

Enumclaw Closed Landfill

LANDFILL GAS REBOUND TEST TECHNICAL MEMORANDUM



King County

Department of
Natural Resources and Parks
Solid Waste Division

Waste
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LANDFILL GAS REBOUND
TEST TECHNICAL
MEMORANDUM

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Prepared by: King County Solid Waste Division

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Executive Summary

King County Solid Waste Division (SWD) has prepared this Technical Memorandum (Memorandum 2021) to summarize the continued effort on the landfill gas (LFG) rebound test performed at the Enumclaw Closed Landfill (ELF). The LFG rebound test is being performed to gather data required to evaluate LFG production and to support transitioning the LFG collection system at the ELF from active to passive. The rebound test began in December 2019 and continued through December 2020. Results through June 2020 are presented in the Rebound Test Technical Memorandum 2020 (Memorandum 2020) (Aspect and Herrera, 2020). Aspect Consulting, LLC (Aspect) and Herrera Environmental Consultants, Inc. (Herrera) contributed towards developing a portion of the Memorandum 2020 while working on the rebound test project. Memorandum 2021 evaluates and analyzes the recommendations established in the Memorandum 2020 along with the added data till December 2020.

ELF is located 1.5 miles east of the City of Enumclaw, Washington, as shown on Figure 1; the layout of the site is shown in Figure 2. Implementing a rebound test was recommended in the “LFG System Evaluation Technical Memorandum” to support transitioning the LFG collection system at ELF from active to passive collection (Aspect and Herrera, 2019a). The transition to passive collection is a necessary step to demonstrate landfill stability in preparation for terminating post-closure care. To establish procedures for rebound test, the “LFG Rebound Test Work Plan” (Work Plan) was prepared Aspect and Herrera, 2019b).

The LFG rebound test started on December 17, 2019, after shut-down of the LFG collection system blower. At the start of the rebound test, valves at all LFG collection wells were opened all the way. Passively collected LFG from the wells was vented through the constructed biofilter for polishing treatment. Aspect performed monthly LFG monitoring and groundwater sampling through June 15, 2020. KCSWD took over the monthly LFG monitoring and groundwater sampling through December 2020. KCSWD continued the groundwater and LFG monitoring as described in the Work Plan. Additional details regarding monitoring protocols are included in Section 2 of Memorandum 2021.

Active LFG collection triggers were established for the rebound test in case monitoring data showed evidence of LFG migration or methane concentrations at the bioherm discharge were not protective of onsite worker health and safety (Aspect and Herrera, 2019b). Performance monitoring data were compared to the trigger criteria during and following each monitoring event; no performance monitoring triggers were exceeded during the rebound test between December 17, 2019 and December 31, 2020.

Primary findings from the LFG rebound test (December 2019-December 2020) include:

- The biofilter was effective at providing polishing treatment and keeping methane levels safe at the surface of the biofilter.

- LFG monitoring results at GP-7S showed increased carbon dioxide during the rebound test period which was different to levels observed prior to the test period. However, a decreasing trend for carbon dioxide had been observed in the Memorandum 2020 (Aspect and Herrera, 2020) for the same GP-7S since commissioning the utility flare remains.
- Groundwater monitoring results for the rebound test period show increased dissolved carbon dioxide in MW-1, alkalinity bicarbonate in MW-9, and chloride at MW-9, while dissolved oxygen (DO) showed a decreasing trend (see Table 4) suggesting that passive venting has potentially increased LFG effects on groundwater. It is important to understand whether increases in dissolved carbon dioxide, alkalinity, and chloride are seasonal effects or related to the transition to passive LFG collection

Recommendations for further rebound test monitoring and future evaluation of the LFG-to-groundwater migration pathway are provided below:

- KCSWD will continue LFG monitoring through February 2022 to acquire a two years of monitoring data for the passive collection and biofilter treatment system. Manual monthly monitoring protocols included in the Work Plan will be implemented in the same way. Continuous monitoring was halted in June 2020 and is not necessary according to Memorandum 2020 (Aspect and Herrera, 2020) for the remainder of the monitoring period.
- KCSWD will continue performance groundwater monitoring through February 2022 on a reduced quarterly basis to supplement four additional quarters of data. One year of monthly data and one year of quarterly data will allow for effective trend analysis (USEPA, 2009) and may support the evaluation of seasonality, which is essential to understanding the effects of transitioning to passive LFG collection. Performance groundwater monitoring protocols of the Work Plan will be followed when sampling groundwater. If an increasing trend (decreasing for DO) is observed in the seasonally extracted performance groundwater monitoring data, active LFG collection should be considered.
- KCSWD will sample groundwater constituents of concern (COCs) on a quarterly basis for an additional year and will extend the Rebound test monitoring period through February 2022. This will add two additional COC sampling events to the four semi-annual events for a total of six, providing an effective trend analysis per the Unified Guidance (USEPA, 2009). If there are increasing trends for groundwater COCs, active LFG collection should be considered.
- As recommended above, the active LFG collection triggers have been enhanced to include quarterly groundwater COCs and quarterly performance monitoring data after the first 12-month rebound test period to implement active LFG collection and protect groundwater. The enhanced triggers will be found at Table 4.

The recommendations above are critical to estimating the timeframe for ending post-closure care with respect to LFG collection and monitoring. Following confirmation that passive LFG collection is controlling both lateral and vertical migration and not

inhibiting groundwater cleanup, KCSWD will perform a demonstration that the ELF is experiencing little or no gas production as outlined in the Washington State Department of Ecology's guidance on ending post-closure care (Ecology, 2013).

1 Introduction

Memorandum 2021 includes a summary of the rebound test, objectives, major findings, and recommendations for next steps. A summary of landfill gas (LFG) monitoring data and performance of the low-flow utility flare system at Enumclaw Closed Landfill (ELF) from September 2017 to December 2019 (between completion of the LFG System Evaluation Technical Memorandum and the rebound test) is also included to provide all available LFG system data through December 2020.

2 Rebound Test and Monitoring

The Landfill Gas (LFG) rebound test is being performed at the ELF (see Figure 1) to support the transition of the LFG collection system from active collection to passive venting, a necessary step towards termination of post-closure monitoring. The rebound test had been planned originally for a 12-month period beginning December 17, 2019, after shut-down of the LFG collection system blower. The existing low-flow utility flare and blower system remained at the site during the rebound test in the event that active collection was triggered based on monitoring results. Rebound test monitoring included collecting data from LFG compliance probes, LFG wellfield points, the biofilter system inlet, and within the biofilter using manual and continuous monitoring devices. Groundwater data were also collected from select monitoring wells. Additional details for monitoring protocols are provided in the Work Plan” and summarized in the subsections below. rt

At the start of the rebound test, valves at all LFG collection wells were opened all the way. Passively collected LFG from the wells was vented through the constructed biofilter for polishing treatment. The passive LFG collection rate to the biofilter and effectiveness of the biofilter polishing treatment were evaluated monthly. Aspect performed LFG monitoring including four emission monitoring chambers (EMCs) (see detailed definition in section 2.1.3) and groundwater sampling once per month. Aspect completed their monitoring period in June 2020, in order to complete their evaluation and report prior to the contract ending. KCSWD also added monthly compliance monitoring events to evaluate LFG migration control with a minimum one-week gap between Aspect and King County monitoring through June 2020. KCSWD took over the groundwater and LFG monitoring including EMCs to complete the rebound test through December 2020. The collective monitoring system by Aspect and KCSWD totaled twelve groundwater, twenty-one LFG, and twelve EMCs monitoring events from December 17, 2019 through December 31, 2020. The continuous gas data monitoring ended in June 2020.

2.1 Landfill Gas Monitoring

Monitoring of LFG occurred during each monthly monitoring event as described below. Methods for manual monitoring at LFG compliance probes, the collection system wellfield, and the biofilter system are described in Sections 2.1.1 through 2.1.3. Methods for automated monitoring at selected locations are described in Section 2.1.4. All monitoring locations are shown on Figure 3.

2.1.1 Compliance Probes

LFG monitoring was conducted at all compliance probes listed in Table 1. Manual measurements were collected using a calibrated Landtec GEM5000 (GEM5000) multi-gas meter in accordance with the Work Plan. Measured concentrations at probes with submerged screens are considered not representative of soil gas.

Monitoring data were then compared to performance monitoring thresholds in the Work Plan to determine whether measurements triggered the need to activate the blower system to provide LFG migration control. Additional details for active LFG collection and notification triggers are included in Section 3. LFG concentrations measured at monitoring probes are included in Table 2.

2.1.2 Collection System Wellfield

The LFG collection system wellfield was monitored to evaluate changes in LFG conditions within the landfill. Manual measurements, including LFG concentrations and vacuum/pressure, were recorded at LFG collection wells N-1 through N-16 and N-18 through N-21. Similar to probe monitoring, manual measurements were collected using a calibrated GEM5000 in accordance with the Work Plan. Monitoring data recorded at the collection wells are included in Table 2.

2.1.3 Biofilter System

Details for the biofilter system design are provided in the Work Plan. KCSWD procured materials and constructed the biofilter in accordance with the Work Plan, with the exception of a discharge stack. King County decided to delay the Rebound test until a biofiltration system could be constructed, which resulted in a discharge stack no longer needing to be constructed.

To evaluate methane treatment and measure emissions at the biofilter, and to gage methane loading rates, flow and methane concentrations were monitored at a Flo-wing assembly at the inlet to the biofilter and at four emission monitoring chambers (EMCs) installed within the biofilter media (EMC-1 through EMC-4). A 1-inch ISCO Flo-wing monitoring assembly was installed by King County so flow from the landfill could be measured. The Flo-wing valve remained opened all the way during the rebound test period. Monitoring at the biofilter inlet was conducted using a calibrated GEM5000 in accordance with the Work Plan.

The EMCs were installed by Aspect within the biofilter media, approximately 1-foot below the top surface of media and fitted with monitoring ports that were capped between sampling events. The chambers consisted of a 1-gallon bucket, a barbed valve, and plastic tubing that was secured in place and capped outside the biofilter media. Purging and

monitoring instructions for compliance probes were followed for monitoring the EMCs. Monitoring data from the EMCs and bioberm inlet (BIO-IN) are included in Table 2.

2.1.4 Automated Monitoring

LFG monitoring data were recorded continuously through June 2020 at compliance probe GP-7S, collection point N-21, and at the inlet to the bioberm to evaluate shorter-term trends in LFG conditions as barometric pressure fluctuated rebound test. A GasClam unit was used at both GP-7s and N-21, and a CSE Corporation (CSE) automated monitoring unit was used at the inlet to the bioberm. A Midgetech pressure/temperature data logger was also installed at the inlet to the bioberm.

Each GasClam was equipped with a methane sensor (0 to 100 percent, ± 2 percent), a carbon dioxide sensor (0 to 100 percent, ± 2 percent), and an oxygen sensor (0 to 25 percent, ± 0.5 percent). GasClams also provide information on probe pressure, barometric pressure, and sensor temperature. The GasClams were programmed to record measurements every two hours and were removed temporarily to perform monthly maintenance service. i.e. (data download, battery and filter replacement, testing, and calibration). The GasClam units suffered data loss a few times, due to low battery errors or pump errors. The CSE monitoring unit measures and records methane concentrations, barometric pressure, and temperature at 10-minute intervals. When there was sufficient signal and battery, data from the CSE unit could be viewed via a web-based portal.

Data from the automated monitoring instruments were recorded using the manufacturer's established methods and downloaded during each monitoring event. Automated readings were compared to manual readings each month to assess reliability of the instruments.

2.2 Groundwater Monitoring

Performance groundwater monitoring was performed during each monthly monitoring event from December 2019 through December 2020 to evaluate changes in groundwater quality and the LFG-to-groundwater migration pathway during the rebound test and passive LFG collection. Groundwater monitoring occurred at three monitoring wells (MW-1, MW-2, and MW-9; Figure 2).

