
MW-14D						430.95						431.68						427.17
MW-14R						366.27						367.42						355.95
MW-15S	422.85	425.50	424.90	431.31		433.53	436.97	438.07	437.73	437.27	436.25	435.32	432.65	433.38	432.76	433.05	432.04	430.29
MW-15D						429.11						430.56						425.99
MW-16S						436.38						433.05						427.06
MW-16D						431.37						432.43						428.09
MW-17S	417.35	420.19	420.58	432.44	427.10	428.38	431.34	431.71	431.47	431.09	430.39	429.67	429.34	428.46	427.90	428.15	427.42	426.04
MW-18S	403.17	405.25	405.18	407.10	408.05	410.02	412.32		414.05	412.96	412.37	411.90	411.73	412.20	410.48	DRY	409.86	408.55
MW-18D	403.79	405.27	405.01	409.03		410.72	413.08	414.39	413.66	413.85	413.31	412.48	412.13	411.36	410.59	410.70	410.21	408.81
MW-19S						436.74						436.71						433.11
MW-19D						428.38						428.57						424.70
MW-20R						374.60						375.22						360.41
MW-22U	DRY	DRY	DRY	DRY		DRY	409.70	410.55	410.23	410.39	410.04	409.47	408.97	408.75	408.72	DRY	408.72	408.47
MW-22L	400.83	402.38	412.21	405.19	406.07	407.12	409.53	410.84	410.65	410.60	409.98	409.25	408.75	408.01	407.21		406.95	405.43
MW-23S						432.63						432.47						429.61
MW-23D						427.92						428.61						424.96
MW-25S						404.32						407.69						402.12
MW-25D						407.37						410.27						405.81
MW-26R																		
MW-27S																		
MW-27D																		
MW-28S																		
BC-4S						404.52						406.70						403.62
BC-4D						372.03						374.99						368.69
FM-1																		
FM-2																		

Water Level Measurements
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	09/04/90	10/01/90	10/22/90	11/26/90	12/17/90	01/29/91	02/25/91	03/26/91	04/29/91	06/28/91	07/29/91	01/20/92	04/14/92	07/14/92	10/19/92	03/22/93	06/02/93	09/07/93
MW-10S	432.69	425.32	430.05		435.69	436.67	441.32	433.22	444.30	443.36	435.20	429.35	433.49	430.31	DRY	427.37	433.05	429.61
MW-10D	427.99	431.62				433.89			439.41	433.96	431.16	424.29	428.87	425.25	420.98	423.64	428.63	425.74
MW-11S	422.41	420.58	418.67	427.55	426.78	426.58	430.09	431.22	432.12	428.19	425.83	419.28	422.73	419.60	DRY	420.13	417.27	413.06
MW-11D		420.38				427.61			432.05		425.60	418.97	422.63	419.60	414.86	420.10	417.13	413.00
MW-11D(2)																		
MW-12S				426.09	429.24	429.03	430.76	432.81	430.35	430.08	428.04	DRY	424.73	DRY	416.73	DRY	425.34	
MW-12D	421.01		418.31			427.02			431.85		424.23	417.46	421.17	418.17	414.37	417.47	420.84	418.33
MW-13S	424.68	423.66	423.45	429.03	428.13	430.33	432.43	423.59	434.54	430.83	428.63	419.23	422.47	419.20	415.91	417.76	422.08	419.65
MW-13D		421.13				426.64			433.29		426.07	418.79	422.40	419.15	415.78	417.56	422.02	419.58
MW-14S	427.07	425.03	424.47		432.45	420.35	447.30	438.95	440.39	434.42	431.01	424.05	428.57	424.27	DRY	423.43	428.37	424.16
MW-14D		422.14				433.28			435.84	430.25	427.33	420.45	424.73	420.89	417.55	419.77	424.55	421.64
MW-14R		359.66				367.49			370.24		358.20	361.18	361.44	355.42	356.74	359.29	358.88	355.18
MW-15S	426.96					433.07			438.36		430.88	423.88	427.90	424.26	420.15	423.16	427.81	
MW-15D						429.29			434.82		426.37	419.11	423.59	419.70	416.43	418.66	423.40	420.59
MW-16S						434.89												
MW-16D				405.49		431.36												
MW-17S	422.86	420.92				428.25			431.88		426.56	419.34	423.07	410.72	414.86	418.76	423.44	420.18
MW-18S	406.71	405.51	404.46		409.38		411.88	403.76	413.42	411.32	409.46	DRY	DRY	DRY	402.62	404.70	407.14	404.83
MW-18D	406.71	405.41							415.38	411.78	409.59	404.61	406.61		402.31	403.76	406.46	404.57
MW-19S									437.67		436.20	427.29	429.69	425.96	423.42	426.81	429.59	426.05
MW-19D									431.53		424.40	416.28	420.71	416.74	413.53	415.55	419.27	421.38
MW-20R		365.62				375.93			376.74		362.13	372.01	367.38	359.15	363.22	365.37	365.90	361.92
MW-22U	403.32								401.78		408.83	408.68	408.66	408.68	408.63	408.59	408.58	408.89
MW-22L	403.47					DRY			411.12		406.33	401.89	403.50	401.71	399.72	401.02	403.34	401.49
MW-23S		426.73				431.73			429.94		430.28	426.11	427.38	425.59	422.09	426.54	427.46	425.22
MW-23D						428.00			431.86		425.43	419.36	422.39	419.50	416.24	419.16	422.21	419.55
MW-25S		399.24				404.54			412.34		403.25	399.17	399.99	398.66	397.72	398.29	400.04	398.53
MW-25D						406.91			414.08		406.76	401.69	403.37	401.33	399.65	400.76	403.36	401.38
MW-26R												418.41	422.24	418.64	415.27	417.27	419.19	418.28
MW-27S												418.61	423.23	418.89	416.24	417.80	423.19	418.84
MW-27D												419.12	423.47	419.53	416.07	418.44	423.34	419.84
MW-28S																		
BC-4S									409.35			400.69	402.05		397.85	399.65	401.91	399.98
BC-4D									366.55			367.82	369.21		364.26	366.06	367.48	364.51
FM-1																		
FM-2																		

Water Level Measurements
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WELL	12/07/93	03/14/94	06/07/94	09/19/94	12/05/94	03/18/95	06/19/95	09/19/95	12/13/95	03/19/96	06/12/96	09/03/96	12/10/96	12/11/96	03/25/97	06/09/97	09/08/97	12/15/97
MW-10S	424.88	427.86	427.72	DRY	425.98	438.16	434.82	428.32	433.15	444.11	440.80	433.97		436.16	445.61	439.49	433.31	432.19
MW-10D	422.47	424.73	424.07	419.79	422.56	435.70	431.53	424.59	430.60	440.31	437.51	430.54		434.00	442.38	436.18	429.66	427.41
MW-11S	410.27	414.64	412.38	407.22	414.56	421.87	418.51	413.36	419.71	421.50	429.48	414.41	417.75		423.39	418.63	412.39	412.87
MW-11D	410.19	414.50	412.28	407.18	414.34	421.77	418.43	413.26	419.50	421.45	429.42	414.32	416.59		423.34	418.51	413.28	412.78
MW-11D(2)																		
MW-12S						430.21					431.24	426.37			433.87			
MW-12D	415.55	418.14	416.80	413.23	416.49	428.03					429.82	422.98			433.87			
MW-13S		419.49	418.12	414.48	417.91	429.13	425.05	418.71	425.06	433.50	431.04	424.23	427.59		434.98	429.54	423.56	422.52
MW-13D	416.81	419.38	418.04	414.42	417.86	429.06	424.98	418.58	424.90	433.35	430.96	424.12	427.49		434.90	429.43	423.42	422.39
MW-14S	422.73	425.00	423.78	DRY	424.23	434.94	430.66	423.86	429.78	440.34	437.20	429.49	432.92		441.55	435.71	428.32	427.05
MW-14D	418.74	421.42	420.20	416.51	419.40	432.14	427.68	420.79	427.28	436.82	434.40	426.88	430.49		438.83	432.64	425.79	424.31
MW-14R	358.09	358.96	357.64	354.24	356.62	365.61				369.81					372.37	369.35		
MW-15S	421.51	424.97	423.51	419.66	423.86	433.81					427.78	429.11			435.18			
MW-15D	417.67	420.36	419.13	415.39	418.49	431.00					425.25	425.50			427.38			
MW-16S																		
MW-16D																		
MW-17S	416.45	421.45	419.24	413.79	420.11	428.54	425.98	420.54	426.26	431.64	429.74	425.04	427.53		432.24	428.74	424.01	439.79
MW-18S	403.39	406.60	405.20	403.10	405.74	411.72					DRY	408.31			414.02		Dry	Dry
MW-18D	402.82	404.78	403.96	401.86	403.78	412.14	408.71	404.27	408.24	416.00	414.02	408.47		410.41	417.25	412.99	407.54	416.88
MW-19S	423.79	427.18	425.62	422.10	427.13	434.65					435.56	430.05			438.73			
MW-19D	417.80	418.42	423.53	412.11	415.87	430.29					430.78	422.34			434.56			
MW-20R	364.98	365.22	364.22	359.17	363.85	373.56				377.05					374.66			
MW-22U	408.63	408.64	408.63	408.57	408.54	409.08					410.29	405.03			411.65			
MW-22L	400.09	401.97	401.20	399.45	401.09	408.62					409.88	408.78			413.61		404.22	
MW-23S	423.01	426.11	424.79	420.91	426.02	430.94	427.78	424.75	429.37	433.76	431.80	427.50		427.10	434.60	431.35	427.15	427.01
MW-23D	417.14	419.74	418.50	414.73	418.86	427.76					429.71	423.78			433.41		423.11	422.29
MW-25S	397.87	399.47	397.06	397.58	399.71	407.39			401.96		410.74	402.43			415.13		401.39	
MW-25D	399.88	401.89	400.91	399.23	401.32	409.70	405.91	401.29	405.30		412.72	404.96			416.69	411.61	404.92	403.70
MW-26R	415.67	418.73	417.29	413.53	416.61	428.77				434.35					436.69			
MW-27S	416.44	419.39	417.93	415.62	417.69	430.84					433.34	426.05			436.35			
MW-27D	416.84	419.92	418.69	415.20	417.89	430.78					433.07	425.86			437.98			
MW-28S																		
BC-4S	398.21	400.45	399.62	397.63	399.46	406.34					407.84	402.93			410.54			
BC-4D	359.84	366.08	365.16	362.99	364.10	373.21					376.22	368.33			380.40			
FM-1																		
FM-2																		

Water Level Measurements
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WELL	03/16/98	06/24/98	09/16/98	12/21/98	04/09/99	06/07/99	09/13/99	12/13/99	03/15/00	06/09/00	09/12/00	01/18/01	03/22/01	04/19/01	07/12/01	10/23/01	01/18/02	04/25/02
MW-10S	437.30	433.77	428.00	433.79	442.47	436.83	431.71	430.83		436.94	432.19	428.97	427.53	421.97	428.15	420.04	435.69	438.75
MW-10D	434.53	429.96	423.75	431.90	438.93	433.70	426.89	431.44	436.77	433.55	427.03	424.19	424.34	425.08	423.72	419.61	433.32	435.80
MW-11S	417.79	414.02	408.99	415.83	420.90	416.45	412.06	415.73	423.34	426.51	421.59	419.72	418.59	420.17	418.34	413.80	426.51	428.58
MW-11D	417.61	413.91	408.90	415.74	420.83	416.35	411.36	414.93	423.39	426.35	421.50		418.50	420.07	418.27	413.73	426.55	428.29
MW-11D(2)										425.56	419.62	416.78	416.74	417.20	415.95	412.88	425.34	427.79
MW-12S		425.82			431.86	427.97		427.32	430.54	427.78	423.13	421.56	419.49	421.98	419.94	416.82	428.12	429.76
MW-12D		422.07			430.90	426.27	419.38	423.50	428.36	425.58	419.44	417.88	417.07	417.34	416.12	412.92	425.48	427.70
MW-13S	428.26	423.57	418.03	426.12	432.13	427.19	421.46	425.30	429.86	427.12	421.34	421.16	419.02	419.17	417.86	414.65	427.30	429.86
MW-13D	428.09	423.70	417.90	425.97	432.01	427.04	421.08	425.06	430.60	427.02	421.03	419.24	418.65	418.89	417.62	414.36	426.99	429.28
MW-14S	433.69	428.75	422.95	430.34	438.56	432.56	425.72	430.83	436.56	432.40	425.90	424.15	423.07	424.36	422.73	418.24	431.60	434.77
MW-14D	430.99	426.18	419.88	428.76	435.53	430.66	421.99	427.70	432.97	429.91	423.00	420.48	420.38	420.88	419.58	416.36	429.53	432.06
MW-14R	368.84	365.64		364.34	373.99	367.36	356.76	363.30	369.84	366.37	359.91	360.24	351.60	351.25	344.49	345.94	352.63	357.03
MW-15S		424.03			432.64		421.22		430.58	427.04	421.28	419.49	418.65	419.71	418.49	414.65	426.65	429.36
MW-15D		514.69			424.18		411.73		421.54									
MW-16S																		
MW-16D																		
MW-17S	427.79	424.56	419.45	425.71	430.27	426.52	421.82	425.80	427.62	426.16	421.84	419.87	418.51	419.89	418.49	413.12	426.54	428.14
MW-18S	410.57	407.51		408.63	412.72	Dry	Dry	408.54	411.43	408.98	405.65	404.28	403.78	404.29	403.73	402.93	409.63	412.72
MW-18D	411.08	407.44	403.67	408.40	415.00	410.69	405.37	407.87	412.18	409.91	399.71	403.71	403.36	403.75	403.09	401.44	409.31	410.30
MW-19S		429.57			436.29		427.23		435.42	432.31	427.38	426.66	425.04	426.53	425.59	422.06	432.98	434.46
MW-19D		420.63			430.58		418.87		428.76	426.35	418.67		419.13	416.48	418.04	412.43	427.77	427.43
MW-20R	375.28	369.21			377.97				377.63	372.31	366.82	366.18	359.06	357.77	348.98	353.10	360.85	363.44
MW-22U		408.60		408.55	410.21	408.62	408.74	408.52	408.87	408.49	408.65		415.11		408.52	408.51	408.58	408.71
MW-22L		404.12		404.66	411.54	407.15	402.27	404.35	408.62	406.42	402.24		400.35	402.85	400.12	398.94	405.67	408.34
MW-23S	430.92	427.28	424.07	428.77	432.50	427.83	426.17	429.15	431.62	428.74	426.10	425.11	424.28	424.38	424.02	420.01	429.36	430.66
MW-23D	427.46	423.22		425.09		425.35			428.71	426.04	420.98		418.31	418.24	417.24	414.80	425.84	428.05
MW-25S		401.46		403.13	412.72	406.26	399.65	402.07	408.62	405.62	399.66	399.04	398.49	399.12	398.45	397.69	403.93	408.25
MW-25D	408.83	404.80	401.02	405.80	414.14	408.78	402.74	405.09	410.31	408.06	402.82		399.04	401.61	400.66	399.30	406.84	410.29
MW-26R	428.69			426.31	433.49				430.47	427.51	420.53	417.96	418.40	419.10	417.36	414.16	426.39	429.08
MW-27S		425.22			435.18				431.83	429.31	421.77		417.86	418.95	417.81	415.59	427.92	431.41
MW-27D		425.02			434.74				431.95	428.99	422.76		418.61	419.53	418.49	415.18	428.07	431.16
MW-28S										427.07	423.74						427.42	428.56
BC-4S		401.92		402.72							400.12		397.88	398.36	397.90	396.63	403.56	405.74
BC-4D		371.40		369.96							367.67		364.58	364.70	361.47	360.01	366.94	371.19
FM-1									404.48	401.66	397.12	395.29	395.11	395.14	395.03	394.20	400.29	404.03
FM-2									405.20	402.76	398.67	396.75	396.35	396.50	397.80	395.30	400.88	404.80

Water Level Measurements
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WELL	07/25/02	10/24/02	01/30/03	04/24/03	07/24/03	10/30/03	01/22/04	04/15/04	06/29/04	10/21/04	01/27/05	02/23/05	04/21/05	07/22/05	10/17/05	01/18/06	04/14/06	08/08/06
MW-10S	432.88	425.14	430.66	433.54	428.64	426.52	432.67	432.97	423.80	426.31	431.62		432.98	430.84	425.93	440.79	438.37	431.52
MW-10D	428.84	422.88	427.50	430.82	424.40	423.28	429.32	430.20	421.95	423.54	427.69		429.57	426.49	422.63	437.31	435.68	426.74
MW-11S	423.19	416.94	425.25	424.44	418.96	418.20	423.74	423.49	417.12	417.45	421.87		422.93	421.08	416.47	430.09	433.19	420.89
MW-11D	423.10	416.88	424.98	424.33	418.88	418.11	423.67	423.42			421.76		422.85	420.98	416.40	429.95	428.09	420.77
MW-11D(2)	421.18	414.99	420.21	422.49	416.52	415.89	421.73	422.53	414.92	415.64	419.73		421.50	419.03	414.94	428.78	427.98	419.00
MW-12S	424.84	418.13	423.57	425.56	420.23	418.73	425.10	427.12	418.39	418.79				422.63			429.50	422.32
MW-12D	421.22	415.87	420.27	422.59	416.69	416.13	421.69	422.66	415.12	415.71	420.12		421.66	419.09	415.19	428.69	427.81	418.97
MW-13S	423.87	418.02	422.46	424.50	418.68	418.22	423.64	424.45	416.60	417.58	421.86		423.36	420.64	416.81	430.15	429.04	420.11
MW-13D	423.06	417.18	423.58	425.19	418.12	417.81	423.27	424.20	416.29	417.31	421.64		423.20	420.49	416.65	430.04	428.97	419.92
MW-14S	427.58	421.26	426.91	429.14	422.85	422.70	427.86	428.02	421.45	422.76	425.78		427.26	425.00	421.19	436.81	435.05	424.99
MW-14D	424.95	418.65	423.28	426.58	420.23	419.66	425.59	423.17	418.46	419.77	423.61		425.37	422.64	418.65	432.93	432.11	422.65
MW-14R	348.54	350.49	352.16	356.12	347.33	351.66	355.57	358.31	348.28	352.96	355.64		359.64	354.42	354.06	360.01	365.51	350.93
MW-15S	423.02	416.69	421.63	423.99	418.43	418.04	423.14	423.40	416.59	417.34	421.18		422.66	420.53	416.50	430.91	429.01	420.43
MW-15D						411.39	417.25	425.34	417.27	418.73	415.41		417.13	414.42	417.49	424.63	423.80	414.42
MW-16S																		
MW-16D																		
MW-17S	423.46	417.19	422.29	424.13	419.13	417.88	423.59	423.63	417.01	416.56	421.87		422.78	421.20	416.32	429.49	427.73	420.97
MW-18S	406.88	403.06	405.43	407.56	403.93	403.45	407.29	407.34	403.52	403.27		405.68	406.27	405.74		403.62	410.66	405.63
MW-18D	406.80	402.61	405.07	407.43	403.58	402.96	406.68	407.33	402.80	402.86		404.87	406.10	404.95		405.80	412.59	405.57
MW-19S	428.75	423.15	428.49	430.11	424.68	425.14	429.91	429.94	422.85	423.99			429.68	427.13	423.14	436.89	433.99	426.70
MW-19D	420.61	417.61	423.12	422.82	416.52	415.85	421.87	425.71	417.37	416.98	423.55		424.87	419.51	416.31	431.44	429.22	418.33
MW-20R	352.90	356.14	357.16	361.74	351.00	356.61	361.66	364.08	351.66	359.30	361.23		367.10	365.10	359.88	364.98	371.55	353.35
MW-22U	408.63	408.60	408.58	408.58	408.58	408.54	408.55	408.55	408.51	408.53			408.48	408.45	408.42	409.31	408.68	408.66
MW-22L	403.40	399.76	401.60	403.97	400.42	400.03	403.19	398.80	399.89	399.84			402.44	401.68	399.67	408.36	408.67	401.95
MW-23S	426.72	421.88	426.86	427.36	423.52	423.38	427.33	426.98	421.90	423.12	426.42		427.22	426.81		434.54	431.58	426.99
MW-23D	422.13	417.02	421.05	423.50	418.02	417.75	422.92	423.21	416.77	417.47	420.82		422.38	421.50		431.53	429.77	421.75
MW-25S	401.21	397.96	400.43	401.87	398.56	398.62	401.25	401.40			400.23		400.86	398.32	396.69	407.84	407.33	398.24
MW-25D	404.55	400.28	402.89	405.11	401.15	400.71	404.54	404.80			401.62		402.57	400.62	398.08	408.45	408.77	400.76
MW-26R	421.86	415.99	420.47	423.51	417.02	416.39	422.04	422.59	414.50	415.49	419.60		420.93	418.16	414.26	427.64	427.15	417.51
MW-27S	424.01	416.90	421.45	425.44	418.43	417.81	424.31	424.72	416.86	417.50	421.54		423.09	421.01	416.89	431.74	431.41	421.17
MW-27D	424.05	417.41	421.92	425.55	419.02	418.27	424.47	425.08	417.15	418.02	422.11		423.70	421.51	417.15	431.58	431.22	421.57
MW-28S	424.95	422.18		425.82	422.21		424.25	425.50			421.63		423.30			430.34	428.30	423.12
BC-4S	401.04	397.08	399.11	401.71	397.90	397.53	400.87	400.42	397.20	397.06	399.05		399.65	399.63	397.03	405.98	406.21	399.62
BC-4D	365.29	363.26	364.35	367.83	362.29	362.80	366.45	368.67	361.83	362.51	365.58		367.62	366.14	363.33	370.34	374.62	364.84
FM-1	398.34	394.69	395.29	398.80	395.20	394.49	397.28	398.92	394.84	395.27	398.88		395.77	396.29	394.54	402.96	404.72	396.37
FM-2	399.46	395.89	396.75	400.20	396.65	395.70	398.82	400.29	396.07	395.61	396.69		397.47	398.29	395.79	404.02	405.29	398.29

Water Level Measurements
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WELL	10/26/06	01/18/07	04/26/07	07/19/07	10/11/07	01/24/08	04/17/08	07/10/08	10/23/08	01/12/09	04/16/09	07/09/09	10/29/09	01/28/10	04/08/10	07/15/10	10/14/10	01/06/11
MW-10S	427.17	442.36	438.36	432.94	430.61	435.04	435.58	431.82	423.99	435.75	435.81	432.63	428.51	436.03	436.53	434.81		
MW-10D	423.53	439.31	436.82	428.95	425.67	431.93	432.69	427.35	421.94	432.42	433.37	428.97	424.31	433.40	435.08	431.80	431.80	433.13
MW-11S	416.76	430.96	428.60	422.56	419.23	425.37	425.56	421.17	416.01	427.07	425.90	422.45	418.70	421.84	426.40	424.64	420.33	425.99
MW-11D	416.72	431.28	428.63	422.47	419.15	425.58	425.45	421.10	415.93	426.96	425.83	422.37	418.63	425.89	426.29	424.98	420.24	425.57
MW-11D(2)	415.75	431.30	429.01	421.14	417.51	424.15	424.91	419.73	414.67	424.94	425.62	421.34	416.91	425.12	425.91	423.95	418.26	425.12
MW-12S	417.51	432.11	429.76	424.03		426.45	426.78	421.84		428.32	427.09			426.12	427.57	447.94		426.83
MW-12D	415.93	430.87	428.67	421.10	417.45	423.68	424.52	419.37	414.83	424.81	425.39	421.36	416.99	425.05	426.23	423.77	418.34	424.98
MW-13S	417.49	432.11	429.85	422.44	419.00	424.94	425.80	420.50	416.34	426.40	426.75	422.59	418.68	426.92	427.13	425.06	420.00	426.07
MW-13D	417.35	432.02	429.77	422.27	418.93	424.96	425.58	420.39	416.19	426.24	426.58	422.47	418.50	426.73	426.92	424.88	419.73	426.21
MW-14S	421.40	438.52	435.52	426.92	424.48	430.14	430.98	425.26		431.42	431.29	426.75	423.62	431.34	432.26	429.93	424.64	431.29
MW-14D	419.35	435.41	433.26	424.94	421.12	427.89	428.77	423.10	418.21	428.23	429.45	424.96	420.31	429.20	429.85	427.91	422.51	428.70
MW-14R	354.43	365.69	364.03	352.31	355.75	359.78	362.63	356.22	353.58	358.61	364.57	355.98	354.34	359.90	362.73	356.73	358.48	359.76
MW-15S	416.74	432.43	429.92	422.23	418.84	425.20	425.92	420.69	415.96	426.49	426.16	422.11	418.51	426.24	426.91	424.79	420.05	426.08
MW-15D	411.10	427.02	424.90	416.71	412.77	419.63	420.02	414.79	409.93	420.11	421.20	416.80	412.07	420.91	421.50	419.47	414.28	420.71
MW-16S																		
MW-16D																		
MW-17S	414.66	430.35	428.03	422.45	417.86	424.52	425.14	421.19		426.49	425.30	422.33	418.25	425.41	425.64	424.14	420.28	425.15
MW-18S	403.63	404.80	402.66	398.23	395.80	408.59	408.98	405.77	403.16	409.61	409.13	406.63	403.75	409.42	409.53	408.14	405.00	409.08
MW-18D	403.23	408.12	406.42	400.03	397.25	408.89	409.69	405.62	402.77	409.36	409.93	406.99	403.83	409.87	410.50	409.13	404.88	409.62
MW-19S	423.21	437.47	434.32	427.92	425.69	431.40	431.34	426.83	422.49	434.55	432.12	428.13	425.61	432.46	432.53	430.20	426.67	432.10
MW-19D	416.38	431.65	430.83	420.54	418.63	425.59	422.96	419.45	416.83	426.70	427.71	424.29	419.98	430.51	431.67	425.29	414.40	426.03
MW-20R	360.35	372.19	369.70	354.75	359.85	363.34	366.95	360.29	357.26	363.90	372.20	360.80	358.55	364.03	367.05	359.84	365.51	365.03
MW-22U	408.67	410.75	409.12	403.21	408.66	408.63	408.68	408.64	408.65	408.63	408.61	408.63	408.62	408.49	408.46	408.55	408.47	408.52
MW-22L	399.93	411.13	409.53	408.84	400.70	404.84	405.84	402.06	399.66	405.39	405.97	403.27	400.42	405.88	406.56	405.19	401.33	405.71
MW-23S	423.52	434.74	432.07	428.03	426.22	428.13	427.94	425.67	421.36	432.59	430.26	427.99	424.66	430.57	427.64	429.01	426.85	428.60
MW-23D	418.56	432.41	430.17	423.10	420.33	424.12	425.12	419.94	415.95	427.22	427.34	423.39	418.20	427.19	430.65	425.72	421.05	425.28
MW-25S	396.69	410.92	408.72	399.75	397.52	402.59	404.10	399.63	397.85	403.98	402.73	399.34	398.60	402.62	403.99	402.02	398.86	403.64
MW-25D	398.27	411.43	409.96	402.42	399.38	404.63	406.01	401.67	398.85	405.31	405.16	402.10	399.77	404.93	406.04	404.43	399.05	400.66
MW-26R	416.03	431.96	429.28	420.27	420.27	422.65	423.93	417.77	412.87	421.81	423.97	418.88	413.99	422.47	423.20		416.44	421.15
MW-27S	417.03	434.62	432.82	423.82	419.02	426.60	428.13	421.57	416.64	426.62	427.87	423.46	418.19	427.68	428.89	426.90	420.24	427.77
MW-27D	417.67	434.38	432.58	424.02	419.79	426.33	427.98	422.01	416.76	426.75	428.09	423.75	418.77	427.73	428.97	426.83	420.75	427.81
MW-28S		430.59	428.57	423.37	422.21	426.60	426.59	422.20		428.75	426.91	423.73		427.12	427.21	426.05	422.12	426.83
BC-4S	397.42	408.86	405.70	401.11	398.20	402.59	403.49	399.51	396.97	402.94	402.94	400.94	397.50	403.68	404.21	402.97	399.19	403.27
BC-4D	364.03	375.24	375.48	366.10	365.42	369.13	370.84	366.13	362.86	367.21	371.11	366.80	363.75			368.16		
FM-1	394.77	407.49	407.03	398.64	395.16	399.50	401.03	396.45	394.63	397.95	400.76	398.56	395.01	408.44	401.49	400.27	395.53	400.45
FM-2	395.96	408.00	406.24	399.82	396.59	401.02	402.38	398.39	395.85	399.52	402.25	399.71	396.36	394.49	402.89	401.76	397.37	401.98

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WELL	04/21/11	07/07/11	10/27/11	01/26/12	04/27/12	07/19/12	10/11/12	01/17/13	04/23/13	07/25/13	10/10/13	01/06/14	04/09/14	07/07/14	10/29/14	01/15/15	04/20/15	07/28/15
MW-10S				NM														
MW-10D	438.59	434.89	427.08	429.64	435.29	431.89	425.34	432.96	434.69	428.83	429.93	428.44	438.39	432.16	426.71	432.14	432.68	425.24
MW-11S	439.94	426.99	420.44	424.08	427.21	424.31	419.24	426.02	426.89	422.45	423.53	421.63	429.57	425.14	420.59	424.43	425.34	419.25
MW-11D		426.87	420.36	423.92	427.06	424.16	419.16	425.85	427.61	422.36	423.00	421.46	426.41	421.30	415.65	419.11	425.16	419.20
MW-11D(2)	430.73	427.83	419.03	422.03	427.27	423.77	417.64	425.38	426.58	421.10	422.28	419.92	429.89	424.78	418.93	422.58	424.94	417.78
MW-12S	430.74	428.05		425.27	428.27	425.87	424.39	427.14	427.73		429.72		431.44			425.44	426.71	420.42
MW-12D	430.97	426.80	419.51	422.20	427.19	424.05	417.36	425.02	426.16	420.88	422.63	420.96	431.00	424.79	419.07	422.50	424.70	417.67
MW-13S	431.11	427.91	421.27	423.90	428.38	425.74	418.78	426.20	427.26	422.06	423.81	422.61	431.26	425.29	420.94	426.36	426.54	419.11
MW-13D	430.92	427.65	421.07	423.69	428.79	425.44	418.59	425.98	427.19	421.90	423.69	422.34	431.15	425.34	420.74	425.84	426.21	418.94
MW-14S	437.49	433.33	424.75	428.94	433.25	429.47	423.21	431.40	432.84	427.06	428.05	425.90	436.85	430.66	425.29	430.17	430.71	423.24
MW-14D	435.03	431.36	422.72	425.72	431.43	428.18	420.98	429.35	430.98	424.81	425.68	424.08	434.58	428.73	422.53	427.98	429.16	421.23
MW-14R	362.68	362.71	356.39	357.34	362.73	355.53	351.39	358.93	361.72	350.22	356.52	361.20	365.59	355.06	354.03	360.16	363.84	350.29
MW-15S	431.56	427.99	420.24	423.86	427.88	424.57	418.77	426.33	427.65	422.49	424.26	421.26	431.45	425.66	420.33	425.22	425.71	418.74
MW-15D	426.63	423.43		417.12	423.17	420.02	412.56	421.08	422.12	416.60	417.52	416.26	426.12	420.52	414.27	420.17	420.65	412.95
MW-16S																	480.27	
MW-16D																	480.73	
MW-17S	428.94	426.19	420.39	423.30	426.41	423.99	419.44	425.44	426.09	422.34	423.23	421.44	428.61	424.66	419.74	424.79	424.79	419.36
MW-18S	412.37	409.96	405.09	406.83	410.15	407.87	404.69	409.43	409.41	404.55	408.55	406.09	413.40	408.57	404.80	411.80	408.76	404.58
MW-18D	414.67	412.11	405.15	407.34	411.34	408.97	404.59	410.13	410.68	404.95	408.89	406.29	414.68	410.23	405.08	408.60	410.12	404.76
MW-19S	435.63	432.64	426.96	431.25	433.59	429.13	425.31	432.40	432.84	428.38	430.49	428.41	436.80	433.39	426.51	433.29	432.36	425.21
MW-19D	434.34	423.97	424.97	426.29	432.47	428.82	413.1	427.16	431.82		417.79	422.87	435.79	433.79	413.86	431.44	420.92	413.59
MW-20R	364.26	366.50	360.18	360.47	365.47	360.16	353.18	363.58	365.12	351.28	358.18	368.18	369.16	357.48	359.32	364.68	367.23	353.66
MW-22U		408.59	408.58	408.55	408.53	408.59	410.72	408.67	407.52	402.40	415.56	404.42	411.57	406.91	400.37	408.56	408.59	408.59
MW-22L		408.30	401.69	403.42	407.40	405.2	401.18	406.22	406.57	401.44	405.98	401.85	410.52	406.07	399.47	407.41	406.28	401.25
MW-23S	433.36	430.65	427.04	428.54	429.91	427.39	424.23	448.34		426.52	427.77	426.28	427.29	427.45			428.10	424.24
MW-23D	431.53	431.51	421.34	423.14	426.84	423.84	419.35	426.05	426.45	421.45	423.18	422.05	430.98	424.81	420.99	427.52	425.60	419.15
MW-25S	410.32	406.94	397.98	401.60	406.43	403.1	398.56	404.35	405.68	400.97	401.44	399.76	408.85	405.19	399.10	403.28	404.56	398.59
MW-25D	411.06	408.46	400.34	403.42	407.77	405.22	400.45	406.21	407.27	403.32	403.66	402.27	410.54	408.36	401.15	405.15	406.34	400.50
MW-26R		423.31	414.36	416.29	422.11	418.41	411.81	421.61		415.23	415.50	414.80	423.73	354.16		356.81	358.39	349.04
MW-27S	434.21	430.81	420.43	424.02	430.11	426.56	418.93	428.23	429.31	423.86	422.84	424.21	433.28	429.46	421.79	429.16	428.21	419.19
MW-27D	433.82	430.84	421.07	424.15	430.02	426.79	419.64	428.23	429.02	423.92	424.08	424.12	433.00	428.92	421.85	428.93	428.07	419.91
MW-28S	429.44	427.4	422.19	424.67	427.77	NM	422.07	421.75			424.77						426.37	422.17
BC-4S	408.19	405.68	399.08	400.62	404.73	402.68	398.69	403.71	403.88	401.18	402.62	399.25	407.92	404.80	393.68	405.91	403.68	398.48
BC-4D				367.04	371.79	383.51	382.23	369.29	370.94				374.59	386.54		369.24	371.86	387.62
FM-1	407.24	404.19	395.63	404.79	402.84	400.23	395.59	400.93	402.29	398.94	396.69	396.97	406.29	401.84	395.37	400.01	401.23	395.44
FM-2	408.19	404.75	397.45	390.61	403.65	401.73	397.31	402.47	402.53	400.03	398.58	398.70	406.80	402.90	396.93	401.55	402.58	397.08

Water Level Measurements
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Hidden Valley Landfill, Pierce County, Washington

WELL	10/15/15	01/14/16	04/21/16	07/07/16	10/13/16	01/19/17	07/14/17
MW-10S						435.12	434.90
MW-10D	422.47	437.59	437.81	430.69	424.98	432.42	432.99
MW-11S		429.04	428.79	423.22	418.36	425.00	425.50
MW-11D	415.96	428.95	428.69	423.14	418.31	420.33	420.87
MW-11D(2)	415.43	430.08	430.53	422.99	417.38	424.64	425.71
MW-12S	416.89	430.00	429.62	424.64	419.14	426.41	426.22
MW-12D	415.54	429.75	429.56	422.75	417.66	424.51	425.57
MW-13S	417.24	430.41	430.56	424.27	418.74	426.16	426.42
MW-13D	417.26	430.27	430.42	423.89	418.69	425.99	426.26
MW-14S		436.43	435.72	428.06	425.60	432.57	430.88
MW-14D	418.88	434.08	434.55	426.57	421.15	428.70	429.61
MW-14R	352.99	364.01	366.66	358.24	353.99	359.65	358.15
MW-15S	416.11	430.48	430.06	423.24	417.79	424.15	425.75
MW-15D	410.65	425.65	426.17	418.69	412.75	419.49	421.31
MW-16S							
MW-16D							
MW-17S	415.83	427.94	427.60	422.73	417.86	423.64	424.54
MW-18S	403.23	411.95	411.40	407.07	404.02	407.88	408.49
MW-18D	403.06	413.79	414.45	408.41	404.09	408.79	410.67
MW-19S	422.99	435.59	434.28	428.74	425.17	430.67	430.03
MW-19D	420.32	425.82	427.99	426.69	422.27	420.48	427.12
MW-20R	357.23	368.53	372.50	361.48	356.95	363.67	360.61
MW-22U	408.60	409.42	409.34	408.63	408.58	408.56	408.60
MW-22L	399.87	409.62	410.58	404.81	400.65	404.79	407.09
MW-23S		431.34	430.21	426.61	423.47	428.87	427.49
MW-23D	416.35	429.00	433.87	423.03	417.92	426.80	426.79
MW-25S	397.52	409.97	411.10	402.60	397.97	402.46	406.00
MW-25D	398.73	410.44	411.85	404.79	399.68	404.88	407.47
MW-26R	350.61	364.41	368.71	394.81	354.01	361.30	359.10
MW-27S	416.61	433.21	433.70	425.59	418.07	427.13	429.09
MW-27D	416.92	433.20	433.70	425.65	419.19	427.19	428.99
MW-28S	422.17	428.97	428.38	423.79	421.70	426.51	426.21
BC-4S	397.08	406.97	412.49	401.98	397.63	402.27	404.06
BC-4D	386.28	373.20		368.82	364.74		370.39
FM-1	394.57	405.59	406.46	399.48	394.94	399.44	402.41
FM-2	395.74	406.21	407.01	400.86	396.27	400.84	403.11