The following field parameters and laboratory analytes were used for each sampling event:

- **Field parameters:** pH, dissolved oxygen (DO), specific conductivity, oxidation reduction potential, and turbidity.
- **Laboratory analytes:** alkalinity, bicarbonate alkalinity, dissolved calcium, chloride, dissolved magnesium, dissolved methane, and dissolved carbon dioxide.

Groundwater samples were collected, handled, and delivered to the laboratory for analysis per instructions provided in the Work Plan. For groundwater samples collected on December 17, 2019, Aspect contracted directly with Fremont for the full analysis. The remaining groundwater samples collected through December 31, 2021 were delivered to King County Environmental Laboratory (KCEL) for analysis. KCEL subcontracted dissolved gas analyses first through Pace Analytical and changed to Fremont Analytical in mid-2020 due to Pace's lack of availability. In addition to the investigation-specific

samples, routine semi-annual sampling of groundwater was also performed by KCSWD and analyzed by KCEL. Groundwater monitoring data are provided in Table 3. Trend Analysis and Groundwater Data Evaluation

The outcome of the sampling, analysis, and data review processes are data that are suitable for use in evaluating groundwater quality. Data evaluation methods are applied to both the collected and historical data to make comparisons and form a basis for decision making activities.

Testing for trends is one of the primary means of evaluating water quality data over time. The statistical test used to analyze ELF field and analytical groundwater data is the Mann-Kendall test for trend. Mann-Kendall test is available under the Statistical Tests module of ProUCL 5.1. The details of these tests can be found in Hollander and Wolfe (1999).

For Enumclaw, the trend analysis has been performed on three different sets of data. The three sets of data defined as “Pre-RBD”, “RBD” and “RBD_Pre” (see table 5) represents time periods before and during rebound test and consisted of different sampling points. First set has been defined as the pre-rebound or passive vent test monitoring period sample set (Pre-RBD) which consisted of thirteen data prior to rebound test (Jan 2016 to Nov 2019). The 13 data-points were a mix of quarterly and biannual sampling.

The second set of data has been defined as the COCs samples collected during the twelve-month rebound test period combined with pre-rebound test samples as sample set “RBD+Pre”. For sample set “RBD+Pre”, the number of samples chosen was based on the ability to understand the effect of passive venting on groundwater COCs at the end of the one-year pilot rebound test. For each COC, two semi-annual sampling events had been added to first set of data “Pre-RBD” to create the second sample set “RBD+Pre” totaling fifteen sampling points.

The third set of data refers to groundwater analytes as indicator of LFG impact collected monthly during the Rebound test period. Therefore, the third set “RBD” consisted of thirteen data points since the start of rebound test period (December 19 to December 20). It is notable that dissolved calcium, dissolved magnesium, alkalinity, and chloride had been sampled semi-annually as well while dissolved carbon dioxide and bicarbonate alkalinity were exclusively introduced during the rebound pilot test.

Mann-Kendall trend test was performed to compare the passive test impact on LFG and groundwater before and during the rebound test. The trend comparison aimed to determine these impacts by assessing whether the slopes of the comparison trend change have been changed and the test showed statistically significant.

This test has been applied to the above mentioned three sets of data and for parameters that are best indicative of LFG impact on the groundwater quality. Those

parameters have been classified in three sub-group: (1) performance monitoring triggers, (2). COCs and (3) analytes as indicator of landfill impacts to aid in interpreting the trend analysis.

To yield meaningful results, trend results must be interpreted carefully in cases where frequency of detection is low, where reporting limits have changed, or analytical resolution has changed over the period of record. Trend test are also conducted on an annual basis and results are tabulated in the Statistical Trend Summary Tables (Appendix C) in the annual reports for Enumclaw (KCSWD, 2020). Statistically significant decreasing trends are denoted by “D” in the table, and statistically significant increasing trends by “I”. Absence of a trend and non-significant trends are indicated in the table as “--”.

3 Enhanced Performance Monitoring Triggers

Active LFG collection triggers were established for the rebound test in case performance monitoring data showed evidence of LFG migration. LFG polishing treatment expansion triggers were also established in case methane concentrations at the bioberm discharge were not protective of onsite worker health and safety. Triggers established for the rebound test are summarized in Table 4. It is notable that the triggers outlined in table 4 has been updated from the Work Plan and will be used for further evaluation beyond Memorandum 2021.

Table 4. Enhanced Performance Monitoring Triggers

Criteria	Active LFG Collection		LFG Polishing Treatment Expansion
	<i>LFG</i>	<i>Groundwater</i>	
	Methane exceeds 2.5% at a compliance probe (baseline have been 0 percent by volume).	Statistically significant increasing trend for COCs* (except decreasing trend for pH), dissolved methane and Performance Monitoring Analytes** Decreasing trend of DO	Methane exceeds 5% at the bio-berm surface for four consecutive monitoring events

*COCs = arsenic, manganese, vinyl chloride, pH, iron

** Performance Monitoring Analytes Indicative of LFG Impacts = dissolved calcium, dissolved magnesium, dissolved methane, dissolved carbon dioxide, alkalinity, bicarbonate alkalinity, chloride

Performance monitoring data were compared to the trigger criteria during and following each monitoring event, as detailed in the Work Plan (Aspect and Herrera, 2019b). No performance monitoring triggers (as set by the Work Plan) were exceeded during the Rebound test between December 17, 2019 and December 31, 2020.

4 Findings

Primary findings of the LFG rebound test are summarized below.

4.1 Landfill Gas Conditions

LFG monitoring results indicate that passive LFG collection adequately controlled lateral LFG migration during the rebound test, based on the following:

- The average passive collection/flow rate during the rebound test, when barometric pressure was dropping (i.e., flow directed to the biofilter), was approximately 0.5 standard cubic feet per minute (scfm).
- Methane was not observed after purging at compliance monitoring probes throughout the rebound test, except for one occurrence in January when methane was measured at 0.1 percent by volume at GP-7S. Methane was also measured at 0.1 percent by volume with the GasClam at GP-7S, once on February 13, 2020, and again on March 13, 2020. This indicates passive LFG collection provided effective lateral LFG migration control during the rebound test.
- Carbon dioxide concentrations at GP-7S showed increased carbon dioxide during the rebound test period which was different from levels observed prior to the test period (see Figure 4b and supporting table 6). However, a decreasing trend for carbon dioxide had been observed by rebound test evaluation 2020 for the same GP-7S since commissioning the utility flare. LFG concentrations measured at compliance probe GP-7S during the rebound test are shown on Figure 4a, as well as measured LFG concentrations dating back to commissioning of the utility flare (October 2017) to evaluate historical trends.
- Figure 4b showed decreasing trend in GP-7S in percent of oxygen suggesting that passive venting has potentially increased LFG effects on groundwater. Alternatively, decreasing oxygen can be a result of seasonal recharge and is not evidence of LFG. Further monitoring is crucial.
- As expected, LFG concentrations across the wellfield increased at the start of the rebound test after shutting down the low-flow utility flare and opening all wellhead valves. After the initial increase, LFG concentrations generally remained stable throughout the monitoring period, with fluctuations occurring due to barometric pressure influences creating varying flow to the biofilter. Methane and carbon dioxide concentrations measured at collection wells throughout the landfill are shown in time-series on Figures 5a and 5b, respectively. Wellhead monitoring data for the period of active LFG collection with the low-flow utility flare are also included in Figures 5a and 5b.
With passive collection, concentrations are expected to remain elevated at extraction wells compared to when there was vacuum was applied to the collection network. The concentrations will fluctuate with barometric pressure and over time are assumed to generally to decrease.

- The average methane collection rate at the biofilter during the rebound test was approximately 0.3 scfm with passive collection (i.e., falling barometric pressure). This equates to approximately five percent of the collection rate obtained during the first year of low-flow utility flare operations, as detailed in the LFG System Evaluation Technical Memorandum. Proportional to decreasing LFG generation rates, the LFG collection rate will continue to decrease over time. Passive flow to the biofilter and methane collection rates are plotted via time-series in Figure 6 of the Memorandum 2020. Active LFG collection flow (using the low-flow utility flare) flow and methane collection rates are also shown on Figure 6 of the Memorandum 2020 to compare active versus passive collection rates.

The biofilter was effective at providing polishing treatment and keeping methane levels safe at the surface of the biofilter, based on the following results:

- Methane was generally not present at the end of purging the EMCs (EMC-1 through EMC-4) within the biofilter during monthly monitoring events. One exception was the February 13, 2020, monitoring event, when methane was measured at 2.6 percent at EMC-1 and 0.4 percent or less at EMC-2, 3 and 4.
- Except for the final monitoring event, when barometric pressure was not decreasing, methane was measured between forty-nine and fifty-four percent at the biofilter inlet while methane measurements at the EMCs remained well below five percent (Table 2).

4.2 Groundwater Conditions

Groundwater constituents that exceed WAC 173-200 criteria were identified in the “Post-Closure Maintenance Report” as: pH, arsenic, iron, manganese, and vinyl chloride (Aspect, 2017).

Table 5: Summary of Mann-Kendall Trend Analysis for Groundwater Well Analytes

GROUNDWATER WELLS						
	MW-1		MW-2		MW-9	
Performance Monitoring Trigger						
Trend comparison	Pre-RBD	RBD	Pre-RBD	RBD	Pre-RBD	RBD
Dissolved methane (CH4)	N/A	.....	N/A	.....	N/A	.....
DO	.....	.....	.....	.....	.....	I
Constituents of Concerns (COCs)						
Trend comparison	Pre-RBD	RBD+Pre	Pre-RBD	RBD+Pre	Pre-RBD	RBD+Pre
Arsenic	.....	.....	.....	.....	.....	.....
Manganese	.....	.....	I	I	ID	.....
Vinyl Chloride	I	.....	ID	ID	ID	ID
Ph	.....	.....	.....	.....	.....	I
Iron	I	I	.....	I	.....	I
Analytes as indicator of Landfill impacts						
Trend comparison	Pre-RBD	RBD	Pre-RBD	RBD	Pre-RBD	RBD
Dissolved calcium	.....	.....	.....	.....	.....	.....
Dissolved magnesium	.....	.....	.....	.....	.....	.....
Dissolved carbon dioxide	N/A	D	N/A	.....	N/A	.....
Alkalinity	.....	.....	.....	.....	.....	.....
Alkalinity bicarbonate	N/A	.....	N/A	.....	N/A	D
Chloride	.....	.....	.....	.....	.....	D
Notes:						
13 data points since the start of rebound test period (Dec 19 to Dec 20)					RBD	
13 data prior to Rebound test starts					Pre-RBD	
Historical quarterly/semi-annual data from 2016 + 2 semi-annual since the rebound test					RBD+Pre-RBD	
Not available due to no historical data before the rebound test starts						N/A
Insufficeint data to produce						ID
Mann-Kendall statistics						
No detectable trend or too few data						.....
point to determine significance						
Decreasing Trend						D
Increasing Trend						I
**** RBD and Pre-RBD has no mutual data						

- An increase in dissolved carbon dioxide in groundwater can form carbonic acid that reacts with minerals within the aquifer, leading to increased alkalinity (Kerfoot, 2004). An increase in alkalinity is therefore an indicator of LFG-to-groundwater effects. Alkalinity can also occur in leachate; however, the increase in dissolved carbon dioxide and increased alkalinity in this case appears to be consistent with LFG impacts. Alternatively, the increase in dissolved carbon dioxide could be a result of seasonal recharge and is not evidence of LFG migration to groundwater. A longer monitoring period is needed to determine if the increase in dissolved carbon dioxide in groundwater is related to seasonal recharge.

- Vinyl chloride, if present in sufficient concentration in LFG, would directly partition into groundwater. Increases in LFG concentrations in the vadose zone, would therefore be accompanied by an increase in vinyl chloride in groundwater.
- DO generally decreased in downgradient monitoring wells during the Rebound test. A decrease in DO would be expected if LFG was migrating to and impacting groundwater. Additional monitoring is recommended to determine if the DO decrease is related to passive system deterioration or seasonality.
- In summary, increased dissolved carbon dioxide and alkalinity suggest passive venting has potentially increased the LFG effects on groundwater. Additional monitoring will be necessary to determine if these are seasonal effects or related to the transition to passive LFG collection. Dissolved methane has not indicated LFG effects on groundwater under passive collection. Continued monitoring and evaluation of COC trends will be necessary to fully characterize effects of passive LFG collection on groundwater quality.

5 Recommendations

The passive LFG collection and biofilter treatment system has performed as expected for the rebound test. KCSWD has continued the monitoring for groundwater and LFG following the end of the 12-month rebound test period which ended on December 2020. Recommendations for further Rebound test monitoring and future evaluation of the LFG-to-groundwater migration pathway are provided below:

- KCSWD will continue monthly LFG monitoring through February 2022 to provide a minimum of two years of monitoring data for the passive collection and biofilter treatment system. Manual monitoring protocols included in Section 3.2 of the Work Plan should be implemented monthly, at a minimum.
- KCSWD will continue performance groundwater monitoring quarterly through February 2022 to provide one year of monthly and an additional year of quarterly groundwater monitoring data to allow for an evaluation of seasonality and the effects of transitioning to passive LFG collection. Performance groundwater monitoring protocols in Section 3.3 of the Work Plan should be followed when sampling groundwater.

An observed increase in dissolved carbon dioxide, alkalinity, and chloride (see Table 4) during the rebound test will be evaluated to see if the increases are seasonal effects or related to the transition to passive LFG collection. An evaluation to identify seasonal variation of the site for groundwater elevation and analytes concentration is under consideration.

- KCSWD will sample groundwater COCs quarterly from second quarter 2021 till the end of the rebound test period.

- KCSWD revised the performance triggers (See Table 4) to include COCs and Performance Monitoring Analytes for groundwater evaluation and to implement active LFG collection and protect groundwater.
- KCSWD will evaluate groundwater performance monitoring data trends once again including COC concentrations in groundwater (i.e., arsenic, pH, iron, manganese, and vinyl chloride) after the two-year monitoring period. If there are increasing trends for groundwater COCs, active LFG collection should be considered.

As evidenced by the results of this rebound test, the existing LFG collection infrastructure appears to be controlling lateral LFG migration with passive collection. The recommended monitoring described above is critical to estimating the timeframe for ending post-closure care with respect to LFG collection and monitoring. Following confirmation that passive LFG collection is controlling potential migration and not inhibiting groundwater cleanup, KCSWD will perform a demonstration that the ELF is experiencing little or no gas production as outlined in the Washington State Department of Ecology's (Ecology) guidance on ending post-closure care (Ecology, 2013).

6 References

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TABLES

Table 1. Landfill Gas Monitoring Probe Construction Information

Probe ID	Installation Date	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Top of Casing Stickup (ft)	Measured Probe depth (ft toc)	Calculated Probe Depth (ft bgs)
G-6s	2/14/1987	8.5	11	1.70	13.58	11.88
G-6i	2/14/1987	20	22.5	1.60	22.09	20.49
G-6d	2/14/1987	32.5	35	1.40	34.04	32.64
G-7s	2/15/1987	8.5	11	0.60	12.05	11.45
G-7i	2/15/1987	22	24.5	0.70	26.65	25.95
G-7d	2/15/1987	30.5	33	0.60	32.04	31.44
G-9s	11/18/1987	4	5.5			
G-10s	11/21/1987	4.5	6			
G-10i	11/21/1987	21.5	22			
G-10d	11/21/1987	48.5	50			
G-15s	11/19/1987	30.5	32			
G-15d	11/19/1987	46.5	48			

Notes:

Units: ft bgs = feet below ground surface; ft toc = feet below top of casing; cc = cubic centimeter; mm:ss = minutes:seconds

Probe construction information from Table 1 of the 2014 Findings Report (Aspect, 2014)

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
BIOIN	Aspect	12/17/2019 13:15	29.19	49.0	28.0	0.0	1	0.01
BIOIN	Aspect	1/15/2020 14:10	28.81	49.4	29.3	0.0	1	0.04
BIOIN	Aspect	2/13/2020 16:11	29.06	54.0	28.6	0.0	0	0.06
BIOIN	Aspect	3/12/2020 13:00	29.39	50.0	26.2	0.0	2	0.06
BIOIN	Aspect	4/16/2020 12:38	29.37	52.8	25.3	0.0	3	-0.06
BIOIN	Aspect	5/14/2020 13:00	29.07	52.6	25.1	0.0	0	0.01
BIOIN	Aspect	6/15/2020 12:39	28.98	15.0	7.3	14.7	0	0.04
BIOIN	KCSWD	9/21/2020 0:00	N/A	29.9	1.7	1.4	20	0
BIOIN	KCSWD	10/7/2020 0:00	N/A	29.8	0.0	0.2	21	0
BIOIN	KCSWD	10/19/2020 0:00	N/A	30.0	0.2	0.7	21	0
BIOIN	KCSWD	11/6/2020 0:00	N/A	29.8	50.7	26.1	1	0
BIOIN	KCSWD	11/13/2020 0:00	N/A	29.3	0.0	0.4	21	0
BIOIN	KCSWD	12/17/2020 0:00	N/A	29.8	0.0	0.3	21	0
EMC01	Aspect	12/17/2019 13:24	29.19	1.2	0.8	20.6	0	NM
EMC01	Aspect	1/15/2020 14:00	28.81	0.4	0.6	20.9	0	0.04
EMC01	Aspect	2/13/2020 15:53	29.03	2.6	2.2	19.5	0	0.08
EMC01	Aspect	3/12/2020 12:42	29.4	0.4	0.6	19.8	0	0
EMC01	Aspect	4/16/2020 12:16	29.41	0.0	0.2	20.0	0	-0.1
EMC01	Aspect	5/14/2020 13:05	29.13	0.2	1.2	18.9	0	0
EMC01	Aspect	6/15/2020 12:25	28.99	0.2	1.0	19.2	0	0.01
EMC01	KCSWD	9/22/2020 0:00	N/A	29.9	0.2	1.4	19	0
EMC01	KCSWD	10/7/2020 0:00	N/A	29.8	0.0	1.1	20	0
EMC01	KCSWD	10/19/2020 0:00	N/A	30.0	0.0	0.6	21	0
EMC01	KCSWD	11/6/2020 0:00	N/A	29.8	0.3	0.4	21	0
EMC01	KCSWD	11/13/2020 0:00	N/A	29.3	0.0	0.2	21	0
EMC01	KCSWD	12/17/2020 0:00	N/A	29.8	0.0	0.1	21	0
EMC02	Aspect	12/17/2019 13:29	29.18	0.0	0.6	21.0	0	NM
EMC02	Aspect	1/15/2020 14:02	28.81	0.0	0.2	21.2	0	0.02
EMC02	Aspect	2/13/2020 15:55	29.04	0.1	0.6	20.7	0	0.08
EMC02	Aspect	3/12/2020 12:44	29.41	0.0	0.6	20.0	0	0
EMC02	Aspect	4/16/2020 12:18	29.41	0.0	0.1	20.3	0	-0.1
EMC02	Aspect	5/14/2020 13:07	29.08	0.0	0.9	19.2	0	-0.02
EMC02	Aspect	6/15/2020 12:26	28.99	0.0	0.5	19.6	0	0.03
EMC02	KCSWD	9/22/2020 0:00	N/A	29.9	0.0	0.6	20	0
EMC02	KCSWD	10/7/2020 0:00	N/A	29.8	0.0	1.1	20	0
EMC02	KCSWD	10/19/2020 0:00	N/A	30.0	0.0	0.5	21	0
EMC02	KCSWD	11/6/2020 0:00	N/A	29.8	0.1	0.3	21	0
EMC02	KCSWD	11/13/2020 0:00	N/A	29.3	0.0	0.2	21	0
EMC02	KCSWD	12/17/2020 0:00	N/A	29.8	0.0	0.1	21	0
EMC03	Aspect	12/17/2019 13:31	29.19	0.0	0.5	21.1	0	NM
EMC03	Aspect	1/15/2020 14:05	28.81	0.0	0.2	21.2	0	0.03
EMC03	Aspect	2/13/2020 15:58	29.05	0.1	0.5	20.9	0	0.07
EMC03	Aspect	3/12/2020 12:46	29.39	0.0	0.3	20.3	0	0
EMC03	Aspect	4/16/2020 12:20	29.4	0.0	0.1	20.1	0	-0.1
EMC03	Aspect	5/14/2020 13:12	29.07	0.0	0.3	19.6	0	-0.01
EMC03	Aspect	6/15/2020 12:28	28.98	0.0	0.3	19.9	0	0
EMC03	KCSWD	9/22/2020 0:00	N/A	29.9	0.0	0.5	20	0
EMC03	KCSWD	10/7/2020 0:00	N/A	29.8	0.0	0.5	21	0
EMC03	KCSWD	10/19/2020 0:00	N/A	broken				