Appendix D

GROUNDWATER MONITORING DATA

Table 2. Water Level Elevations - July 14, 2017
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Location	Well Casing Elevation	Depth to Water (FT)	Water Level Elevation
Shallow Perched Aquifer			
MW-10S	460.17	25.27	434.90
MW-11S	516.44	90.94	425.50
MW-12S	489.94	63.72	426.22
MW-13S	448.81	22.39	426.42
MW-14S	477.95	47.07	430.88
MW-15S	498.76	73.01	425.75
MW-17S	552.44	127.90	424.54
MW-18S	538.40	129.91	408.49
MW-19S	485.71	55.68	430.03
MW-23S[(a)]	448.34	20.85	427.49
MW-25S	527.80	121.80	406.00
MW-27S	531.81	102.72	429.09
MW-28S[(a)]	466.87	40.66	426.21
FMMW-1	542.59	140.18	402.41
FMMW-2	536.40	133.29	403.11
BC-4S	526.68	122.62	404.06
Upper Regional Aquifer			
MW-10D	460.69	27.70	432.99
MW-11D	512.06	91.19	420.87
MW-11D(2)	515.53	89.82	425.71
MW-12D	489.97	64.40	425.57
MW-13D	448.94	22.68	426.26
MW-14D	477.98	48.37	429.61
MW-15D	498.52	77.21	421.31
MW-18D	539.00	128.33	410.67
MW-19D	485.82	58.70	427.12
MW-22U	545.92	137.32	408.60
MW-23D[(a)]	449.96	23.17	426.79
MW-25D	527.52	120.05	407.47
MW-27D	531.92	102.93	428.99
Lower Regional Aquifer			
MW-14R	476.84	118.69	358.15
MW-20R	469.43	108.82	360.61
MW-22L	546.07	138.98	407.09
MW-26R	481.81	122.71	359.10
BC-4R	526.94	156.55	370.39

Notes:

[(a)] = Reading taken on July 13, 2017

Table 3. Field Parameters
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Location	Sample Number	Date	Method	pH	Specific Conductivity	Temperature
Units				(SU)	(µS/cm)	(°C)
HVL Cleanup Level				—	700	—
WAC 173-200 Criteria				—	700[b]	—
Shallow Perched Aquifer						
(BG) MW-10S	HVL-071317-21	7/13/17	DP	6.53	225	11.36
MW-11S	HVL-071117-10	7/11/17	DP	6.11	201	15.22
MW-12S	HVL-071017-01	7/10/17	DB	6.39	398	18.62
MW-13S	HVL-071017-03	7/10/17	DP	6.36	359	18.67
MW-14S	HVL-071217-14	7/12/17	DP	6.05	196	14.21
MW-15S	HVL-071017-05	7/10/17	DP	6.20	264	14.68
MW-17S	HVL-071117-06	7/11/17	DP	6.18	367	20.11
MW-18S	HVL-071317-19	7/13/17	DP	6.15	365	16.81
FMMW-1	HVL-071217-12	7/12/17	DP	6.06	341	15.69
FMMW-2	HVL-071217-13	7/12/17	DP	6.00	309	17.54
Upper Regional Aquifer						
(BG) MW-10D	HVL-071317-20	7/13/17	DP	6.45	214	11.80
MW-11D(2)	HVL-071117-11	7/11/17	DP	6.70	199	15.32
MW-12D	HVL-071017-02	7/10/17	DP	6.59	266	16.96
MW-13D	HVL-071017-04	7/10/17	DP	6.49	358	17.73
MW-14D	HVL-071217-16	7/12/17	DP	6.27	238	13.64
MW-15D	HVL-071117-07	7/11/17	DP	6.59	237	14.15
MW-18D	HVL-071317-18	7/13/17	DP	6.59	273	15.95
Lower Regional Aquifer						
MW-14R	HVL-071117-08	7/11/17	DP	7.31	99	12.61
MW-20R	HVL-071217-17	7/12/17	DP	6.86	105	10.82
MW-26R	HVL-071117-09	7/11/17	DP	7.37	184	11.84

Notes:

µS/cm = microsiemens per centimeter
°C = degrees Celsius
BG = Background
DP = dedicated bladder-pump
DB = disposable bailer
b = Secondary Drinking Water Standard
— indicates not analyzed or not applicable

Table 4. Inorganic Parameters
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Location		Alkalinity, Bicarbonate	Alkalinity, Total	Ammonia	Chloride	Nitrate	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL		5.0	5.0	0.1	0.2-0.4	0.2	0.2	10	1.0	4.0
HVL Cleanup Level		—	—	—	250	10	250	500	—	—
WAC 173-200 Criteria		—	—	—	250[b]	10[a]	250[b]	500[b]	—	—
Shallow Perched Aquifer										
(BG)	MW-10S	83	83	*	5.7	0.46	14	140	1.4	*
	MW-11S	65	65	0.17	13	1.5	13	160	1.0	*
	MW-12S	160	160	3.8	23	*	0.63	230	3.8	*
	MW-13S	140	140	0.11	18	*	6.4	230	2.1	*
	MW-14S	67	67	0.46	6.8	0.31	11	110	1.6	*
	MW-15S	96	96	2.7	12	*	11	160	1.6	*
	MW-17S	150	150	4.6	24	0.31	5.2	220	2.0	*
	MW-18S	130	130	*	24	0.49	3.5	200	1.9	*
	FMMW-1	110	110	*	21	1.4	8.0	190	1.4	*
	FMMW-2	100	100	*	17	1.6	13	190	1.7	*
Upper Regional Aquifer										
(BG)	MW-10D	76	76	*	5.2	1.3	12	140	*	*
	MW-11D(2)	82	82	*	7.2	1.7	8.3	140	*	*
	MW-12D	110	110	*	7.7	1.5	6.8	170	*	*
	MW-13D	150	150	*	15	0.57	10	220	1.3	*
	MW-14D	84	84	3.7	8.3	*	10	130	1.7	*
	MW-15D	110	110	*	8.4	0.98	9.3	180	*	*
	MW-18D	110	110	*	7.4	1.6	6.5	170	*	*
Lower Regional Aquifer										
	MW-14R	46	46	*	2.0	*	3.4	100	*	*
	MW-20R	44	44	*	1.7	*	2.9	86	*	*
	MW-26R	84	84	*	4.8	*	8.9	150	*	*

Notes:

Parameter concentrations that are greater than cleanup levels are shown in **bold**
mg/L = milligrams per liter
* indicates not reported at or above the MRL (Method Reporting Limit)
— indicates not analyzed or not applicable
a = Primary Drinking Water Standard
b = Secondary Drinking Water Standard
BG = Background/upgradient wells

Table 5. Dissolved Metals
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Location	Iron	Manganese	Calcium	Magnesium	Potassium	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.03	0.001	0.2	0.1	2.0	1.0
HVL Cleanup Level	0.30	0.05	—	—	—	—
WAC 173-200 Criteria	0.30[b]	0.05[b]	—	—	—	—
Shallow Perched Aquifer						
(BG) MW-10S	*	*	26	8.0	*	8.3
MW-11S	*	0.0035	16	4.9	5.4	16
MW-12S	*	**0.77**	28	7.8	14	24
MW-13S	*	0.013	30	8.4	5.5	29
MW-14S	*	**0.23**	18	6.0	3.7	7.4
MW-15S	*	**0.64**	18	5.4	7.6	16
MW-17S	*	**1.1**	25	8.3	15	25
MW-18S	*	*	31	9.4	9.8	27
FMMW-1	*	*	27	8.1	4.9	26
FMMW-2	*	0.036	21	7.0	9.3	22
Upper Regional Aquifer						
(BG) MW-10D	*	*	21	8.1	*	7.6
MW-11D(2)	*	*	20	8.6	*	7.9
MW-12D	*	*	24	9.1	2.1	15
MW-13D	*	*	34	12	3.5	20
MW-14D	**0.91**	**0.96**	16	5.1	7.2	12
MW-15D	*	**0.083**	19	7.9	2.1	18
MW-18D	*	*	26	10	2.9	13
Lower Regional Aquifer						
MW-14R	*	**0.42**	18	8.2	*	6.1
MW-20R	*	*	8.1	4.4	2.2	5.8
MW-26R	**0.69**	**0.20**	7.8	4.5	*	5.3

Notes:

Parameter concentrations that are greater than site cleanup levels or WAC 173-200 criteria are shown in **bold**

Analyses performed by TestAmerica in Denver, Colorado

b = Secondary Drinking Water Standard (concentrations measured as total metals)

mg/L = milligrams per liter

* indicates not reported at or above the MRL (Method Reporting Limit)

— indicates not analyzed or not applicable

BG = Background

Table 6. Volatile Organic Compounds
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Location		Tetrachloroethene
Units		µg/L
MRL		0.5
HVL Cleanup Level		—
WAC 173-200 Criteria		0.80
Shallow Perched Aquifer		
(BG)	MW-10S	*
	MW-11S	*
	MW-12S	*
	MW-13S	*
	MW-14S	*
	MW-15S	*
	MW-17S	*
	MW-18S	*
	FMMW-1	*
	FMMW-2	*
Upper Regional Aquifer		
(BG)	MW-10D	*
	MW-11D(2)	**0.92**
	MW-12D	*
	MW-13D	*
	MW-14D	*
	MW-15D	*
	MW-18D	*
Lower Regional Aquifer		
	MW-14R	*
	MW-20R	*
	MW-26R	*

Notes:

Volatile organic compounds not listed were not present at concentrations exeeding the MRL
BG = Background
µg/L = micrograms per liter
* = not reported at or above the MRL (Method Reporting Limit)
— = not analyzed or not applicable

Table 7. Duplicate Sample Evaluation
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Parameter	MRL	MW-14S	MW-14S (DUP)	RPD (%)
Volatile Organic Compunds (µg/L)				
No Detections	—	ND	ND	—
Dissolved Metals (mg/L)				
Calcium	0.2	18	18	0.0
Magnesium	0.1	6.0	5.9	1.7
Manganese	0.001	0.23	0.24	4.3
Potassium	2.0	3.7	3.6	2.7
Sodium	1.0	7.4	7.3	1.4
Inorganic Parameters (mg/L)				
Alkalinity	5.0	67	66	1.5
Alkalinity, Bicarbonate (as CaCO3)	5.0	67	66	1.5
Ammonia	0.1	0.46	0.42	9.1
Chloride	0.2-0.4	6.8	6.8	0.0
Nitrate	0.2-0.21	0.31	0.34	9.2
Sulfate	0.2	11	11	0.0
Total Dissolved Solids	10	110	110	0.0
Total Organic Carbon	1.0	1.6	1.7	6.1

Analysis performed by TestAmerica, Arvada, Colorado

Analytes not listed were not present at concentrations exceeding the MRL

RPD = relative percent difference

µg/L = micrograms per liter

mg/L = milligrams per liter

*= RPD based on result as compared to the Reporting Limit (RL) for a non-detection in the compared sample

— = not applicable

ND = No Detection

NA = Not Applicable

Table 8. Water Supply Wells
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Parameter	Units	MRL	Corliss	Paul Bunyan
Field Parameters				
pH	SU	—	6.45	6.98
Specific Conductivity	µS/cm	—	247	301
Temperature	deg C	—	19.55	15.57
Volatile Organic Compounds				
(No VOCs detected)	µg/L	—	*	*
Metals (total)				
Arsenic	mg/L	0.005	*	*
Iron	mg/L	0.030	*	*
Manganese	mg/L	1.000	0.0019	*
Zinc	mg/L	0.010	0.024	0.017
Inorganic Parameters				
Chloride	mg/L	0.2	5.8	6.0
Nitrate as N	mg/L	0.2	1.6	2.2
Sulfate	mg/L	0.2	9.3	9.9
Other				
Color	PCU	5.0	*	*

Notes:

Analyses performed by TestAmerica in Denver, Colorado.

Analytes not listed were not present at concentrations exceeding the MRL.

Color reported in color units

µg/L = micrograms per liter

mg/L = milligrams per liter

PCU = platinum-cobalt units

* = not reported at or above the MRL (Method Reporting Limit)

SU = Standard Units

µS/cm = microsiemens per centimeter

°C = degrees Celsius

— = Not Applicable

Table 9. Cation-Anion Balance
Semi - Annual Monitoring Event No. 2 - July 2017
Hidden Valley Landfill, Pierce County, Washington

Cations	mg/L					meq/L					% of Total		
	Ca	Mg	K	Na	Total	Ca	Mg	K	Na	Total	Na+K	Ca	Mg
MW-10S	26	8	2	8.3	44.30	1.30	0.66	0.05	0.36	2.37	17	55	28
MW-11S	16	4.9	5.4	16	42.30	0.80	0.40	0.14	0.70	2.04	41	39	20
MW-12S	28	7.8	14	24	73.80	1.40	0.64	0.36	1.04	3.44	41	41	19
MW-13S	30	8.4	5.5	29	72.90	1.50	0.69	0.14	1.26	3.59	39	42	19
MW-14S	18	6	3.7	7.4	35.10	0.90	0.49	0.09	0.32	1.81	23	50	27
MW-15S	18	5.4	7.6	16	47.00	0.90	0.44	0.19	0.70	2.23	40	40	20
MW-17S	25	8.3	15	25	73.30	1.25	0.68	0.38	1.09	3.40	43	37	20
MW-18S	31	9.4	9.8	27	77.20	1.55	0.77	0.25	1.17	3.75	38	41	21
FMMW-1	27	8.1	4.9	26	66.00	1.35	0.67	0.13	1.13	3.27	38	41	20
FMMW-2	21	7	9.3	22	59.30	1.05	0.58	0.24	0.96	2.82	42	37	20
MW-10D	21	8.1	2	7.6	38.70	1.05	0.67	0.05	0.33	2.10	18	50	32
MW-11D(2)	20	8.6	2	7.9	38.50	1.00	0.71	0.05	0.34	2.10	19	48	34
MW-12D	24	9.1	2.1	15	50.20	1.20	0.75	0.05	0.65	2.65	27	45	28
MW-13D	34	12	3.5	20	69.50	1.70	0.99	0.09	0.87	3.64	26	47	27
MW-14D	16	5.1	7.2	12	40.30	0.80	0.42	0.18	0.52	1.92	37	41	22
MW-15D	19	7.9	2.1	18	47.00	0.95	0.65	0.05	0.78	2.44	34	39	27
MW-18D	26	10	2.9	13	51.90	1.30	0.82	0.07	0.57	2.76	23	47	30
MW-14R	18	8.2	2	6.1	34.30	0.90	0.67	0.05	0.27	1.89	17	48	36
MW-20R	8.1	4.4	2.2	5.8	20.50	0.40	0.36	0.06	0.25	1.07	29	38	34
MW-26R	7.8	4.5	2	5.3	19.60	0.39	0.37	0.05	0.23	1.04	27	37	36

Anions	mg/L					meq/L					% of Total			Total Ions (meq/L)	Cation - Anion Balance	Applicable Ratio (%)	Ratio Exceedance
	Alk	Cl	NO_3	SO_4	Total	Alk	Cl	NO_3	SO_4	Total	Cl	Alk	SO_4				
MW-10S	99.6	5.7	0.46	14	119.76	1.63	0.16	0.01	0.29	2.09	8	78	14	4.46	6.17	10	-
MW-11S	78	13	1.5	13	105.50	1.28	0.37	0.02	0.27	1.94	19	66	14	3.98	2.40	10	-
MW-12S	192	23	0.2	0.63	215.83	3.15	0.65	0.00	0.01	3.81	17	83	0	7.26	5.13	5	Exceeds
MW-13S	168	18	0.2	6.4	192.60	2.76	0.51	0.00	0.13	3.40	15	81	4	6.99	2.74	5	-
MW-14S	80.4	6.8	0.31	11	98.51	1.32	0.19	0.00	0.23	1.74	11	76	13	3.55	1.82	10	-
MW-15S	115.2	12	0.2	11	138.40	1.89	0.34	0.00	0.23	2.46	14	77	9	4.69	4.83	10	-
MW-17S	180	24	0.31	5.2	209.51	2.95	0.68	0.00	0.11	3.74	18	79	3	7.14	4.76	5	-
MW-18S	156	24	0.49	3.5	183.99	2.56	0.68	0.01	0.07	3.32	20	77	2	7.06	6.09	5	Exceeds
FMMW-1	132	21	1.4	8	162.40	2.16	0.59	0.02	0.17	2.95	20	73	6	6.22	5.22	5	Exceeds
FMMW-2	120	17	1.6	13	151.60	1.97	0.48	0.03	0.27	2.74	17	72	10	5.56	1.36	5	-
MW-10D	91.2	5.2	1.3	12	109.70	1.50	0.15	0.02	0.25	1.91	8	78	13	4.01	4.58	10	-
MW-11D(2)	98.4	7.2	1.7	8.3	115.60	1.61	0.20	0.03	0.17	2.02	10	80	9	4.12	2.04	10	-
MW-12D	132	7.7	1.5	6.8	148.00	2.16	0.22	0.02	0.14	2.55	9	85	6	5.20	2.02	5	-
MW-13D	180	15	0.57	10	205.57	2.95	0.42	0.01	0.21	3.59	12	82	6	7.24	0.71	5	-
MW-14D	100.8	8.3	0.2	10	119.30	1.65	0.23	0.00	0.21	2.10	11	79	10	4.02	4.32	10	-
MW-15D	132	8.4	0.98	9.3	150.68	2.16	0.24	0.02	0.19	2.61	9	83	7	5.05	3.49	5	-
MW-18D	132	7.4	1.6	6.5	147.50	2.16	0.21	0.03	0.14	2.53	8	85	5	5.29	4.26	5	-
MW-14R	55.2	2	0.2	3.4	60.80	0.91	0.06	0.00	0.07	1.04	5	87	7	2.93	29.19	10	Exceeds
MW-20R	52.8	1.7	0.2	2.9	57.60	0.87	0.05	0.00	0.06	0.98	5	89	6	2.05	4.75	10	-
MW-26R	100.8	4.8	0.2	8.9	114.70	1.65	0.14	0.00	0.19	1.98	7	84	9	3.02	31.00	10	Exceeds

Notes:
mg/L = milligrams per liter
meq/L = milliequivalents per liter
Total alkalinity concentration, reported as calcium carbonate (CaCO3), is converted to the bicarbonate (HCO3-) ion by multiplying by a factor of 1.2.
Cation / anion balance equation is the equivalent percent difference in cations minus anions divided by the sum of cations and anions [(cations-anions)/(anions+cations)*100].
— = not applicable or not performed
The MRL was used for analytes that were non-detect
A 10% difference threshold is used if the total cation-anion sums are < 5.0 meq/liter.
A 5% difference threshold is used if the total cation-anion sums are > or = to 5.0 meq/liter.

Table 10. Leachate Monitoring Results
Semi - Annual Monitoring Event No. 2 - October 19, 2017
Hidden Valley Landfill, Pierce County, Washington

Parameters	MRL	Hydraulic Gradient Control System
Volatile Organics (µg/L)		
Acetone	10	26.0(1)
Total Metals (mg/L)		
Antimony	0.002	*
Arsenic	0.005	0.0059
Barium	0.005	0.027
Calcium	0.2	96
Chromium	0.005	*
Cobalt	0.01	*
Copper	0.01	0.035
Iron	0.18	4.1
Lead	0.002	*
Magnesium	0.1	26
Manganese	0.005	4.4
Nickel	0.02	*
Potassium	2	3.3
Sodium	1	17
Vanadium	0.01	*
Zinc	0.01	0.45
Inorganic Parameters (mg/L)		
Alkalinity	5	420
Bicarbonate Alkalinity as CaCO3	5	420
Ammonia	0.1	*
Chloride	0.2	2.9
Nitrate as N	0.5	*
Sulfate	0.25	6.7
Total Dissolved Solids	10	430
Total Organic Carbon - Quad	1.0	1.9
Total Suspended Solids	4.0	10
Field Parameters		
Dissolved Oxygen	—	3.22
Oxidation Reduction Potential	—	15.5
pH	—	6.32
Specific Conductivity	—	744
Temperature	—	13.41
Turbidity	—	3.56

Notes:
Analyses performed by TestAmerica, Arvada, Colorado
Volatile organic compounds not listed were not present at concentrations exceeding the MRL
µg/L = micrograms per liter
mg/L = milligrams per liter
µS = microsiemens
°C = degrees celcius
(1) = Lab Control Sample is outside acceptance limits. Therefor, detection is likely due to laboratory cleaning chemicals.
— = not applicable or not analyzed
* = not reported at or above the MRL (Method Reporting Limit)

Table 2. Water Level Elevations - January 19, 2017
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Location	Well Casing Elevation	Depth to Water (FT)	Water Level Elevation
Shallow Perched Aquifer			
MW-10S	460.17	25.05	435.12
MW-11S	516.44	91.44	425.00
MW-12S	489.94	63.53	426.41
MW-13S	448.81	22.65	426.16
MW-14S	477.95	45.38	432.57
MW-15S	498.76	74.61	424.15
MW-17S	552.44	128.80	423.64
MW-18S	538.40	130.52	407.88
MW-19S	485.71	55.04	430.67
MW-23S	448.34	19.47	428.87
MW-25S	527.80	125.34	402.46
MW-27S	531.81	104.68	427.13
MW-28S[(a)]	466.87	40.36	426.51
FMMW-1	542.59	143.15	399.44
FMMW-2	536.40	135.56	400.84
BC-4S	526.68	124.41	402.27
Upper Regional Aquifer			
MW-10D	460.69	28.27	432.42
MW-11D	512.06	91.73	420.33
MW-11D(2)	515.53	90.89	424.64
MW-12D	489.97	65.46	424.51
MW-13D	448.94	22.95	425.99
MW-14D	477.98	49.28	428.70
MW-15D	498.52	79.03	419.49
MW-18D	539.00	130.21	408.79
MW-19D	485.82	65.34	420.48
MW-22U	545.92	137.36	408.56
MW-23D	449.96	23.16	426.80
MW-25D	527.52	122.64	404.88
MW-27D	531.92	104.73	427.19
Lower Regional Aquifer			
MW-14R	476.84	117.19	359.65
MW-20R	469.43	105.76	363.67
MW-22L	546.07	141.28	404.79
MW-26R	481.81	120.51	361.30
BC-4R	526.94	NM*	NM*

Notes:

Table 3. Field Parameters
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Location	Sample Number	Date	Method	pH	Specific Conductivity	Temperature
Units				(SU)	(µS/cm)	(°C)
HVL Cleanup Level				—	700	—
WAC 173-200 Criteria				—	700[b]	—
Shallow Perched Aquifer						
(BG) MW-10S	HVL-011817-14	1/18/17	DP	6.83	245	12.79
MW-11S	HVL-011817-22	1/18/17	DP	6.10	257	14.51
MW-12S	HVL-011917-19	1/19/17	DB	5.61	313	18.37
MW-13S	HVL-011817-18	1/18/17	DP	6.38	323	17.02
MW-14S	HVL-011817-08	1/18/17	DP	6.31	176	13.10
MW-15S	HVL-011717-05	1/17/17	DP	5.34	279	14.65
MW-17S	HVL-011717-03	1/17/17	DP	5.53	435	18.97
MW-18S	HVL-011717-02	1/17/17	DP	5.58	395	15.47
FMMW-1	HVL-011817-07	1/18/17	DP	5.82	299	13.72
FMMW-2	HVL-011817-09	1/18/17	DP	5.60	351	16.22
Upper Regional Aquifer						
(BG) MW-10D	HVL-011817-16	1/18/17	DP	6.78	217	12.18
MW-11D(2)	HVL-011917-21	1/19/17	DP	6.27	213	13.61
MW-12D	HVL-011917-17	1/19/17	DP	6.13	284	16.72
MW-13D	HVL-011817-20	1/18/17	DP	6.63	341	16.41
MW-14D	HVL-011817-12	1/18/17	DP	6.55	238	12.92
MW-15D	HVL-011717-04	1/17/17	DP	6.03	277	13.25
MW-18D	HVL-011717-01	1/17/17	DP	6.02	260	14.33
Lower Regional Aquifer						
MW-14R	HVL-011817-11	1/18/17	DP	6.34	105	11.97
MW-20R	HVL-011817-15	1/18/17	DP	6.65	100	10.59
MW-26R	HVL-011817-13	1/18/17	DP	6.76	199	11.57

Notes:

µS/cm = microsiemens per centimeter
°C = degrees Celsius
BG = Background
DP = dedicated bladder-pump
DB = disposable bailer
b = Secondary Drinking Water Standard
— indicates not analyzed or not applicable

Table 4. Inorganic Parameters
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Location	Alkalinity, Bicarbonate	Alkalinity, Total	Ammonia	Chloride	Nitrate	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	5.0	5.0	0.1	0.2-0.4	0.2-0.21	0.2	10	1.0	4.0
HVL Cleanup Level	—	—	—	250	10	250	500	—	—
WAC 173-200 Criteria	—	—	—	250[b]	10[a]	250[b]	500[b]	—	—
Shallow Perched Aquifer									
(BG) MW-10S	92	92	*	7.9	1.10	15.0	150	1.2	*
MW-11S	70	70	*	16.0	4.50	12.0	160	1.1	*
MW-12S	100	100	1.7	14.0	6.30	3.7	210	2.3	21
MW-13S	130	130	*	12.0	0.46	17.0	190	1.2	*
MW-14S	62	62	0.74	7.4	0.64	8.8	110	1.6	*
MW-15S	100	100	3.5	14.0	*	11.0	160	1.6	*
MW-17S	170	170	4.8	17.0	3.90	4.4	230	2.0	*
MW-18S	130	130	*	15.0	**11.0**	4.9	230	1.4	*
FMMW-1	110	110	*	14.0	1.90	11.0	180	1.1	*
FMMW-2	96	96	*	17.0	9.60	9.0	230	1.3	*
Upper Regional Aquifer									
(BG) MW-10D	84	84	*	5.6	1.70	11.0	140	*	*
MW-11D(2)	85	85	*	6.1	1.70	8.2	130	*	*
MW-12D	120	120	*	8.1	1.40	6.8	170	*	*
MW-13D	140	140	*	12.0	0.57	16.0	200	1.1	*
MW-14D	88	88	3.9	10.0	*	11.0	140	1.8	*
MW-15D	120	120	*	8.7	0.83	10.0	380	*	*
MW-18D	110	110	*	7.2	1.70	6.7	170	*	*
Lower Regional Aquifer									
MW-14R	47	47	*	1.6	*	3.6	91	*	*
MW-20R	46	46	*	1.6	*	3.1	85	*	*
MW-26R	85	85	*	4.4	*	9.9	130	*	*

Notes:

Parameter concentrations that are greater than cleanup levels are shown in **bold**
mg/L = milligrams per liter
* indicates not reported at or above the MRL (Method Reporting Limit)
— indicates not analyzed or not applicable

a = Primary Drinking Water Standard
b = Secondary Drinking Water Standard
BG = Background/upgradient wells

Table 5. Dissolved Metals
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Location	Iron	Manganese	Calcium	Magnesium	Potassium	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.03	0.001	0.2	0.1	2.0	1.0
HVL Cleanup Level	0.30	0.05	—	—	—	—
WAC 173-200 Criteria	0.30[b]	0.05[b]	—	—	—	—
Shallow Perched Aquifer						
(BG) MW-10S	*	*	27	8.6	*	8.2
MW-11S	*	*	20	6.2	6.4	19.0
MW-12S	*	**0.55**	23	6.7	12.0	22.0
MW-13S	*	0.003	29	8.2	5.7	25.0
MW-14S	0.088	**0.25**	16	5.0	4.5	8.0
MW-15S	*	**0.93**	19	5.9	10	19.0
MW-17S	*	**1.00**	29	9.5	17.0	30.0
MW-18S	0.034	*	32	9.6	9.9	28.0
FMMW-1	0.031	*	25	7.1	4.2	27.0
FMMW-2	*	0.047	27	8.3	11.0	25.0
Upper Regional Aquifer						
(BG) MW-10D	*	*	24	8.9	2.1	7.7
MW-11D(2)	*	*	21	9.2	2.5	8.2
MW-12D	*	*	26	10.0	3.3	18.0
MW-13D	*	*	33	12.0	4.5	21.0
MW-14D	**2.40**	**1.10**	17	5.2	8.0	13.0
MW-15D	*	**0.088**	23	9.5	3.1	20.0
MW-18D	0.056	*	24	9.7	3.7	12.0
Lower Regional Aquifer						
MW-14R	0.059	**0.18**	8.2	4.8	2.2	5.4
MW-20R	*	*	7.9	4.1	2.2	5.8
MW-26R	**0.60**	**0.38**	20	9.0	2.5	6.5

Notes:

Parameter concentrations that are greater than site cleanup levels or WAC 173-200 criteria are shown in **bold**

Analyses performed by TestAmerica in Denver, Colorado

b = Secondary Drinking Water Standard (concentrations measured as total metals)

mg/L = milligrams per liter

* indicates not reported at or above the MRL (Method Reporting Limit)

— indicates not analyzed or not applicable

BG = Background

Table 6. Volatile Organic Compounds
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Location		Tetrachloroethene
Units		µg/L
MRL		0.5
HVL Cleanup Level		—
WAC 173-200 Criteria		0.80
Shallow Perched Aquifer		
(BG)	MW-10S	*
	MW-11S	*
	MW-12S	*
	MW-13S	*
	MW-14S	*
	MW-15S	*
	MW-17S	*
	MW-18S	*
	FMMW-1	*
	FMMW-2	*
Upper Regional Aquifer		
(BG)	MW-10D	*
	MW-11D(2)	**1.0**
	MW-12D	*
	MW-13D	*
	MW-14D	*
	MW-15D	*
	MW-18D	*
Lower Regional Aquifer		
	MW-14R	*
	MW-20R	*
	MW-26R	*

Notes:

Volatile organic compounds not listed were not present at concentrations exeeding the MRL
BG = Background
µg/L = micrograms per liter
* = not reported at or above the MRL (Method Reporting Limit)
— = not analyzed or not applicable

Table 7. Duplicate Sample Evaluation
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Parameter	MRL	MW-14S	MW-14S (DUP)	RPD (%)	MW-15S	MW-15S (DUP)	RPD (%)
Volatile Organic Compunds (µg/L)							
No Detections	—	ND	ND	—	ND	ND	—
Dissolved Metals (mg/L)							
Calcium	0.2	16.0	16.0	0.0	19.0	18.0	5.4
Iron	0.03	0.088	0.03 U	98.3*	0.03 U	0.03 U	NA
Magnesium	0.1	5.0	4.9	2.0	5.9	5.7	3.4
Manganese	0.001	0.250	0.240	4.1	0.93	0.93	0.0
Potassium	2.0	4.5	4.4	2.2	10.0	9.9	1.0
Sodium	1.0	8.0	8.0	0.0	19.0	18.0	5.4
Inorganic Parameters (mg/L)							
Alkalinity	5.0	62.0	61.0	1.6	100	100	0.0
Alkalinity, Bicarbonate (as CaCO3)	5.0	62.0	61.0	1.6	100	100	0.0
Ammonia	0.1	0.74	0.75	1.3	3.5	3.4	2.9
Chloride	0.2-0.4	7.4	7.7	4.0	14.0	14.0	0.0
Nitrate	0.2-0.21	0.64	0.63	1.6	0.5 U	0.5 U	NA
Sulfate	0.2	8.8	8.9	1.1	11.0	11.0	0.0
Total Dissolved Solids	10	110	110	0.0	160	150	6.5
Total Organic Carbon	1.0	1.6	1.6	0.0	1.6	1.6	0.0

Analysis performed by TestAmerica, Arvada, Colorado

Analytes not listed were not present at concentrations exceeding the MRL

RPD = relative percent difference

µg/L = micrograms per liter

mg/L = milligrams per liter

*= RPD based on result as compared to the Reporting Limit (RL) for a non-detection in the compared sample

— = not applicable

ND = No Detection

NA = Not Applicable

Table 8. Water Supply Wells
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Parameter	Units	MRL	Corliss	Paul Bunyan
Field Parameters				
pH	SU	—	6.05	6.42
Specific Conductivity	µS/cm	—	235	281
Temperature	deg C	—	8.24	8.92
Volatile Organic Compounds				
(No VOCs detected)	µg/L	—	*	*
Metals (total)				
Arsenic	mg/L	0.005	*	*
Iron	mg/L	0.030	0.045	0.130
Manganese	mg/L	0.001	0.002	0.023
Zinc	mg/L	0.010	0.022	0.025
Inorganic Parameters				
Chloride	mg/L	0.2	5.6	5.6
Nitrate (as N)	mg/L	0.2	1.6	2.1
Sulfate	mg/L	0.2	8.8	9.4
Other				
Color	PCU	5.0	5.0	5.0

Notes:

Analyses performed by TestAmerica in Denver, Colorado.

Analytes not listed were not present at concentrations exceeding the MRL.