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
EMC03	KCSWD	11/6/2020 0:00	N/A	broken				
EMC03	KCSWD	11/13/2020 0:00	N/A	broken				
EMC03	KCSWD	12/17/2020 0:00	N/A	29.8	0.0	0.1	21	0
EMC04	Aspect	12/17/2019 13:33	29.18	0.1	0.4	21.1	0	NM
EMC04	Aspect	1/15/2020 14:07	28.81	0.0	0.2	21.2	0	0.03
EMC04	Aspect	2/13/2020 16:00	29.03	0.2	0.4	20.9	0	0.07
EMC04	Aspect	3/12/2020 12:50	29.39	0.0	0.3	20.3	0	0
EMC04	Aspect	4/16/2020 12:34	29.4	1.0	0.6	19.8	0	-0.11
EMC04	Aspect	5/14/2020 13:15	29.07	0.0	0.2	19.7	0	-0.02
EMC04	Aspect	6/15/2020 12:29	28.99	0.0	0.2	20.1	0	0
EMC04	KCSWD	9/22/2020 0:00	N/A	29.9	0.0	0.0	20	0
EMC04	KCSWD	10/7/2020 0:00	N/A	29.8	0.0	0.3	21	0
EMC04	KCSWD	10/19/2020 0:00	N/A	30.0	0.0	0.2	21	0
EMC04	KCSWD	11/6/2020 0:00	N/A	29.8	0.1	0.2	21	0
EMC04	KCSWD	11/13/2020 0:00	N/A	29.3	0.0	0.2	21	0
EMC04	KCSWD	12/17/2020 0:00	N/A	29.8	0.0	0.1	21	0
ENUMN001	Aspect	12/17/2019 12:25	29.15	46.1	24.9	0.0	0	0.05
ENUMN001	KCSWD	1/2/2020 9:17	NA	38.2	23.9	0.0	NA	-0.1
ENUMN001	Aspect	1/15/2020 12:49	28.81	50.1	27.7	0.0	12	0.44
ENUMN001	KCSWD	2/3/2020 10:27	NA	47.6	25.2	0.0	NA	-0.4
ENUMN001	Aspect	2/13/2020 14:41	29.04	38.6	24.8	0.0	1	-0.52
ENUMN001	KCSWD	3/3/2020 9:36	NA	49.6	25.4	0.0	NA	0.1
ENUMN001	Aspect	3/12/2020 11:51	29.34	50.4	25.3	0.0	3	0.09
ENUMN001	KCSWD	4/2/2020 11:02	NA	51.1	23.5	0.0	NA	-0.1
ENUMN001	Aspect	4/16/2020 11:44	29.38	56.6	25.8	0.0	19	-0.01
ENUMN001	KCSWD	5/7/2020 10:32	NA	44.9	20.4	0.5	NA	0.3
ENUMN001	Aspect	5/14/2020 12:32	29.03	50.9	24.0	0.0	0	0.03
ENUMN001	KCSWD	6/4/2020 10:16	NA	42.8	23.9	0.0	NA	0.2
ENUMN001	Aspect	6/15/2020 12:10	28.93	41.2	23.5	1.7	1	0.03
ENUMN001	KCSWD	7/07/20 12:52:00	N/A	45.5	24.5	0.0		0.1
ENUMN001	KCSWD	8/06/20 08:47:00	N/A	48.6	24.8	0.0		-0.1
ENUMN001	KCSWD	9/22/20 12:02:00	N/A	48.6	23.0	0.0		0.1
ENUMN001	KCSWD	10/07/20 10:31:00	N/A	51.4	26.4	0.0		0
ENUMN001	KCSWD	11/06/20 11:38:00	N/A	56.3	25.1	0.1		0.1
ENUMN001	KCSWD	12/17/20 10:45:00	N/A	47.9	20.2	2.7		-0.1
ENUMN002	Aspect	12/17/2019 12:13	29.17	47.1	25.8	0.0	9	-0.04
ENUMN002	KCSWD	1/2/2020 9:14	NA	25.7	21.6	0.0	NA	-0.1
ENUMN002	Aspect	1/15/2020 12:42	28.81	34.6	24.7	0.0	1	0.34
ENUMN002	KCSWD	2/3/2020 10:22	NA	28.1	20.5	0.0	NA	-0.4
ENUMN002	Aspect	2/13/2020 14:37	29.05	37.7	23.7	0.0	1	0.15
ENUMN002	KCSWD	3/3/2020 9:33	NA	49.1	24.7	0.0	NA	0
ENUMN002	Aspect	3/12/2020 11:22	29.36	42.6	23.1	0.0	11	0.58
ENUMN002	KCSWD	4/2/2020 11:00	NA	50.1	22.8	0.0	NA	-0.1
ENUMN002	Aspect	4/16/2020 12:13	29.39	41.7	20.3	2.4	1	-0.01
ENUMN002	KCSWD	5/7/2020 10:29	NA	38.8	21.9	0.0	NA	0.2
ENUMN002	Aspect	5/14/2020 12:35	29.04	42.9	24.7	0.0	0	0.02
ENUMN002	KCSWD	6/4/2020 10:12	NA	44.5	23.9	0.0	NA	0.1
ENUMN002	Aspect	6/15/2020 12:13	28.96	37.6	20.6	1.5	0	0.02
ENUMN002	KCSWD	7/07/20 12:49:00	N/A	35.8	19.8	0.0		0

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN002	KCSWD	8/06/20 08:43:00	N/A	38.3	20.5	0.2		-0.1
ENUMN002	KCSWD	9/22/20 11:59:00	N/A	51.3	23.5	0.0		0.1
ENUMN002	KCSWD	10/07/20 10:28:00	N/A	45.6	22.4	0.0		-0.1
ENUMN002	KCSWD	11/06/20 11:35:00	N/A	48.7	24.4	0.0		0.1
ENUMN002	KCSWD	12/17/20 10:43:00	N/A	42.2	23.7	0.0		-0.1
ENUMN003	Aspect	12/17/2019 12:07	29.17	38.1	24.8	0.0	2	-0.03
ENUMN003	KCSWD	1/2/2020 9:12	NA	16.1	20.3	0.0	NA	-0.1
ENUMN003	Aspect	1/15/2020 12:39	28.81	34.7	24.7	0.0	1	0.3
ENUMN003	KCSWD	2/3/2020 10:20	NA	47.0	23.8	0.2	NA	-0.4
ENUMN003	Aspect	2/13/2020 14:33	29.02	37.5	23.6	0.0	2	0.04
ENUMN003	KCSWD	3/3/2020 9:30	NA	46.6	24.3	0.0	NA	0
ENUMN003	Aspect	3/12/2020 11:18	29.35	41.2	23.3	0.0	3	0.09
ENUMN003	KCSWD	4/2/2020 10:58	NA	50.3	22.9	0.0	NA	-0.1
ENUMN003	Aspect	4/16/2020 11:53	29.39	41.3	21.9	0.7	5	-0.05
ENUMN003	KCSWD	5/7/2020 10:27	NA	35.4	22.4	0.0	NA	0.2
ENUMN003	Aspect	5/14/2020 12:37	29.05	44.8	25.4	0.0	0	0.03
ENUMN003	KCSWD	6/4/2020 10:10	NA	44.3	23.9	0.0	NA	0.1
ENUMN003	Aspect	6/15/2020 12:15	28.95	36.2	19.4	3.3	0	0.01
ENUMN003	KCSWD	7/07/20 12:47:00	N/A	46.0	24.3	0.0		-0.1
ENUMN003	KCSWD	8/06/20 08:42:00	N/A	40.6	21.4	0.0		-0.2
ENUMN003	KCSWD	9/22/20 11:57:00	N/A	51.3	23.8	0.0		0.1
ENUMN003	KCSWD	10/07/20 10:26:00	N/A	53.0	24.9	0.0		0
ENUMN003	KCSWD	11/06/20 11:33:00	N/A	48.8	24.9	0.0		0
ENUMN003	KCSWD	12/17/20 10:41:00	N/A	27.4	20.8	0.0		-0.2
ENUMN004	Aspect	12/17/2019 12:15	29.16	37.0	25.7	0.0	1	0.05
ENUMN004	KCSWD	1/2/2020 9:20	NA	21.8	20.9	0.3	NA	-0.2
ENUMN004	Aspect	1/15/2020 12:46	28.81	39.8	26.5	0.0	1	-1.03
ENUMN004	KCSWD	2/3/2020 10:30	NA	41.9	23.2	0.1	NA	-0.4
ENUMN004	Aspect	2/13/2020 14:44	28.99	33.9	22.5	0.1	2	0.05
ENUMN004	KCSWD	3/3/2020 9:39	NA	40.1	23.6	0.0	NA	0.1
ENUMN004	Aspect	3/12/2020 11:28	29.38	38.6	21.8	0.5	1	0.02
ENUMN004	KCSWD	4/2/2020 11:09	NA	49.3	22.8	0.0	NA	-0.1
ENUMN004	Aspect	4/16/2020 11:49	29.38	44.4	24.4	0.0	1	-0.01
ENUMN004	KCSWD	5/7/2020 10:34	NA	35.5	22.4	0.0	NA	0.3
ENUMN004	Aspect	5/14/2020 12:30	29.03	45.6	25.6	0.0	0	0.02
ENUMN004	KCSWD	6/4/2020 10:20	NA	45.3	24.2	0.0	NA	0.2
ENUMN004	Aspect	6/15/2020 12:06	28.95	41.3	21.9	1.9	0	0.01
ENUMN004	KCSWD	7/07/20 12:55:00	N/A	48.7	24.3	0.0		0.1
ENUMN004	KCSWD	8/06/20 08:49:00	N/A	41.2	22.5	0.1		-0.1
ENUMN004	KCSWD	9/22/20 12:04:00	N/A	51.9	24.0	0.0		0.2
ENUMN004	KCSWD	10/07/20 10:33:00	N/A	52.6	24.7	0.0		-0.1
ENUMN004	KCSWD	11/06/20 11:40:00	N/A	50.2	25.4	0.0		0.1
ENUMN004	KCSWD	12/17/20 10:48:00	N/A	19.4	14.0	7.5		-0.1
ENUMN005	Aspect	12/17/2019 12:04	29.18	32.4	21.0	8.8	0	-0.05
ENUMN005	KCSWD	1/2/2020 9:05	NA	28.7	22.0	0.2	NA	-0.1
ENUMN005	Aspect	1/15/2020 12:15	28.81	33.3	25.8	0.0	1	0.25
ENUMN005	KCSWD	2/3/2020 10:13	NA	37.4	21.9	1.2	NA	-0.4
ENUMN005	Aspect	2/13/2020 14:28	29.06	36.9	23.6	0.0	2	0.01
ENUMN005	KCSWD	3/3/2020 9:24	NA	41.3	23.6	0.0	NA	0

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN005	Aspect	3/12/2020 11:48	29.34	40.4	23.6	0.0	1	0.08
ENUMN005	KCSWD	4/2/2020 10:53	NA	41.5	22.7	0.3	NA	-0.1
ENUMN005	Aspect	4/16/2020 10:35	29.36	16.6	12.1	9.0	1	0.04
ENUMN005	KCSWD	5/7/2020 10:21	NA	34.2	22.0	0.0	NA	0.2
ENUMN005	Aspect	5/14/2020 11:48	29.05	34.9	22.7	0.0	0	0.03
ENUMN005	KCSWD	6/4/2020 10:00	NA	31.0	22.1	0.0	NA	0.1
ENUMN005	Aspect	6/15/2020 11:28	28.96	28.1	18.4	3.8	0	0.01
ENUMN005	KCSWD	7/07/20 12:40:00	N/A	34.2	24.0	0.0		0
ENUMN005	KCSWD	8/06/20 08:36:00	N/A	32.5	22.6	0.7		0
ENUMN005	KCSWD	9/22/20 11:55:00	N/A	33.1	23.3	0.1		0.1
ENUMN005	KCSWD	10/07/20 10:21:00	N/A	36.6	21.7	1.4		0
ENUMN005	KCSWD	11/06/20 11:28:00	N/A	32.9	21.2	1.5		0.1
ENUMN005	KCSWD	12/17/20 10:36:00	N/A	20.7	15.9	5.3		-0.1
ENUMN006	Aspect	12/17/2019 12:06	29.21	27.3	23.2	0.0	0	0.02
ENUMN006	KCSWD	1/2/2020 9:02	NA	26.2	20.3	2.1	NA	-0.1
ENUMN006	Aspect	1/15/2020 12:19	28.81	19.9	21.6	0.0	1	0.28
ENUMN006	KCSWD	2/3/2020 10:11	NA	8.0	11.0	10.5	NA	-0.4
ENUMN006	Aspect	2/13/2020 14:47	29.03	37.7	23.5	0.0	1	0.02
ENUMN006	KCSWD	3/3/2020 9:21	NA	40.1	22.6	0.0	NA	0
ENUMN006	Aspect	3/12/2020 11:32	29.39	19.5	14.0	8.5	0	0.05
ENUMN006	KCSWD	4/2/2020 10:51	NA	21.0	14.9	7.1	NA	-0.2
ENUMN006	Aspect	4/16/2020 10:38	29.38	15.7	13.1	7.1	1	0.095
ENUMN006	KCSWD	5/7/2020 10:18	NA	5.2	5.7	14.7	NA	0.2
ENUMN006	Aspect	5/14/2020 11:51	29.06	12.3	9.1	11.2	0	0.02
ENUMN006	KCSWD	6/4/2020 9:58	NA	22.3	17.4	3.7	NA	0.1
ENUMN006	Aspect	6/15/2020 11:31	28.96	16.9	11.2	9.5	0	-0.01
ENUMN006	KCSWD	7/07/20 12:38:00	N/A	17.6	12.7	10.6		0
ENUMN006	KCSWD	8/06/20 08:33:00	N/A	14.4	11.2	10.1		-0.1
ENUMN006	KCSWD	9/22/20 11:52:00	N/A	16.0	10.5	10.3		0
ENUMN006	KCSWD	10/07/20 10:18:00	N/A	24.2	14.4	7.8		0
ENUMN006	KCSWD	11/06/20 11:25:00	N/A	39.5	22.2	2.5		0
ENUMN006	KCSWD	12/17/20 10:33:00	N/A	10.8	10.2	10.7		-0.1
ENUMN007	Aspect	12/17/2019 12:25	29.19	36.7	24.1	0.0	0	-0.01
ENUMN007	KCSWD	1/2/2020 9:00	NA	10.7	12.6	8.4	NA	-0.1
ENUMN007	Aspect	1/15/2020 12:31	28.81	31.5	23.6	0.0	1	0.46
ENUMN007	KCSWD	2/3/2020 10:08	NA	5.4	10.8	9.6	NA	-0.4
ENUMN007	Aspect	2/13/2020 14:50	29.02	33.5	21.8	1.1	0	0.07
ENUMN007	KCSWD	3/3/2020 9:19	NA	44.9	23.4	0.0	NA	0
ENUMN007	Aspect	3/12/2020 11:37	29.37	44.4	25.1	0.0	0	0.13
ENUMN007	KCSWD	4/2/2020 10:49	NA	40.2	21.1	4.1	NA	-0.2
ENUMN007	Aspect	4/16/2020 10:42	29.38	44.1	24.1	0.0	1	0.07
ENUMN007	KCSWD	5/7/2020 10:16	NA	34.9	21.2	0.0	NA	0.2
ENUMN007	Aspect	5/14/2020 11:54	29.05	45.3	23.5	0.0	0	0.03
ENUMN007	KCSWD	6/4/2020 9:54	NA	41.7	22.0	0.1	NA	0.1
ENUMN007	Aspect	6/15/2020 11:33	28.95	27.5	15.0	6.6	0	0
ENUMN007	KCSWD	7/07/20 12:35:00	N/A	31.8	17.6	6.0		0
ENUMN007	KCSWD	8/06/20 08:30:00	N/A	17.1	11.4	10.1		0
ENUMN007	KCSWD	9/22/20 11:50:00	N/A	50.5	22.7	0.0		0
ENUMN007	KCSWD	10/07/20 10:15:00	N/A	49.3	23.4	0.0		0

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN007	KCSWD	11/06/20 11:23:00	N/A	47.7	24.2	0.8		0.1
ENUMN007	KCSWD	12/17/20 10:31:00	N/A	10.2	13.5	6.1		-0.1
ENUMN008	Aspect	12/17/2019 12:20	29.17	33.0	23.6	0.0	0	0.03
ENUMN008	KCSWD	1/2/2020 8:57	NA	35.6	23.6	0.3	NA	-0.1
ENUMN008	Aspect	1/15/2020 12:38	28.81	34.0	24.0	0.0	1	0.39
ENUMN008	KCSWD	2/3/2020 10:05	NA	42.7	24.5	0.0	NA	-0.4
ENUMN008	Aspect	2/13/2020 14:55	29	36.7	23.0	0.0	0	-0.23
ENUMN008	KCSWD	3/3/2020 9:16	NA	44.5	24.3	0.0	NA	0.1
ENUMN008	Aspect	3/12/2020 11:41	29.35	42.0	24.4	0.0	1	0.06
ENUMN008	KCSWD	4/2/2020 10:47	NA	57.0	28.4	0.0	NA	-0.1
ENUMN008	Aspect	4/16/2020 10:47	29.36	43.8	24.1	0.0	1	0.06
ENUMN008	KCSWD	5/7/2020 10:13	NA	36.1	21.4	0.0	NA	0.2
ENUMN008	Aspect	5/14/2020 11:56	29.03	46.2	23.7	0.0	0	0.03
ENUMN008	KCSWD	6/4/2020 9:51	NA	43.9	22.5	0.0	NA	0.1
ENUMN008	Aspect	6/15/2020 11:36	28.93	37.7	18.5	3.8	0	0.01
ENUMN008	KCSWD	7/07/20 12:32:00	N/A	48.8	23.8	0.0		0
ENUMN008	KCSWD	8/06/20 08:27:00	N/A	50.3	24.2	0.0		-0.1
ENUMN008	KCSWD	9/22/20 11:47:00	N/A	50.3	22.9	0.0		0
ENUMN008	KCSWD	10/07/20 10:13:00	N/A	50.6	23.4	0.0		-0.1
ENUMN008	KCSWD	11/06/20 11:21:00	N/A	49.8	24.4	0.0		0
ENUMN008	KCSWD	12/17/20 10:28:00	N/A	23.5	16.1	5.1		-0.1
ENUMN009	Aspect	12/17/2019 12:27	29.14	44.4	24.5	0.0	1	0.13
ENUMN009	KCSWD	1/2/2020 9:23	NA	36.2	25.0	0.7	NA	-0.1
ENUMN009	Aspect	1/15/2020 13:00	28.81	46.9	25.1	0.0	2	-0.12
ENUMN009	KCSWD	2/3/2020 10:33	NA	46.4	25.5	0.0	NA	-0.4
ENUMN009	Aspect	2/13/2020 15:03	28.99	52.7	27.9	0.0	0	0.12
ENUMN009	KCSWD	3/3/2020 9:42	NA	46.1	22.7	0.0	NA	0.1
ENUMN009	Aspect	3/12/2020 11:56	29.33	47.3	23.4	0.0	2	0.12
ENUMN009	KCSWD	4/2/2020 11:07	NA	56.7	28.5	0.0	NA	-0.1
ENUMN009	Aspect	4/16/2020 11:38	29.37	51.6	23.2	0.0	5	0.01
ENUMN009	KCSWD	5/7/2020 10:37	NA	46.0	22.2	0.0	NA	0.3
ENUMN009	Aspect	5/14/2020 12:28	29.05	51.6	22.8	0.0	3	0.01
ENUMN009	KCSWD	6/4/2020 10:21	NA	50.7	23.2	0.0	NA	0.2
ENUMN009	Aspect	6/15/2020 12:04	28.94	46.0	20.2	2.3	0	0.07
ENUMN009	KCSWD	7/07/20 12:58:00	N/A	53.7	23.8	0.0		0.1
ENUMN009	KCSWD	8/06/20 08:52:00	N/A	48.4	24.5	0.0		-0.1
ENUMN009	KCSWD	9/22/20 12:07:00	N/A	52.2	22.8	0.0		0.2
ENUMN009	KCSWD	10/07/20 10:36:00	N/A	56.3	22.2	0.0		0.1
ENUMN009	KCSWD	11/06/20 11:43:00	N/A	58.6	24.4	0.0		0.1
ENUMN009	KCSWD	12/17/20 10:51:00	N/A	23.3	15.9	5.6		-0.1
ENUMN010	Aspect	12/17/2019 12:14	29.17	33.5	24.4	0.0	0	0.05
ENUMN010	KCSWD	1/2/2020 8:54	NA	39.9	24.6	0.0	NA	-0.1
ENUMN010	Aspect	1/15/2020 13:06	28.81	27.3	23.5	0.0	1	0.43
ENUMN010	KCSWD	2/3/2020 10:03	NA	45.6	24.6	0.0	NA	-0.4
ENUMN010	Aspect	2/13/2020 14:58	29.01	48.2	24.7	0.0	1	0.09
ENUMN010	KCSWD	3/3/2020 9:12	NA	47.4	23.7	0.0	NA	-0.1
ENUMN010	Aspect	3/12/2020 11:44	29.35	42.4	25.4	0.0	0	0.09
ENUMN010	KCSWD	4/2/2020 10:45	NA	58.8	29.7	0.0	NA	-0.1
ENUMN010	Aspect	4/16/2020 10:51	29.35	36.5	21.7	0.5	2	0.06

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN010	KCSWD	5/7/2020 10:09	NA	34.6	21.4	0.0	NA	0.2
ENUMN010	Aspect	5/14/2020 11:58	29.02	47.3	23.9	0.0	0	0.03
ENUMN010	KCSWD	6/4/2020 9:48	NA	51.9	25.0	0.0	NA	0.1
ENUMN010	Aspect	6/15/2020 11:38	28.93	40.3	19.6	3.6	1	0
ENUMN010	KCSWD	7/07/20 12:29:00	N/A	50.0	23.8	0.0		0.1
ENUMN010	KCSWD	8/06/20 08:25:00	N/A	47.5	23.0	0.0		0
ENUMN010	KCSWD	9/22/20 11:45:00	N/A	49.6	23.5	0.0		0.1
ENUMN010	KCSWD	10/07/20 10:10:00	N/A	49.9	24.4	0.0		0
ENUMN010	KCSWD	11/06/20 11:18:00	N/A	49.9	25.6	0.0		0.1
ENUMN010	KCSWD	12/17/20 10:25:00	N/A	23.4	15.8	5.6		-0.1
ENUMN011	Aspect	12/17/2019 12:42	29.14	41.4	27.3	0.0	2	0.02
ENUMN011	KCSWD	1/2/2020 8:51	NA	37.1	25.2	0.3	NA	-0.1
ENUMN011	Aspect	1/15/2020 13:09	28.81	40.5	27.0	0.0	1	-0.44
ENUMN011	KCSWD	2/3/2020 10:00	NA	52.2	26.4	0.0	NA	-0.4
ENUMN011	Aspect	2/13/2020 15:43	28.99	50.4	28.0	0.0	0	0.15
ENUMN011	KCSWD	3/3/2020 9:09	NA	46.0	23.0	0.0	NA	0.1
ENUMN011	Aspect	3/12/2020 12:00	29.34	48.2	27.7	0.0	0	0.11
ENUMN011	KCSWD	4/2/2020 10:43	NA	58.9	29.5	0.0	NA	-0.1
ENUMN011	Aspect	4/16/2020 10:55	29.34	52.0	27.5	0.0	1	0.06
ENUMN011	KCSWD	5/7/2020 10:07	NA	41.1	24.4	0.0	NA	0.2
ENUMN011	Aspect	5/14/2020 12:01	29.01	53.7	27.0	0.0	0	0.05
ENUMN011	KCSWD	6/4/2020 9:46	NA	54.5	27.1	0.0	NA	0.1
ENUMN011	Aspect	6/15/2020 11:41	28.92	42.6	20.9	3.8	0	0.01
ENUMN011	KCSWD	7/07/20 12:25:00	N/A	62.5	30.2	0.0		0.1
ENUMN011	KCSWD	8/06/20 08:22:00	N/A	48.7	24.7	0.0		0
ENUMN011	KCSWD	9/22/20 11:42:00	N/A	53.4	25.5	0.0		0.1
ENUMN011	KCSWD	10/07/20 10:07:00	N/A	56.7	27.0	0.0		0
ENUMN011	KCSWD	11/06/20 11:16:00	N/A	56.5	26.9	0.0		0.1
ENUMN011	KCSWD	12/17/20 10:23:00	N/A	24.2	16.2	5.4		-0.1
ENUMN012	Aspect	12/17/2019 12:45	29.13	44.0	25.0	0.0	1	-1.03
ENUMN012	KCSWD	1/2/2020 8:49	NA	36.4	24.8	0.8	NA	0
ENUMN012	Aspect	1/15/2020 13:12	28.81	51.2	29.8	0.2	0	-0.48
ENUMN012	KCSWD	2/3/2020 9:58	NA	46.6	25.3	0.0	NA	-0.4
ENUMN012	Aspect	2/13/2020 15:39	28.96	51.7	27.8	0.0	0	0.22
ENUMN012	KCSWD	3/3/2020 9:07	NA	45.9	22.9	0.0	NA	0.1
ENUMN012	Aspect	3/12/2020 12:04	29.33	47.9	24.4	0.0	2	0.22
ENUMN012	KCSWD	4/2/2020 10:41	NA	59.5	29.8	0.0	NA	-0.2
ENUMN012	Aspect	4/16/2020 10:58	29.34	51.7	23.6	0.0	3	0.1
ENUMN012	KCSWD	5/7/2020 10:04	NA	45.4	22.5	0.0	NA	0.3
ENUMN012	Aspect	5/14/2020 12:03	29.01	52.0	23.7	0.0	2	0.06
ENUMN012	KCSWD	6/4/2020 9:40	NA	60.0	29.7	0.0	NA	0.1
ENUMN012	Aspect	6/15/2020 11:43	28.91	46.5	23.0	1.9	1	0.02
ENUMN012	KCSWD	7/07/20 12:22:00	N/A	60.3	28.7	0.0		0
ENUMN012	KCSWD	8/06/20 08:19:00	N/A	51.5	25.9	0.0		0
ENUMN012	KCSWD	9/22/20 11:40:00	N/A	50.6	23.4	0.0		-0.1
ENUMN012	KCSWD	10/07/20 10:05:00	N/A	60.1	29.2	0.0		0.1
ENUMN012	KCSWD	11/06/20 11:14:00	N/A	55.4	27.7	0.0		-0.1
ENUMN012	KCSWD	12/17/20 10:21:00	N/A	41.3	23.7	0.0		-0.1
ENUMN013	Aspect	12/17/2019 12:49	29.14	58.8	32.7	0.0	2	0.1