Color reported in color units

µg/L = micrograms per liter

mg/L = milligrams per liter

PCU = platinum-cobalt units

* = not reported at or above the MRL (Method Reporting Limit)

SU = Standard Units

µS/cm = microsiemens per centimeter

°C = degrees Celsius

— = Not Applicable

Table 9. Cation-Anion Balance
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Cations	mg/L					meq/L					% of Total		
	Ca	Mg	K	Na	Total	Ca	Mg	K	Na	Total	Na+K	Ca	Mg
MW-10S	27.0	8.6	2.0	8.2	45.80	1.35	0.71	0.05	0.36	2.46	17	55	29
MW-11S	20.0	6.2	6.4	19.0	51.60	1.00	0.51	0.16	0.83	2.50	40	40	20
MW-12S	23.0	6.7	12.0	22.0	63.70	1.15	0.55	0.31	0.96	2.96	43	39	19
MW-13S	29.0	8.2	5.7	25.0	67.90	1.45	0.67	0.15	1.09	3.36	37	43	20
MW-14S	16.0	5.0	4.5	8.0	33.50	0.80	0.41	0.12	0.35	1.67	28	48	25
MW-15S	19.0	5.9	10.0	19.0	53.90	0.95	0.49	0.26	0.83	2.52	43	38	19
MW-17S	29.0	9.5	17.0	30.0	85.50	1.45	0.78	0.44	1.31	3.97	44	36	20
MW-18S	32.0	9.6	9.9	28.0	79.50	1.60	0.79	0.25	1.22	3.86	38	41	20
FMMW-1	25.0	7.1	4.2	27.0	63.30	1.25	0.58	0.11	1.17	3.11	41	40	19
FMMW-2	27.0	8.3	11.0	25.0	71.30	1.35	0.68	0.28	1.09	3.40	40	40	20
MW-10D	24.0	8.9	2.1	7.7	42.70	1.20	0.73	0.05	0.33	2.32	17	52	32
MW-11D(2)	21.0	9.2	2.5	8.2	40.90	1.05	0.76	0.06	0.36	2.23	19	47	34
MW-12D	26.0	10.0	3.3	18.0	57.30	1.30	0.82	0.08	0.78	2.99	29	43	28
MW-13D	33.0	12.0	4.5	21.0	70.50	1.65	0.99	0.12	0.91	3.66	28	45	27
MW-14D	17.0	5.2	8.0	13.0	43.20	0.85	0.43	0.20	0.57	2.05	38	41	21
MW-15D	23.0	9.5	3.1	20.0	55.60	1.15	0.78	0.08	0.87	2.88	33	40	27
MW-18D	24.0	9.7	3.7	12.0	49.40	1.20	0.80	0.09	0.52	2.61	24	46	31
MW-14R	8.2	4.8	2.2	5.4	20.60	0.41	0.40	0.06	0.23	1.10	27	37	36
MW-20R	7.9	4.1	2.2	5.8	20.00	0.39	0.34	0.06	0.25	1.04	30	38	32
MW-26R	20.0	9.0	2.5	6.5	38.00	1.00	0.74	0.06	0.28	2.09	17	48	36

Anions	mg/L					meq/L					% of Total			Total Ions (meq/L)	Cation - Anion Balance	Applicable Ratio (%)	Ratio Exceedance
	Alk	Cl	NO_3	SO_4	Total	Alk	Cl	NO_3	SO_4	Total	Cl	Alk	SO_4				
MW-10S	110.4	7.9	1.1	15.0	134.40	1.81	0.22	0.02	0.31	2.36	9	77	13	4.83	2.07	10	-
MW-11S	84.0	16.0	4.5	12.0	116.50	1.38	0.45	0.07	0.25	2.15	21	64	12	4.65	7.48	10	-
MW-12S	120.0	14.0	6.3	3.7	144.00	1.97	0.39	0.10	0.08	2.54	16	77	3	5.50	7.67	5	Exceeds
MW-13S	156.0	12.0	0.46	17.0	185.46	2.56	0.34	0.01	0.35	3.26	10	79	11	6.61	1.48	5	-
MW-14S	74.4	7.4	0.64	8.8	91.24	1.22	0.21	0.01	0.18	1.62	13	75	11	3.30	1.55	10	-
MW-15S	120.0	14.0	0.2	11.0	145.20	1.97	0.39	0.00	0.23	2.59	15	76	9	5.11	1.54	10	-
MW-17S	204.0	17.0	3.9	4.4	229.30	3.35	0.48	0.06	0.09	3.98	12	84	2	7.95	0.13	5	-
MW-18S	156.0	15.0	11.0	4.9	186.90	2.56	0.42	0.18	0.10	3.26	13	78	3	7.12	8.40	5	Exceeds
FMMW-1	132.0	14.0	1.9	11.0	158.90	2.16	0.39	0.03	0.23	2.82	14	77	8	5.93	4.97	5	-
FMMW-2	115.2	17.0	9.6	9.0	150.80	1.89	0.48	0.15	0.19	2.71	18	70	7	6.11	11.28	10	Exceeds
MW-10D	100.8	5.6	1.7	11.0	119.10	1.65	0.16	0.03	0.23	2.07	8	80	11	4.39	5.74	10	-
MW-11D(2)	102.0	6.1	1.7	8.2	118.00	1.67	0.17	0.03	0.17	2.04	8	82	8	4.27	4.29	10	-
MW-12D	144.0	8.1	1.4	6.8	160.30	2.36	0.23	0.02	0.14	2.75	8	86	5	5.74	4.07	5	-
MW-13D	168.0	12.0	0.57	16.0	196.57	2.76	0.34	0.01	0.33	3.44	10	80	10	7.10	3.20	5	-
MW-14D	105.6	10.0	0.2	11.0	126.80	1.73	0.28	0.00	0.23	2.25	13	77	10	4.29	4.64	10	-
MW-15D	144.0	8.7	0.83	10.0	163.53	2.36	0.25	0.01	0.21	2.83	9	83	7	5.71	0.89	5	-
MW-18D	132.0	7.2	1.7	6.7	147.60	2.16	0.20	0.03	0.14	2.53	8	85	5	5.15	1.52	10	-
MW-14R	56.4	1.6	0.2	3.6	61.80	0.92	0.05	0.00	0.07	1.05	4	88	7	2.14	2.20	10	-
MW-20R	55.2	1.6	0.2	3.1	60.10	0.91	0.05	0.00	0.06	1.02	4	89	6	2.06	1.08	10	-
MW-26R	102.0	4.4	0.2	9.9	116.50	1.67	0.12	0.00	0.21	2.01	6	83	10	4.09	1.94	10	-

Notes:
mg/L = milligrams per liter
meq/L = milliequivalents per liter
Total alkalinity concentration, reported as calcium carbonate (CaCO3), is converted to the bicarbonate (HCO3-) ion by multiplying by a factor of 1.2.
Cation / anion balance equation is the equivalent percent difference in cations minus anions divided by the sum of cations and anions [(cations-anions)/(anions+cations)*100].
— = not applicable or not performed
The MRL was used for analytes that were non-detect
A 10% difference threshold is used if the total cation-anion sums are < 5.0 meq/liter.
A 5% difference threshold is used if the total cation-anion sums are > or = to 5.0 meq/liter.

Table 10. Leachate Monitoring Results
Semi-Annual Monitoring Event No. 1 - January 2017
Hidden Valley Landfill, Pierce County, Washington

Parameters	MRL	Leachate-East Area	Leak Detection-Side Slope
Volatile Organics (µg/L)			
2-Butanone (MEK)	6.0	7.6	30000
Acetone	10.0	13.0	26000
Chloroform	0.5	6.0	*
Methylene Chloride	64	*	220
Toluene	0.5	0.51	*
m-Xylene & p-Xylene	0.5	0.77	*
Total Metals (mg/L)			
Antimony	0.002	0.0028	0.073
Arsenic	0.005	0.019	0.11
Barium	0.005	0.11	0.43
Calcium	0.2	28	14
Chromium	0.005	0.028	0.05
Cobalt	0.01	*	0.014
Copper	0.01	0.021	0.2
Iron	0.03	10.0	2.8
Lead	0.002	0.006	0.012
Magnesium	0.1	9.7	12
Manganese	0.005	0.43	0.24
Nickel	0.02	0.085	0.36
Potassium	2.0	49	410
Sodium	1.0	520	5100
Vanadium	0.01	0.025	0.12
Zinc	0.01	0.1	0.16
Inorganic Parameters (mg/L)			
Alkalinity	5.0	1200	6000
Bicarbonate Alkalinity as CaCO3	5.0	1200	6000
Ammonia	0.22	17	380
Chloride	4.0	80	4800
Nitrate as N	0.5	*	14.0
Sulfate	0.2	16	47
Total Dissolved Solids	19	2100	16000
Total Organic Carbon - Quad	1.0	43	740
Total Suspended Solids	4.0	43	160
Field Parameters			
Dissolved Oxygen	—	3.33	2.16
Oxidation Reduction Potential	—	144.5	26
pH	—	7.42	7.67
Specific Conductivity	—	8252	2360
Temperature	—	12.2	17.5
Turbidity	—	*	36.2

Notes:
Leachate - East Area Sample collected on February 24, 2017
Analyses performed by TestAmerica, Arvada, Colorado
Volatile organic compounds not listed were not present at concentrations exceeding the MRL
µg/L = micrograms per liter
mg/L = milligrams per liter
µS = microsiemens
°C = degrees celcius
— = not applicable or not analyzed
* = not reported at or above the MRL (Method Reporting Limit)

Appendix E

TIME SERIES PLOTS

Figure 1

Specific Conductivity

Shallow Perched Aquifer, Hidden Valley Landfill
Wells MW-11S, MW-13S, MW-14S, and MW-17S

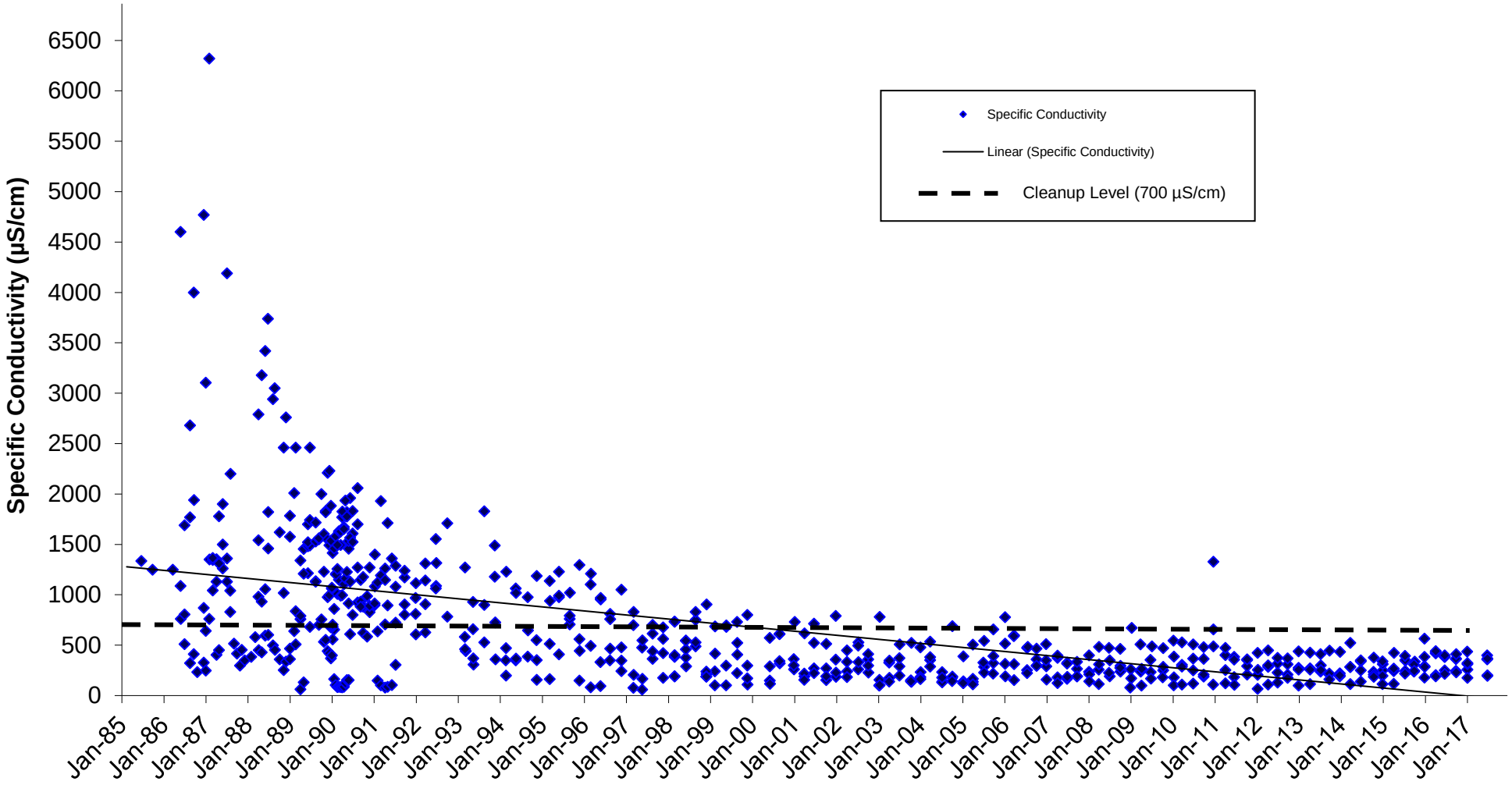


Figure 2

Ammonia

Shallow Perched Aquifer, Hidden Valey Landfill
Wells MW-11S, MW-13S, MW-14S, and MW-17S

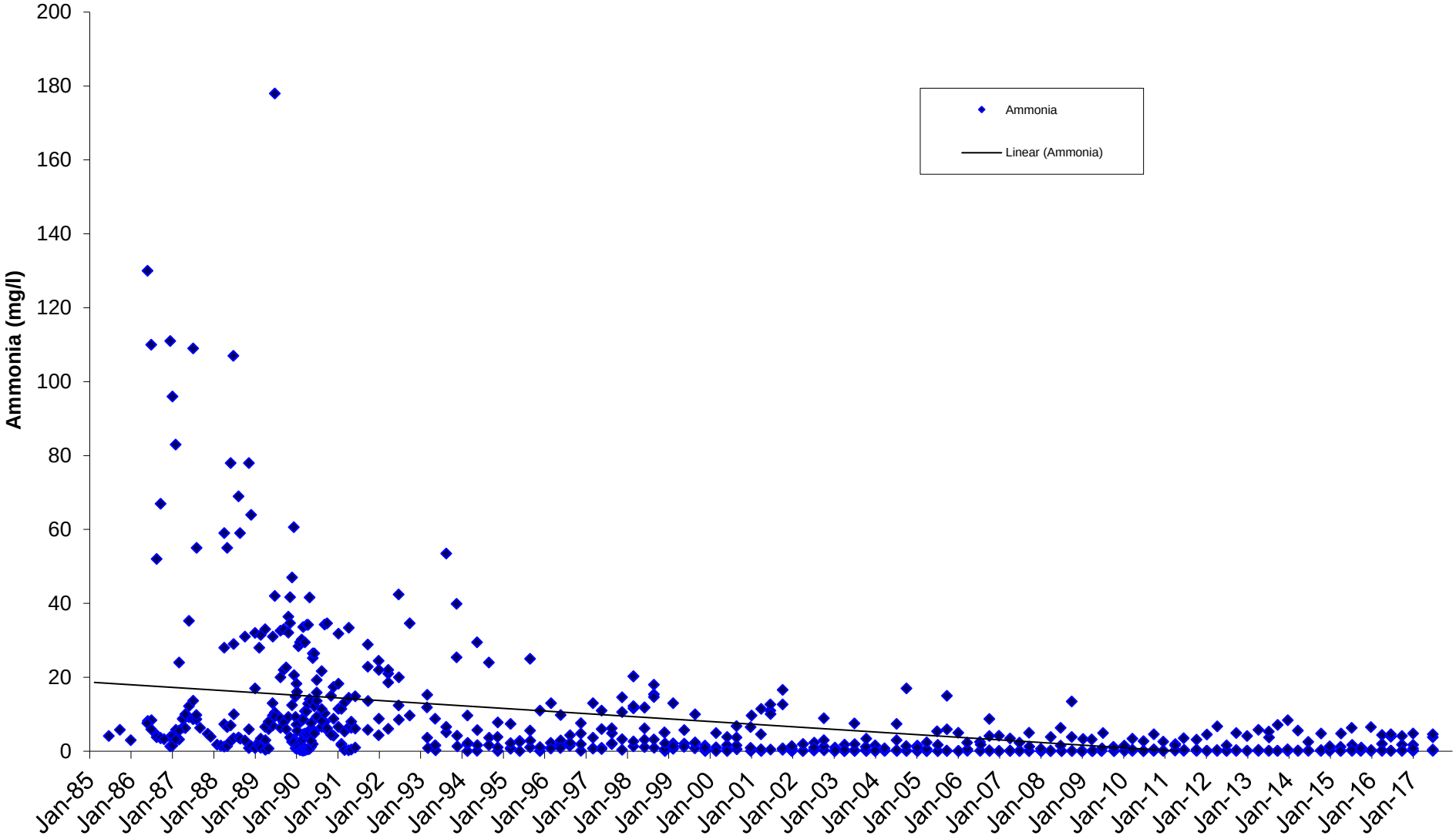


Figure 3

Nitrate

Shallow Perched Aquifer, Hidden Valley Landfill
Wells MW-11S, MW-13S, MW-14S, and MW-17S

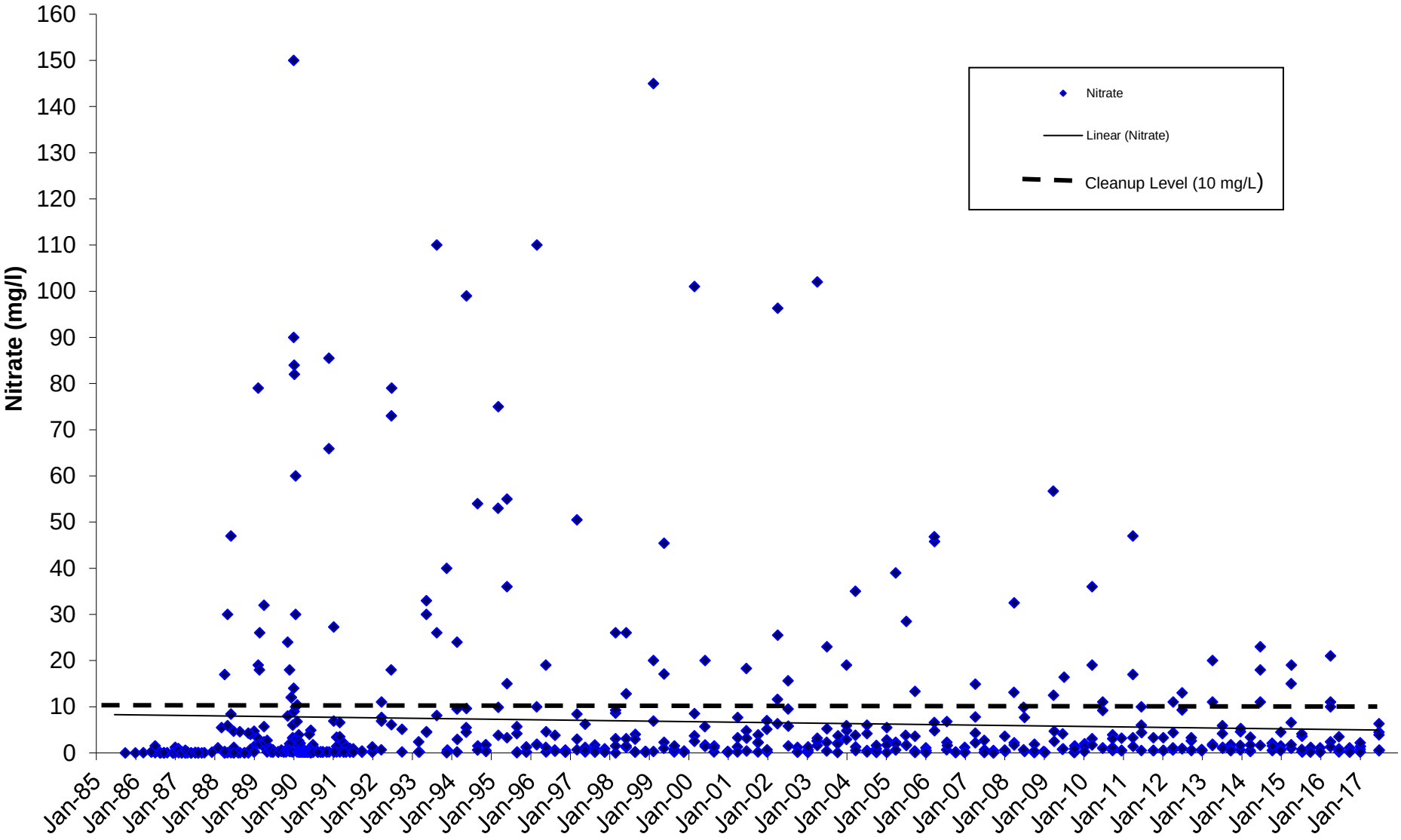


Figure 4

Dissolved Iron

Shallow Perched Aquifer, Hidden Valley Landfill

Wells MW-11S, MW-13S, MW-14S, and MW-17

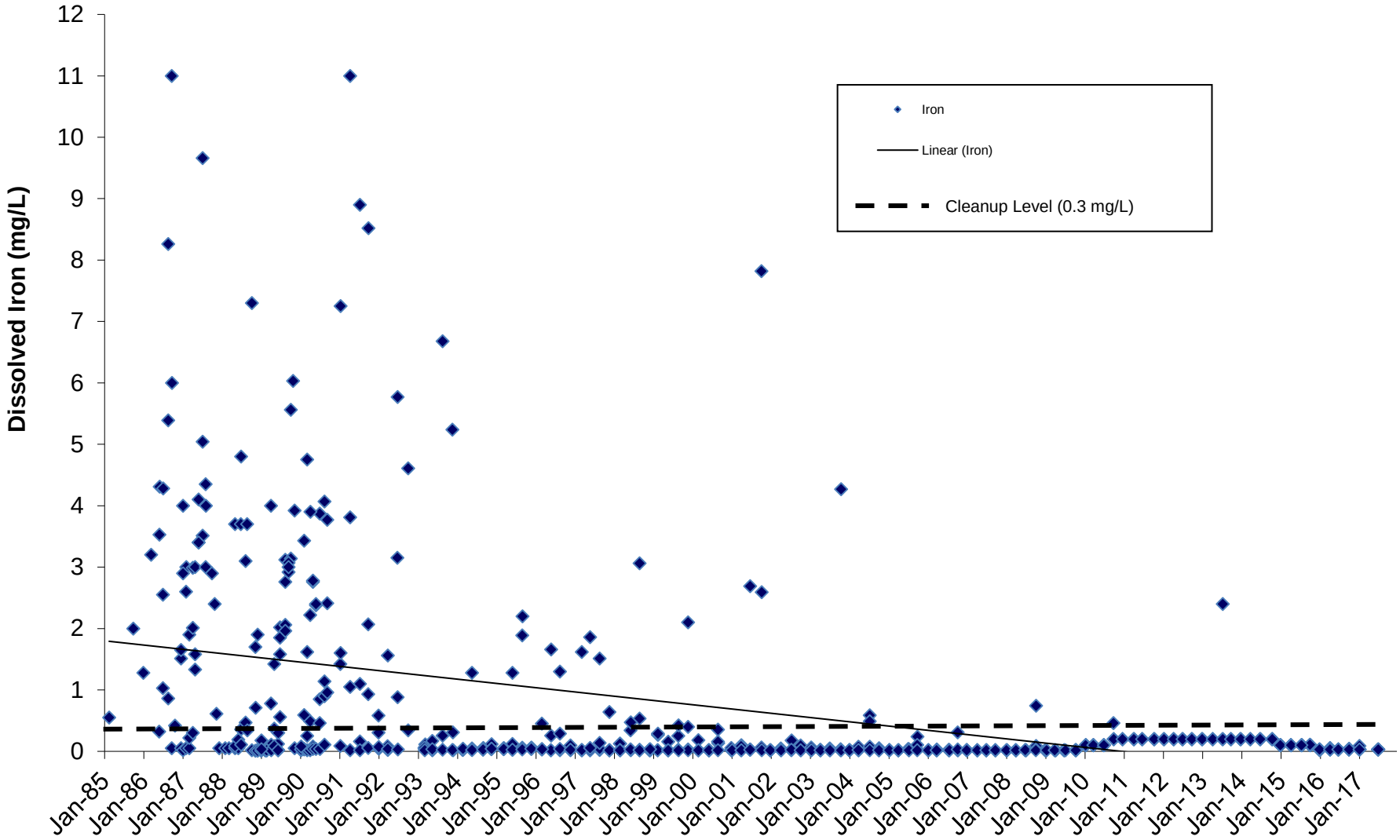


Figure 5

Dissolved Manganese

Shallow Perched Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-13D, MW-14D

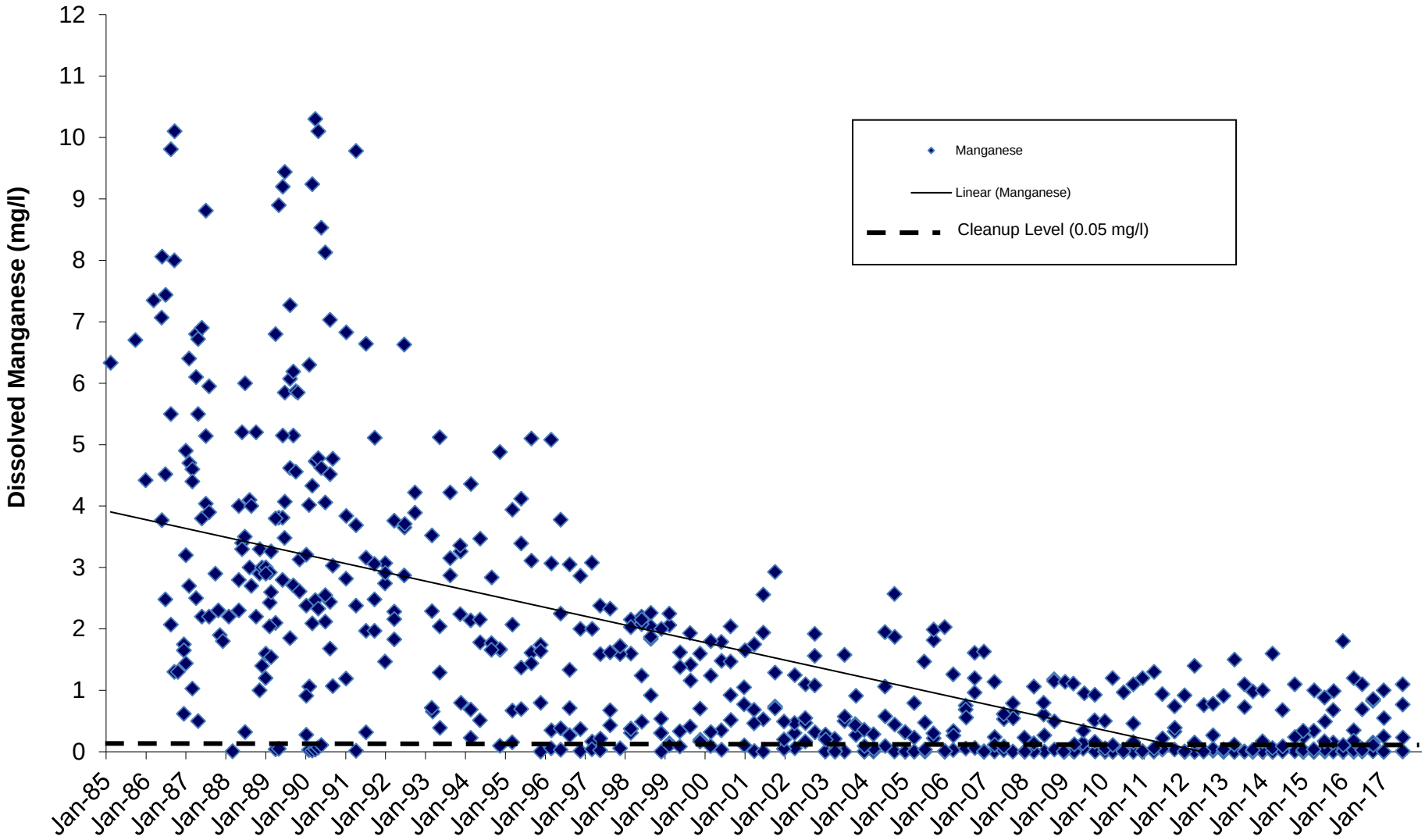


Figure 6

Specific Conductivity

Upper Regional Aquifer, Hidden Valley Landfill

Wells MW-11D(2), MW-13D and MW-14D

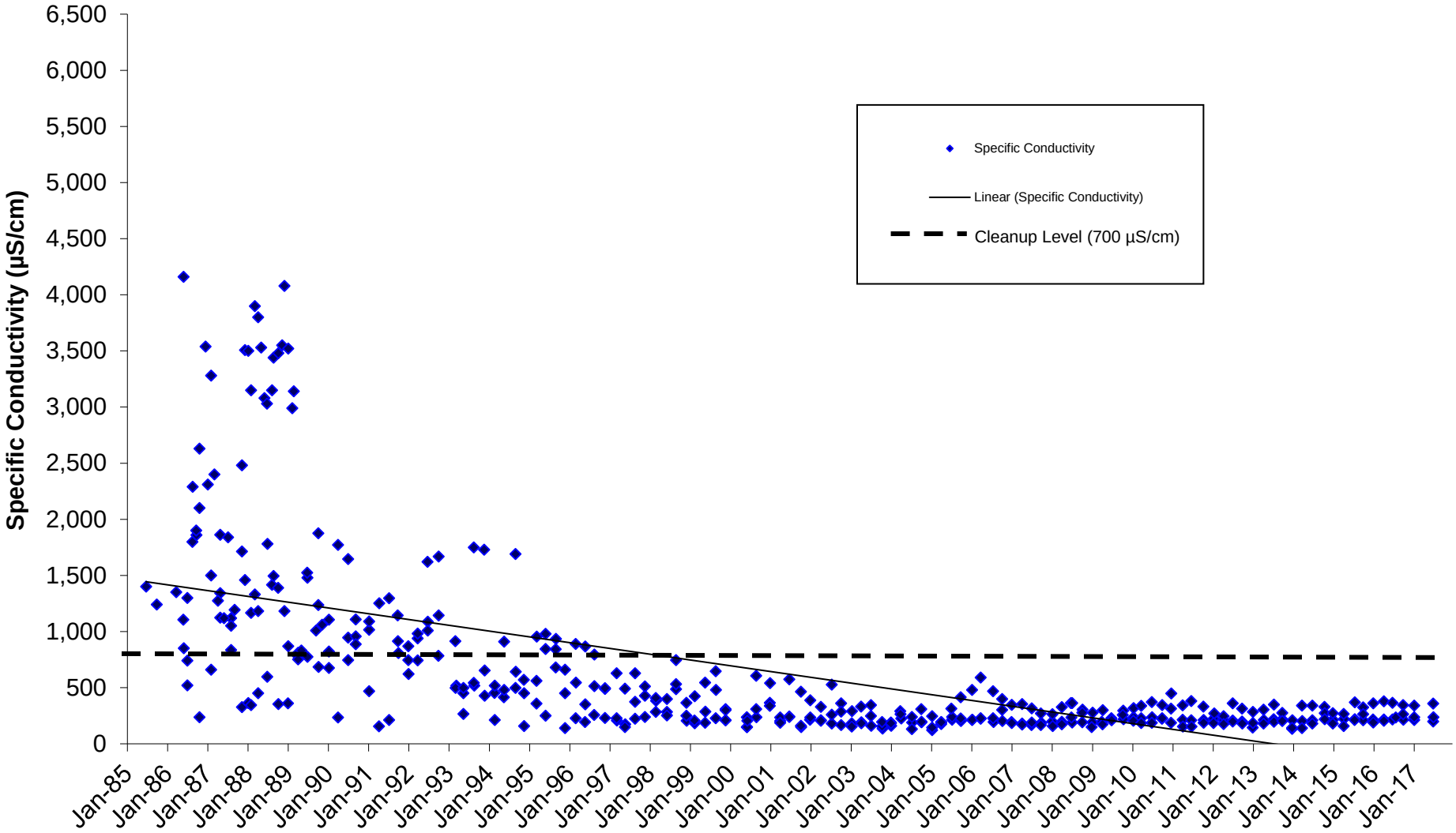


Figure 7

Ammonia

Upper Regional Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-13D and MW-14D

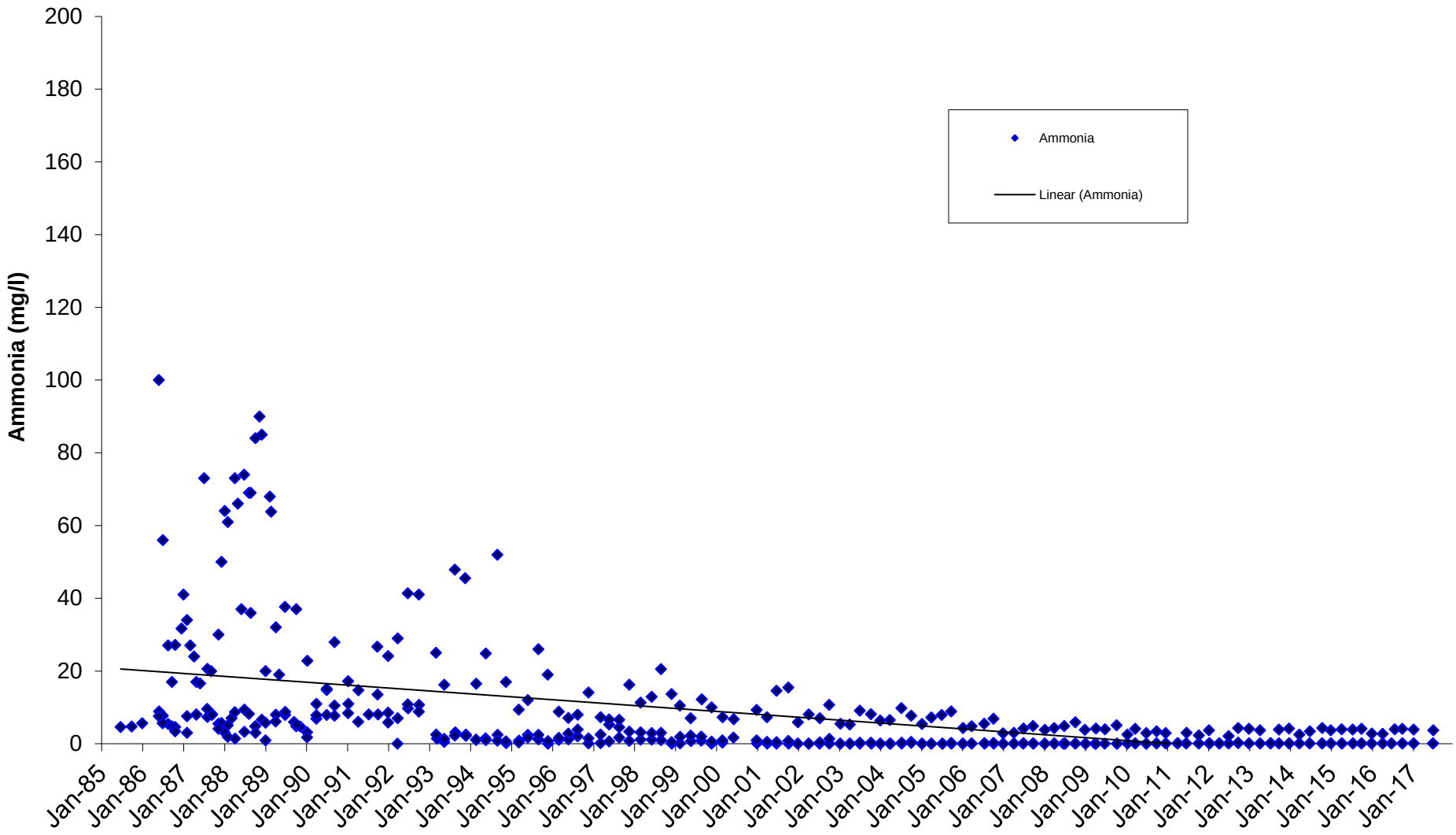


Figure 8

Nitrate

Upper Regional Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-13D and MW-14D

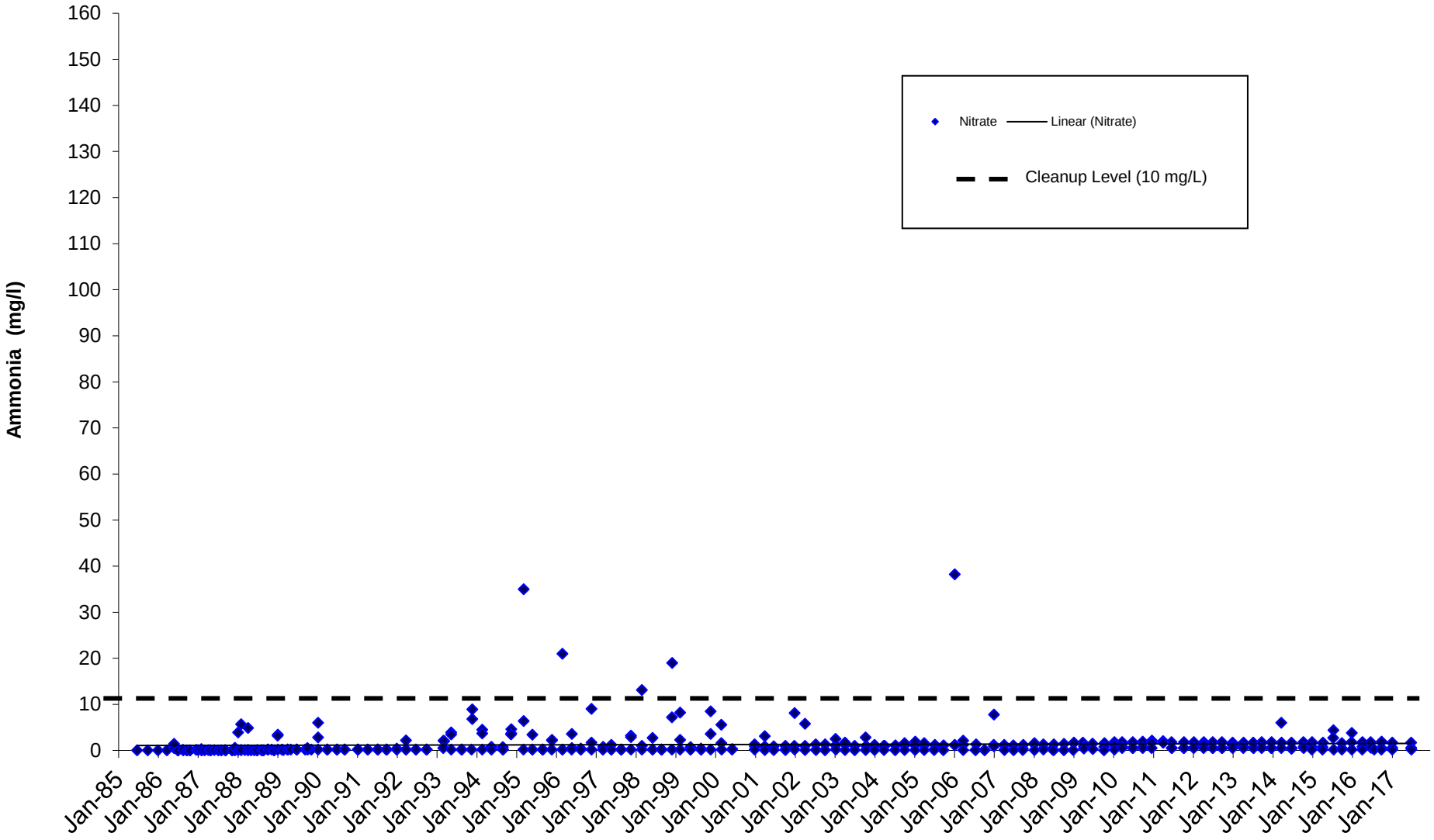


Figure 9

Dissolved Iron

Upper Regional Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-13D, MW-14D

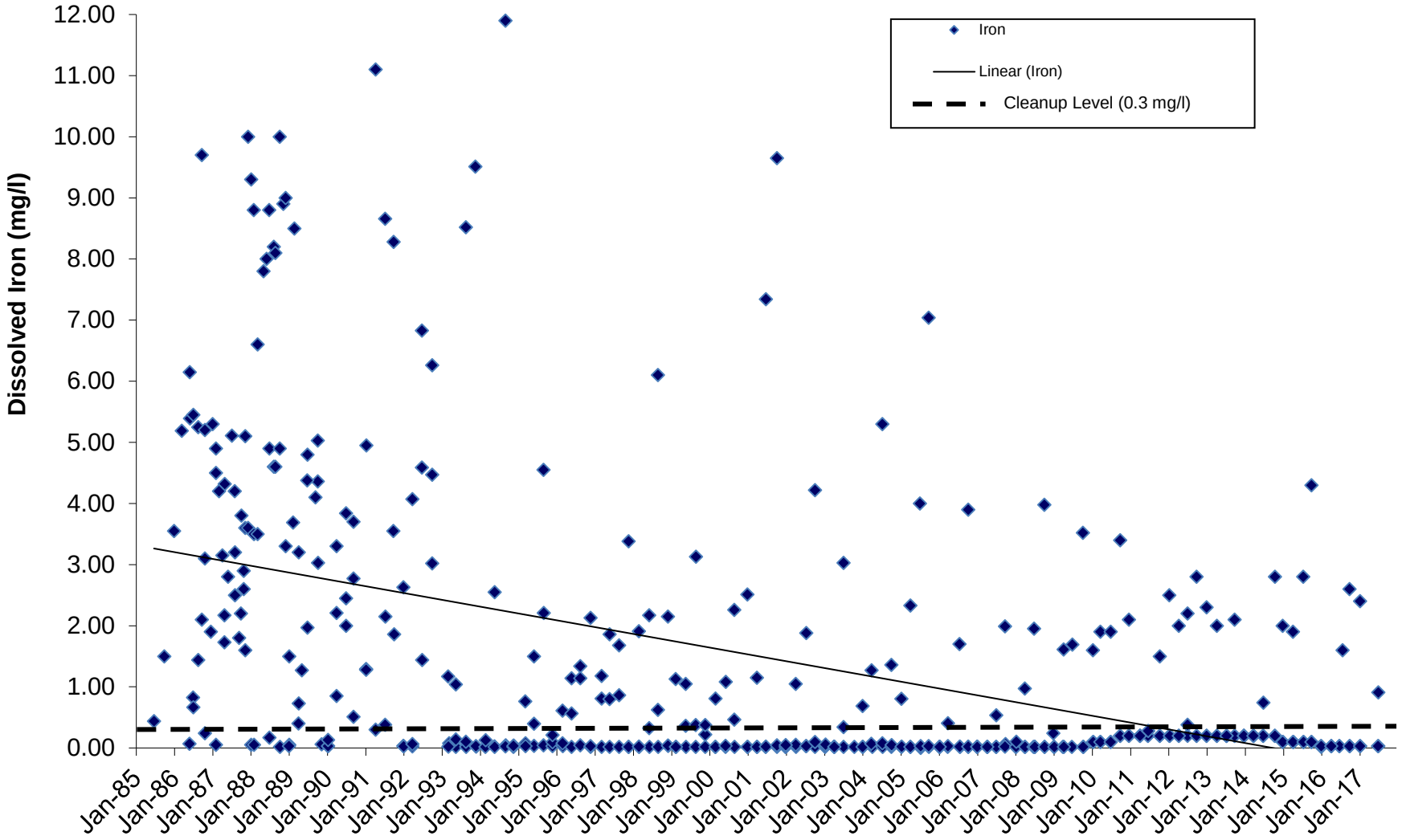
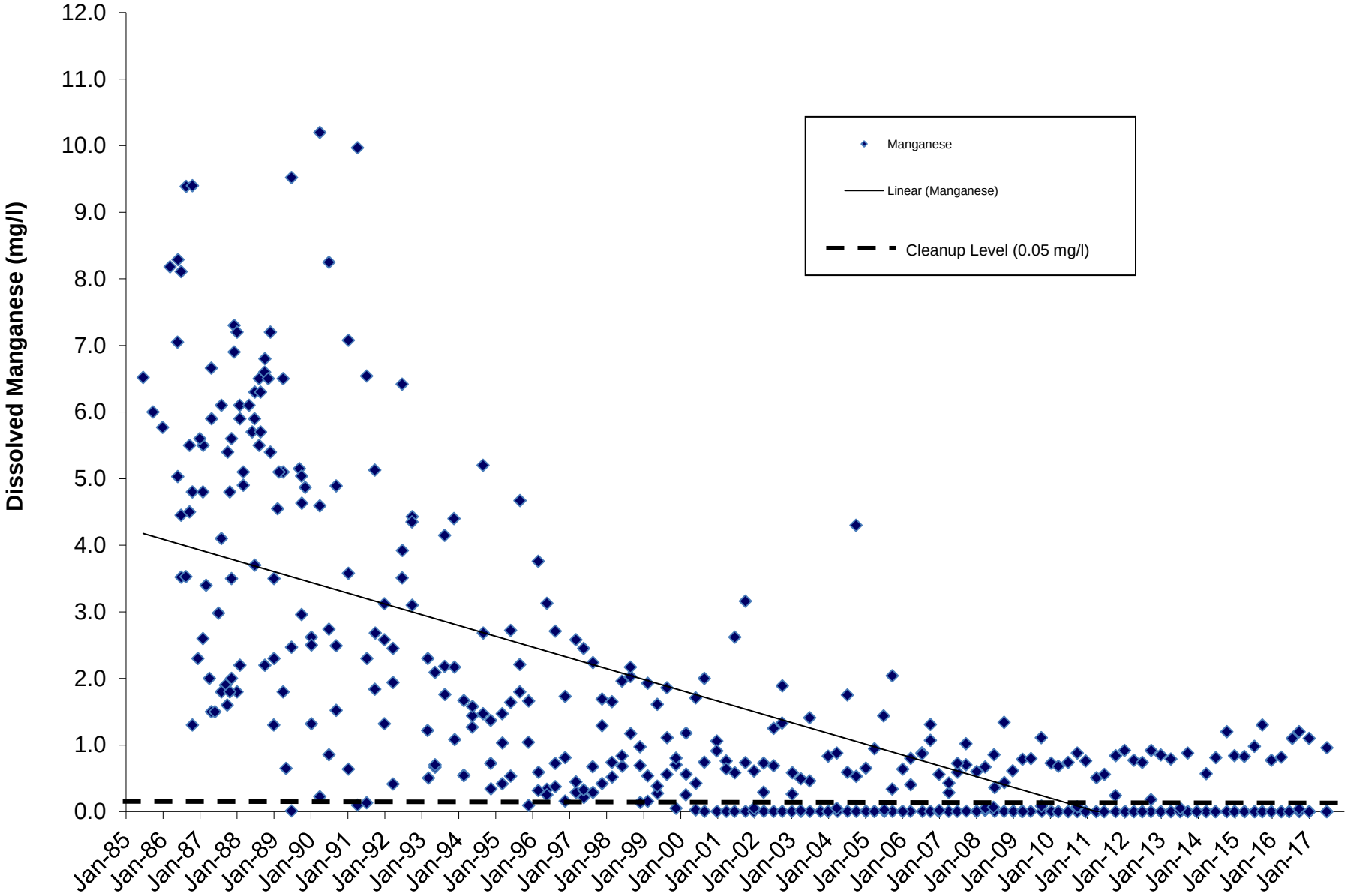


Figure 10

Dissolved Manganese

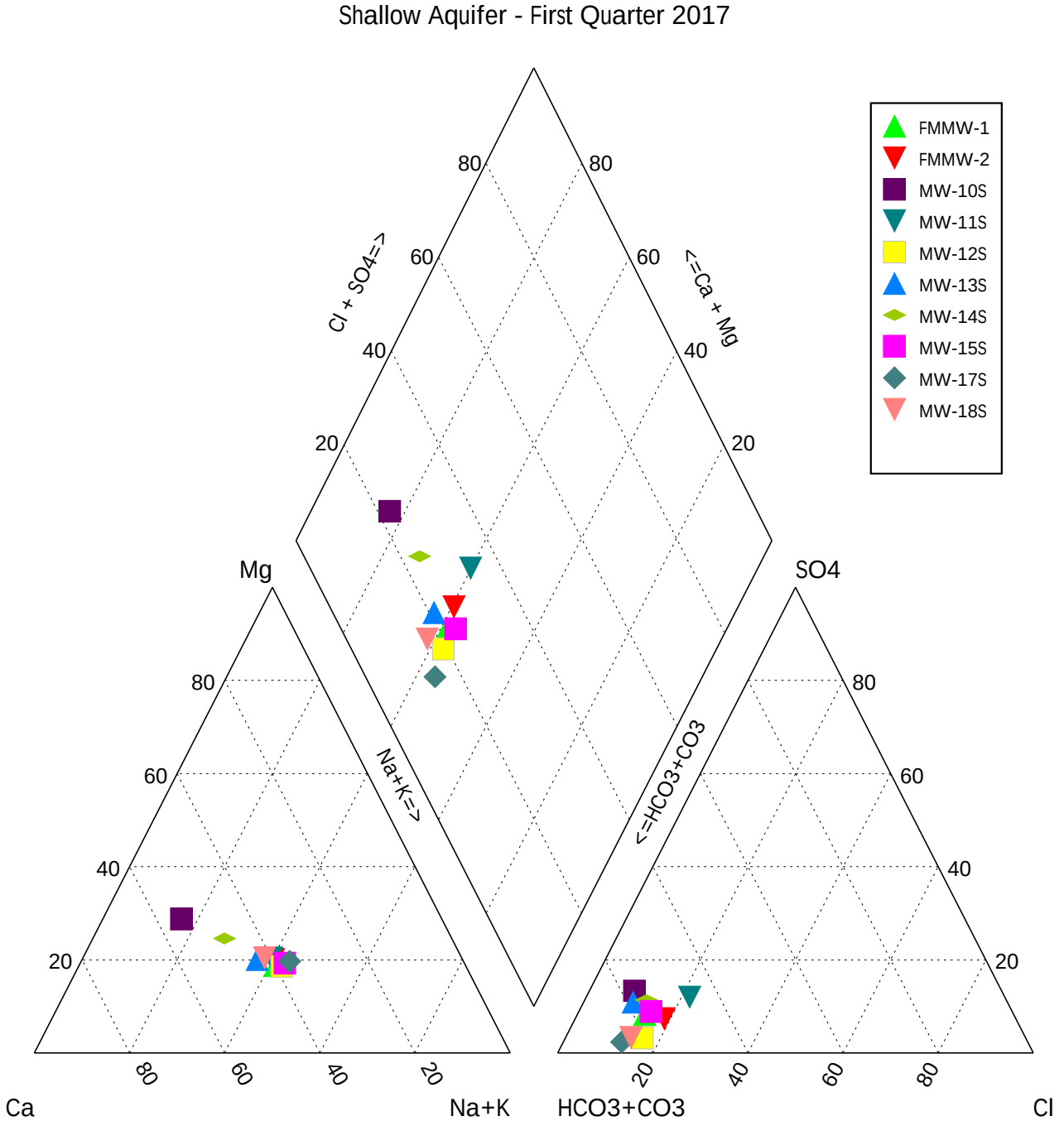
Upper Regional Aquifer, Hidden Valley Landfill

Wells MW-11D(2), MW-13D, MW-14D

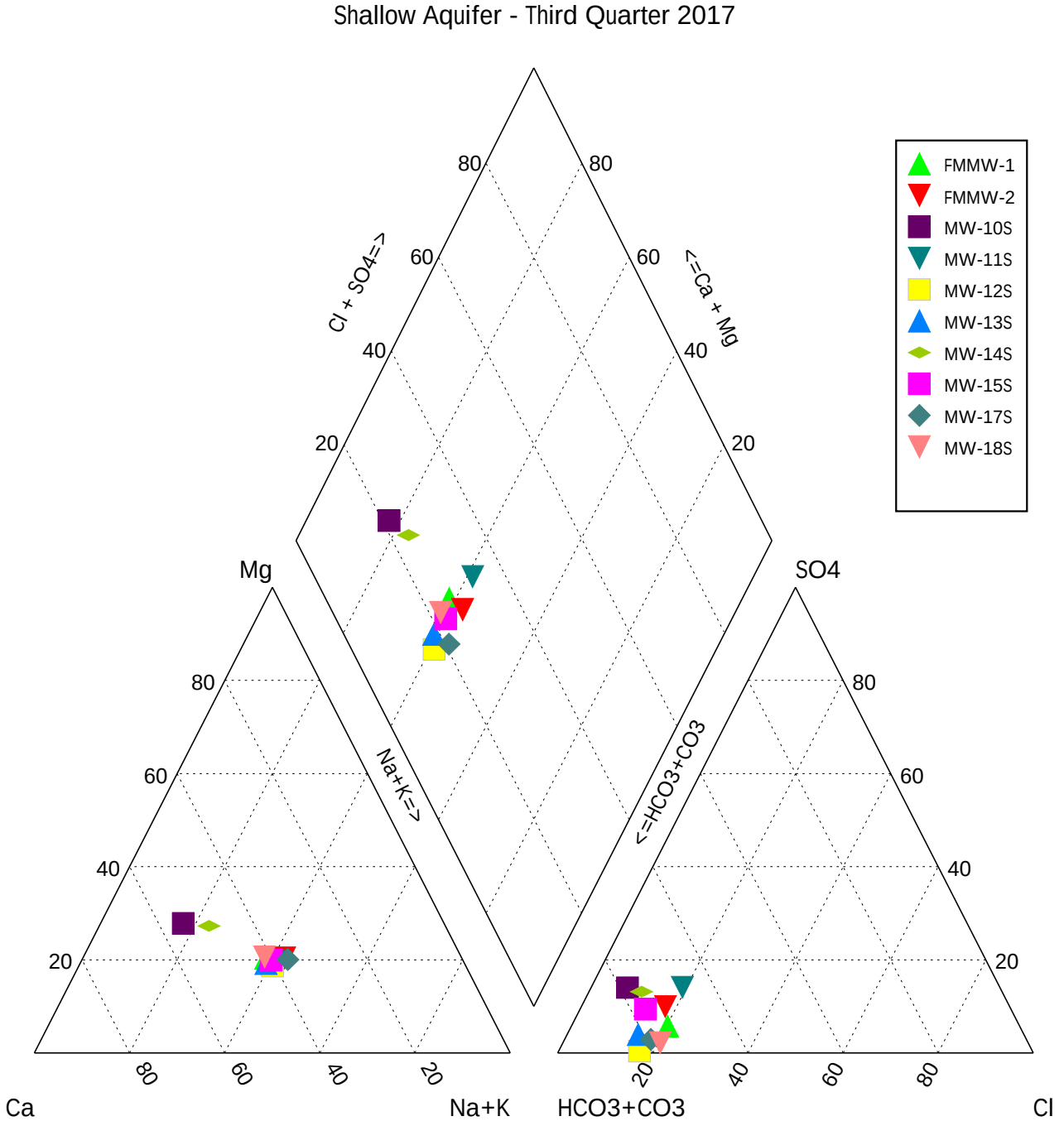


Appendix F

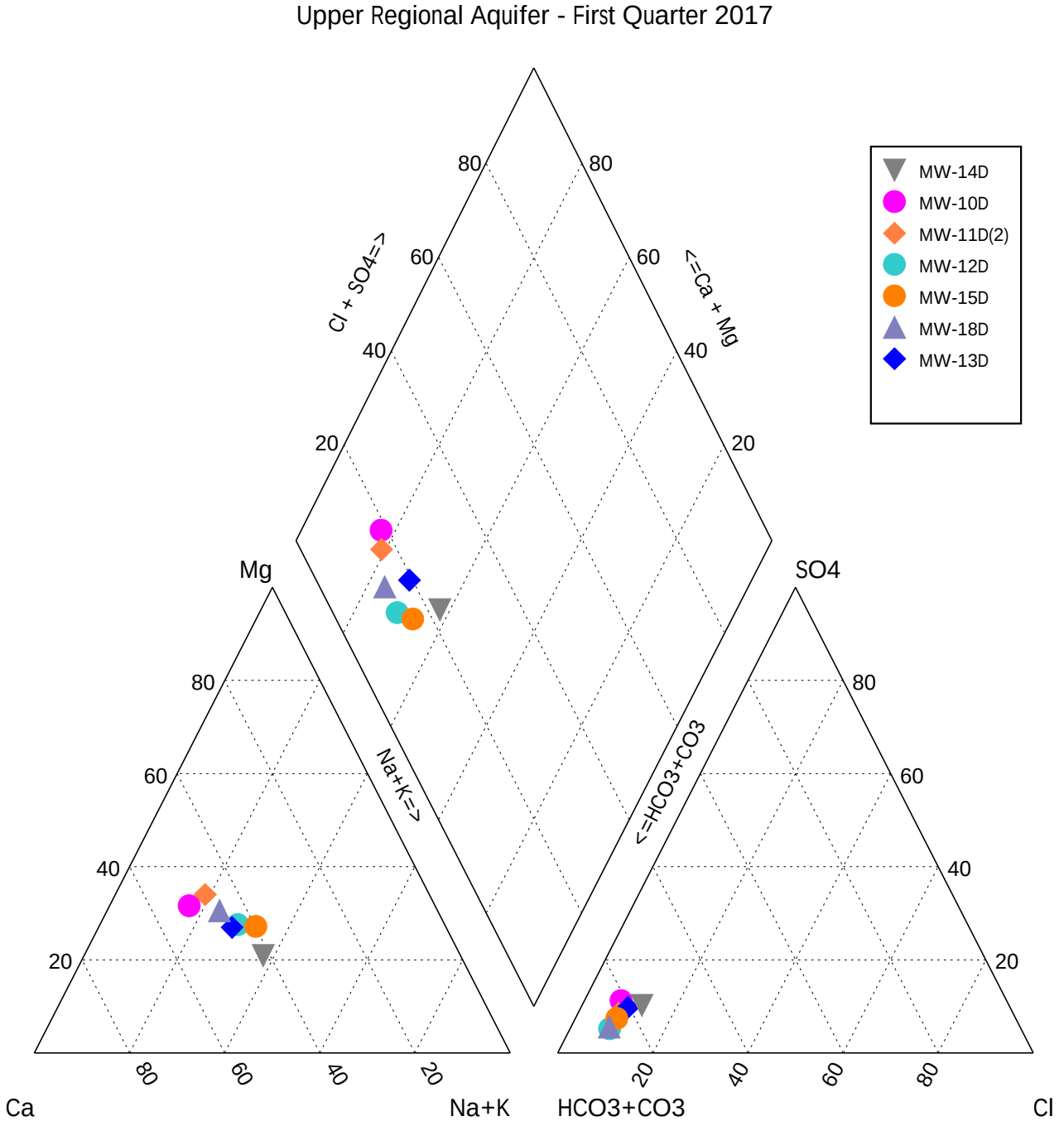
TRILINEAR DIAGRAMS



DESCRIPTION: Trilinear Diagram: Shallow Aquifer, First Quarter 2017		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04217003.03
	CLIENT: LRI Hidden Valley	DATE: May 2017

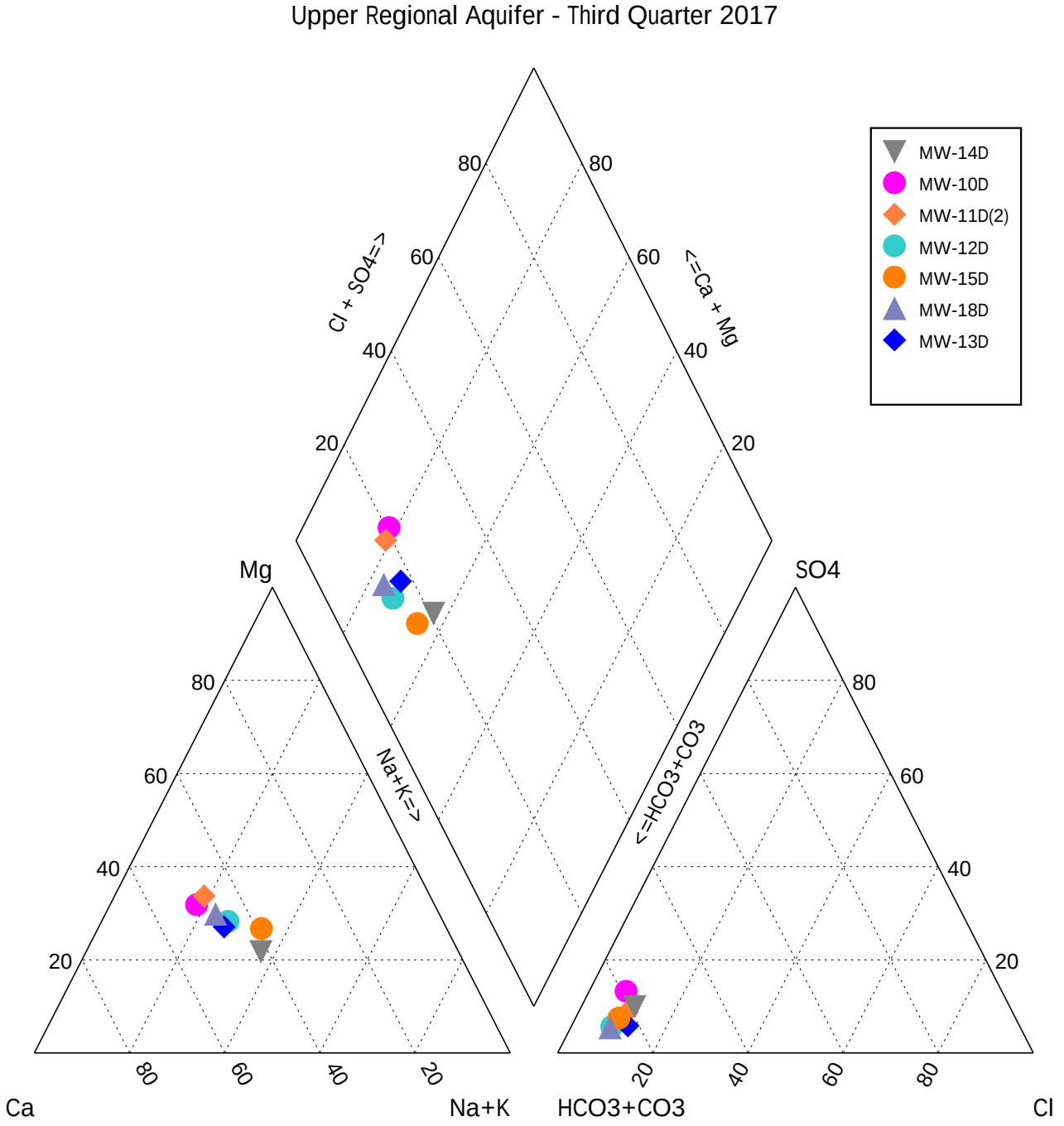


DESCRIPTION: Trilinear Diagram: Shallow Aquifer, Third Quarter 2017		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04217003.03
	CLIENT: LRI Hidden Valley	DATE: October 2017



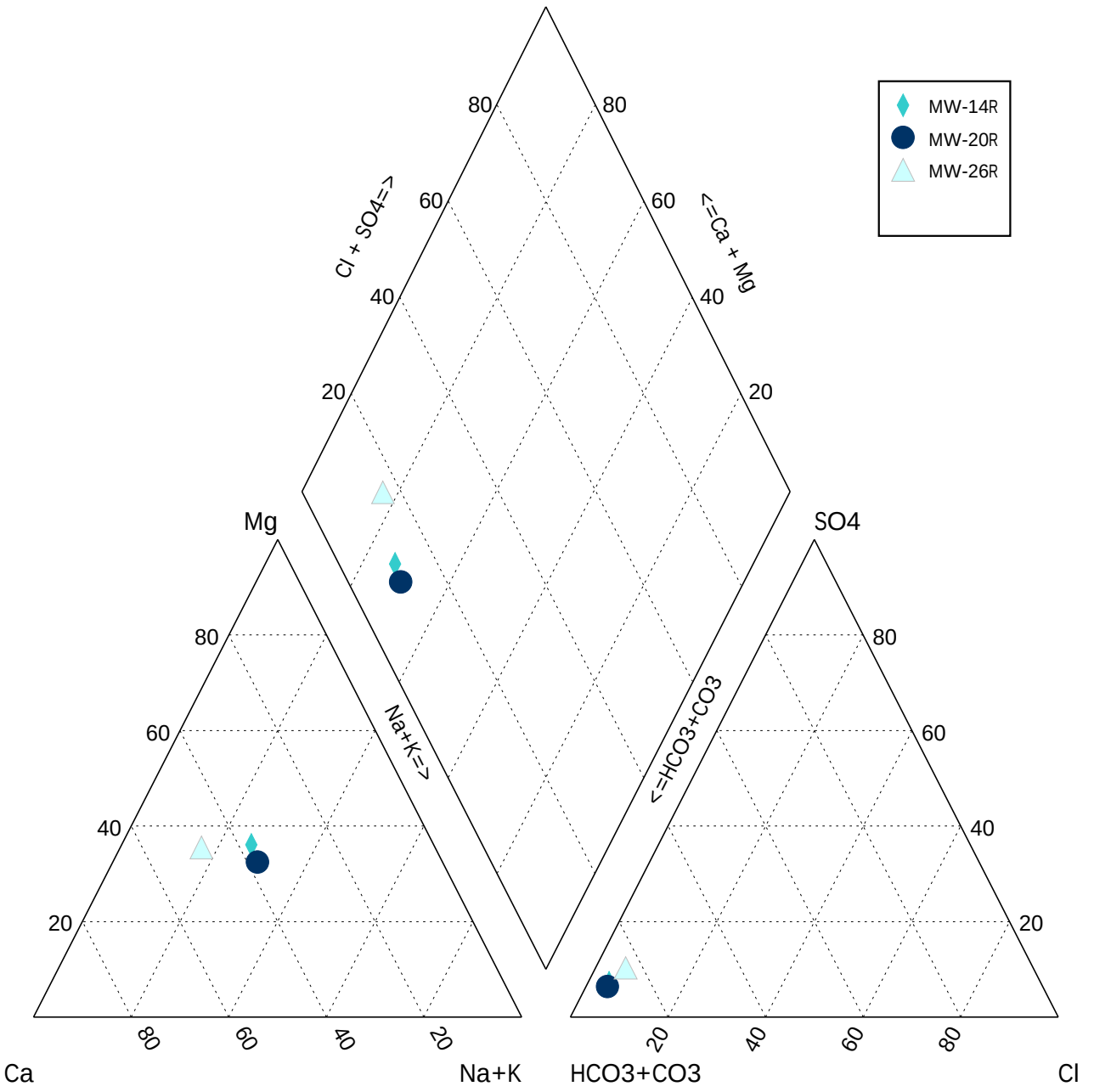
DESCRIPTION: Trilinear Diagram: Upper Regional Aquifer, First Quarter 2017

	PROJECT: Hidden Valley Landfill	PROJECT NO: 04217003.03
	CLIENT: LRI Hidden Valley	DATE: May 2017



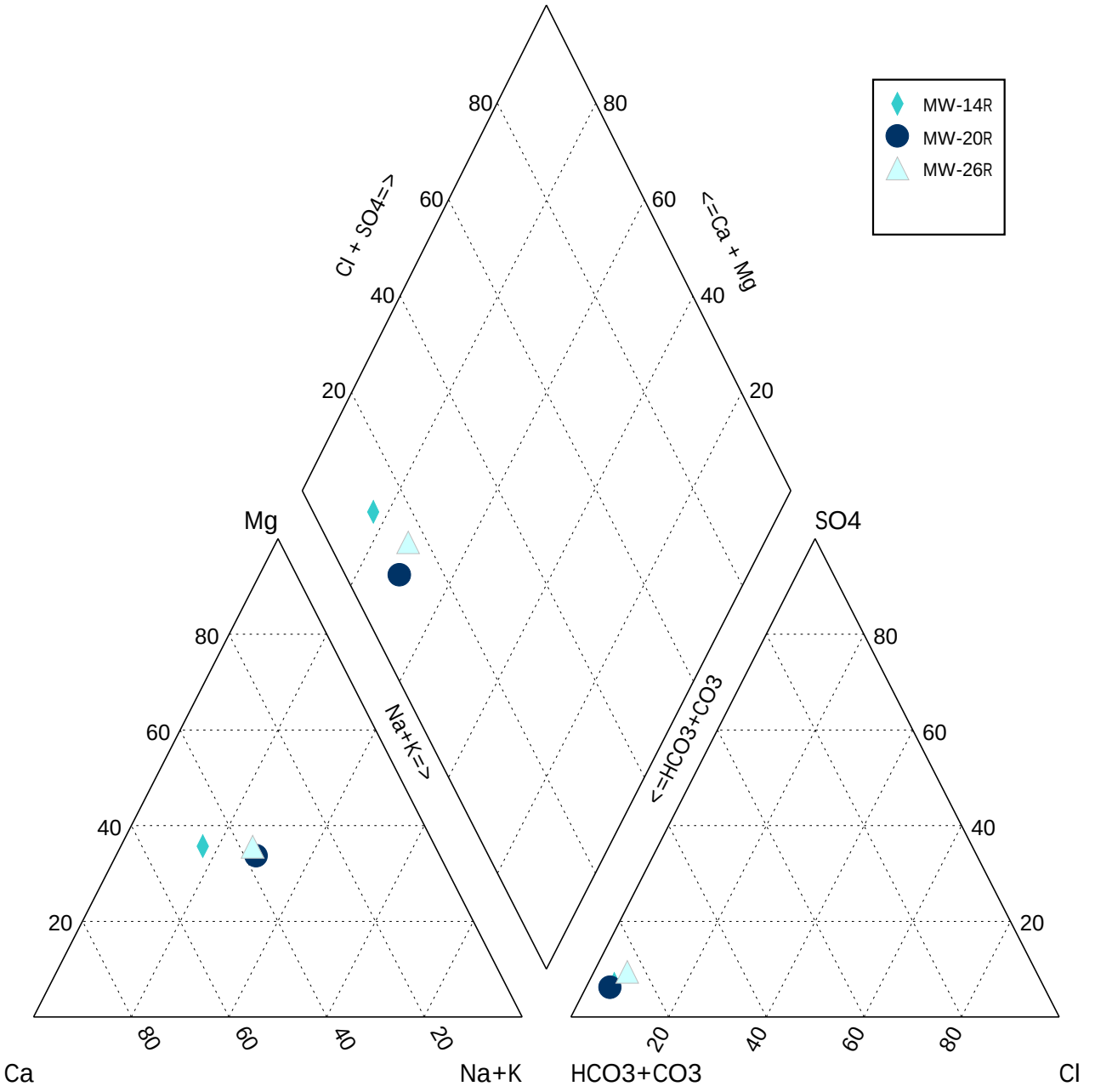
DESCRIPTION: Trilinear Diagram: Upper Regional Aquifer, Third Quarter 2017		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04217003.03
	CLIENT: LRI Hidden Valley	DATE: October 2017

Lower Regional Aquifer - First Quarter 2017



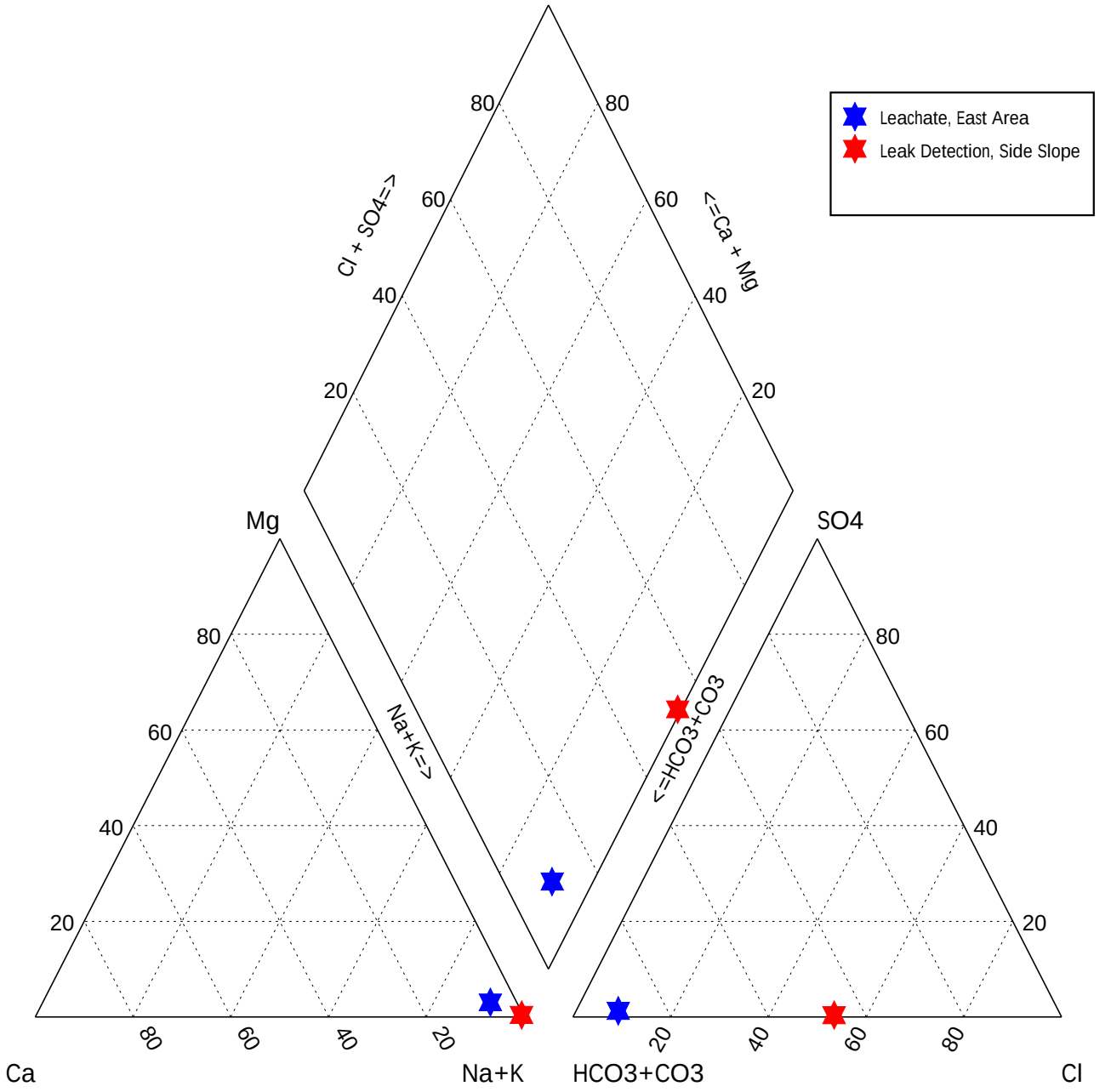
DESCRIPTION: Trilinear Diagram: Lower Regional Aquifer, First Quarter 2017		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04217003.03
	CLIENT: LRI Hidden Valley	DATE: May 2017