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN013	KCSWD	1/2/2020 8:46	NA	49.6	29.6	0.0	NA	0
ENUMN013	Aspect	1/15/2020 12:00	NM	NM	NM	NM	NM	NM
ENUMN013	KCSWD	2/3/2020 9:55	NA	43.7	25.2	1.5	NA	-0.4
ENUMN013	Aspect	2/13/2020 15:35	28.98	59.4	31.8	0.0	0	0.05
ENUMN013	KCSWD	3/3/2020 9:04	NA	62.4	31.2	0.0	NA	0.1
ENUMN013	Aspect	3/12/2020 12:08	29.34	61.3	32.0	0.0	2	0.11
ENUMN013	KCSWD	4/2/2020 10:39	NA	59.7	29.6	0.2	NA	-0.1
ENUMN013	Aspect	4/16/2020 11:03	29.34	65.5	33.0	0.0	1	0.09
ENUMN013	KCSWD	5/7/2020 10:02	NA	58.0	30.5	0.0	NA	0.2
ENUMN013	Aspect	5/14/2020 12:06	29.02	65.4	34.6	0.0	0	0.07
ENUMN013	KCSWD	6/4/2020 9:37	NA	62.5	30.9	0.0	NA	0.1
ENUMN013	Aspect	6/15/2020 11:45	28.92	53.8	27.8	2.1	1	0.02
ENUMN013	KCSWD	7/07/20 12:20:00	N/A	66.0	32.0	0.0		0.1
ENUMN013	KCSWD	8/06/20 08:16:00	N/A	47.5	24.5	0.3		0
ENUMN013	KCSWD	9/22/20 11:38:00	N/A	65.6	34.2	0.0		0.1
ENUMN013	KCSWD	10/07/20 10:02:00	N/A	55.1	25.5	0.0		-0.1
ENUMN013	KCSWD	11/06/20 11:09:00	N/A	61.5	32.6	0.0		0.1
ENUMN013	KCSWD	12/17/20 10:19:00	N/A	21.5	14.9	6.2		-0.1
ENUMN014	Aspect	12/17/2019 12:53	29.17	47.9	27.5	0.0	1	0.03
ENUMN014	KCSWD	1/2/2020 8:43	NA	26.7	19.7	3.8	NA	0
ENUMN014	Aspect	1/15/2020 13:38	28.81	49.1	28.6	0.0	1	-0.01
ENUMN014	KCSWD	2/3/2020 9:51	NA	27.1	18.0	6.6	NA	-0.6
ENUMN014	Aspect	2/13/2020 15:32	29	52.2	28.3	0.0	0	0.1
ENUMN014	KCSWD	3/3/2020 9:01	NA	57.1	29.0	0.0	NA	-0.1
ENUMN014	Aspect	3/12/2020 12:12	29.38	52.7	27.4	0.0	1	0.01
ENUMN014	KCSWD	4/2/2020 9:45	NA	55.5	28.4	0.2	NA	-0.2
ENUMN014	Aspect	4/16/2020 11:08	29.37	52.9	25.9	0.0	2	0.03
ENUMN014	KCSWD	5/7/2020 9:59	NA	48.3	24.4	0.0	NA	0.2
ENUMN014	Aspect	5/14/2020 12:09	29.06	55.5	28.2	0.0	0	0
ENUMN014	KCSWD	6/4/2020 9:34	NA	45.0	24.8	0.0	NA	0.1
ENUMN014	Aspect	6/15/2020 11:48	28.94	40.2	21.0	2.8	1	0.02
ENUMN014	KCSWD	7/07/20 12:17:00	N/A	42.2	23.9	0.2		0
ENUMN014	KCSWD	8/06/20 08:13:00	N/A	36.2	21.3	2.2		-0.1
ENUMN014	KCSWD	9/22/20 11:35:00	N/A	53.0	25.8	0.0		0.1
ENUMN014	KCSWD	10/07/20 09:59:00	N/A	55.4	25.0	0.0		0
ENUMN014	KCSWD	11/06/20 11:06:00	N/A	54.3	27.2	0.2		0
ENUMN014	KCSWD	12/17/20 10:16:00	N/A	40.3	21.6	2.3		-0.1
ENUMN015	Aspect	12/17/2019 12:49	29.18	48.1	27.9	0.0	2	0.01
ENUMN015	KCSWD	1/2/2020 8:40	NA	20.2	20.8	0.2	NA	0
ENUMN015	Aspect	1/15/2020 13:45	28.81	48.4	28.2	0.0	1	0.12
ENUMN015	KCSWD	2/3/2020 9:48	NA	15.4	16.8	4.7	NA	-0.3
ENUMN015	Aspect	2/13/2020 15:29	29.01	35.7	23.9	0.0	3	0.09
ENUMN015	KCSWD	3/3/2020 8:57	NA	37.5	23.6	0.0	NA	0
ENUMN015	Aspect	3/12/2020 12:16	29.39	49.3	26.4	0.0	0	0.02
ENUMN015	KCSWD	4/2/2020 9:42	NA	28.1	17.7	4.8	NA	-0.1
ENUMN015	Aspect	4/16/2020 11:13	29.39	52.1	25.0	0.0	2	0
ENUMN015	KCSWD	5/7/2020 9:56	NA	47.6	24.3	0.1	NA	0.1
ENUMN015	Aspect	5/14/2020 12:12	29.05	40.8	19.9	1.2	1	0.01
ENUMN015	KCSWD	6/4/2020 9:32	NA	29.0	21.4	0.0	NA	0.1

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN015	Aspect	6/15/2020 11:50	28.94	28.8	19.0	2.5	3	0
ENUMN015	KCSWD	7/07/20 12:14:00	N/A	21.1	20.0	0.0		0
ENUMN015	KCSWD	8/06/20 08:11:00	N/A	29.7	20.2	0.7		-0.1
ENUMN015	KCSWD	9/22/20 11:32:00	N/A	30.7	19.6	1.5		0.1
ENUMN015	KCSWD	10/07/20 09:56:00	N/A	46.2	24.0	0.0		0
ENUMN015	KCSWD	11/06/20 11:04:00	N/A	34.3	21.2	1.6		0
ENUMN015	KCSWD	12/17/20 10:14:00	N/A	20.7	20.1	0.0		-0.1
ENUMN016	Aspect	12/17/2019 12:44	29.15	51.5	25.4	0.0	59	0.05
ENUMN016	KCSWD	1/2/2020 8:32	NA	52.5	24.9	0.0	NA	0.1
ENUMN016	Aspect	1/15/2020 13:27	28.81	55.7	27.3	0.0	197	0.07
ENUMN016	KCSWD	2/3/2020 9:43	NA	54.7	24.9	0.0	NA	-0.2
ENUMN016	Aspect	2/13/2020 15:26	28.99	53.9	26.5	0.0	15	0.11
ENUMN016	KCSWD	3/3/2020 8:51	NA	50.5	24.0	0.0	NA	0.1
ENUMN016	Aspect	3/12/2020 12:22	29.34	49.2	26.4	0.3	3	0.11
ENUMN016	KCSWD	4/2/2020 9:36	NA	48.7	21.7	0.0	NA	0
ENUMN016	Aspect	4/16/2020 11:20	29.36	50.4	24.1	0.0	10	0.05
ENUMN016	KCSWD	5/7/2020 9:50	NA	51.0	21.9	0.0	NA	0.2
ENUMN016	Aspect	5/14/2020 12:17	29.03	54.6	23.5	0.0	25	0.07
ENUMN016	KCSWD	6/4/2020 9:27	NA	54.0	22.7	0.0	NA	0.1
ENUMN016	Aspect	6/15/2020 11:53	28.93	49.9	20.3	2.2	7	0.01
ENUMN016	KCSWD	7/07/20 12:09:00	N/A	59.1	23.3	0.0		0
ENUMN016	KCSWD	8/06/20 08:05:00	N/A	58.5	22.7	0.0		0
ENUMN016	KCSWD	9/22/20 11:28:00	N/A	62.0	23.0	0.0		0.1
ENUMN016	KCSWD	10/07/20 09:50:00	N/A	57.0	24.5	0.0		-0.1
ENUMN016	KCSWD	11/06/20 10:58:00	N/A	61.6	23.7	0.0		0.1
ENUMN016	KCSWD	12/17/20 10:10:00	N/A	46.4	20.4	1.8		0
ENUMN017	KCSWD	10/07/20 09:53:00	N/A	52.7	24.8	0.0		-0.2
ENUMN017	KCSWD	11/06/20 11:01:00	N/A	59.6	23.9	0.0		0.1
ENUMN017	KCSWD	12/17/20 10:11:00	N/A	15.6	18.3	0.7		-0.1
ENUMN017	KCSWD	7/07/20 12:11:00	N/A	47.6	23.2	0.1		0
ENUMN017	KCSWD	8/06/20 08:08:00	N/A	38.9	22.4	0.0		-0.1
ENUMN017	KCSWD	9/22/20 11:30:00	N/A	60.5	23.0	0.0		0
ENUMN018	Aspect	12/17/2019 12:37	29.12	50.4	26.2	0.0	17	0.05
ENUMN018	KCSWD	1/2/2020 8:20	NA	42.8	23.5	0.2	NA	0.1
ENUMN018	Aspect	1/15/2020 13:12	28.81	54.4	27.6	0.0	22	-0.6
ENUMN018	KCSWD	2/3/2020 9:38	NA	43.5	23.1	0.0	NA	-0.2
ENUMN018	Aspect	2/13/2020 15:11	29	53.7	26.5	0.0	11	0.12
ENUMN018	KCSWD	3/3/2020 8:40	NA	52.4	24.9	0.0	NA	0.1
ENUMN018	Aspect	3/12/2020 12:30	29.33	55.5	26.5	0.0	30	-0.02
ENUMN018	KCSWD	4/2/2020 9:25	NA	52.0	23.7	0.0	NA	0.1
ENUMN018	Aspect	4/16/2020 11:32	29.36	52.7	24.4	0.1	35	0.01
ENUMN018	KCSWD	5/7/2020 9:38	NA	52.4	23.9	0.0	NA	0.2
ENUMN018	Aspect	5/14/2020 12:24	29.02	58.2	26.3	0.0	8	0.09
ENUMN018	KCSWD	6/4/2020 10:24	NA	54.4	24.5	0.0	NA	0.2
ENUMN018	Aspect	6/15/2020 12:01	28.91	50.7	22.0	1.9	3	0.11
ENUMN018	KCSWD	7/07/20 12:00:00	N/A	59.0	23.1	0.1		0.1
ENUMN018	KCSWD	8/06/20 07:56:00	N/A	59.0	22.8	0.4		0
ENUMN018	KCSWD	9/22/20 11:24:00	N/A	54.9	22.4	0.0		0.1
ENUMN018	KCSWD	10/07/20 09:39:00	N/A	65.0	25.4	0.0		0