Lower Regional Aquifer - Third Quarter 2017



DESCRIPTION: Trilinear Diagram: Lower Regional Aquifer, Third Quarter 2017		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04217003.03
	CLIENT: LRI Hidden Valley	DATE: October 2017

Leachate and Leak Detection Locations - First Quarter 2017



DESCRIPTION: Trilinear Diagram: Leachate and Leak Detection, First Quarter 2017		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04217003.03
	CLIENT: LRI Hidden Valley	DATE: May 2017

Appendix G

STATISTICAL CALCULATIONS

Statistical Summary of Groundwater Data - Inorganics
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-10D																	
MW-10D	1/15/2013	139	139	78	78	5.8	5.8	0.1 L	0.05	1.6	1.6	8.2	8.2	120	120	1 L	0.5
MW-10D	4/23/2013	184	184	73	73	4.9	4.9	0.1 L	0.05	1.7	1.7	9.3	9.3	120	120	1 L	0.5
MW-10D	7/26/2013	133	133	49	49	4.8	4.8	0.1 L	0.05	0.5 L	0.25	4.9	4.9	87	87	1 L	0.5
MW-10D	10/8/2013	161	161	63	63	8.1	8.1	0.1 L	0.05	0.9	0.9	8.8	8.8	110	110	1 L	0.5
MW-10D	1/6/2014	100	100	65	65	8.6	8.6	0.1 L	0.05	0.8 H	0.8	13	13	120	120	1 L	0.5
MW-10D	4/7/2014	152	152	65	65	7.0	7.0	0.1 L	0.05	0.97	0.97	9.3	9.3	110	110	1 L	0.5
MW-10D	7/10/2014	210	210	83	83	5.5	5.5	0.1 L	0.05	1.8 J	1.8	8.1	8.1	140	140	1 L	0.5
MW-10D	10/29/2014	160	160	74	74	6.3	6.3	0.1 L	0.05	0.69	0.69	7.8	7.8	120	120	1 L	0.5
MW-10D	1/12/2015	195	195	88	88	5.9	5.9	0.1 L	0.05	1.8	1.8	7.5	7.5	140	140	1 L	0.5
MW-10D	4/20/2015	180.9	180.9	89	89	5.2	5.2	0.1 L	0.05	2.2	2.2	7.6	7.6	140	140	1 L	0.5
MW-10D	7/30/2015	195	195	67	67	6.7	6.7	0.1 L	0.05	0.79	0.79	11	11	120	120	1 L	0.5
MW-10D	10/13/2015	210	210	94	94	6.2	6.2	0.1 L	0.05	2.2	2.2	8.1	8.1	140	140	1 L	0.5
MW-10D	1/13/2016	226	226	93	93	5.9	5.9	0.38	0.38	2.1	2.1	7.9	7.9	150	150	1 L	0.5
MW-10D	4/19/2016	229	229	92	92	6.6	6.6	0.1 L	0.05	2.1	2.1	10	10	150	150	1 L	0.5
MW-10D	7/5/2016	231	231	87	87	8.0	8.0	0.1 L	0.05	0.99	0.99	14	14	130	130	1.1	1.1
MW-10D	10/10/2016	243	243	96	96	7.3	7.3	0.1 L	0.05	0.66	0.66	13.0	13	140	140	1	1
MW-10D	1/18/2017	217	217	84	84	5.6	5.6	0.1 L	0.05	1.7	1.7	11	11	140	140	1 L	0.5
MW-10D	7/13/2017	214	214	76	76	5.2	5.2	0.1 L	0.05	1.3	1.3	12	12	140	140	1 L	0.5
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		1		17		18		18		2	
Minimum conc.			100		49		4.8		0.050		0.25		4.9		87		0.5
Maximum conc.			243		96		8.6		0.380		2.2		14		150		1.1
Average conc.			188		79		6.3		0.068		1.4		9.5		129		0.6
Distribution			Lognormal		Lognormal		Lognormal		NC		Normal		Lognormal		Neither		NC
UCL 95			243*		96*		8.4		NC		2.2*		14*		150*		NC

Statistical Summary of Groundwater Data - Inorganics
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Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-10S																	
MW-10S	1/15/2013	149	149	60	60	8.1	8.1	0.1 L	0.05	1.3	1.3	7.0	7.0	89	89	1.0 L	0.5
MW-10S	4/23/2013	127	127	48	48	5	5	0.1 L	0.05	1.1	1.1	5.9	5.9	69	69	1.2	1.2
MW-10S	7/26/2013	133	133	52	52	5	5	0.1 L	0.05	0.5 L	0.25	5.1	5.1	88	88	1.0 L	0.5
MW-10S	10/8/2013	169	169	65	65	6.9	6.9	0.1 L	0.05	0.91	0.91	7.8	7.8	100	100	1.0 L	0.5
MW-10S	1/6/2014	160	160	65	65	9.4	9.4	0.1 L	0.05	0.82 H	0.82	12.0	12.0	120	120	2.0 L	1.0
MW-10S	4/7/2014	145	145	55	55	8.8	8.8	0.1 L	0.05	1.2	1.2	9.7	9.7	99	99	1.0	1.0
MW-10S	7/10/2014	160	160	62	62	6.3	6.3	0.1 L	0.05	0.59 J	0.59	8.7	8.7	100	100	1.0 L	0.5
MW-10S	10/29/2014	166	166	76	76	6.0	6.0	0.1 L	0.05	0.81	0.81	7.2	7.2	110	110	1.0 L	0.5
MW-10S	1/12/2015	173	173	70	70	8.3	8.3	0.1 L	0.05	1	1	9.7	9.7	110	110	1.0 L	0.5
MW-10S	4/20/2015	147	147	68	68	6.4	6.4	0.1 L	0.05	1	1	11.0	11.0	110	110	1.0	1.0
MW-10S	7/30/2015	195	195	70	70	6.8	6.8	0.1 L	0.05	0.79	0.79	11.0	11.0	120	120	1.0 L	0.5
MW-10S	10/13/2015	214	214	88	88	8.6	8.6	0.1 L	0.05	1.4	1.4	10	10.0	130	130	1.4	1.4
MW-10S	1/13/2016	243	243	91	91	13	13.0	0.1 L	0.05	1.5	1.5	12	12.0	140	140	1.1	1.1
MW-10S	4/18/2016	236	236	87	87	9	9.0	0.1 L	0.05	1.1	1.1	14.0	14.0	130	130	1.4	1.4
MW-10S	7/5/2016	235	235	88	88	8	8.0	0.1 L	0.05	0.75	0.75	15.0	15.0	130	130	1.2	1.2
MW-10S	10/10/2016	254	254	100	100	7.8	7.8	0.1 L	0.05	0.8	0.81	12.0	12.0	150	150	1.1	1.1
MW-10S	1/18/2017	245	245	92	92	7.9	7.9	0.1 L	0.05	1.1	1.1	15	15.0	150	150	1.2	1.2
MW-10S	7/13/2017	225	225	83	83	5.7	5.7	0.1 L	0.05	0.46	0.46	14.0	14.0	140	140	1.4	1.4
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		0		17		18		18		10	
Minimum conc.			127		48		5.0		0.05		0.25		5.1		69		0.5
Maximum conc.			254		100		13.0		0.05		1.5		15.0		150		1.4
Average conc.			188		73		7.6		0.05		0.9		10.4		116		0.9
Distribution			Lognormal		Lognormal		Lognormal		NC		Normal		Lognormal		Lognormal		Neither
UCL 95			254*		100*		11.3		NC		1.49		15*		150*		1.4*

Statistical Summary of Groundwater Data - Inorganics
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Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-11D(2)																	
MW-11D(2)	1/14/2013	144	144	89	89	5.5	5.5	0.1 L	0.05	1.7	1.7	6.2	6.2	140	140	1 L	0.5
MW-11D(2)	4/24/2013	212	212	88	88	5.3	5.3	0.1 L	0.05	1.7	1.7	6.6	6.6	140	140	1 L	0.5
MW-11D(2)	7/23/2013	219	219	89	89	5.3	5.3	0.1 L	0.05	1.7	1.7	6.5	6.5	160	160	1 L	0.5
MW-11D(2)	10/9/2013	218	218	95	95	4.9	4.9	0.1 L	0.05	1.8	1.8	6.7	6.7	140	140	1 L	0.5
MW-11D(2)	1/8/2014	210	210	99	99	6.2	6.2	0.1 L	0.05	1.8	1.8	6.9	6.9	140	140	1 L	0.5
MW-11D(2)	4/8/2014	204	204	94	94	6.8	6.8	0.1 L	0.05	1.7	1.7	7	7	150	150	1 L	0.5
MW-11D(2)	7/8/2014	210	210	85	85	6.5	6.5	0.1 L	0.05	1.7 J	1.7	6.9	6.9	140	140	1 L	0.5
MW-11D(2)	10/27/2014	329	329	88	88	6.5	6.5	0.1 L	0.05	1.8	1.8	7.7	7.7	140	140	1 L	0.5
MW-11D(2)	1/14/2015	214	214	100	100	7.2	7.2	0.1 L	0.05	1.8	1.8	7.1	7.1	140	140	1 L	0.5
MW-11D(2)	4/23/2015	221	221	90	90	6	6	0.1 L	0.05	1.7	1.7	7.7	7.7	140	140	1 L	0.5
MW-11D(2)	7/29/2015	220	220	89	89	6.2	6.2	0.1 L	0.05	1.8	1.8	7.8	7.8	130	130	1 L	0.5
MW-11D(2)	10/14/2015	211	211	91	91	6.9	6.9	0.1 L	0.05	1.6	1.6	8.5	8.5	140	140	1 L	0.5
MW-11D(2)	1/11/2016	216	216	87	87	5.4	5.4	0.1 L	0.05	1.8	1.8	7.8	7.8	260	260	1 L	0.5
MW-11D(2)	4/19/2016	217	217	86	86	6.2	6.2	0.1 L	0.05	1.8	1.8	8	8	140	140	1 L	0.5
MW-11D(2)	7/5/2016	217	217	85	85	6	6	0.1 L	0.05	1.8	1.8	7.9	7.9	130	130	1 L	0.5
MW-11D(2)	10/12/2016	214	214	86	86	6.2	6.2	0.1 L	0.05	1.9	1.9	8.0	8	140	140	1 L	0.5
MW-11D(2)	1/19/2017	213	213	85	85	6.1	6.1	0.1 L	0.05	1.7	1.7	8.2	8.2	130	130	1 L	0.5
MW-11D(2)	7/11/2017	199	199	82	82	7.2	7.2	0.1 L	0.05	1.7	1.7	8.3	8.3	140	140	1 L	0.5
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		0		17		18		18		0	
Minimum conc.			144		82		4.9		0.05		1.6		6.2		130		0.5
Maximum conc.			329		100		7.2		0.05		1.9		8.5		260		0.5
Average conc.			216		89		6.1		0.05		1.8		7.4		147		0.5
Distribution			Neither		Lognormal		Lognormal		NC		Neither		Lognormal		Neither		NC
UCL 95			329*		98.15		7.2*		NC		1.9*		8.5*		260*		NC

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Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-11S																	
MW-11S	1/14/2013	275	275	63	63	14.0	14.0	0.13	0.13	11	11	20	20	200	200	1.1	1.1
MW-11S	4/24/2013	270	270	66	66	17.0	17.0	0.1 L	0.05	5.9	5.9	20	20	170	170	1.5	1.5
MW-11S	7/23/2013	238	238	69	69	15.0	15.0	0.1 L	0.05	1.8	1.8	15	15	1100	1100	1 L	0.5
MW-11S	10/9/2013	207	207	51	51	11.0	11.0	0.1 L	0.05	4.6	4.6	13	13	140	140	1 L	0.5
MW-11S	1/8/2014	221	221	69	69	15.0	15.0	0.1 L	0.05	3.4	3.4	12	12	150	150	1.1	1.1
MW-11S	4/8/2014	283	283	57	57	17.0	17.0	0.1 L	0.05	11	11	19	19	210	210	1.2	1.2
MW-11S	7/8/2014	250	250	67	67	20.0	20.0	0.29	0.29	2.1 J	2.1	15	15	170	170	1.2	1.2
MW-11S	10/27/2014	236	236	65	65	21.0	21.0	0.1 L	0.05	4.5	4.5	11	11	170	170	1 L	0.5
MW-11S	1/14/2015	251	251	66	66	15.0	15.0	0.1 L	0.05	6.6	6.6	15	15	170	170	1 L	0.5
MW-11S	4/21/2015	262	262	78	78	13.0	13.0	0.1 L	0.05	3.6	3.6	16	16	170	170	1.2	1.2
MW-11S	7/29/2015	246	246	89	89	14.0	14.0	0.1 L	0.05	0.87	0.87	11	11	150	150	1 L	0.5
MW-11S	10/14/2015	238	238	95	95	15.0	15.0	0.1 L	0.05	0.2 L	0.1	11	11	150	150	1.2	1.2
MW-11S	1/11/2016	293	293	69	69	15.0	15.0	0.1 L	0.05	11	11	16	16	200	200	1.4	1.4
MW-11S	4/19/2016	204	204	53	53	12.0	12.0	0.1 L	0.05	3.5	3.5	14	14	130	130	1.5	1.5
MW-11S	7/5/2016	250	250	73	73	19.0	19.0	0.1 L	0.05	1.1	1.1	13	13	150	150	1.2	1.2
MW-11S	10/12/2016	245	245	78	78	19.0	19.0	0.1 L	0.05	0.8	0.76	12.0	12	150	150	1.0	1.0
MW-11S	1/18/2017	257	257	70	70	16.0	16.0	0.1 L	0.05	4.5	4.5	12	12	160	160	1.1	1.1
MW-11S	7/11/2017	201	201	65	65	13.0	13.0	0.17	0.17	1.5	1.5	13	13	160	160	1	1.0
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		3		17		18		18		13	
Minimum conc.			201		51		11.0		0.05		0.1		11.0		130		0.5
Maximum conc.			293		95		21.0		0.29		11.0		20.0		1100		1.5
Average conc.			246		69		15.6		0.07		4.3		14.3		217		1.0
Distribution			Lognormal		Lognormal		Lognormal		NC		Neither		Lognormal		Neither		Neither
UCL 95			293*		89.88		20.89		NC		**11.0***		19.94		**1100***		1.5*

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Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-12S																	
MW-12S	1/16/2013	250	250	48	48	9.8	9.8	0.48	0.48	12.0	12.0	6.1	6.1	180	180	1.8	1.8
MW-12S	1/15/2015	312	312	54	54	18.0	18.0	0.76	0.76	15	15	6.6	6.6	220	220	1.8	1.8
MW-12S	4/20/2015	243	243	130	130	13.0	13.0	1.2	1.2	0.2 L	0.1	1.6	1.6	180	180	3.1	3.1
MW-12S	7/31/2015	346	346	130	130	14.0	14.0	1.7	1.7	1.2	1.2	1.8	1.8	200	200	2.4	2.4
MW-12S	10/19/2015	337	337	150	150	13.0	13.0	1.00	1	1.1	1.1	4.0	4	210	210	2.4	2.4
MW-12S	1/14/2016	284	284	110	110	20.0	20.0	0.10 L	0.05	2.4	2.4	4.2	4.2	200	200	2.5	2.5
MW-12S	4/19/2016	428	428	170	170	28.0	28.0	2.00	2	0.2 L	0.1	1.2	1.2	240	240	4.6	4.6
MW-12S	7/6/2016	384	384	160	160	20.0	20.0	3.90	3.9	0.2 L	0.1	0.7	0.66	210	210	3.3	3.3
MW-12S	10/12/2016	362	362	150	150	20.0	20.0	1.80	1.8	1.4	1.4	2.1	2.1	210	210	2.1	2.1
MW-12S	1/19/2017	313	313	100	100	14.0	14.0	1.70	1.7	6.3	6.3	3.7	3.7	210	210	2.3	2.3
MW-12S	7/10/2017	398	398	160	160	23.0	23.0	3.80	3.8	0.2 L	0.1	0.6	0.63	230	230	3.8	3.8
No. Analyzed		11		11		11		11		11		11		11		11	
No. Detect		11		11		11		10		7		11		11		11	
Minimum conc.			243		48		9.8		0.05		0.1		0.63		180		1.8
Maximum conc.			428		170		28.0		3.90		15.0		6.6		240		4.6
Average conc.			332		124		17.5		1.67		3.6		3.0		208		2.7
Distribution			Lognormal		Neither		Lognormal		Normal		Neither		Lognormal		Lognormal		Lognormal
UCL 95			428*		170*		28*		3.90*		**15.0***		6.6*		240*		4.49
MW-12D																	
MW-12D	1/16/2013	327	327	140	140	9.6	9.6	0.1 L	0.05	1.2	1.2	5.5	5.5	190	190	1	1
MW-12D	7/26/2013	299	299	120	120	8.7	8.7	0.1 L	0.05	1.3	1.3	5.7	5.7	190	190	1 L	0.5
MW-12D	1/7/2014	310	310	150	150	10	10	0.1 L	0.05	1.1	1.1	5.7	5.7	200	200	1 L	0.5
MW-12D	7/11/2014	270	270	120	120	9	9	0.1 L	0.05	1.4 J	1.4	6.0	6.0	180	180	1 L	0.5
MW-12D	10/30/2014	294	294	150	150	13.0	13.0	0.1 L	0.05	1.1	1.1	6.0	6.0	190	190	1 L	0.5
MW-12D	1/13/2015	289	289	150	150	13.0	13.0	0.1 L	0.05	1.2	1.2	5.9	5.9	200	200	1 L	0.5
MW-12D	4/20/2015	244	244	130	130	9.3	9.3	0.1 L	0.05	1.3	1.3	6.4	6.4	190	190	1 L	0.5
MW-12D	7/31/2015	315	315	130	130	9.2	9.2	0.1 L	0.05	1.1	1.1	6.2	6.2	190	190	1 L	0.5
MW-12D	10/19/2015	316	316	140	140	9.3	9.3	0.1 L	0.05	1.1	1.1	6.1	6.1	210	210	1 L	0.5
MW-12D	1/14/2016	297	297	140	140	9.4	9.4	0.1 L	0.05	1.4	1.4	6.5	6.5	190	190	1 L	0.5
MW-12D	4/19/2016	278	278	120	120	8.3	8.3	0.1 L	0.05	1.6	1.6	6.9	6.9	230	230	1 L	0.5
MW-12D	7/6/2016	282	282	120	120	7.4	7.4	0.1 L	0.05	1.6	1.6	7.0	7.0	170	170	1 L	0.5
MW-12D	10/12/2016	293	293	130	130	9.2	9.2	0.1 L	0.05	1.3	1.3	6.4	6.4	180	180	1 L	0.5
MW-12D	1/19/2017	284	284	120	120	8.1	8.1	0.1 L	0.05	1.4	1.4	6.8	6.8	170	170	1 L	0.5
MW-12D	7/10/2017	266	266	110	110	7.7	7.7	0.1 L	0.05	1.5	1.5	6.8	6.8	170	170	1 L	0.5
No. Analyzed		15		15		15		15		15		15		15		15	
No. Detect		15		15		15		0		15		15		15		1	
Minimum conc.			244		110		7.4		0.05		1.1		5.5		170		0.5
Maximum conc.			327		150		13.0		0.05		1.6		7.0		230		1.0
Average conc.			291		131		9.4		0.05		1.3		6.3		190		0.5
Distribution			Lognormal		Lognormal		Neither		NC		Lognormal		Lognormal		Lognormal		NC
UCL 95			327*		150*		13.0*		NC		1.6*		7.0*		219.78		NC

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		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-13D																	
MW-13D	1/15/2013	285	285	140	140	12	12	0.1 L	0.05	1.1	1.1	13	13	190	190	1	1
MW-13D	4/23/2013	304	304	130	130	12	12	0.1 L	0.05	0.87	0.87	13	13	190	190	1.2	1.2
MW-13D	7/26/2013	350	350	140	140	12.0	12.0	0.1 L	0.05	0.5 L	0.25	17	17	220	220	1.3	1.3
MW-13D	10/8/2013	275	275	120	120	9.2	9.2	0.1 L	0.05	0.66	0.66	12	12	180	180	1 L	0.5
MW-13D	1/6/2014	133	133	140	140	10.0	10.0	0.1 L	0.05	0.52 H	0.52	18	18	220	220	2 L	1
MW-13D	4/7/2014	340	340	140	140	17.0	17.0	0.1 L	0.05	6	6	16	16	240	240	1 L	0.5
MW-13D	7/8/2014	340	340	140	140	21.0	21.0	0.1 L	0.05	0.33 J	0.33	14	14	240	240	1.1	1.1
MW-13D	10/29/2014	272	272	120	120	9.9	9.9	0.1 L	0.05	0.83	0.83	12	12	180	180	1 L	0.5
MW-13D	1/12/2015	272	272	120	120	12.0	12.0	0.1 L	0.05	0.78	0.78	12	12	180	180	1 L	0.5
MW-13D	4/20/2015	266	266	130	130	12.0	12.0	0.1 L	0.05	0.73	0.73	15	15	210	210	1	1
MW-13D	7/30/2015	370	370	142	142	13.0	13.0	0.1 L	0.05	0.21	0.21	19	19	220	220	1.3	1.3
MW-13D	10/14/2015	324	324	140	140	11.0	11.0	0.1 L	0.05	0.43	0.43	18	18	200	200	1.1	1.1
MW-13D	1/13/2016	360	360	140	140	14.0	14.0	0.1 L	0.05	3.8	3.8	16	16	230	230	1 L	0.5
MW-13D	4/19/2016	379	379	150	150	17.0	17.0	0.1 L	0.05	0.84	0.84	15	15	230	230	1.2	1.2
MW-13D	7/6/2016	366	366	150	150	15.0	15.0	0.1 L	0.05	0.54	0.54	12	12	220	220	1 L	0.5
MW-13D	10/10/2016	345	345	150	150	14.0	14.0	0.1 L	0.05	0.6	0.58	14	14	200	200	1.0 L	0.5
MW-13D	1/18/2017	341	341	140	140	12.0	12.0	0.1 L	0.05	0.57	0.57	16	16	200	200	1.1	1.1
MW-13D	7/10/2017	358	358	150	150	15.0	15.0	0.1 L	0.05	0.57	0.57	10	10	220	220	1.3	1.3
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		0		17		18		18		10	
Minimum conc.			133		120		9.2		0.05		0.2		10.0		180		0.5
Maximum conc.			379		150		21.0		0.05		6.0		19.0		240		1.3
Average conc.			316		138		13.2		0.05		1.1		14.6		209		0.9
Distribution			Neither		Neither		Lognormal		NC		Neither		Lognormal		Lognormal		Neither
UCL 95			379*		150*		18.74		NC		6.0*		19.0*		240*		1.3*

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		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-13S																	
MW-13S	1/15/2013	257	257	93	93	10	10	0.1 L	0.05	1.9	1.9	15.0	15.0	160	160	1.2	1.2
MW-13S	4/23/2013	257	257	92	92	11	11	0.1 L	0.05	1.2	1.2	19.0	19.0	170	170	1.5	1.5
MW-13S	7/26/2013	300	300	110	110	12	12	0.1 L	0.05	1	1	20.0	20.0	190	190	1.2	1.2
MW-13S	10/8/2013	217	217	89	89	6.4	6.4	0.1 L	0.05	0.64	0.64	11.0	11.0	140	140	1.2	1.2
MW-13S	1/6/2014	190	190	120	120	9.7	9.7	0.1 L	0.05	0.33 H	0.33	20.0	20.0	210	210	2.3	2.3
MW-13S	4/9/2014	286	286	58	58	20	20	0.1 L	0.05	18	18	19.0	19.0	230	230	1.1	1.1
MW-13S	7/8/2014	340	340	130	130	22	22	0.1 L	0.05	0.5 L	0.3	16.0	16.0	230	230	1.6	1.6
MW-13S	10/29/2014	209	209	99	99	7.1	7.1	0.1 L	0.05	0.8	0.8	8.4	8.4	150	150	1.0 L	0.5
MW-13S	1/13/2015	195	195	89	89	8.8	8.8	0.1 L	0.05	1	1	11.0	11.0	140	140	1.0 L	0.5
MW-13S	4/20/2015	268	268	120	120	14	14	0.1 L	0.05	0.27	0.27	20.0	20.0	200	200	1.2	1.2
MW-13S	7/30/2015	352	352	160	160	13	13	0.1 L	0.05	0.2 L	0.1	22.0	22.0	220	220	1.3	1.3
MW-13S	10/14/2015	308	308	140	140	9.7	9.7	0.1 L	0.05	0.2 L	0.1	19.0	19.0	190	190	1.2	1.2
MW-13S	1/13/2016	383	383	110	110	16	16	0.1 L	0.05	10.0	10	17.0	17.0	250	250	1.0	1
MW-13S	4/19/2016	420	420	140	140	28	28	0.1 L	0.05	0.65	0.65	19.0	19.0	240	240	1.7	1.7
MW-13S	7/6/2016	383	383	150	150	20	20	0.1	0.1	0.2 L	0.1	8.8	8.8	210	210	1.6	1.6
MW-13S	10/11/2016	366	366	150	150	18.0	18	0.1 L	0.05	0.2 L	0.1	16.0	16.0	220	220	1.2	1.2
MW-13S	1/18/2017	323	323	130	130	12	12	0.1 L	0.05	0.5	0.46	17.0	17.0	190	190	1.2	1.2
MW-13S	7/10/2017	359	359	140	140	18	18	0.11	0.11	0.2 L	0.1	6.4	6.4	230	230	2.1	2.1
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		2		12		18		18		16	
Minimum conc.			190		58		6.4		0.05		0.1		6.4		140		0.5
Maximum conc.			420		160		28.0		0.11		18.0		22.0		250		2.3
Average conc.			301		118		14.2		0.06		2.1		15.8		198		1.3
Distribution			Lognormal		Lognormal		Lognormal		NC		Lognormal		Normal		Lognormal		Normal
UCL 95			420*		160*		26.48		NC		8.41		22.0*		250*		2.13

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		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-14D																	
MW-14D	1/15/2013	185	185	78	78	9.4	9.4	4.1	4.1	0.5 L	0.25	10.0	10.0	110	110	1.9	1.9
MW-14D	4/23/2013	181	181	65	65	6.8	6.8	3.7	3.7	0.5 L	0.25	10.0	10.0	100	100	1.9	1.9
MW-14D	7/26/2013	196	196	74	74	23	23	0.16	0.16	0.5 L	0.25	7.4	7.4	150	150	2.0	2.0
MW-14D	10/8/2013	202	202	72	72	11	11	3.9	3.9	0.5 L	0.25	11.0	11.0	120	120	1.6	1.6
MW-14D	1/6/2014	142	142	88	88	10	10	4.2	4.2	0.2 L	0.1	11.0	11.0	150	150	1.7	1.7
MW-14D	4/7/2014	139	139	58	58	8.7	8.7	2.5	2.5	0.5 L	0.25	8.9	8.9	100	100	1.4	1.4
MW-14D	7/10/2014	180	180	63	63	7.8	7.8	3.4	3.4	0.5 L	0.25	11.0	11.0	120	120	1.3	1.3
MW-14D	10/29/2014	218	218	76	76	16	16	4.3	4.3	0.5 L	0.25	12.0	12.0	150	150	1.3	1.3
MW-14D	1/12/2015	181	181	70	70	11	11	3.7	3.7	0.2 L	0.10	9.8	9.8	120	120	1.5	1.5
MW-14D	4/20/2015	159	159	72	72	7.7	7.7	4	4	0.2 L	0.10	11.0	11.0	110	110	1.7	1.7
MW-14D	7/27/2015	212	212	75	75	9.7	9.7	3.9	3.9	0.2 L	0.10	12.0	12.0	140	140	1.3	1.3
MW-14D	10/13/2015	265	265	100	100	15.0	15	4.1	4.1	0.2 L	0.10	10.0	10.0	150	150	1.9	1.9
MW-14D	1/13/2016	190	190	72	72	8.1	8.1	2.8	2.8	0.2 L	0.10	8.4	8.4	110	110	1.5	1.5
MW-14D	4/18/2016	206	206	76	76	9.6	9.6	2.7	2.7	0.2 L	0.10	11.0	11.0	120	120	1.6	1.6
MW-14D	8/4/2016	235	235	95	95	10.0	10	4.0	4	0.2 L	0.10	13.0	13.0	140	140	2.0	2
MW-14D	10/10/2016	264	264	91	91	15.0	15	4.1	4.1	0.2 L	0.10	12.0	12.0	140	140	1.5	1.5
MW-14D	1/18/2017	238	238	88	88	10.0	10	3.9	3.9	0.2 L	0.10	11.0	11.0	140	140	1.8	1.8
MW-14D	7/12/2017	238	238	84	84	8.3	8.3	3.7	3.7	0.2 L	0.10	10.0	10.0	130	130	1.7	1.7
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		18		0		18		18		18	
Minimum conc.			139		58		6.8		0.16		0.1		7.4		100		1.3
Maximum conc.			265		100		23		4.3		0.25		13		150		2.0
Average conc.			202		78		11		3.5		0.2		11		128		1.6
Distribution			Lognormal		Lognormal		Neither		Neither		NC		Lognormal		Lognormal		Lognormal
UCL 95			265*		98.82		23*		4.3*		NC		13*		150*		2.0*
MW-14R																	
MW-14R	1/15/2013	105	105	49	49	1.7	1.7	0.1 L	0.05	0.5 L	0.25	3.5	3.5	93	93	1 L	0.5
MW-14R	1/7/2014	98	98	47	47	1.7	1.7	0.1 L	0.05	0.21	0.21	3.6	3.6	95	95	1 L	0.5
MW-14R	7/11/2014	100	100	45	45	1.7	1.7	0.1 L	0.05	0.2 J	0.2	3.6	3.6	99	99	1 L	0.5
MW-14R	10/28/2014	92	92	47	47	2.1	2.1	0.1 L	0.05	0.5 L	0.25	3.6	3.6	97	97	1 L	0.5
MW-14R	1/13/2015	92	92	49	49	2.2	2.2	0.1 L	0.05	0.2 L	0.10	3.6	3.6	94	94	1 L	0.5
MW-14R	4/22/2015	106	106	47	47	1.8	1.8	0.1 L	0.05	0.2 L	0.10	3.6	3.6	99	99	1 L	0.5
MW-14R	7/30/2015	105	105	46	46	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.6	3.6	100	100	1 L	0.5
MW-14R	10/13/2015	102	102	50	50	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.9	3.9	95	95	1 L	0.5
MW-14R	1/12/2016	103	103	56	56	1.8	1.8	0.1 L	0.05	0.2 L	0.10	3.5	3.5	94	94	1 L	0.5
MW-14R	4/18/2016	106	106	47	47	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.6	3.6	96	96	1 L	0.5
MW-14R	7/6/2016	103	103	47	47	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.7	3.7	89	89	1 L	0.5
MW-14R	10/12/2016	104	104	47	47	1.8	1.8	0.1 L	0.05	0.2 L	0.10	3.6	3.6	96	96	1 L	0.5
MW-14R	1/18/2017	105	105	47	47	1.6	1.6	0.1 L	0.05	0.2 L	0.10	3.6	3.6	91	91	1 L	0.5
MW-14R	7/11/2017	99	99	46	46	2.0	2.0	0.1 L	0.05	0.2 L	0.10	3.4	3.4	100	100	1 L	0.5
No. Analyzed		14		14		14		14		14		14		14		14	
No. Detect		14		14		14		0		2		14		14		0	
Minimum conc.			92		45		1.6		0.05		0.1		3.4		89		0.5
Maximum conc.			106		56		2.2		0.05		0.3		3.9		100		0.5
Average conc.			101		48		1.8		0.05		0.1		3.6		96		0.5
Distribution			Neither		Neither		Neither		NC		NC		Neither		Lognormal		NC
UCL 95			106*		56*		2.2*		NC		NC		3.9*		100*		NC

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		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-14S																	
MW-14S	1/14/2013	98	98	37	37	4.1	4.1	0.13	0.13	1.6	1.6	5.9	5.9	73	73	1.7	1.7
MW-14S	4/23/2013	114	114	38	38	4.8	4.8	0.39	0.39	0.99	0.99	7.3	7.3	64	64	1.8	1.8
MW-14S	7/26/2013	254	254	66	66	6.6	6.6	3.7	3.7	0.5 L	0.25	12	12	120	120	1.3	1.3
MW-14S	10/8/2013	160	160	56	56	9.3	9.3	0.1	0.1	1.6	1.6	6.6	6.6	110	110	2.3	2.3
MW-14S	1/6/2014	200	200	86	86	16	16	0.51	0.51	0.2 L	0.1	8.8	8.8	150	150	2	2
MW-14S	4/7/2014	114	114	39	39	7.1	7.1	0.18	0.18	1.6	1.6	7.7	7.7	83	83	1.3	1.3
MW-14S	7/9/2014	140	140	43	43	8.8	8.8	0.2	0.20	0.56 J	0.56	9.5	9.5	98	98	1.1	1.1
MW-14S	10/29/2014	185	185	63	63	12	12	0.35	0.35	0.78	0.78	7.1	7.1	120	120	2	2
MW-14S	1/12/2015	115	115	41	41	4.9	4.9	0.1 L	0.05	1.8	1.8	6.1	6.1	85	85	1.3	1.3
MW-14S	4/20/2015	117	117	49	49	7.4	7.4	0.1 L	0.05	0.74	0.74	9.3	9.3	89	89	1.5	1.5
MW-14S	7/27/2015	217	217	74	74	17	17	0.35	0.35	0.2 L	0.1	8.2	8.2	130	130	1.5	1.5
MW-14S	10/15/2015	246	246	96	96	22	22	0.78	0.78	0.2 L	0.1	7.7	7.7	160	160	2	2
MW-14S	1/13/2016	178	178	64	64	8.2	8.2	0.36	0.36	1.3	1.3	7.4	7.4	110	110	1.5	1.5
MW-14S	4/18/2016	192	192	63	63	9.8	9.8	0.28	0.28	0.86	0.86	11	11	120	120	1.7	1.7
MW-14S	7/6/2016	216	216	70	70	13	13	0.1 L	0.05	0.42	0.42	14	14	130	130	1.3	1.3
MW-14S	10/14/2016	231	231	74	74	14	14	0.27	0.27	2.2	2.2	8.2	8.2	140	140	2.2	2.2
MW-14S	1/18/2017	176	176	62	62	7.7	7.7	0.75	0.75	0.64	0.64	8.9	8.9	110	110	1.6	1.6
MW-14S	7/12/2017	196	196	67	67	6.8	6.8	0.46	0.46	0.34	0.34	11	11	110	110	1.7	1.7
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		15		14		18		18		18	
Minimum conc.			98		37		4.1		0.05		0.1		5.9		64		1.1
Maximum conc.			254		96		22.0		3.7		2.2		14.0		160		2.3
Average conc.			175		60		10.0		0.498		0.9		8.7		111		1.7
Distribution			Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal
UCL 95			254*		96*		20.02		1.83		2.2*		12.72		160*		2.3*
MW-15D																	
MW-15D	1/14/2013	212	212	150	150	11	11	0.1 L	0.05	0.5 L	0.25	9.2	9.2	190	190	1.3	1.3
MW-15D	7/25/2013	293	293	120	120	9.3	9.3	0.1 L	0.05	0.54	0.54	9.4	9.4	170	170	1 L	0.5
MW-15D	1/7/2014	272	272	120	120	8.8	8.8	0.1 L	0.05	0.79 H	0.79	9.2	9.2	180	180	1 L	0.5
MW-15D	7/9/2014	270	270	140	140	11.0	11	0.1	0.1	0.52 J	0.52	9.5	9.5	180	180	1.2	1.2
MW-15D	10/28/2014	291	291	140	140	13.0	13	0.1 L	0.05	0.53	0.53	9.3	9.3	200	200	1 L	0.5
MW-15D	1/13/2015	281	281	140	140	12.0	12	0.1 L	0.05	0.5	0.5	9.6	9.6	190	190	1 L	0.5
MW-15D	4/21/2015	296	296	130	130	9.5	9.5	0.1 L	0.05	0.55	0.55	10	10	180	180	1.2	1.2
MW-15D	7/27/2015	282	282	120	120	10.0	10	0.1 L	0.05	0.65	0.65	9.7	9.7	180	180	1 L	0.5
MW-15D	7/27/2015	282	282	120	120	10.0	10	0.1 L	0.05	0.65	0.65	9.7	9.7	180	180	1 L	0.5
MW-15D	1/13/2016	294	294	130	130	9.7	9.7	0.1 L	0.05	0.58	0.58	10	10	170	170	1.1	1.1
MW-15D	4/18/2016	266	266	110	110	8.1	8.1	0.1 L	0.05	1.00	1	9.6	9.6	160	160	1 L	0.5
MW-15D	7/6/2016	266	266	110	110	8.8	8.8	0.1 L	0.05	0.94	0.94	9.9	9.9	160	160	1 L	0.5
MW-15D	10/10/2016	291	291	120	120	9.9	9.9	0.1 L	0.05	0.8	0.8	8.6	8.6	160	160	1 L	0.5
MW-15D	1/17/2017	277	277	120	120	8.7	8.7	0.1 L	0.05	0.83	0.83	10	10	380	380	1 L	0.5
MW-15D	7/11/2017	237	237	110	110	8.4	8.4	0.1 L	0.05	0.98	0.98	9.3	9.3	180	180	1.0 L	0.5
No. Analyzed		15		15		15		15		15		15		15		15	
No. Detect		15		15		15		1		14		15		15		4	
Minimum conc.			212		110		8.1		0.05		0.25		8.6		160		0.5
Maximum conc.			296		150		13.0		0.10		1.00		10.0		380		1.3
Average conc.			274		125		9.9		0.05		0.67		9.5		191		0.7
Distribution			Neither		Lognormal		Lognormal		NC		Normal		Lognormal		Neither		NC
UCL 95			296*		148.88		12.4		NC		1.00*		10.0*		380*		NC