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN018	KCSWD	11/06/20 10:46:00	N/A	58.8	23.3	0.1		0.1
ENUMN018	KCSWD	12/17/20 09:59:00	N/A	48.8	21.0	1.8		0
ENUMN019	Aspect	12/17/2019 12:37	29.14	52.1	26.7	0.0	11	0.07
ENUMN019	KCSWD	1/2/2020 8:28	NA	50.3	24.8	0.0	NA	0.1
ENUMN019	Aspect	1/15/2020 16:22	28.81	55.8	27.3	0.0	117	0.24
ENUMN019	KCSWD	2/3/2020 9:36	NA	41.8	22.3	0.0	NA	-0.2
ENUMN019	Aspect	2/13/2020 15:15	28.96	52.2	25.7	0.0	32	0.09
ENUMN019	KCSWD	3/3/2020 8:46	NA	54.4	25.2	0.0	NA	0.1
ENUMN019	Aspect	3/12/2020 12:26	29.33	51.7	24.6	0.0	49	0.1
ENUMN019	KCSWD	4/2/2020 9:33	NA	48.8	21.6	0.0	NA	0.1
ENUMN019	Aspect	4/16/2020 11:25	29.35	52.0	22.8	0.0	13	0.07
ENUMN019	KCSWD	5/7/2020 9:47	NA	52.7	22.1	0.0	NA	0.2
ENUMN019	Aspect	5/14/2020 12:48	29.01	55.8	23.7	0.0	32	0.1
ENUMN019	KCSWD	6/4/2020 9:24	NA	54.1	22.7	0.0	NA	0.1
ENUMN019	Aspect	6/15/2020 11:55	28.9	49.8	20.6	1.6	24	0.04
ENUMN019	KCSWD	7/07/20 12:06:00	N/A	58.6	23.1	0.0		0
ENUMN019	KCSWD	8/06/20 08:02:00	N/A	58.4	22.5	0.0		0.1
ENUMN019	KCSWD	9/22/20 11:21:00	N/A	63.1	23.3	0.0		0.1
ENUMN019	KCSWD	10/07/20 09:47:00	N/A	64.5	22.7	0.0		0
ENUMN019	KCSWD	11/06/20 10:55:00	N/A	65.6	23.9	0.0		0.1
ENUMN019	KCSWD	12/17/20 10:07:00	N/A	52.1	22.4	0.0		0
ENUMN020	Aspect	12/17/2019 12:33	29.15	49.7	26.0	0.0	13	0.01
ENUMN020	KCSWD	1/2/2020 8:24	NA	45.4	24.2	0.0	NA	0.1
ENUMN020	Aspect	1/15/2020 12:55	28.81	55.4	27.9	0.0	20	0.37
ENUMN020	KCSWD	2/3/2020 9:21	NA	52.1	24.5	0.1	NA	-0.1
ENUMN020	Aspect	2/13/2020 15:07	28.98	50.7	25.6	0.0	15	0.11
ENUMN020	KCSWD	3/3/2020 8:43	NA	49.4	23.9	0.0	NA	0.1
ENUMN020	Aspect	3/12/2020 12:35	29.35	53.2	25.7	0.0	24	0.05
ENUMN020	KCSWD	4/2/2020 9:29	NA	49.6	22.1	0.0	NA	0
ENUMN020	Aspect	4/16/2020 11:28	29.37	52.2	23.9	0.0	31	0.01
ENUMN020	KCSWD	5/7/2020 9:43	NA	51.2	22.3	0.0	NA	0.1
ENUMN020	Aspect	5/14/2020 12:21	29.02	55.3	23.8	0.0	26	0.06
ENUMN020	KCSWD	6/4/2020 9:21	NA	51.3	22.3	0.0	NA	0.1
ENUMN020	Aspect	6/15/2020 11:58	28.93	49.7	20.9	1.9	22	0.04
ENUMN020	KCSWD	7/07/20 12:03:00	N/A	57.5	22.8	0.0		0.1
ENUMN020	KCSWD	8/06/20 07:59:00	N/A	51.1	19.7	0.3		0
ENUMN020	KCSWD	9/22/20 11:18:00	N/A	58.1	21.5	0.0		0
ENUMN020	KCSWD	10/07/20 09:44:00	N/A	55.9	20.0	0.0		0
ENUMN020	KCSWD	11/06/20 10:48:00	N/A	56.9	22.4	0.0		0.1
ENUMN020	KCSWD	12/17/20 10:01:00	N/A	47.7	21.2	1.2		0
ENUMN021	Aspect	12/17/2019 11:49	29.2	38.2	24.6	0.0	1	-0.44
ENUMN021	KCSWD	1/2/2020 9:09	NA	17.0	20.8	0.0	NA	-0.1
ENUMN021	Aspect	1/15/2020 12:12	28.81	35.0	24.6	0.0	1	-0.01
ENUMN021	KCSWD	2/3/2020 10:16	NA	10.9	19.2	0.0	NA	-0.4
ENUMN021	Aspect	2/13/2020 14:24	29.03	35.3	23.3	0.0	2	0.02
ENUMN021	KCSWD	3/3/2020 9:27	NA	22.3	20.6	0.0	NA	0
ENUMN021	Aspect	3/12/2020 11:14	29.44	38.9	22.3	0.0	1	0.03
ENUMN021	KCSWD	4/2/2020 10:56	NA	9.1	18.4	0.0	NA	-0.1
ENUMN021	Aspect	4/16/2020 10:32	29.36	33.0	17.0	5.1	2	0.04

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
ENUMN021	KCSWD	5/7/2020 10:24	NA	33.7	21.7	0.0	NA	0.2
ENUMN021	Aspect	5/14/2020 11:46	29.06	24.7	21.1	0.0	0	0.02
ENUMN021	KCSWD	6/4/2020 10:03	NA	26.8	20.8	0.0	NA	0.1
ENUMN021	Aspect	6/15/2020 11:26	28.96	14.1	14.1	5.2	1	0
ENUMN021	KCSWD	7/07/20 12:44:00	N/A	8.2	16.0	3.6		0
ENUMN021	KCSWD	8/06/20 08:39:00	N/A	10.0	15.1	1.6		-0.1
ENUMN021	KCSWD	9/22/20 11:10:00	N/A	13.4	17.9	1.0		-0.1
ENUMN021	KCSWD	10/07/20 10:23:00	N/A	17.0	19.7	0.0		0
ENUMN021	KCSWD	11/06/20 11:30:00	N/A	47.9	24.7	0.0		0
ENUMN021	KCSWD	12/17/20 10:38:00	N/A	16.2	19.3	0.0		-0.1
GP-10D	Aspect	12/17/19 11:43	29.21	0.0	7.0	11.6	0	-6.45
GP-10D	KCSWD	1/2/2020 10:16	30.01	0.0	7.3	9.8	NA	-10.28
GP-10D	Aspect	1/15/2020 10:30	28.81	0.0	9.5	5.0	NM	-10.87
GP-10D	KCSWD	2/3/2020 11:52	30.12	0.0	9.1	4.5	NA	-13.05
GP-10D	Aspect	2/13/2020 10:00	29.02	0.0	11.4	1.3	0	-10.2
GP-10D	KCSWD	3/3/2020 10:55	30.1	0.0	10.4	3.0	NA	-3.02
GP-10D	Aspect	3/12/2020 11:03	29.44	0.0	12.3	0.0	0	-5.9
GP-10D	KCSWD	4/2/2020 12:06	30.06	0.0	11.3	2.0	NA	-1.27
GP-10D	Aspect	4/16/2020 9:38	29.39	0.0	5.9	10.1	0	0.05
GP-10D	KCSWD	5/7/2020 12:11	30.31	0.0	9.8	4.7	NA	0.29
GP-10D	Aspect	5/14/2020 10:29	29.1	0.0	11.6	2.5	1	0
GP-10D	KCSWD	6/4/2020 11:34	30.02	0.0	10.0	6.4	NA	-1.45
GP-10D	Aspect	6/15/2020 10:12	28.99	0.0	11.0	4.6	0	-0.03
GP-10I	Aspect	12/17/19 11:35	29.21	0.0	4.1	16.7	0	-0.08
GP-10I	KCSWD	1/2/2020 10:15	30.01	0.0	4.3	15.8	NA	-0.01
GP-10I	Aspect	1/15/2020 12:00	NM	NM	NM	NM	NM	NM
GP-10I	KCSWD	2/3/2020 11:51	30.12	0.0	4.6	11.4	NA	-0.02
GP-10I	Aspect	2/13/2020 10:05	29.02	0.0	4.7	10.1	0	0
GP-10I	KCSWD	3/3/2020 10:54	30.10	0.0	4.0	12.3	NA	0.1
GP-10I	Aspect	3/12/2020 11:08	29.45	0.0	3.4	13.8	0	0
GP-10I	KCSWD	4/2/2020 12:05	30.06	0.0	2.9	15.2	NA	-0.09
GP-10I	Aspect	4/16/2020 9:33	29.39	0.0	1.7	17.3	0	0.04
GP-10I	KCSWD	5/7/2020 12:10	30.31	0.0	3.0	15.5	NA	0.13
GP-10I	Aspect	5/14/2020 10:28	29.1	0.0	3.4	14.1	1	0
GP-10I	KCSWD	6/4/2020 11:32	30.02	0.0	3.9	15.7	NA	-0.07
GP-10I	Aspect	6/15/20 10:19	29.01	0.0	3.4	14.8	0	0.01
GP-10S	Aspect	12/17/2019 11:31	29.19	0.0	5.1	16.9	0	-0.08
GP-10S	KCSWD	1/2/2020 10:13	30.01	0.0	3.8	19.1	NA	0.02
GP-10S	Aspect	1/15/2020 10:19	28.84	0.0	2.8	18.4	NM	-0.04
GP-10S	KCSWD	2/3/2020 11:49	30.12	0.0	3.7	17.4	NA	-0.04
GP-10S	Aspect	2/13/2020 10:15	29.02	0.0	3.7	15.2	0	0.06
GP-10S	KCSWD	3/3/2020 10:52	30.10	0.0	3.1	17.7	NA	0.1
GP-10S	Aspect	3/12/2020 11:00	29.45	0.0	3.4	17.1	0	0.01
GP-10S	KCSWD	4/2/2020 12:03	30.06	0.0	3.6	16.9	NA	-0.04
GP-10S	Aspect	4/16/2020 9:29	29.39	0.0	2.5	17.6	0	0.05
GP-10S	KCSWD	5/7/2020 12:08	30.31	0.0	4.6	15.9	NA	0.1
GP-10S	Aspect	5/14/2020 10:25	29.03	0.0	6.1	12.2	1	0
GP-10S	KCSWD	6/4/2020 11:31	30.02	0.0	6.4	12.6	NA	0.02
GP-10S	Aspect	6/15/20 10:16	29.01	0.0	6.7	11.7	0	0