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Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-15S																	
MW-15S	1/14/2013	253	253	95	95	16	16	4.3	4.3	1.6	1.6	10	10	160	160	1.9	1.9
MW-15S	7/25/2013	208	208	65	65	12	12	3.7	3.7	0.5 L	0.25	14.0	14.0	120	120	1.2	1.2
MW-15S	1/7/2014	257	257	100	100	14	14	4.3	4.3	0.2 L	0.1	11.0	11.0	160	160	1.7	1.7
MW-15S	7/9/2014	230	230	67	67	20	20	2.9	2.9	0.5 L	0.25	9.9	9.9	140	140	1.8	1.8
MW-15S	10/28/2014	271	271	81	81	17	17	3.9	3.9	6.1	6.1	8.8	8.8	170	170	1.9	1.9
MW-15S	1/13/2015	232	232	86	86	15	15	3	3	2.5	2.5	9.3	9.3	150	150	1.4	1.4
MW-15S	4/21/2015	240	240	88	88	13	13	3.6	3.6	0.2 L	0.1	9.4	9.4	140	140	1.9	1.9
MW-15S	7/27/2015	252	252	94	94	15	15.0	4.4	4.40	0.2 L	0.1	8.3	8.3	150	150	1.6	1.6
MW-15S	10/13/2015	297	297	150	150	16	16.0	4.7	4.70	0.2 L	0.1	7.3	7.3	160	160	2.1	2.1
MW-15S	1/13/2016	235	235	85	85	10	10.0	3.3	3.30	1.1	1.1	8.4	8.4	130	130	1.6	1.6
MW-15S	4/18/2016	259	259	95	95	12	12.0	2.9	2.90	0.42	0.42	10	10	150	150	1.6	1.6
MW-15S	7/6/2016	273	273	91	91	17	17.0	3.4	3.40	0.2 L	0.1	11	11	140	140	1.8	1.8
MW-15S	10/10/2016	270	270	89	89	19	19.0	2.8	2.80	0.2 L	0.1	11	11	150	150	1.7	1.7
MW-15S	1/17/2017	279	279	100	100	14	14.0	3.5	3.50	0.2 L	0.1	11	11	160	160	1.6	1.6
MW-15S	7/10/2017	264	264	96	96	12	12.0	2.7	2.70	0.2 L	0.1	11	11	160	160	1.6	1.6
No. Analyzed		15		15		15		15		15		15		15		15	
No. Detect		15		15		15		15		5		15		15		15	
Minimum conc.			208		65		10.0		2.7		0.1		7.3		120		1.2
Maximum conc.			297		150		20.0		4.7		6.1		14.0		170		2.1
Average conc.			255		92		14.8		3.6		0.9		10.0		149		1.7
Distribution			Lognormal		Neither		Lognormal		Lognormal		NC		Lognormal		Lognormal		Lognormal
UCL 95			297*		150*		20.0*		4.7*		NC		13.11		170*		2.1*
MW-17S																	
MW-17S	1/15/2013	438	438	120	120	16.0	16.0	4.1	4.1	20	20	7.1	7.1	290	290	1.8	1.8
MW-17S	4/24/2013	426	426	180	180	17.0	17.0	5.8	5.8	4.2	4.2	5.6	5.6	260	260	2.6	2.6
MW-17S	7/25/2013	411	411	180	180	15.0	15.0	5.3	5.3	0.5 L	0.25	3.8	3.8	220	220	1.7	1.7
MW-17S	10/10/2013	445	445	180	180	13.0	13.0	7.0	7.0	3.6	3.6	3.8	3.8	240	240	2.0	2.0
MW-17S	1/9/2014	434	434	200	200	13.0	13.0	8.4	8.4	1.7	1.7	4.4	4.4	240	240	2.1	2.1
MW-17S	4/8/2014	523	523	140	140	27.0	27.0	5.6	5.6	23	23	10	10	350	350	2.0	2.0
MW-17S	7/8/2014	350	350	120	120	23.0	23.0	2.5	2.5	1.5 J	1.5	8.2	8.2	220	220	1.8	1.8
MW-17S	10/28/2014	377	377	170	170	20.0	20.0	4.8	4.8	0.5 L	0.25	4.1	4.1	230	230	2.4	2.4
MW-17S	1/13/2015	340	340	79	79	17.0	17.0	1.3	1.3	19	19	4.9	4.9	260	260	1.4	1.4
MW-17S	4/23/2015	424	424	160	160	18.0	18.0	4.8	4.8	4.1	4.1	5.4	5.4	240	240	1.9	1.9
MW-17S	7/27/2015	395	395	180	180	14.0	14.0	6.3	6.3	0.2 L	0.1	2.9	2.9	230	230	1.7	1.7
MW-17S	10/15/2015	404	404	200	200	13.0	13.0	10	10.0	0.2 L	0.1	1.5	1.5	220	220	2.2	2.2
MW-17S	1/12/2016	564	564	150	150	23.0	23.0	6.5	6.5	21	21	7.7	7.7	340	340	2.0	2.0
MW-17S	4/19/2016	442	442	190	190	26.0	26.0	4.4	4.4	0.66	0.66	5.7	5.7	240	240	2.7	2.7
MW-17S	7/6/2016	400	400	160	160	21.0	21.0	4.6	4.6	0.2 L	0.1	4.8	4.8	220	220	2.1	2.1
MW-17S	10/13/2016	411	411	170	170	22.0	22.0	4.2	4.2	0.2 L	0.1	4.7	4.7	250	250	2.0	2.0
MW-17S	1/17/2017	435	435	170	170	17.0	17.0	4.8	4.8	3.9	3.9	4.4	4.4	230	230	2.0	2.0
MW-17S	7/11/2017	367	367	150	150	24.0	24.0	4.6	4.6	0.31	0.31	5.2	5.2	220	220	2.0	2.0
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		18		12		18		18		18	
Minimum conc.			340		79		13.0		1.30		0.1		1.5		220		1.4
Maximum conc.			564		200		27.0		10.00		23.0		10.0		350		2.7
Average conc.			421		161		18.8		5.28		5.8		5.2		250		2.0
Distribution			Lognormal		Normal		Lognormal		Normal		Lognormal		Lognormal		Neither		Lognormal
UCL 95			522		200*		27*		8.78		**23.0***		10.0*		350*		2.63

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		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-18D																	
MW-18D	1/14/2013	212	212	130	130	8.8	8.8	0.1 L	0.05	1.7	1.7	5.1	5.1	170	170	1 L	0.5
MW-18D	7/23/2013	275	275	120	120	8.1	8.1	0.1 L	0.05	1.7	1.7	5.3	5.3	180	180	1 L	0.5
MW-18D	1/9/2014	268	268	120	120	8.4	8.4	0.1 L	0.05	1.7	1.7	5.4	5.4	180	180	1 L	0.5
MW-18D	7/9/2014	260	260	110	110	9.6	9.6	0.1 L	0.05	1.6 J	1.6 J	5.5	5.5	170	170	1 L	0.5
MW-18D	10/27/2014	247	247	110	110	9.2	9.2	0.1 L	0.05	1.7	1.7	5.8	5.8	180	180	1 L	0.5
MW-18D	1/14/2015	263	263	120	120	9.6	9.6	0.1 L	0.05	1.6	1.6	5.5	5.5	170	170	1 L	0.5
MW-18D	4/23/2015	274	274	120	120	8.9	8.9	0.1 L	0.05	1.5	1.5	6.0	6.0	170	170	1 L	0.5
MW-18D	7/29/2015	274	274	120	120	8.9	8.9	0.1 L	0.05	1.6	1.6	6.3	6.3	170	170	1 L	0.5
MW-18D	10/16/2015	263	263	110	110	9.6	9.6	0.1 L	0.05	1.6	1.6	6.8	6.8	170	170	1 L	0.5
MW-18D	1/11/2016	260	260	120	120	7.6	7.6	0.1 L	0.05	1.6	1.6	6.5	6.5	170	170	1 L	0.5
MW-18D	4/19/2016	269	269	120	120	8.2	8.2	0.1 L	0.05	1.7	1.7	6.6	6.6	170	170	1 L	0.5
MW-18D	7/6/2016	269	269	110	110	7.7	7.7	0.1 L	0.05	1.6	1.6	6.7	6.7	170	170	1 L	0.5
MW-18D	10/11/2016	262	262	110	110	8.1	8.1	0.1 L	0.05	1.6	1.6	6.5	6.5	170	170	1 L	0.5
MW-18D	1/17/2017	260	260	110	110	7.2	7.2	0.1 L	0.05	1.7	1.7	6.7	6.7	170	170	1 L	0.5
MW-18D	7/13/2017	273	273	110	110	7.4	7.4	0.1 L	0.05	1.6	1.6	6.5	6.5	170	170	1 L	0.5
No. Analyzed		15		15		15		15		15		15		15		15	
No. Detect		15		15		15		0		15		15		15		0	
Minimum conc.			212		110		7.2		0.05		1.5		5.1		170		0.5
Maximum conc.			275		130		9.6		0.05		1.7		6.8		180		0.5
Average conc.			262		116		8.5		0.05		1.6		6.1		172		0.5
Distribution			Neither		Neither		Lognormal		NC		Neither		Lognormal		Neither		NC
UCL 95			275*		130*		9.6*		NC		1.7*		6.8*		180*		NC
MW-18S																	
MW-18S	1/14/2013	347	347	130	130	13.0	13.0	0.1 L	0.05	9.8	9.8	8.3	8.3	250	250	1.4	1.4
MW-18S	7/23/2013	304	304	130	130	12.0	12.0	0.1 L	0.05	0.61	0.61	5.5	5.5	190	190	1.5	1.5
MW-18S	1/9/2014	327	327	130	130	12.0	12.0	0.1 L	0.05	5 H	5	5.2	5.2	220	220	1.1	1.1
MW-18S	7/9/2014	310	310	120	120	20.0	20.0	0.1 L	0.05	0.84 J	0.84	6.2	6.2	210	210	1.4	1.4
MW-18S	10/27/2014	295	295	130	130	17.0	17.0	0.1 L	0.05	0.2	0.2	4.5	4.5	190	190	1.1	1.1
MW-18S	1/14/2015	371	371	130	130	15.0	15.0	0.1 L	0.05	9.20	9.2	6.3	6.3	240	240	1.1	1.1
MW-18S	4/23/2015	334	334	120	120	14.0	14.0	0.1 L	0.05	4.00	4	7.8	7.8	200	200	1.5	1.5
MW-18S	7/29/2015	315	315	140	140	14.0	14.0	0.1 L	0.05	0.36	0.36	5.3	5.3	190	190	1.6	1.6
MW-18S	10/16/2015	317	317	140	140	15.0	15.0	0.1 L	0.05	0.3	0.34	4.2	4.2	200	200	1.7	1.7
MW-18S	1/11/2016	410	410	120	120	17.0	17.0	0.1 L	0.05	11	11	10	10	260	260	1.4	1.4
MW-18S	4/19/2016	360	360	140	140	26.0	26.0	0.1 L	0.05	0.55	0.55	4.8	4.8	210	210	2.1	2.1
MW-18S	7/6/2016	343	343	140	140	22.0	22.0	0.1 L	0.05	0.2 L	0.1	4.6	4.6	200	200	1.6	1.6
MW-18S	10/11/2016	337	337	140	140	21.0	21.0	0.1 L	0.05	0.2 L	0.1	3.4	3.4	210	210	1.4	1.4
MW-18S	1/17/2017	395	395	130	130	15.0	15.0	0.1 L	0.05	11	11	4.9	4.9	230	230	1.4	1.4
MW-18S	7/13/2017	365	365	130	130	24.0	24.0	0.1 L	0.05	0.49	0.49	3.5	3.5	200	200	1.9	1.9
No. Analyzed		15		15		15		15		15		15		15		15	
No. Detect		15		15		15		0		13		15		15		15	
Minimum conc.			295		120		12.0		0.05		0.1		3.4		190		1.1
Maximum conc.			410		140		26.0		0.05		11.0		10.0		260		2.1
Average conc.			342		131		17.1		0.05		3.6		5.6		213		1.5
Distribution			Lognormal		Neither		Lognormal		NC		Lognormal		Lognormal		Lognormal		Lognormal
UCL 95			402.16		140*		25.82		NC		4.57		9.2		254.77		2.04

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		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-20R																	
MW-20R	1/16/2013	91	91	45	45	1.6	1.6	0.1 L	0.05	0.5 L	0.25	2.9	2.9	80	80	1 L	0.5
MW-20R	1/10/2014	97	97	48	48	1.8	1.8	0.1 L	0.05	0.2 L	0.1	3.0	3.0	91	91	1 L	0.5
MW-20R	7/11/2014	99	99	44	44	1.7	1.7	0.1 L	0.05	0.5 L	0.25	2.9	2.9	200	200	1 L	0.5
MW-20R	10/30/2014	91	91	46	46	2.0	2.0	0.1 L	0.05	0.5 L	0.25	3.0	3.0	94	94	1 L	0.5
MW-20R	1/12/2015	90	90	45	45	2.0	2.0	0.1 L	0.05	0.2 L	0.1	2.9	2.9	89	89	1 L	0.5
MW-20R	4/23/2015	100	100	47	47	1.8	1.8	0.1 L	0.05	0.2 L	0.1	3.0	3.0	90	90	1 L	0.5
MW-20R	7/28/2015	100	100	47	47	1.8	1.8	0.1 L	0.05	0.2 L	0.1	3.1	3.1	85	85	1 L	0.5
MW-20R	10/14/2015	97	97	48	48	1.7	1.7	0.1 L	0.05	0.2 L	0.1	3.2	3.2	85	85	1 L	0.5
MW-20R	1/12/2016	94	94	46	46	1.6	1.6	0.1 L	0.05	0.2 L	0.1	3.0	3.0	88	88	1 L	0.5
MW-20R	4/19/2016	102	102	48	48	1.8	1.8	0.1 L	0.05	0.2 L	0.1	3.1	3.1	97	97	1 L	0.5
MW-20R	7/6/2016	100	100	46	46	1.7	1.7	0.1 L	0.05	0.2 L	0.1	3.1	3.1	79	79	1 L	0.5
MW-20R	10/13/2016	100	100	47	47	1.7	1.7	0.1 L	0.05	0.2 L	0.1	2.8	2.8	100	100	1 L	0.5
MW-20R	1/18/2017	100	100	46	46	1.6	1.6	0.1 L	0.05	0.2 L	0.1	3.1	3.1	85	85	1 L	0.5
MW-20R	7/12/2017	105	105	44	44	1.7	1.7	0.1 L	0.05	0.2 L	0.1	2.9	2.9	86	86	1 L	0.5
No. Analyzed		14		14		14		14		14		14		14		14	
No. Detect		14		14		14		0		0		14		14		0	
Minimum conc.			90		44		1.6		0.05		0.1		2.8		79		0.5
Maximum conc.			105		48		2.0		0.05		0.3		3.2		200		0.5
Average conc.			98		46		1.8		0.05		0.1		3.0		96		0.5
Distribution			Lognormal		Lognormal		Neither		NC		NC		Lognormal		Neither		NC
UCL 95			105*		48*		2.0*		NC		NC		3.2		200*		NC
MW-26R																	
MW-26R	1/17/2013	174	174	77	77	3.9	3.9	0.10 L	0.05	0.5 L	0.25	9.1	9.1	110	110	1 L	0.5
MW-26R	1/10/2014	141	141	66	66	3.9	3.9	0.10 L	0.05	0.2 L	0.1	7.9	7.9	110	110	1 L	0.5
MW-26R	7/10/2014	160	160	69	69	3.9	3.9	0.10 L	0.05	0.5 L	0.25	8.5	8.5	120	120	1 L	0.5
MW-26R	10/30/2014	156	156	75	75	4.6	4.6	0.10 L	0.05	0.5 L	0.25	9.3	9.3	140	140	1 L	0.5
MW-26R	1/12/2015	167	167	78	78	4.7	4.7	0.10 L	0.05	0.2 L	0.1	9.0	9.0	120	120	1 L	0.5
MW-26R	4/23/2015	189	189	82	82	4.5	4.5	0.10 L	0.05	0.2 L	0.10	9.4	9.4	120	120	1 L	0.5
MW-26R	7/31/2015	186	186	75	75	4.4	4.4	0.10 L	0.05	0.2 L	0.10	8.9	8.9	120	120	1 L	0.5
MW-26R	10/14/2015	183	183	82	82	4.4	4.4	0.10 L	0.05	0.2 L	0.10	10	10.0	130	130	1 L	0.5
MW-26R	1/12/2016	193	193	85	85	4.4	4.4	0.10 L	0.05	0.2 L	0.10	9.7	9.7	130	130	1 L	0.5
MW-26R	4/19/2016	197	197	87	87	4.6	4.6	0.10 L	0.05	0.2 L	0.10	9.9	9.9	130	130	1 L	0.5
MW-26R	7/6/2016	195	195	84	84	4.6	4.6	0.10 L	0.05	0.2 L	0.10	9.2	9.2	120	120	1 L	0.5
MW-26R	10/12/2016	191	191	91	91	4.5	4.5	0.10 L	0.05	0.2 L	0.10	8.8	8.8	110	110	1 L	0.5
MW-26R	1/18/2017	199	199	85	85	4.4	4.4	0.10 L	0.05	0.2 L	0.10	9.9	9.9	130	130	1 L	0.5
MW-26R	7/11/2017	184	184	84	84	4.8	4.8	0.10 L	0.05	0.2 L	0.10	8.9	8.9	150	150	1 L	0.5
No. Analyzed		14		14		14		14		14		14		14		14	
No. Detect		14		14		14		0		0		14		14		0	
Minimum conc.			141		66		3.9		0.05		0.10		7.9		110		0.5
Maximum conc.			199		91		4.8		0.05		0.25		10.0		150		0.5
Average conc.			180		80		4.4		0.05		0.13		9.2		124		0.5
Distribution			Normal		Lognormal		Neither		NC		NC		Lognormal		Lognormal		NC
UCL 95			199*		91*		4.8*		NC		NC		10.0*		145.97		NC

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Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
FMMW-1																	
FMMW-1	1/16/2013	270	270	94	94	11.0	11.0	0.1 L	0.05	1.9	1.9	15	15	160	160	1.3	1.3
FMMW-1	4/24/2013	261	261	110	110	12.0	12.0	0.1 L	0.05	1.3	1.3	16	16	160	160	1.5	1.5
FMMW-1	7/24/2013	271	271	99	99	12.0	12.0	0.1 L	0.05	0.87	0.87	15	15	160	160	1 L	0.5
FMMW-1	10/9/2013	281	281	110	110	12.0	12.0	0.1 L	0.05	0.55	0.55	15	15	170	170	1.0	1.0
FMMW-1	1/8/2014	270	270	110	110	11.0	11.0	0.1 L	0.05	1.1 H	1.1	15	15	180	180	1.1	1.1
FMMW-1	4/8/2014	229	229	90	90	11.0	11.0	0.1 L	0.05	1.7	1.7	15	15	170	170	1.0	1.0
FMMW-1	7/9/2014	300	300	100	100	21.0	21.0	0.1 L	0.05	3.1 J	3.1	13	13	200	200	1.0 L	0.5
FMMW-1	10/27/2014	293	293	100	100	23.0	23.0	0.1 L	0.05	2.5	2.5	17	17	200	200	1.0 L	0.5
FMMW-1	1/14/2015	293	293	110	110	18.0	18.0	0.1 L	0.05	2.1	2.1	15	15	180	180	1.0 L	0.5
FMMW-1	4/22/2015	271	271	98	98	12.0	12.0	0.1 L	0.05	1.5	1.5	15	15	170	170	1.1	1.1
FMMW-1	7/29/2015	276	276	140	140	13.0	13.0	0.1 L	0.05	1.2	1.2	16	16	170	170	1.0 L	0.5
FMMW-1	10/16/2015	278	278	110	110	15.0	15.0	0.1 L	0.05	0.85	0.85	17	17	180	180	1.2	1.2
FMMW-1	1/11/2016	257	257	95	95	8.3	8.3	0.1 L	0.05	2	2	15	15	170	170	1.1	1.1
FMMW-1	4/20/2016	330	330	110	110	20.0	20.0	0.1 L	0.05	2.9	2.9	11	11	190	190	1.2	1.2
FMMW-1	7/5/2016	331	331	120	120	22.0	22.0	0.1 L	0.05	1.7	1.7	12	12	210	210	1.0 L	0.5
FMMW-1	10/11/2016	320	320	110	110	22.0	22.0	0.1 L	0.05	1.3	1.3	12	12	240	240	1 L	0.5
FMMW-1	1/18/2017	299	299	110	110	14.0	14.0	0.1 L	0.05	1.9	1.9	11	11	180	180	1.1	1.1
FMMW-1	7/12/2017	341	341	110	110	21.0	21.0	0.1 L	0.05	1.4	1.4	8	8	190	190	1.4	1.4
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		0		18		18		18		11	
Minimum conc.			229		90		8.3		0.05		0.55		8.0		160		0.5
Maximum conc.			341		140		23.0		0.05		3.1		17.0		240		1.5
Average conc.			287		107		15.5		0.05		1.7		14.1		182		0.9
Distribution			Lognormal		Neither		Lognormal		NC		Lognormal		Neither		Lognormal		Neither
UCL 95			341*		140*		23.0*		NC		3.1*		17.0*		219.61		1.5*

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		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
FMMW-2																	
FMMW-2	1/16/2013	400	400	110	110	12.0	12.0	0.12	0.12	15.0	15.0	11	11	270	270	1.6	1.6
FMMW-2	4/24/2013	333	333	120	120	13.0	13.0	0.10 L	0.05	3.9	3.9	13	13	210	210	1.8	1.8
FMMW-2	7/24/2013	339	339	140	140	15.0	15.0	0.11	0.11	1.0	1.0	7.6	7.6	200	200	1.3	1.3
FMMW-2	10/9/2013	402	402	120	120	15.0	15.0	0.34	0.34	13.0	13.0	8.8	8.8	260	260	1.5	1.5
FMMW-2	1/8/2014	345	345	140	140	14.0	14.0	0.31	0.31	5.2 H	5.2	5.9	5.9	240	240	1.6	1.6
FMMW-2	4/8/2014	467	467	150	150	21.0	21.0	0.10 L	0.05	15.0	15.0	19	19	330	330	1.5	1.5
FMMW-2	7/9/2014	300	300	110	110	20.0	20.0	0.11	0.11	0.84 J	0.8	12	12	210	210	1.3	1.3
FMMW-2	10/28/2014	344	344	130	130	22.0	22.0	0.33	0.33	5.1	5.1	6.1	6.1	230	230	1.4	1.4
FMMW-2	1/14/2015	403	403	100	100	19.0	19.0	0.28	0.28	16	16	10	10	260	260	1.1	1.1
FMMW-2	4/22/2015	321	321	110	110	15.0	15.0	0.14	0.14	3.9	3.9	8.6	8.6	200	200	1.5	1.5
FMMW-2	7/29/2015	350	350	140	140	15.0	15.0	0.14	0.14	2.8	2.8	4.6	4.6	220	220	1.4	1.4
FMMW-2	10/16/2015	359	359	140	140	16.0	16.0	0.15	0.15	4.5	4.5	5.4	5.4	220	220	1.7	1.7
FMMW-2	1/11/2016	501	501	110	110	15.0	15.0	0.1 L	0.05	22	22	20	20	330	330	1.4	1.4
FMMW-2	4/20/2016	336	336	110	110	23.0	23.0	0.1 L	0.05	1.3	1.3	14	14	190	190	1.8	1.8
FMMW-2	7/5/2016	300	300	100	100	19.0	19.0	0.1 L	0.05	1.5	1.5	13	13	200	200	1.3	1.3
FMMW-2	10/11/2016	362	362	130	130	22.0	22.0	0.11	0.11	3.9	3.9	5.7	5.7	230	230	1.5	1.5
FMMW-2	1/18/2017	351	351	96	96	17.0	17.0	0.1 L	0.05	9.6	9.6	9	9	230	230	1.3	1.3
FMMW-2	7/12/2017	309	309	100	100	17.0	17.0	0.1 L	0.05	1.6	1.6	13	13	190	190	1.7	1.7
No. Analyzed		18		18		18		18		18		18		18		18	
No. Detect		18		18		18		11		18		18		18		18	
Minimum conc.			300		96		12.0		0.05		0.84		4.6		190		1.1
Maximum conc.			501		150		23.0		0.34		22.0		20.0		330		1.8
Average conc.			362		120		17.2		0.14		7.0		10.4		234		1.5
Distribution			Lognormal		Lognormal		Lognormal		Neither		Lognormal		Lognormal		Lognormal		Lognormal
UCL 95			462		150*		23.0*		0.34*		**17.9**		20.0*		312		1.8*

Notes:
Bold indicates UCL 95 is greater than Cleanup Level.
J indicates
H indicates
L indicates below the given method reporting limit (MRL).
ND indicates not detected.
NC indicates not calculated due to less than 50 percent detection frequency.
* UCL represents maximum concentration detected because the calculated value was greater than the data sample range or the distribution was neither lognormal nor normal.
Statistical calculations use one half the MRL for non-detected parameters.

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-10D					
MW-10D	01/15/13	0.200 L	0.100	0.001 L	0.0005
MW-10D	04/23/13	0.200 L	0.100	0.001 L	0.0005
MW-10D	07/26/13	0.200 L	0.100	0.001 L	0.0005
MW-10D	10/08/13	0.200 L	0.100	0.001 L	0.0005
MW-10D	01/06/14	0.100 L	0.050	0.001	0.0010
MW-10D	04/07/14	0.100 L	0.050	0.001 L	0.0005
MW-10D	07/10/14	0.100 L	0.050	0.001 L	0.0005
MW-10D	10/29/14	0.100 L	0.050	0.001 L	0.0005
MW-10D	01/12/15	0.100 L	0.050	0.001 L	0.0005
MW-10D	04/20/15	0.100 L	0.050	0.001 L	0.0005
MW-10D	07/30/15	0.100 L	0.050	0.001 L	0.0005
MW-10D	10/13/15	0.100 L	0.050	0.001 L	0.0005
MW-10D	01/13/16	0.029	0.029	0.001 L	0.0005
MW-10D	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-10D	07/05/16	0.029 L	0.015	0.001 L	0.0005
MW-10D	10/10/16	0.030 L	0.015	0.001 L	0.0005
MW-10D	01/18/17	0.030 L	0.015	0.001 L	0.0005
MW-10D	07/13/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		18		18	
No. Detect		1		1	
Minimum conc.			0.015		0.0005
Maximum conc.			0.100		0.001
Average conc.			0.054		0.001
Distribution			NC		NC
UCL 95			NC		NC
MW-10S					
MW-10S	01/15/13	0.200 L	0.100	0.0010 L	0.0005
MW-10S	04/23/13	0.200 L	0.100	0.001 L	0.0005
MW-10S	07/26/13	0.200 L	0.100	0.001 L	0.0005
MW-10S	10/08/13	0.200 L	0.100	0.001 L	0.0005
MW-10S	01/06/14	0.100	0.100	0.001 L	0.0005
MW-10S	04/07/14	0.100 L	0.050	0.001 L	0.0005
MW-10S	07/10/14	0.100 L	0.050	0.001 L	0.0005
MW-10S	10/29/14	0.100 L	0.050	0.001 L	0.0005
MW-10S	01/12/15	0.100 L	0.050	0.001 L	0.0005
MW-10S	04/20/15	0.100 L	0.050	0.001 L	0.0005
MW-10S	07/30/15	0.100 L	0.050	0.001 L	0.0005
MW-10S	10/13/15	0.100 L	0.050	0.001 L	0.0005
MW-10S	01/13/16	0.029 L	0.015	0.001 L	0.0005
MW-10S	04/18/16	0.029 L	0.015	0.001 L	0.0005
MW-10S	07/05/16	0.029 L	0.015	0.001 L	0.0005
MW-10S	10/10/16	0.030 L	0.015	0.001 L	0.0005
MW-10S	01/18/17	0.030 L	0.015	0.001 L	0.0005
MW-10S	07/13/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		18		18	
No. Detect		1		0	
Minimum conc.			0.015		0.0005
Maximum conc.			0.100		0.0005
Average conc.			0.056		0.001
Distribution			NC		NC
UCL 95			NC		NC

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-11D(2)					
MW-11D(2)	01/14/13	0.200 L	0.100	0.001 L	0.0005
MW-11D(2)	04/24/13	0.200 L	0.100	0.001 L	0.0005
MW-11D(2)	07/23/13	0.200 L	0.100	0.001 L	0.0005
MW-11D(2)	10/09/13	0.200 L	0.100	0.001 L	0.0005
MW-11D(2)	01/08/14	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	04/08/14	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	07/08/14	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	10/27/14	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	01/14/15	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	04/23/15	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	07/29/15	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	10/14/15	0.100 L	0.050	0.001 L	0.0005
MW-11D(2)	01/11/16	0.029 L	0.015	0.001 L	0.0005
MW-11D(2)	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-11D(2)	07/05/16	0.029 L	0.015	0.001 L	0.0005
MW-11D(2)	10/12/16	0.030 L	0.015	0.001 L	0.0005
MW-11D(2)	01/19/17	0.030 L	0.015	0.001 L	0.0005
MW-11D(2)	07/11/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		18		18	
No. Detect		0		0	
Minimum conc.			0.015		0.0005
Maximum conc.			0.100		0.0005
Average conc.			0.054		0.0005
Distribution			NC		NC
UCL 95			NC		NC
MW-11S					
MW-11S	01/14/13	0.200 L	0.100	0.001 L	0.0005
MW-11S	04/24/13	0.200 L	0.100	0.001 L	0.0005
MW-11S	07/23/13	0.200 L	0.100	0.004	0.0043
MW-11S	10/09/13	0.200 L	0.100	0.001 L	0.0005
MW-11S	01/08/14	0.100 L	0.050	0.001 L	0.0005
MW-11S	04/08/14	0.100 L	0.050	0.001	0.0013
MW-11S	07/08/14	0.100 L	0.050	0.021	0.0210
MW-11S	10/27/14	0.100 L	0.050	0.008	0.0079
MW-11S	01/14/15	0.100 L	0.050	0.001 L	0.0005
MW-11S	04/21/15	0.100 L	0.050	0.001	0.0012
MW-11S	07/29/15	0.100 L	0.050	0.003	0.0025
MW-11S	10/14/15	0.100 L	0.050	0.003	0.0028
MW-11S	01/11/16	0.029 L	0.015	0.001 L	0.0005
MW-11S	04/19/16	0.029 L	0.015	0.001	0.0014
MW-11S	07/05/16	0.029 L	0.015	0.003	0.0032
MW-11S	10/12/16	0.030 L	0.015	0.007	0.0072
MW-11S	01/18/17	0.030 L	0.015	0.001 L	0.0005
MW-11S	07/11/17	0.180 L	0.090	0.004	0.0035
No. Analyzed		18		18	
No. Detect		0		11	
Minimum conc.			0.015		0.0005
Maximum conc.			0.100		0.021
Average conc.			0.054		0.003
Distribution			NC		Neither
UCL 95			NC		0.021*

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-12D					
MW-12D	01/16/13	0.200 L	0.100	0.001 L	0.0005
MW-12D	07/26/13	0.200 L	0.100	0.001 L	0.0005
MW-12D	01/07/14	0.100 L	0.050	0.001 L	0.0005
MW-12D	07/11/14	0.100 L	0.050	0.001 L	0.0005
MW-12D	10/30/14	0.100 L	0.050	0.001 L	0.0005
MW-12D	01/13/15	0.100 L	0.050	0.001 L	0.0005
MW-12D	04/20/15	0.100 L	0.050	0.001 L	0.0005
MW-12D	07/31/15	0.100 L	0.050	0.001 L	0.0005
MW-12D	10/19/15	0.100 L	0.050	0.001 L	0.0005
MW-12D	01/14/16	0.029 L	0.015	0.001 L	0.0005
MW-12D	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-12D	07/06/16	0.029 L	0.015	0.001 L	0.0005
MW-12D	10/12/16	0.030 L	0.015	0.001 L	0.0005
MW-12D	01/19/17	0.030 L	0.015	0.001 L	0.0005
MW-12D	07/10/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		15		15	
No. Detect		0		0	
Minimum conc.			0.015		0.0005
Maximum conc.			0.100		0.0005
Average conc.			0.048		0.0005
Distribution			NC		NC
UCL 95			NC		NC
MW-12S					
MW-12S	01/16/13	0.200 L	0.100	0.170	0.170
MW-12S	01/15/15	0.100 L	0.050	0.240	0.240
MW-12S	04/20/15	0.100 L	0.050	0.340	0.340
MW-12S	07/31/15	0.100 L	0.050	0.511	0.511
MW-12S	10/19/15	0.100 L	0.050	0.990	0.990
MW-12S	01/14/16	0.029 L	0.015	0.016	0.016
MW-12S	04/19/16	0.029 L	0.015	0.350	0.350
MW-12S	07/06/16	0.029 L	0.015	0.690	0.690
MW-12S	10/12/16	0.030 L	0.015	0.830	0.830
MW-12S	01/19/17	0.030 L	0.015	0.550	0.550
MW-12S	07/10/17	0.180 L	0.090	0.770	0.770
No. Analyzed		11		11	
No. Detect		0		11	
Minimum conc.			0.015		0.0160
Maximum conc.			0.100		0.9900
Average conc.			0.042		0.496
Distribution			NC		Normal
UCL 95			NC		**0.9900***

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-13D					
MW-13D	01/15/13	0.200 L	0.100	0.001 L	0.0005
MW-13D	04/23/13	0.200 L	0.100	0.001 L	0.001
MW-13D	07/26/13	0.200 L	0.100	0.001 L	0.0005
MW-13D	10/08/13	0.200 L	0.100	0.001 L	0.001
MW-13D	01/06/14	0.100 L	0.050	0.001 L	0.0005
MW-13D	04/07/14	0.100 L	0.050	0.001 L	0.0005
MW-13D	07/08/14	0.100 L	0.050	0.001 L	0.0005
MW-13D	10/29/14	0.100 L	0.050	0.001 L	0.0005
MW-13D	01/12/15	0.100 L	0.050	0.001 L	0.0005
MW-13D	04/20/15	0.100 L	0.050	0.001 L	0.0005
MW-13D	07/30/15	0.100 L	0.050	0.001 L	0.0005
MW-13D	10/14/15	0.100 L	0.050	0.001 L	0.0005
MW-13D	01/13/16	0.020 L	0.010	0.001 L	0.0005
MW-13D	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-13D	07/06/16	0.029 L	0.015	0.001 L	0.0005
MW-13D	10/10/16	0.030 L	0.015	0.039	0.0390
MW-13D	01/18/17	0.030 L	0.015	0.001 L	0.0005
MW-13D	07/10/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		18		18	
No. Detect		0		1	
Minimum conc.			0.010		0.0005
Maximum conc.			0.100		0.0390
Average conc.			0.053		0.0026
Distribution			NC		NC
UCL 95			NC		NC
MW-13S					
MW-13S	01/15/13	0.200 L	0.100	0.003	0.003
MW-13S	04/23/13	0.200 L	0.100	0.001	0.001
MW-13S	07/26/13	0.200 L	0.100	0.003	0.003
MW-13S	10/08/13	0.200 L	0.100	0.007	0.007
MW-13S	01/06/14	0.100 L	0.050	0.007	0.007
MW-13S	04/09/14	0.100 L	0.050	0.002	0.002
MW-13S	07/08/14	0.100 L	0.050	0.007	0.007
MW-13S	10/29/14	0.100 L	0.050	0.012	0.012
MW-13S	01/13/15	0.100 L	0.050	0.001	0.001
MW-13S	04/20/15	0.100 L	0.050	0.001 L	0.001
MW-13S	07/30/15	0.100 L	0.050	0.034	0.034
MW-13S	10/14/15	0.100 L	0.050	0.190	0.190
MW-13S	01/13/16	0.020 L	0.010	0.008	0.008
MW-13S	04/19/16	0.054	0.054	0.024	0.024
MW-13S	07/06/16	0.029 L	0.015	0.051	0.051
MW-13S	10/11/16	0.030 L	0.015	0.150	0.150
MW-13S	01/18/17	0.030 L	0.015	0.003	0.003
MW-13S	07/10/17	0.180 L	0.090	0.013	0.013
No. Analyzed		18		18	
No. Detect		1		17	
Minimum conc.			0.010		0.0005
Maximum conc.			0.054		0.190
Average conc.			0.055		0.029
Distribution			NC		Lognormal
UCL 95			NC		0.0330

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-14D					
MW-14D	01/15/13	2.300	2.300	0.850	0.850
MW-14D	04/23/13	2.000	2.000	0.790	0.790
MW-14D	07/26/13	0.200 L	0.100	0.052	0.052
MW-14D	10/08/13	2.100	2.100	0.880	0.880
MW-14D	01/06/14	3.300	3.300	1.000	1.000
MW-14D	04/07/14	0.100 L	0.050	0.570	0.570
MW-14D	07/10/14	0.740	0.740	0.810	0.810
MW-14D	10/29/14	2.800	2.800	1.200	1.200
MW-14D	01/12/15	2.000	2.000	0.840	0.840
MW-14D	04/20/15	1.900	1.900	0.830	0.830
MW-14D	07/27/15	2.800	2.800	0.980	0.980
MW-14D	10/13/15	4.300	4.300	1.300	1.300
MW-14D	01/13/16	0.029 L	0.015	0.770	0.770
MW-14D	04/18/16	0.029 L	0.015	0.820	0.820
MW-14D	08/04/16	1.600	1.600	1.100	1.100
MW-14D	10/10/16	2.600	2.600	1.200	1.200
MW-14D	01/18/17	2.400	2.400	1.100	1.100
MW-14D	07/12/17	0.910	0.910	0.960	0.960
No. Analyzed		18		18	
No. Detect		14		18	
Minimum conc.			0.0145		0.052
Maximum conc.			4.300		1.300
Average conc.			1.774		0.892
Distribution			Normal		Neither
UCL 95			**3.96**		**1.300***
MW-14S					
MW-14S	01/14/13	0.200 L	0.100	0.0420	0.0420
MW-14S	04/23/13	0.200 L	0.100	0.120	0.1200
MW-14S	07/26/13	2.400	2.400	0.730	0.7300
MW-14S	10/08/13	0.200 L	0.100	0.034	0.0340
MW-14S	01/06/14	0.100 L	0.050	0.170	0.1700
MW-14S	04/07/14	0.100 L	0.050	0.063	0.0630
MW-14S	07/09/14	0.100 L	0.050	0.097	0.0970
MW-14S	10/29/14	0.100 L	0.050	0.240	0.2400
MW-14S	01/12/15	0.100 L	0.050	0.028	0.0280
MW-14S	04/20/15	0.100 L	0.050	0.042	0.0420
MW-14S	07/27/15	0.100 L	0.050	0.170	0.1700
MW-14S	10/15/15	0.110	0.110	0.680	0.6800
MW-14S	01/13/16	0.029 L	0.015	0.110	0.1100
MW-14S	04/18/16	0.029 L	0.015	0.180	0.1800
MW-14S	07/06/16	0.029 L	0.015	0.029	0.0290
MW-14S	10/14/16	0.043	0.043	0.110	0.1100
MW-14S	01/18/17	0.088	0.088	0.250	0.2500
MW-14S	07/12/17	0.180 L	0.090	0.240	0.2400
No. Analyzed		18		18	
No. Detect		4		18	
Minimum conc.			0.015		0.028
Maximum conc.			2.400		0.730
Average conc.			0.190		0.185
Distribution			NC		Lognormal
UCL 95			NC		**0.470**

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-14R					
MW-14R	01/15/13	0.200 L	0.100	0.001 L	0.0005
MW-14R	01/07/14	0.100 L	0.050	0.001 L	0.0005
MW-14R	07/11/14	0.100 L	0.050	0.001	0.0014
MW-14R	10/28/14	0.100 L	0.050	0.0010 L	0.0005
MW-14R	01/13/15	0.100 L	0.050	0.001 L	0.0005
MW-14R	04/22/15	0.100 L	0.050	0.001	0.0011
MW-14R	07/30/15	0.100 L	0.050	0.1700	0.170
MW-14R	10/13/15	0.100 L	0.050	0.2000	0.2000
MW-14R	01/12/16	0.045	0.045	0.2000	0.2000
MW-14R	04/18/16	0.059	0.059	0.2000	0.2000
MW-14R	07/06/16	0.045	0.045	0.1800	0.1800
MW-14R	10/12/16	0.063	0.063	0.1900	0.1900
MW-14R	01/18/17	0.059	0.059	0.1800	0.1800
MW-14R	07/11/17	0.180 L	0.090	0.4200	0.4200
No. Analyzed		14		14	
No. Detect		5		10	
Minimum conc.			0.045		0.0005
Maximum conc.			0.100		0.420
Average conc.			0.058		0.125
Distribution			NC		Neither
UCL 95			NC		**0.420***
MW-15D					
MW-15D	01/14/13	0.200 L	0.100	0.260	0.2600
MW-15D	07/25/13	0.200 L	0.100	0.260	0.2600
MW-15D	01/07/14	0.100 L	0.050	0.001 L	0.0005
MW-15D	07/09/14	0.100 L	0.050	0.300	0.3000
MW-15D	10/28/14	0.100 L	0.050	0.220	0.2200
MW-15D	01/13/15	0.100 L	0.050	0.260	0.2600
MW-15D	04/21/15	0.100 L	0.050	0.280	0.2800
MW-15D	07/27/15	0.100 L	0.050	0.087	0.0870
MW-15D	10/13/15	0.100 L	0.050	0.028	0.0280
MW-15D	01/13/16	0.029 L	0.015	0.190	0.1900
MW-15D	04/18/16	0.029 L	0.015	0.006	0.0060
MW-15D	07/06/16	0.029 L	0.015	0.096	0.0960
MW-15D	10/10/16	0.030 L	0.015	0.007	0.0072
MW-15D	01/17/17	0.030 L	0.015	0.088	0.0880
MW-15D	07/11/17	0.180 L	0.090	0.083	0.0830
No. Analyzed		15		15	
No. Detect		0		14	
Minimum conc.			0.015		0.0005
Maximum conc.			0.100		0.300
Average conc.			0.048		0.144
Distribution			NC		Normal
UCL 95			NC		**0.300***

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-15S					
MW-15S	01/14/13	0.200 L	0.100	0.840	0.8400
MW-15S	07/25/13	0.200 L	0.100	0.530	0.5300
MW-15S	01/07/14	0.100 L	0.050	0.880	0.8800
MW-15S	07/09/14	0.100 L	0.050	0.640	0.6400
MW-15S	10/28/14	0.100 L	0.050	0.870	0.8700
MW-15S	01/13/15	0.100 L	0.050	0.780	0.7800
MW-15S	04/21/15	0.100 L	0.050	0.610	0.6100
MW-15S	07/27/15	0.120	0.120	0.870	0.8700
MW-15S	10/13/15	0.100 L	0.050	1.100	1.1000
MW-15S	01/13/16	0.029 L	0.015	0.670	0.6700
MW-15S	04/18/16	0.029	0.029	0.740	0.7400
MW-15S	07/06/16	0.054	0.054	0.810	0.8100
MW-15S	10/10/16	0.100	0.100	0.880	0.8800
MW-15S	01/17/17	0.030 L	0.015	0.930	0.9300
MW-15S	07/10/17	0.180 L	0.090	0.640	0.6400
No. Analyzed		15		15	
No. Detect		4		15	
Minimum conc.			0.015		0.530
Maximum conc.			0.120		1.100
Average conc.			0.062		0.786
Distribution			NC		Lognormal
UCL 95			NC		**1.090**
MW-17S					
MW-17S	01/15/13	0.200 L	0.100	0.910	0.9100
MW-17S	04/24/13	0.200 L	0.100	1.500	1.5000
MW-17S	07/25/13	0.200 L	0.100	1.100	1.1000
MW-17S	10/10/13	0.200 L	0.100	0.970	0.9700
MW-17S	01/09/14	0.100 L	0.050	1.000	1.0000
MW-17S	04/08/14	0.100 L	0.050	1.600	1.6000
MW-17S	07/08/14	0.100 L	0.050	0.680	0.6800
MW-17S	10/28/14	0.100 L	0.050	1.100	1.1000
MW-17S	01/13/15	0.100 L	0.050	0.340	0.3400
MW-17S	04/23/15	0.100 L	0.050	1.000	1.0000
MW-17S	07/27/15	0.100 L	0.050	0.906	0.9060
MW-17S	10/15/15	0.100 L	0.050	1.100	1.1000
MW-17S	01/12/16	0.029 L	0.015	1.800	1.8000
MW-17S	04/19/16	0.029 L	0.015	1.200	1.2000
MW-17S	07/06/16	0.029 L	0.015	1.100	1.1000
MW-17S	10/13/16	0.030 L	0.015	0.860	0.8600
MW-17S	01/17/17	0.030 L	0.015	1.000	1.0000
MW-17S	07/11/17	0.180 L	0.090	1.100	1.1000
No. Analyzed		18		18	
No. Detect		0		18	
Minimum conc.			0.015		0.340
Maximum conc.			0.100		1.800
Average conc.			0.054		1.070
Distribution			NC		Normal
UCL 95			NC		**1.660**

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-18D					
MW-18D	01/14/13	0.200 L	0.100	0.001 L	0.0005
MW-18D	07/23/13	0.200 L	0.100	0.001 L	0.0005
MW-18D	01/09/14	0.100 L	0.050	0.001 L	0.0005
MW-18D	07/09/14	0.100 L	0.050	0.001 L	0.0005
MW-18D	10/27/14	0.100 L	0.050	0.001 L	0.0005
MW-18D	01/14/15	0.100 L	0.050	0.001 L	0.0005
MW-18D	04/23/15	0.100 L	0.050	0.0019	0.0019
MW-18D	07/29/15	0.100 L	0.050	0.001 L	0.0005
MW-18D	10/16/15	0.280	0.280	0.001 L	0.0005
MW-18D	01/11/16	0.029 L	0.015	0.001 L	0.0005
MW-18D	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-18D	07/06/16	0.029 L	0.015	0.001 L	0.0005
MW-18D	10/11/16	0.030 L	0.015	0.001 L	0.0005
MW-18D	01/17/17	0.056	0.056	0.001 L	0.0005
MW-18D	07/13/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		15		15	
No. Detect		2		1	
Minimum conc.			0.015		0.0005
Maximum conc.			0.280		0.0019
Average conc.			0.066		0.0006
Distribution			NC		NC
UCL 95			NC		NC
MW-18S					
MW-18S	01/14/13	0.200 L	0.100	0.0010 L	0.0005
MW-18S	07/23/13	0.200 L	0.100	0.0010 L	0.0005
MW-18S	01/09/14	0.100 L	0.050	0.0010 L	0.0005
MW-18S	07/09/14	0.100 L	0.050	0.0010 L	0.0005
MW-18S	10/27/14	0.100 L	0.050	0.0013 L	0.0007
MW-18S	01/14/15	0.100 L	0.050	0.0013 L	0.0007
MW-18S	04/23/15	0.100 L	0.050	0.0013 L	0.0007
MW-18S	07/29/15	0.100 L	0.050	0.0013 L	0.0007
MW-18S	10/16/15	0.100 L	0.050	0.0013 L	0.0007
MW-18S	01/11/16	0.029 L	0.015	0.0010 L	0.0005
MW-18S	04/19/16	0.029 L	0.015	0.0010 L	0.0005
MW-18S	07/06/16	0.029 L	0.015	0.0014	0.0014
MW-18S	10/11/16	0.030 L	0.015	0.0056	0.0056
MW-18S	01/17/17	0.034	0.034	0.0010 L	0.0005
MW-18S	07/13/17	0.180 L	0.090	0.0010 L	0.0005
No. Analyzed		15		15	
No. Detect		1		2	
Minimum conc.			0.015		0.0005
Maximum conc.			0.100		0.0056
Average conc.			0.049		0.0010
Distribution			NC		NC
UCL 95			NC		NC

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-20R					
MW-20R	01/16/13	0.200 L	0.100	0.001 L	0.0005
MW-20R	01/10/14	0.100 L	0.050	0.001	0.0014
MW-20R	07/11/14	0.100 L	0.050	0.001 L	0.0005
MW-20R	10/30/14	0.100 L	0.050	0.001 L	0.0005
MW-20R	01/12/15	0.100 L	0.050	0.001 L	0.0005
MW-20R	04/23/15	0.370	0.370	0.001 L	0.0005
MW-20R	07/28/15	0.100 L	0.050	0.042	0.0417
MW-20R	10/14/15	0.100 L	0.050	0.026	0.0260
MW-20R	01/12/16	0.029 L	0.015	0.001 L	0.0005
MW-20R	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-20R	07/06/16	0.029 L	0.015	0.001 L	0.0005
MW-20R	10/13/16	0.030 L	0.015	0.001	0.0010
MW-20R	01/18/17	0.030 L	0.015	0.001 L	0.0005
MW-20R	07/12/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		14		14	
No. Detect		1		4	
Minimum conc.			0.015		0.0005
Maximum conc.			0.370		0.0417
Average conc.			0.067		0.005
Distribution			NC		NC
UCL 95			NC		NC
MW-26R					
MW-26R	01/17/13	0.590	0.590	0.340	0.3400
MW-26R	01/10/14	0.840	0.840	0.250	0.2500
MW-26R	07/10/14	0.620	0.620	0.340	0.3400
MW-26R	10/30/14	0.680	0.680	0.370	0.3700
MW-26R	01/12/15	0.610	0.610	0.380	0.3800
MW-26R	04/23/15	0.650	0.650	0.400	0.4000
MW-26R	07/31/15	0.570	0.570	0.370	0.3700
MW-26R	10/14/15	0.630	0.630	1.000	1.0000
MW-26R	01/12/16	0.680	0.680	0.400	0.4000
MW-26R	04/19/16	0.660	0.660	0.380	0.3800
MW-26R	07/06/16	0.700	0.700	0.370	0.3700
MW-26R	10/12/16	0.690	0.690	0.400	0.4000
MW-26R	01/18/17	0.600	0.600	0.380	0.3800
MW-26R	07/11/17	0.690	0.690	0.200	0.2000
No. Analyzed		14		14	
No. Detect		14		14	
Minimum conc.			0.570		0.200
Maximum conc.			0.840		1.000
Average conc.			0.658		0.399
Distribution			Lognormal		Neither
UCL 95			**0.78**		**1.000***

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Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
FMMW-1					
FMMW-1	01/16/13	0.200 L	0.100	0.001 L	0.0005
FMMW-1	04/24/13	0.200 L	0.100	0.001 L	0.0005
FMMW-1	07/24/13	0.200 L	0.100	0.001 L	0.0005
FMMW-1	10/09/13	0.200 L	0.100	0.001 L	0.0005
FMMW-1	01/08/14	0.100 L	0.050	0.001 L	0.0005
FMMW-1	04/08/14	0.100 L	0.050	0.001 L	0.0005
FMMW-1	07/09/14	0.100 L	0.050	0.001 L	0.0005
FMMW-1	10/27/14	0.100 L	0.050	0.001 L	0.0005
FMMW-1	01/14/15	0.100 L	0.050	0.001 L	0.0005
FMMW-1	04/22/15	0.100 L	0.050	0.001 L	0.0005
FMMW-1	07/29/15	0.100 L	0.050	0.001 L	0.0005
FMMW-1	10/16/15	0.230	0.230	0.001 L	0.0005
FMMW-1	01/11/16	0.029 L	0.015	0.001 L	0.0005
FMMW-1	04/20/16	0.029 L	0.015	0.001 L	0.0005
FMMW-1	07/05/16	0.029 L	0.015	0.001 L	0.0005
FMMW-1	10/11/16	0.030 L	0.015	0.001 L	0.0005
FMMW-1	01/18/17	0.031	0.031	0.001 L	0.0005
FMMW-1	07/12/17	0.180 L	0.090	0.001 L	0.0005
No. Analyzed		18		18	
No. Detect		2		0	
Minimum conc.			0.015		0.0005
Maximum conc.			0.230		0.0005
Average conc.			0.064		0.0005
Distribution			NC		NC
UCL 95			NC		NC
FMMW-2					
FMMW-2	01/16/13	0.200 L	0.100	0.089	0.0890
FMMW-2	04/24/13	0.200 L	0.100	0.075	0.0750
FMMW-2	07/24/13	0.200 L	0.100	0.081	0.0810
FMMW-2	10/09/13	0.200 L	0.100	0.110	0.1100
FMMW-2	01/08/14	0.100 L	0.050	0.081	0.0810
FMMW-2	04/08/14	0.100 L	0.050	0.084	0.0840
FMMW-2	07/09/14	0.100 L	0.050	0.072	0.0720
FMMW-2	10/28/14	0.100 L	0.050	0.090	0.0900
FMMW-2	01/14/15	0.100 L	0.050	0.086	0.0860
FMMW-2	04/22/15	0.100 L	0.050	0.070	0.0700
FMMW-2	07/29/15	0.100 L	0.050	0.082	0.0820
FMMW-2	10/16/15	0.100 L	0.050	0.068	0.0680
FMMW-2	01/11/16	0.029 L	0.015	0.028	0.0280
FMMW-2	04/20/16	0.029 L	0.015	0.055	0.0550
FMMW-2	07/05/16	0.029 L	0.015	0.041	0.0410
FMMW-2	10/11/16	0.030 L	0.015	0.067	0.0670
FMMW-2	01/18/17	0.030 L	0.015	0.047	0.0470
FMMW-2	07/12/17	0.180 L	0.090	0.036	0.0360
No. Analyzed		18		18	
No. Detect		0		18	
Minimum conc.			0.015		0.028
Maximum conc.			0.100		0.110
Average conc.			0.054		0.070
Distribution			NC		Normal
UCL 95			NC		**0.110**

Notes:
Bold indicates UCL 95 is greater than Cleanup Level.
L indicates below the given method reporting limit (MRL).
ND indicates not detected.
NC indicates not calculated due to less than 50 percent detection frequency.
* UCL represents maximum concentration detected because the calculated value was greater than the data sample range or the distribution was neither lognormal nor normal.
Statistical calculations use one half the MRL for non-detected parameters.

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-11S			
MW-11S	01/14/13	0.5 L	0.25
MW-11S	04/24/13	0.5 L	0.25
MW-11S	07/23/13	0.5 L	0.25
MW-11S	10/09/13	0.5 L	0.25
MW-11S	01/08/14	0.5 L	0.25
MW-11S	04/08/14	0.5 L	0.25
MW-11S	07/08/14	0.5 L	0.25
MW-11S	10/27/14	0.5 L	0.25
MW-11S	01/12/15	0.5 L	0.25
MW-11S	04/20/15	0.5 L	0.25
MW-11S	07/30/15	0.5 L	0.25
MW-11S	10/13/15	0.5 L	0.25
MW-11S	01/11/16	0.5 L	0.25
MW-11S	04/19/16	0.5 L	0.25
MW-11S	07/05/16	0.5 L	0.25
MW-11S	10/12/16	0.5 L	0.25
MW-11S	01/18/17	0.5 L	0.25
MW-11S	07/11/17	0.5 L	0.25
No. Analyzed		18	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-12S			
MW-12S	01/16/13	0.5 L	0.25
MW-12S	01/12/15	0.5 L	0.25
MW-12S	04/20/15	0.5 L	0.25
MW-12S	07/30/15	0.5 L	0.25
MW-12S	10/13/15	0.5 L	0.25
MW-12S	01/14/16	0.5 L	0.25
MW-12S	04/19/16	0.7	0.73
MW-12S	07/06/16	0.5 L	0.25
MW-12S	10/12/16	0.5 L	0.25
MW-12S	01/19/17	0.5 L	0.25
MW-12S	07/10/17	0.5 L	0.25
No. Analyzed		11	
No. Detect		1	
Minimum conc.			0.25
Maximum conc.			0.73
Average conc.			0.29
Distribution			NC
UCL 95			NC
MW-12D			
MW-12D	01/16/13	0.5 L	0.25
MW-12D	07/26/13	0.5 L	0.25
MW-12D	01/07/14	0.5 L	0.25
MW-12D	07/11/14	0.5 L	0.25
MW-12D	10/30/14	0.5 L	0.25
MW-12D	01/12/15	0.5 L	0.25
MW-12D	04/20/15	0.5 L	0.25
MW-12D	07/30/15	0.5 L	0.25
MW-12D	10/13/15	0.5 L	0.25
MW-12D	01/14/16	0.5 L	0.25
MW-12D	04/19/16	0.5 L	0.25
MW-12D	07/06/16	0.5 L	0.25
MW-12D	10/12/16	0.5 L	0.25
MW-12D	01/19/17	0.5 L	0.25
MW-12D	07/10/17	0.5 L	0.25
No. Analyzed		15	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-13S			
MW-13S	01/15/13	0.5 L	0.25
MW-13S	04/23/13	0.5 L	0.25
MW-13S	07/26/13	0.5 L	0.25
MW-13S	10/08/13	0.5 L	0.25
MW-13S	01/06/14	0.5 L	0.25
MW-13S	04/09/14	0.5 L	0.25
MW-13S	07/08/14	0.5 L	0.25
MW-13S	10/29/14	0.5 L	0.25
MW-13S	01/12/15	0.5 L	0.25
MW-13S	04/20/15	0.5 L	0.25
MW-13S	07/30/15	0.5 L	0.25
MW-13S	10/13/15	0.5 L	0.25
MW-13S	01/13/16	0.5 L	0.25
MW-13S	04/19/16	0.5 L	0.25
MW-13S	07/06/16	0.5 L	0.25
MW-13S	10/11/16	0.5 L	0.25
MW-13S	01/18/17	0.5 L	0.25
MW-13S	07/10/17	0.5 L	0.25
No. Analyzed		18	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-13D			
MW-13D	01/15/13	0.5 L	0.25
MW-13D	04/23/13	0.5 L	0.25
MW-13D	07/26/13	0.5 L	0.25
MW-13D	10/08/13	0.5 L	0.25
MW-13D	01/06/14	0.5 L	0.25
MW-13D	04/07/14	0.5 L	0.25
MW-13D	07/08/14	0.5 L	0.25
MW-13D	10/29/14	0.5 L	0.25
MW-13D	01/12/15	0.5 L	0.25
MW-13D	04/20/15	0.5 L	0.25
MW-13D	07/30/15	0.5 L	0.25
MW-13D	10/13/15	0.5 L	0.25
MW-13D	01/13/16	0.5 L	0.25
MW-13D	04/19/16	0.5 L	0.25
MW-13D	07/06/16	0.5 L	0.25
MW-13D	10/10/16	0.5 L	0.25
MW-13D	01/18/17	0.5 L	0.25
MW-13D	07/10/17	0.5 L	0.25
No. Analyzed		18	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-15S			
MW-15S	01/14/13	0.5 L	0.25
MW-15S	07/25/13	0.5 L	0.25
MW-15S	01/07/14	0.5 L	0.25
MW-15S	07/09/14	0.5 L	0.25
MW-15S	10/28/14	0.5 L	0.25
MW-15S	01/12/15	0.5 L	0.25
MW-15S	04/20/15	0.5 L	0.25
MW-15S	07/30/15	0.5 L	0.25
MW-15S	10/13/15	0.5 L	0.25
MW-15S	01/13/16	0.5 L	0.25
MW-15S	04/18/16	0.5 L	0.25
MW-15S	07/06/16	0.5 L	0.25
MW-15S	10/10/16	0.5 L	0.25
MW-15S	01/17/17	0.5 L	0.25
MW-15S	07/10/17	0.5 L	0.25
No. Analyzed		15	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-17S			
MW-17S	01/15/13	0.5 L	0.25
MW-17S	04/24/13	0.5 L	0.25
MW-17S	07/25/13	0.5 L	0.25
MW-17S	10/10/13	0.5 L	0.25
MW-17S	01/09/14	0.5 L	0.25
MW-17S	04/08/14	0.5 L	0.25
MW-17S	07/08/14	0.5 L	0.25
MW-17S	10/28/14	0.5 L	0.25
MW-17S	01/12/15	0.5 L	0.25
MW-17S	04/20/15	0.5 L	0.25
MW-17S	07/30/15	0.5 L	0.25
MW-17S	10/13/15	0.5 L	0.25
MW-17S	01/12/16	0.5 L	0.25
MW-17S	04/19/16	0.5 L	0.25
MW-17S	07/06/16	0.5 L	0.25
MW-17S	10/13/16	0.5 L	0.25
MW-17S	01/17/17	0.5 L	0.25
MW-17S	07/11/17	0.5 L	0.25
No. Analyzed		18	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-18S			
MW-18S	01/14/13	0.5 L	0.25
MW-18S	07/23/13	0.5 L	0.25
MW-18S	01/09/14	0.5 L	0.25
MW-18S	07/09/14	0.5 L	0.25
MW-18S	10/27/14	0.5 L	0.25
MW-18S	01/12/15	0.5 L	0.25
MW-18S	04/20/15	0.5 L	0.25
MW-18S	07/30/15	0.5 L	0.25
MW-18S	10/13/15	0.5 L	0.25
MW-18S	01/11/16	0.5 L	0.25
MW-18S	04/19/16	0.5 L	0.25
MW-18S	07/06/16	0.5 L	0.25
MW-18S	10/11/16	0.5 L	0.25
MW-18S	01/17/17	0.5 L	0.25
MW-18S	07/13/17	0.5 L	0.25
No. Analyzed		15	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
FMMW-2			
FMMW-2	01/16/13	0.5 L	0.25
FMMW-2	04/24/13	0.5 L	0.25
FMMW-2	07/24/13	0.5 L	0.25
FMMW-2	10/09/13	0.5 L	0.25
FMMW-2	01/08/14	0.5 L	0.25
FMMW-2	04/08/14	0.5 L	0.25
FMMW-2	07/09/14	0.5 L	0.25
FMMW-2	10/28/14	0.5 L	0.25
FMMW-2	01/12/15	0.5 L	0.25
FMMW-2	04/20/15	0.5 L	0.25
FMMW-2	07/30/15	0.5 L	0.25
FMMW-2	10/13/15	0.5 L	0.25
FMMW-2	01/11/16	0.5 L	0.25
FMMW-2	04/20/16	0.5 L	0.25
FMMW-2	07/05/16	0.5 L	0.25
FMMW-2	10/11/16	0.5 L	0.25
FMMW-2	01/18/17	0.5 L	0.25
FMMW-2	07/12/17	0.5 L	0.25
No. Analyzed		18	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Notes:
L = below the method reporting limit (MRL)
ND = not detected
NC = not calculated due to less than 50 percent detection frequency or historically no detections.
Calculations use one-half the MRL for non-detected parameters.

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2017 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene		Chlorobenzene		Tetrachloroethene (PCE)	
		Result	Conc.	Result	Conc.	Result	Conc.
MW-11D(2)							
MW-11D(2)	01/14/13	0.5 L	0.25	0.5 L	0.25	0.5 L	0.25
MW-11D(2)	04/24/13	0.5 L	0.25	0.5 L	0.25	0.9	0.90
MW-11D(2)	07/23/13	0.5 L	0.25	0.5 L	0.25	0.5 L	0.25
MW-11D(2)	10/09/13	0.5 L	0.25	0.5 L	0.25	0.5 L	0.25
MW-11D(2)	01/08/14	0.5 L	0.25	0.5 L	0.25	0.9	0.88
MW-11D(2)	04/08/14	0.5 L	0.25	0.5 L	0.25	0.8	0.77
MW-11D(2)	07/08/14	0.5 L	0.25	0.5 L	0.25	0.7	0.65
MW-11D(2)	10/27/14	0.5 L	0.25	0.5 L	0.25	0.5 L	0.25
MW-11D(2)	01/12/15	0.5 L	0.25	0.5 L	0.25	0.7	0.67
MW-11D(2)	04/20/15	0.5 L	0.25	0.5 L	0.25	0.5 L	0.25
MW-11D(2)	07/30/15	0.5 L	0.25	0.5 L	0.25	0.9	0.85
MW-11D(2)	10/13/15	0.5 L	0.25	0.5 L	0.25	0.8	0.77
MW-11D(2)	01/11/16	0.5 L	0.25	0.5 L	0.25	1.0	0.98
MW-11D(2)	04/19/16	0.5 L	0.25	0.5 L	0.25	0.8	0.82
MW-11D(2)	07/05/16	0.5 L	0.25	0.5 L	0.25	1.0	0.96
MW-11D(2)	10/12/16	0.5 L	0.25	0.5 L	0.25	0.8	0.82
MW-11D(2)	01/19/17	0.5 L	0.25	0.5 L	0.25	1.0	1.00
MW-11D(2)	07/11/17	0.5 L	0.25	0.5 L	0.25	0.9	0.92
No. Analyzed		18		18		18	
No. Detect		0		0		13	
Minimum conc.			0.25		0.25		0.25
Maximum conc.			0.25		0.25		1.00
Average conc.			0.25		0.25		0.68
Distribution			NC		NC		Neither
UCL 95			NC		NC		1.00*

Notes:
Bold indicates UCL 95 is greater than Cleanup Level.
L = below the method reporting limit (MRL)
ND = indicates not detected
NC = not calculated due to less than 50 percent detection frequency or historically no detections
* UCL represents maximum concentration detected because the calculated value was greater than the data sample range or the distribution was neither lognormal nor normal.
Calculations use half the MRL for non-detected parameters

Appendix H

QUARTERLY SITE INSPECTION REPORTS

0421703.02

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: SAM ARLINGTON Date: 3/21/2017

Signature: Weather: OVERCAST

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		X	
Cracking of Cover Soils		X	
Inadequate Cover Soil or Rock		X	
Standing Water	X		NO SIGNIFICANT RAIN FOR 2 DAYS PRIOR TO INSPECTION
Vegetation			
Bare or Sparsely Vegetated Areas		X	
Areas of Dying Vegetation		X	
Large Root Vegetation (ex. Bushes)	X		FOR TREES & BLACK BERRYS ON SLOPE IN SW CORNER OF LF NEAR HEADER, IN DITCH
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas	X		FLAT SPOTS DUE TO SETTLEMENT, SOME PONDED WATER
Culvert Obstructions		X	
Catch Basin Debris or Silt Accumulation		X	
Stormwater Basin Debris or Silt	X		STORMWATER SWALE VERY SILTY. POND NEAR GP-1D SIMMILAR.
Cover Erosion			
Gullies and/or Erosion Scars		X	
Presence of Seeps		X	
Vector Control			
Evidence of Ground Burrows		X	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues		X	
Pump or Meter Issues		X	
Foaming at Pump		X	

Other Remarks:

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: SAM ADJUNCT CSU Date: 6/28/2017

Signature: [signature] Weather: OVERCAST ~60°F

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		X	
Cracking of Cover Soils		X	
Inadequate Cover Soil or Rock		X	
Standing Water		X	
Vegetation			
Bare or Sparsely Vegetated Areas		X	
Areas of Dying Vegetation		X	
Large Root Vegetation (ex. Bushes)			MINOR BUSHES & TREES SPREAD ON COVER
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas	X		MINOR SETTLEMENT IN SOME DITCHES
Culvert Obstructions		X	
Catch Basin Debris or Silt Accumulation		X	
Stormwater Basin Debris or Silt		X	
Cover Erosion			
Gullies and/or Erosion Scars		X	
Presence of Seeps		X	
Vector Control			
Evidence of Ground Burrows		X	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues		X	
Pump or Meter Issues		X	
Foaming at Pump		X	

Other Remarks:

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Alexa Deep Date: 9/19/17

Signature: Alexa Deep Weather: rain

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		✓	
Cracking of Cover Soils		✓	
Inadequate Cover Soil or Rock		✓	
Standing Water		✓	
Vegetation			
Bare or Sparsely Vegetated Areas	✓		Near GW N-13
Areas of Dying Vegetation		✓	
Large Root Vegetation (ex. Bushes)		✓	
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas		✓	
Culvert Obstructions		✓	
Catch Basin Debris or Silt Accumulation		✓	
Stormwater Basin Debris or Silt	✓		some silt runoff
Cover Erosion			
Gullies and/or Erosion Scars		✓	
Presence of Seeps		✓	
Vector Control			
Evidence of Ground Burrows		✓	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues		✓	
Pump or Meter Issues	✓		See condensate sump inspection form
Foaming at Pump		✓	

Other Remarks:

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Alexa Deep Date: 11/29/17

Signature: Alexa Deep Weather: sunny

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		✓	
Cracking of Cover Soils		✓	
Inadequate Cover Soil or Rock		✓	
Standing Water		✓	
Vegetation			
Bare or Sparsely Vegetated Areas		✓	
Areas of Dying Vegetation		✓	
Large Root Vegetation (ex. Bushes)		✓	
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas		✓	
Culvert Obstructions		✓	
Catch Basin Debris or Silt Accumulation		✓	
Stormwater Basin Debris or Silt	✓		some silt present
Cover Erosion			
Gullies and/or Erosion Scars		✓	
Presence of Seeps		✓	
Vector Control			
Evidence of Ground Burrows		✓	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues		✓	
Pump or Meter Issues		✓	
Foaming at Pump		✓	

Other Remarks:

Appendix I

LANDFILL GAS SYSTEM O&M REPORTS

Hidden Valley Landfill
LFG System Monitoring & Maintenance
January 26 and 27, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring on January 26 and 27, 2017.
- Flare was shutdown to replace nitrogen bottles and then restarted.
- Moved the operating thermal coupler to the middle.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
1/26/2017 9:38	33.5	20.6	5.7	40.2	196	196	29.89

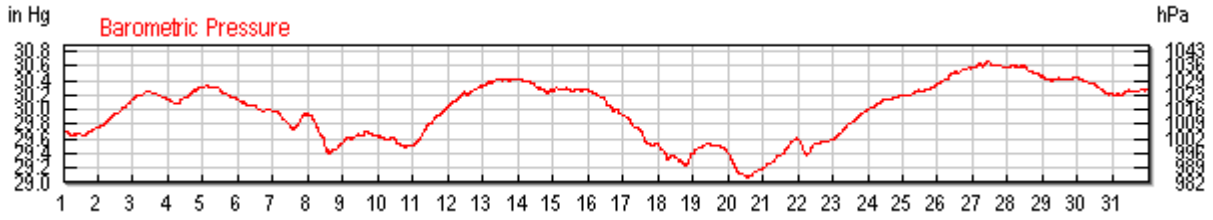
After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
1/26/2017 17:23	38.6	23.6	3.9	33.9	186	186	29.89

PHOTO LOG

None

Barometric Pressure Trend for January 2017



Source: KPLU
https://www.wunderground.com/history/airport/KPLU/2017/1/26/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
February 15 and 16, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring and repairs on February 15 and 16, 2017.
- Replaced 3 inch hose at N-3.

LANDFILL FLARE STATION

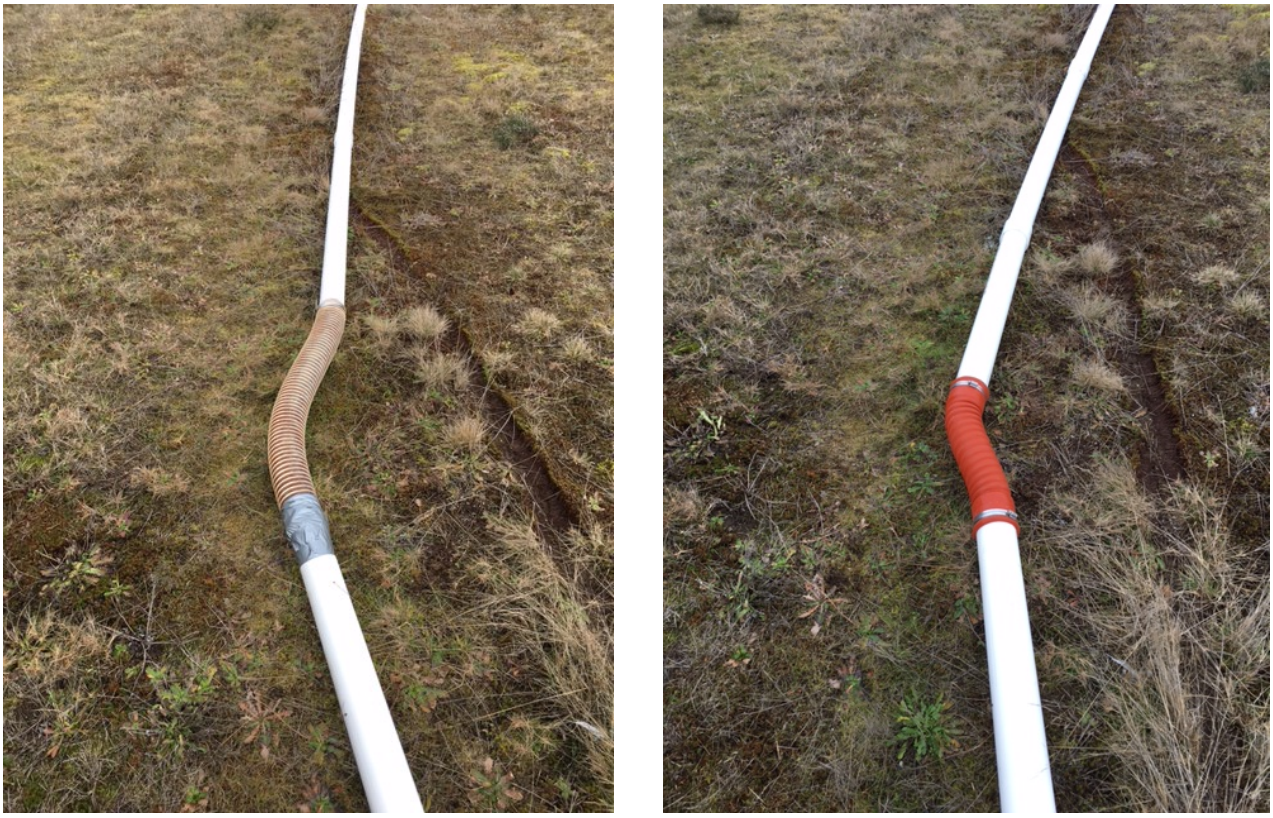
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
2/15/2017 11:29	41.0	24.7	2.7	31.6	187	187	29.13
2/16/2017 09:52	41.8	25.1	2.2	30.9	229	229	28.87

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
2/15/2017 15:20	44.6	26.8	1.2	27.4	250	250	28.88
2/16/2017 15:37	40.5	24.6	1.3	33.6	317	317	28.91

PHOTO LOG



Replaced flex hose at N-13

Barometric Pressure Trend for February 2017*:

*Barometric pressure trend graph for the month of February was taken from the Tacoma-Narrows location on wunderground.com because no data was available for Graham, Washington.

Source: KTIW https://www.wunderground.com/history/airport/KTIW/2017/2/15/MonthlyHistory.html?req_city=Taco

Hidden Valley Landfill
LFG System Monitoring & Maintenance
March 30 and 31, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring and repairs on March 30 and 31, 2017.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
3/30/2017 10:47	25.5	20.1	2.5	51.9	312	312	29.58
3/31/2017 9:23	27.9	20.5	3.2	48.4	264	264	29.75

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
3/30/2017 15:40	27.9	22.1	2.2	47.8	263	263	29.63
3/31/2017 13:33	31.0	20.6	4.2	44.2	199	199	29.78

PHOTO LOG

None

Barometric Pressure Trend for March 2017

Source: KPLU

https://www.wunderground.com/history/airport/KPLU/2017/3/30/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
April 20, 21, and 28, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring and flare maintenance on April 20, 21, and 28, 2017.
- Flare shutdown on April 20 and unable to restart due to unstable voltage.
- Investigated flare Fireye voltage issues on April 21. Flare shutdown until replacement could be installed on April 24.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
4/20/2017 12:32	27.0	19.8	4.9	48.3	191	191	29.68
4/28/2017 07:35	27.8	19.9	5.5	46.8	191	191	29.66

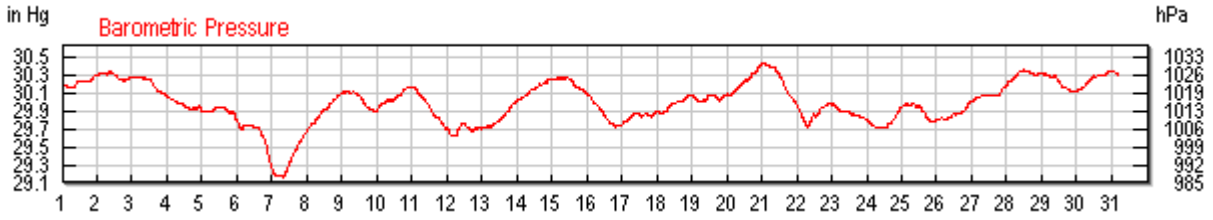
After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
4/28/2017 11:37	34.2	22.1	3.3	40.4	265	265	29.73

PHOTO LOG

None

Barometric Pressure Trend for April 2017



Source: KPLU
https://www.wunderground.com/history/airport/KPLU/2017/4/20/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
May 23, 25, and 26, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring and repairs on May 23, 25, and 26, 2017.
- Replaced damaged 2-inch PVC gate valve and 3-inch lateral line at E-42.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
5/23/2017 14:49	37.8	25.1	2.2	34.9	210	210	29.34
5/25/2017 07:37	35.2	25.0	2.4	37.4	231	231	29.33

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
5/23/2017 16:41	38.5	25.5	1.8	34.2	229	229	29.32
5/25/2017 10:44	40.9	26.6	0.8	31.7	259	259	29.26
5/26/2017 10:10	38.9	26.3	0.8	34.0	223	223	29.33

PHOTO LOG

Repairs at E-42

Repairs at E-42

Observed at E-9A

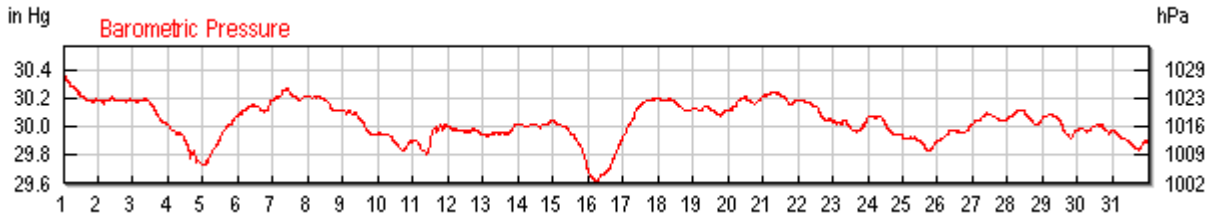
Observed at E-11

Observed at E-14

Observed at E-15

Observed at E-17

Barometric Pressure Trend for May 2017



Source: KPLU

https://www.wunderground.com/history/airport/KPLU/2017/5/23/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
June 15 and 16, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring on June 15 and 16, 2017.
- The 3-in. LFG hose and 2-in. valve were replaced at wells E-16, N-14, E-14, and E-16.
- The 10-in. LFG hose was replaced at well E-14.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
6/15/2017 12:40	36.5	26.6	1	35.9	268	268	29.26

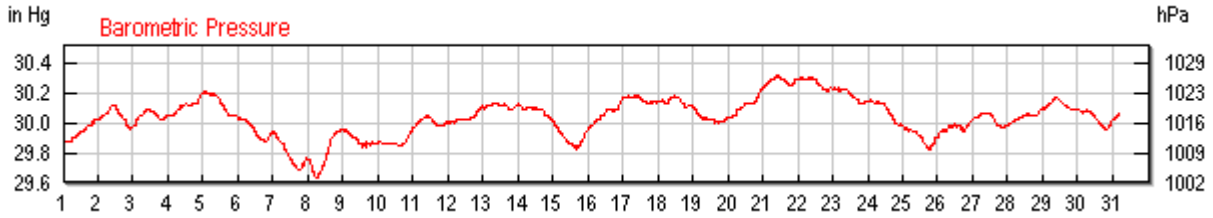
After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
6/15/2017 18:16	38.5	25.9	0.4	35.2	317	317	29.25
6/16/2017 10:33	38.1	25.5	0.8	35.6	281	281	29.45

PHOTO LOG

None

Barometric Pressure Trend for June 2017



Source: KPLU
https://www.wunderground.com/history/airport/KPLU/2017/6/15/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
July 17 and 18, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring on July 17 and 18, 2017.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
7/17/2017 10:38	31.8	20.8	1.8	45.6	268	268	29.50
7/18/2017 9:04	34.1	21.1	2.3	42.5	277	227	29.44

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
7/17/2017 17:44	36.8	21.5	1.2	40.5	224	224	29.37
7/18/2017 14:14	42.5	23.3	1	33.2	217	217	29.34

PHOTO LOG

None

Barometric Pressure Trend for July 2017

Source: KPLU

https://www.wunderground.com/history/airport/KPLU/2017/7/17/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
August 30 and 31, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring on August 30 and 31, 2017.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
8/30/2017 13:54	33.0	23.5	3.1	40.4	216	216	29.39
8/31/2017 7:12	34.1	21.8	0.9	43.2	251	251	29.52

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
8/30/2017 17:29	35.6	22.3	0	42.1	251	251	29.35
8/31/2017 11:57	40.2	22.7	1.8	35.3	225	225	29.52

PHOTO LOG

None

Barometric Pressure Trend for August 2017

Source: KPLU

https://www.wunderground.com/history/airport/KPLU/2017/8/31/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
September 19 and 20, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring on September 19 and 20, 2017.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
9/19/2017 11:58	36.6	25.1	0	38.3	187	187	29.15
9/20/2017 12:16	41.7	25.0	3.3	30.0	183	183	29.01

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
9/19/2017 17:37	42.2	27.9	1.7	28.2	177	177	29.11
9/20/2017 12:16	40.3	25.8	1.3	32.6	207	207	29.06

PHOTO LOG

None

Barometric Pressure Trend for September 2017

Source: KPLU
https://www.wunderground.com/history/airport/KPLU/2017/9/20/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
October 27 and 31, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring on October 27 and 31, 2017.
- Adjusted cam on block valve to restore vacuum at BFS to property set point.
- Replaced the 4-inch hose at extraction well N-46.
- Replaced 3-inch hoses at the following extraction wells: N-55, N-22, and N-25.
- Reconnected separated 6-inch line at extraction well E-45.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
10/27/2017 7:50	33.1	24.1	2.4	40.4	214	214	29.7
10/31/2017 10:05	26.4	18.7	7.3	47.6	434	434	29.64

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
10/27/2017 11:47	38.7	27.6	1.2	32.5	230	230	29.72
10/31/2017 12:33	38.7	26.4	1.6	33.3	333	333	29.5

PHOTO LOG

Repairs at N-25

Repairs at N-55

Barometric Pressure Trend for October 2017

Source: KPLU
https://www.wunderground.com/history/airport/KPLU/2017/10/27/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
November 29 and 30, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Sealed oxygen leaks at N3, N4, and E-39.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
11/29/2017 11:53	25.0	22.3	1.3	51.4	374	374	29.86
11/30/2017 8:07	31.8	22.8	4.5	40.9	160	160	29.59

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
11/29/2017 16:25	28.4	22.2	3.6	45.8	164	164	29.8
11/30/2017 13:32	42.5	27.4	1.2	28.9	235	235	29.54

Barometric Pressure Trend for November 2017

Source: KPLU
https://www.wunderground.com/history/airport/KPLU/2017/11/29/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

Hidden Valley Landfill
LFG System Monitoring & Maintenance
December 28 and 29, 2017

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly LFG extraction well monitoring on December 28 and 29, 2017.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
12/28/2017 12:12	35.5	20.8	1.9	41.8	216	216	29.51
12/29/2017 8:02	41.7	25.2	0.6	32.5	301	301	29.37

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
12/28/2017 16:13	42.4	25.6	0.4	31.6	313	313	29.46
12/29/2017 11:14	41.9	26.2	0.3	31.6	296	296	29.35

Barometric Pressure Trend for December 2017

Source: KPLU
https://www.wunderground.com/history/airport/KPLU/2017/12/29/MonthlyHistory.html?req_city=Puyallup&req_state=WA&req_statename=&reqdb.zip=98375&reqdb.magic=5&reqdb.wmo=99999

2172
.1875

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Brian McMillan / Steve Hargrave

Signature:

Date: 3/30/17

Weather: Cloudy 45°F

Instructions: Inspect each sump for pump operation and condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	Lel thickness	structure top of ball valve	DTW from top of Ball valve	Comments
Sump No. 1		.09	.66	NA	Dry DTB 9.50' from top of Ball valve
Sump No. 2		.09	.69	6.38	
Sump No. 3	Kink in external hose	.09	.68	NA	Dry DTB 8.88' from top of Ball valve.
Sump No. 4		.09	.66	6.42	
Sump No. 5		.09	.66	9.25	
Sump No. 6	Vault Under Vacuum	.09	.66	6.30	
Sump No. 7		.09	.67	7.33	
Sump No. 8		.12	.67	9.08	
Sump No. 9	Vault under Vacuum	.09	.66	7.96	
Sump No. 10		.08	.68	9.53	
Sump No. 11		.08	.71	7.19	

Other Remarks:

Add the Sum of these two Columns to Privious depth to bottom to get new depth to bottom.

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Kevin Lakey

Date: 3/30/2018

Signature:

Weather: —

Instructions: Inspect each sump for pump operation and measure condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	(1) Depth to Condensate (ft)	(2) Depth to Bottom (ft)	Height of Condensate (ft) = (2) – (1)	Comments
Sump No. 1					
Sump No. 2					
Sump No. 3					
Sump No. 4					
Sump No. 5					
Sump No. 6					
Sump No. 7					
Sump No. 8					
Sump No. 9					
Sump No. 10					
Sump No. 11					

Other Remarks: The condensate recirculation sumps were inspected on June 28, 2017 and found to be operating correctly. Original field form not available.

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Alexa Deep & Sam Adlington Date: 9/19/17

Signature: Alexa Deep Weather: rain

Instructions: Inspect each sump for pump operation and measure condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	(1) Depth to Condensate (ft)	(2) Depth to Bottom (ft)	Height of Condensate (ft) = (2) – (1)	Comments
Sump No. 1	Y	dry	9.50		dry
Sump No. 2	Y	6.42	8.53	2.11	
Sump No. 3	Y	dry	10.35		dry
Sump No. 4	Y	6.38	8.87	2.49	
Sump No. 5	Y	7.20	9.34	2.14	
Sump No. 6	N	4.78	7.15	2.37	
Sump No. 7	Y	7.25	9.43	2.18	
Sump No. 8	Y	dry	9.25		dry
Sump No. 9	Y	7.93	9.95	2.02	
Sump No. 10	N	~~9.56~~ dry	9.56		dry
Sump No. 11	Y	7.23	9.61	2.38	

Other Remarks:

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Alexa Deep

Signature: Alexa Deep

Date: 12/21/17

Weather: Sunny

Instructions: Inspect each sump for pump operation and measure condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	(1) Depth to Condensate (ft)	(2) Depth to Bottom (ft)	Height of Condensate (ft) = (2) – (1)	Comments
Sump No. 1	Y	dry	9.45	–	
Sump No. 2	Y	6.38	8.60	2.22	
Sump No. 3	Y	8.85	10.67	1.82	
Sump No. 4	Y	6.35	8.78	2.43	
Sump No. 5	Y	7.95	9.94	1.99	
Sump No. 6	N	6.20	9.44	3.24	
Sump No. 7	Y	dry	9.40	–	
Sump No. 8	Y	7.48	9.43	1.95	
Sump No. 9	Y	7.99	9.49	1.50	
Sump No. 10	N	dry	9.60	–	
Sump No. 11	Y	7.25	9.60	2.35	

Other Remarks:

Appendix J

GROUNDWATER WELL INSTALLATION & WELL DECOMMISSION CORRESPONDENCE

Lakey, Kevin

From: Kourehdar, Mohsen (ECY) <mkou461@ECY.WA.GOV>
Sent: Friday, March 24, 2017 11:17 AM
To: Lakey, Kevin
Cc: David Bosch; Jody Snyder (jodys@wcnx.org); jody.snyder@comcast.net; George Duvendack; Rick Johnston (rjohnst@co.pierce.wa.us)
Subject: Consent Decree No. 032146876 - Approval of the Groundwater Optimization Report

Hi Kevin,

This is a follow-up to our phone conversation on March 22, 2017. The Washington State Department of Ecology (Ecology) has reviewed the groundwater monitoring optimization report (the report) dated December 2nd 2016 and based on our review we approve the report with the following conditions:

1. Decommission wells MW-28S, MW-23S and MW-25S by a driller licensed in the State of Washington in accordance with the regulation and licensing of well contractors and operators (Chapter 173-160).
2. Construct a new monitoring well between MW-28S and MW-23S. The proposed location of the new well should be approved by Ecology.
3. Test dissolved and total Appendix A metals every five years. The next testing should be conducted in 2021.
4. Update the 2014 landfill groundwater monitoring plan and submit a copy to Ecology and Tacoma Pierce County Health Department (TPCHD).

Please in future submit (email or by mail) copies of landfill related documents to Ecology and TPCHD.

If you have any questions, please contact me.

Mohsen Kourehdar, P.E.
Toxics Cleanup Program
Southwest Regional Office
PO Box 47775
Olympia, WA 98504-7775
Phone: 360-407-6256
Fax: 360-407-6305
mkou461@ecy.wa.gov

Environmental Consultants
and Contractors

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SCS ENGINEERS

January 24, 2018
File No. 04217003.03

Mohsen Kourehdar, P.E.
Washington Department of Ecology
Toxics Cleanup Program
PO Box 47775
Olympia, WA 98504-7775

Subject: Groundwater Well Installation and Well Decommission Report
Hidden Valley Landfill, Pierce County, Washington

Dear Mohsen:

This letter report presents a summary of activities performed by SCS Engineers (SCS) and Cascade Drilling (Cascade) during the installation of one (1) new groundwater monitoring well and the decommissioning of seven (7) existing groundwater monitoring wells at the Hidden Valley Landfill (HVL) located in Pierce County, Washington. A figure showing the locations of the new and decommissioned monitoring wells is attached (see Figure 1).

The well installation and well decommissioning activities were performed in general accordance with the Work Plan dated August 17, 2017, and with Washington Administrative Code (WAC) 173-160-420, Minimum Standards for Construction and Maintenance of Resource Protection Wells.

New Well Location and Purpose

SCS personnel were onsite from November 30 to December 4, 2017 to observe the drilling and installation of new groundwater monitoring well MW-29S within the Shallow Perched Aquifer. The drilling and installation work was performed by Cascade. The new well is located on the west side of the HVL property boundary between existing monitoring wells MW-12S and MW-13S (see Figure 1). The purpose of the new well is to provide point-of-compliance groundwater quality data on the western, downgradient, edge of the Hidden Valley Landfill property, and to replace decommissioned monitoring wells MW-23S and MW-28S that were previously included in the groundwater-monitoring network.

A registered surveyor will document the location and elevation of the new well.

Borehole Advancement

The boring for MW-29S was drilled using a limited access sonic drill rig with a 6-inch diameter drill casing. This drilling technique provides a continuous core sample of subsurface soil. On, November 30, 2017, the initial boring was drilled to a depth of 37.5 feet below ground surface (bgs) and the bottom of the well was set at 35 feet bgs. However, after the well was constructed, the two-inch diameter polyvinyl chloride (PVC) well casing was observed to be filled with sand to 15 feet bgs. Cascade personnel reported that the well casing was likely fractured during the

well installation process and that silica sand used for well construction had infiltrated into the well casing.

SCS subsequently directed Cascade to redrill the boring to the original depth and reconstruct the well. The reconstructed well was set at a depth of 35.5 feet bgs and was finished on December 4, 2017. Photographs that document drilling and well construction activities are attached.

Subsurface Conditions

The subsurface lithology observed during drilling was consistent with that reported in the Hidden Valley Landfill Site Remedial Investigation Report (March 1992) and the Hidden Valley Landfill Hydrogeologic Report Addendum (December 1998). The upper 35 feet consists of sand and gravel layers that are interpreted to be Vashon Recessional Outwash. Groundwater was encountered at a depth of approximately 13.5 feet bgs during drilling. This zone of saturation extended to a depth of 35 feet bgs and is interpreted to be the Shallow Perched Aquifer. From a depth of 35 feet bgs to the termination of the boring at 37.5 feet bgs, a dense silty sandy gravel deposit was encountered. This deposit is interpreted to be Vashon Till. Additional detail regarding the subsurface lithology can be found in the attached boring log.

Well Construction

New monitoring well MW-29S was constructed of two-inch diameter Schedule 40 PVC pipe with a 10 foot long, 0.020-inch, factory-slotted screen. A filter pack of 10x20 Colorado Silica Sand was placed in the annular space between the well casing and the surrounding formation, extending from beneath the well screen to 5.5 feet above the top of the well screen. The annular space above the filter pack was filled with hydrated Pure Gold bentonite chips to 3 feet bgs. The PVC well casing was terminated approximately 3 feet above the ground surface and was completed with a locking protective steel monument that is secured in concrete. Two concrete Ecology blocks were placed around the wellhead for protection. Well construction details are summarized in Table 1.

TABLE 1: MW-29S MONITORING WELL CONSTRUCTION DETAILS

WELL CONSTRUCTION INFORMATION	WELL LOCATION IDENTIFIER
Total Depth of Borehole (feet bgs)	37.5
Boring Diameter (inches)	6
Well Casing Diameter (inches)	2
Total Well Depth (feet bgs)	35.5
Total Screen Length (feet)	10
Screened Interval (feet bgs)	25.5-35.5
Wellhead Completion (type)	Above-Ground Steel Monument
Sacks of Colorado Silica Sand for filter pack (50 lbs)	4.25
Sacks of Pure Gold Bentonite Chips (50 lbs)	3.75
Sacks of concrete mix (50 lbs)	5

Well Development

On December 6, 2017, Cascade developed monitoring well MW-29S to provide a good hydraulic connection between the well screen and the surrounding aquifer, and to remove residual solids that could potentially be mobilized during the sampling process.

Well development was initially performed by Cascade on December 6, 2017 by surging and pumping with an electric submersible pump for the duration of one hour. Approximately 55 gallons of water were removed. A second round of well development was performed by SCS on January 9, 2018 by surging and pumping using an electric submersible Whale pump. The well was developed for another hour and an additional 55 gallons of water were removed.

Well Decommissioning Methodology

Monitoring wells MW-23S, MW-23D, MW-25S, MW-25D, MW-27S, MW-27D and MW-28S (see Figure 1) were decommissioned by Cascade on December 4, 6, and 21, 2017, under the guidance of SCS. The decommissioned monitoring wells were constructed of two-inch diameter Schedule 40 PVC pipe with 10 to 15-foot screened intervals. The wells ranged in depth from 32 to 164 feet below ground surface. The wells were finished with protective steel monuments.

Cascade employed the following general method at each well:

1. Removed the steel surface casing

2. Placed bentonite grout inside the two-inch PVC well casing to create a permanent seal. The grout was placed from the bottom of the well casing to the ground surface with the use of a tremie pipe. The grout mixture consisted of one 50-pound sack of bentonite Quik-Grout and 30-gallons of water.

3. Restored the immediate ground surface consistent with surrounding area.

4. Disposed of refuse material generated during this process.

Monitoring wells MW-23S and MW-25S included gas probes installed with the groundwater monitoring wells. Therefore, an alternate technique was employed to decommission these wells. Monitoring well MW-25S was filled with bentonite grout from total depth to ground surface by using a treme pipe on December 6, 2017. Then, on December 21, 2017, Cascade used a Hollow Stem Auger (HSA) drill rig to over-drill the well casing to a depth of 40 feet bgs, which was below the depth of the two gas probes at this location. Also on December 21, 2017, Cascade completely over-drilled groundwater monitoring well MW-23S (including the gas probe) to the bottom depth of 32 feet bgs. Both borings were back-filled with hydrated bentonite chips (Cetco Pure Gold Medium Chips) to within 3 feet bgs. The remaining void was back-filled with quick drying concrete and 6 inches of surrounding surface material.

Well decommissioning details are summarized in Table 2.

TABLE 2: MONITORING WELL DECOMMISSIONING DETAILS

Date	Location	Method	DTW (from TOC)	DTB (from TOC)	Type of Bentonite	Volume Used
12/4/17	MW-27D	Grout in place	106.33	160.6	Grout	35 gal.
12/4/17	MW-27S	Grout in place	106.34	131.2	Grout	30 gal.
12/6/17	MW-25D	Grout in place	123.45	157.0	Grout	35 gal.
12/6/17	MW-23D	Grout in place	24.76	79.9	Grout	18 gal.
12/6/17	MW-28S	Grout in place	40.98	45.2	Grout	15 gal.
12/6/17 & 12/21/17	MW-25S	Grout in place for monitoring well and over-drill gas probe	125.72	138.0	Grout & Chips	30 gal. for monitoring well, 19 sacks of chips for boring cavity
12/21/17	MW-23S	Over-drill monitoring well and gas probe	20.58	26.7	Chips	14 sacks of chips

Notes: DTW indicates Depth to Water
DTB indicates Depth to Bottom
gal. = gallon
The grout mixture consisted of one (1) fifty-pound sack of Quik-Grout mixed with 30 gallons of water.
Bentonite chips were provided in fifty-pound sacks of Pure Gold chipped bentonite.

Closing

New groundwater monitoring well MW-29S was installed in the Shallow Perched Aquifer at HVL. This well replaces former wells MW-23S and MW-28S and provides a point-of-compliance downgradient monitoring point for groundwater quality data. Seven monitoring wells that were no longer being used for groundwater monitoring were decommissioned. The well installation and well decommissioning activities were performed in general accordance with the Work Plan dated August 17, 2017, and with the guidelines in WAC 173-160-420 Minimum Standards for Construction and Maintenance of Resource Protection Wells.

If you have any questions regarding the information presented in this letter report, please do not hesitate to contact the undersigned.

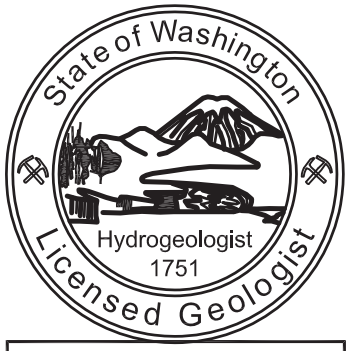
Sincerely,

Kevin Lakey, PE, LHG
Project Director
SCS ENGINEERS

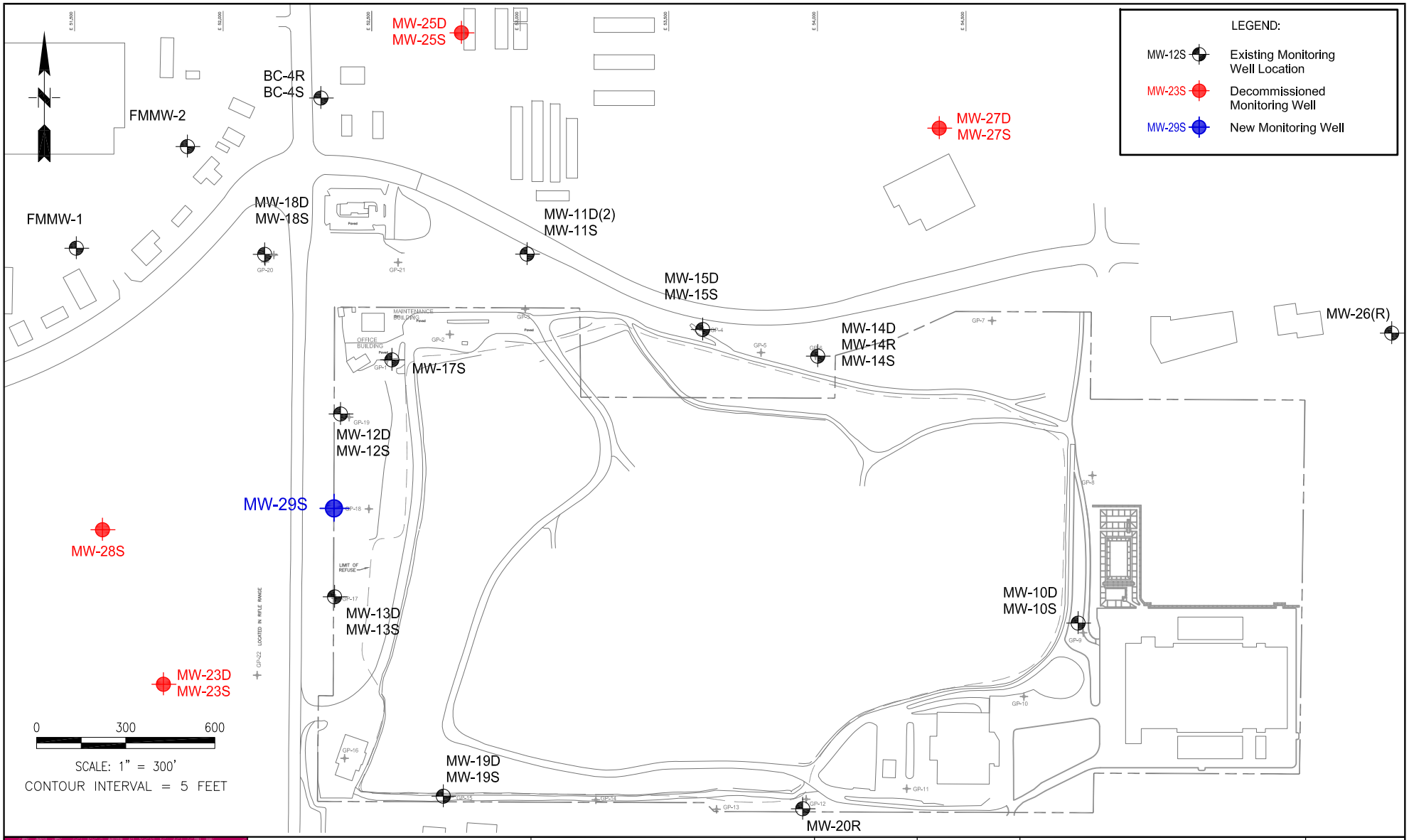
Sam Graber
Staff Scientist
SCS ENGINEERS

cc: David Bosch, TPCHD
Rick Johnston, Pierce County
George Duvendack, LRI
Greg Burrington, LRI

Attachments:
Site Map
Photographs of Well Construction and Decommissioning
MW-29S Boring Log



Kevin G. Lakey



SCS ENGINEERS
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2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO.	04217003.03
DES BY	SG
SCALE	AS SHOWN
CHK BY	KGL
CAD FILE	FIGURE 1
APP BY	KGL

GROUNDWATER MONITORING NETWORK

HIDDEN VALLEY LANDFILL
PIERCE COUNTY, WASHINGTON

DATE: JANUARY 2018

FIGURE: 1

Drilling location for new monitoring well MW-29S

Soil cuttings from boring MW-29S

Construction of monitoring well MW-29S

MW-29S completed

Mixing bentonite grout slurry for well abandonments

Placing tremie pipe

Grouting MW-25D using tremie pipe

MW-25D after grouting

Removal of steel monument

MW-25D with steel monument removed

Placement of gravel underneath surface material

Finished photo of abandoned MW-25D

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: MW-29S Page 1 of 2

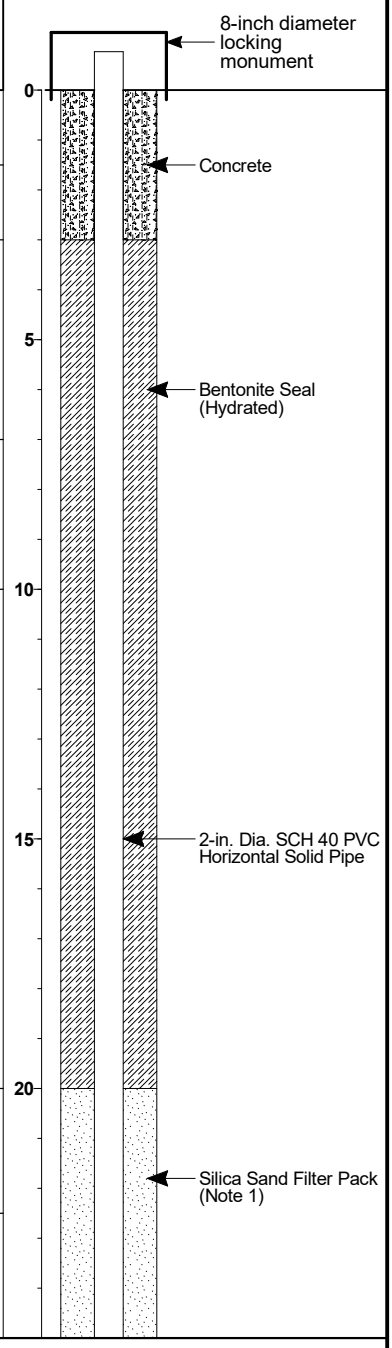
Hidden Valley Landfill, 2017 GW Well
17925 Meridian East
Puyallup, Washington

JOB NUMBER: 04217003.03

REMARKS:
Start Card BJP-898

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0					ML		SILT with clay and few angular gravel. Brown. Moist. (Topsoil)
						GW		Well-graded, angular GRAVEL with fine to medium sand. Light brown-gray. Moist.
1						SW		Fine to medium SAND with well-graded, angular to sub-rounded gravel (0.5" to 3" dia.). Light brown. Dry to moist.
	5							
2						GW		Well-graded, sub-rounded GRAVEL (0.5"-3" dia.) with sand and silt. Brown. Moist. (Outwash)
3	10					GW-GM		SILTY SANDY GRAVEL. Well-graded, sub-angular gravel (0.25"-3" dia.). Gray-brown. Moist to wet. (Outwash)
4								▽ Encountered groundwater at 13.5 ft-bgs while drilling on 11/30/2017 at 11:40 AM.
	15							
5								Decreasing silt with depth.
6	20					GW		Well-graded, sub-angular GRAVEL (0.5"-3" dia.) with little medium-grained sand. Light brown. Wet. (Outwash)
7						SW-SM		Medium to coarse-grained GRAVELLY SAND, well-graded to sub-rounded gravel, trace silt. Brown. Wet. (Outwash)
	25							

Completion Detail



Drilling Company: **Cascade Drilling**
Drilling Method: **Sonic**
Logged By: **Sam Graber**

Date Started: **11/30/17**
Date Ended: **12/4/17**
Boring Diameter: **6-inch**
Well Diameter: **2-inch**
Total Depth: **37.5 ft.**

STANDARD_LOG 04217003.03 HVL GW WELLS 2017.GPJ STD_LOG.GDT 1/19/18

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: MW-29S

Hidden Valley Landfill, 2017 GW Well

JOB NUMBER: 04217003.03

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
8	25					SW-SM		Medium to coarse-grained GRAVELLY SAND cont.
						ML		GRAVELLY SILT, sub-rounded gravel (1" dia.). Gray-brown. Moist.
9	30					GW		Well graded, sub-angular SANDY GRAVEL (0.5"-2" dia.), coarse sand, trace silt. Light brown-gray. Wet. (Outwash)
10								
11	35					GM		Well-graded, sub-angular GRAVEL with silt and trace sand. Brown. Moist. Very dense.(Till)
12	40							Notes: 1: Well material from 20' to 22.5' is a mixture of slough and silica sand filter pack. 2: A continuous core sample of subsurface soil was collected during drilling. 3: This boring was re-drilled to the original depth on December 4, 2017.
13								
14	45							
15	50							
16								
	55							

Completion Detail