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
GP-15D	Aspect	12/17/2019 9:42	29.26	0.0	0.2	21.7	0	0
GP-15D	KCSWD	1/2/2020 9:59	30.01	0.0	7.4	10.6	NA	-0.03
GP-15D	Aspect	1/15/2020 11:18	28.81	0.0	8.4	7.9	NM	0.03
GP-15D	KCSWD	2/3/2020 11:34	30.12	0.0	7.8	8.3	NA	0.09
GP-15D	Aspect	2/13/2020 11:00	29.08	0.0	9.8	2.9	0	0.1
GP-15D	KCSWD	3/3/2020 10:35	30.10	0.0	8.5	5.3	NA	0.0
GP-15D	Aspect	3/12/2020 10:39	29.42	0.0	9.7	2.4	0	0
GP-15D	KCSWD	4/2/2020 13:20	30.06	0.0	7.5	6.0	NA	-0.01
GP-15D	Aspect	4/16/2020 9:04	29.38	0.0	8.3	3.3	0	0.08
GP-15D	KCSWD	5/7/2020 11:55	30.31	0.0	7.2	4.7	NA	0.11
GP-15D	Aspect	5/14/2020 11:11	29.14	0.0	8.0	3.2	0	0
GP-15D	KCSWD	6/4/2020 11:17	30.02	0.0	7.4	6.0	NA	0.14
GP-15D	Aspect	6/15/20 11:00	29.04	0.0	5.0	9.5	0	0.01
GP-15S	Aspect	12/17/2019 9:49	29.26	0.0	7.6	8.6	0	-0.04
GP-15S	KCSWD	1/2/2020 9:58	30.01	0.0	0.3	20.7	NA	-0.02
GP-15S	Aspect	1/15/2020 11:15	28.81	0.0	0.3	21.1	NM	0.05
GP-15S	KCSWD	2/3/2020 11:32	30.12	0.0	0.2	21.0	NA	0.09
GP-15S	Aspect	2/13/2020 10:55	29.04	0.0	0.3	20.4	0	-0.68
GP-15S	KCSWD	3/3/2020 10:33	30.10	0.0	0.2	21.0	NA	0.0
GP-15S	Aspect	3/12/2020 10:33	29.42	0.0	0.2	20.5	0	0.01
GP-15S	KCSWD	4/2/2020 13:18	30.06	0.0	0.1	20.3	NA	-2.54
GP-15S	Aspect	4/16/2020 9:01	29.39	0.0	0.2	20.5	0	0.08
GP-15S	KCSWD	5/7/2020 11:53	30.31	0.0	0.2	20.6	NA	0.18
GP-15S	Aspect	5/14/2020 11:12	29.14	0.0	0.3	19.8	0	0
GP-15S	KCSWD	6/4/2020 11:15	30.02	0.0	0.3	20.8	NA	0.17
GP-15S	Aspect	6/15/20 11:03	29.05	0.0	0.1	20.0	0	0.01
GP-6D	Aspect	12/17/2019 10:29	29.25	0.0	0.6	21.2	0	-0.05
GP-6D	KCSWD	1/2/2020 9:53	30.01	0.0	2.6	18.2	NA	0
GP-6D	Aspect	1/15/2020 11:31	28.81	0.0	2.4	19.0	NM	0.04
GP-6D	KCSWD	2/3/2020 11:29	30.12	0.0	1.9	19.9	NA	0.12
GP-6D	Aspect	2/23/2020 11:05	29.08	0.0	2.7	16.0	0	0
GP-6D	KCSWD	3/3/2020 10:29	30.10	0.0	1.6	19.6	NA	0.0
GP-6D	Aspect	3/12/2020 10:08	29.44	0.0	3.8	13.5	0	0.01
GP-6D	KCSWD	4/2/2020 12:13	30.06	0.0	0.8	18.5	NA	-0.04
GP-6D	Aspect	4/16/2020 8:55	29.38	0.0	0.7	19.4	0	0.08
GP-6D	KCSWD	5/7/2020 11:50	30.31	0.0	1.0	18.5	NA	0.1
GP-6D	Aspect	5/14/2020 11:30	29.09	0.0	2.3	16.9	0	0
GP-6D	KCSWD	6/4/2020 11:12	30.02	0.0	2.4	17.4	NA	0.15
GP-6D	Aspect	6/15/20 11:20	29.04	0.0	2.4	15.1	0	-0.01
GP-6I	Aspect	12/17/2019 10:07	29.26	0.0	2.9	18.0	0	-0.04
GP-6I	KCSWD	1/2/2020 9:52	30.01	0.0	2.9	18.2	NA	-0.02
GP-6I	Aspect	1/15/2020 11:40	28.81	0.0	2.6	19.1	NM	-0.03
GP-6I	KCSWD	2/3/2020 11:27	30.12	0.0	1.8	20.4	NA	0.05

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
GP-6I	Aspect	2/13/2020 11:10	29.08	0.0	2.3	17.6	0	0.03
GP-6I	KCSWD	3/3/2020 10:28	30.10	0.0	1.8	19.2	NA	0.0
GP-6I	Aspect	3/12/2020 10:18	29.44	0.0	2.7	14.6	0	0.01
GP-6I	KCSWD	4/2/2020 12:11	30.06	0.0	1.2	17.7	NA	-0.09
GP-6I	Aspect	4/16/2020 8:52	29.38	0.0	0.9	18.3	0	0.06
GP-6I	KCSWD	5/7/2020 11:49	30.31	0.0	2.5	11.7	NA	0.09
GP-6I	Aspect	5/14/2020 11:25	29.14	0.0	3.3	13.1	0	0.01
GP-6I	KCSWD	6/4/2020 11:10	30.02	0.0	3.1	15.6	NA	0.14
GP-6I	Aspect	6/15/20 11:09	29.04	0.0	2.3	15.6	0	0.01
GP-6S	Aspect	12/17/2019 9:55	29.26	0.0	0.1	21.9	0	-0.23
GP-6S	KCSWD	1/2/2020 9:51	30.01	0.0	0.2	20.9	NA	0
GP-6S	Aspect	1/15/2020 12:00	FF	FF	FF	FF	FF	FF
GP-6S	KCSWD	2/3/2020 11:26	30.12	0.0	0.2	21.0	NA	0
GP-6S	Aspect	2/13/2020 11:10	29.09	0.0	0.1	20.7	0	0.0
GP-6S	KCSWD	3/3/2020 10:26	30.1	0.0	0.3	21.0	NA	0.01
GP-6S	Aspect	3/12/2020 10:27	29.44	0.0	0.2	20.7	0	-0.02
GP-6S	KCSWD	4/2/2020 12:10	30.06	0.0	0.2	19.6	NA	1.14
GP-6S	Aspect	4/16/2020 8:49	29.38	0.0	0.3	20.2	0	0.09
GP-6S	KCSWD	5/7/2020 11:48	30.31	0.0	0.2	20.6	NA	0.08
GP-6S	Aspect	5/14/2020 11:22	29.14	0.0	0.1	20.2	0	0.02
GP-6S	KCSWD	6/4/20 11:08	30.02	0.0	0.2	21.0	NA	0.15
GP-6S	Aspect	6/15/2020 11:12	29.04	0.0	0.2	20.0	0	0
GP-7D	Aspect	12/17/2019 11:02	29.24	0.0	0.3	21.3	0	-0.02
GP-7D	KCSWD	1/2/2020 10:09	30.01	0.0	0.3	20.5	NA	0.01
GP-7D	Aspect	1/15/2020 10:54	28.81	0.0	0.2	21.2	NM	0
GP-7D	KCSWD	2/3/2020 11:44	30.12	0.0	0.2	21.0	NA	0.08
GP-7D	Aspect	2/13/2020 10:20	29.02	0.0	0.3	20.2	0	0.5
GP-7D	KCSWD	3/3/2020 10:46	30.1	0.0	0.2	21.0	NA	-0.05
GP-7D	Aspect	3/12/2020 9:54	29.43	0.0	0.2	20.8	0	0.01
GP-7D	KCSWD	4/2/2020 13:12	30.06	0.0	0.1	19.9	NA	-0.02
GP-7D	Aspect	4/16/2020 9:24	29.39	0.0	0.1	20.0	0	0.01
GP-7D	KCSWD	5/7/2020 12:05	30.31	0.0	0.1	21.0	NA	0.09
GP-7D	Aspect	5/14/2020 10:55	29.13	0.0	0.1	20.0	0	0.01
GP-7D	KCSWD	6/4/20 11:28	30.02	0.0	0.2	21.0	NA	-0.03
GP-7D	Aspect	6/15/2020 10:28	29.03	0.0	0.1	19.7	0	-0.01

Table 2. Landfill Gas Monitoring Data During Rebound Test

Location	Field Personnel	Date/Time	Baro Pressure (in Hg)	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Static Pressure (in Hg)
GP-7I	Aspect	12/17/2019 10:55	29.25	0.0	0.2	21.6	0	-0.21
GP-7I	KCSWD	1/2/2020 10:08	30.01	0.0	0.6	19.2	NA	-0.04
GP-7I	Aspect	1/15/2020 10:45	28.81	0.0	0.2	21.1	NM	-0.1
GP-7I	KCSWD	2/3/2020 11:43	30.12	0.0	0.2	21.0	NA	0.08
GP-7I	Aspect	2/13/2020 10:25	29.03	0.0	0.2	20.6	0	0.1
GP-7I	KCSWD	3/3/2020 10:44	30.1	0.0	0.2	21.0	NA	-0.02
GP-7I	Aspect	3/12/2020 9:47	29.44	0.0	0.2	20.8	0	0.03
GP-7I	KCSWD	4/2/2020 13:10	30.06	0.0	0.1	19.8	NA	-0.02
GP-7I	Aspect	4/16/2020 9:21	29.4	0.0	0.1	19.9	0	0.05
GP-7I	KCSWD	5/7/2020 12:03	30.31	0.0	0.2	20.9	NA	0.04
GP-7I	Aspect	5/14/2020 10:50	29.13	0.0	0.1	19.9	0	0.03
GP-7I	KCSWD	6/4/20 11:26	30.02	0.0	0.2	21.0	NA	-0.01
GP-7I	Aspect	6/15/2020 10:34	29	0.0	0.1	19.8	0	0
GP-7S	Aspect	12/17/2019 10:44	29.25	0.0	7.5	8.1	0	-0.02
GP-7S	KCSWD	1/2/2020 10:06	30.01	0.0	2.6	18.0	NA	0.12
GP-7S	Aspect	1/15/2020 10:40	28.81	0.1	7.9	6.1	NM	0.03
GP-7S	KCSWD	2/3/2020 11:41	30.12	0.0	2.2	17.2	NA	0.07
GP-7S	Aspect	2/13/2020 10:30	29.03	0.0	5.1	11.0	0	0.0
GP-7S	KCSWD	3/3/2020 10:42	30.1	0.0	4.5	21.0	NA	-0.01
GP-7S	Aspect	3/12/2020 9:35	29.43	0.0	6.5	8.8	0	0
GP-7S	KCSWD	4/2/2020 13:06	30.06	0.0	1.3	17.4	NA	-0.05
GP-7S	Aspect	4/16/2020 9:17	29.39	0.0	2.3	14.8	0	0.05
GP-7S	KCSWD	5/7/2020 12:02	30.31	0.0	4.5	10.2	NA	0.1
GP-7S	Aspect	5/14/2020 10:40	29.11	0.0	6.2	6.1	1	0
GP-7S	KCSWD	6/4/20 11:23	30.02	0.0	4.9	10.4	NA	-0.13
GP-7S	Aspect	6/15/2020 10:38	29.02	0.0	7.1	3.7	0	-0.01
GP-9S	Aspect	12/17/2019 9:36	29.25	0.0	6.4	14.6	0	-0.04
GP-9S	KCSWD	1/2/2020 10:03	30.01	0.0	0.0	0.0	NA	0
GP-9S	Aspect	1/15/2020 12:00	28.81	0.0	0.4	21.1	NM	-0.06
GP-9S	KCSWD	2/3/2020 11:37	30.12	0.0	0.7	20.3	NA	0.06
GP-9S	Aspect	2/13/2020 10:40	29.03	0.0	0.3	20.3	0	-3.5
GP-9S	KCSWD	3/3/2020 10:39	30.1	0.0	0.2	21.0	NA	0.07
GP-9S	Aspect	3/12/2020 10:45	29.44	0.0	0.4	20.3	0	-0.08
GP-9S	KCSWD	4/2/2020 13:15	30.06	0.0	0.1	20.0	NA	-0.01
GP-9S	Aspect	4/16/2020 9:14	29.39	0.0	0.9	19.1	0	0.13
GP-9S	KCSWD	5/7/2020 11:57	30.31	0.0	1.1	12.6	NA	0.24
GP-9S	Aspect	5/14/2020 11:07	29.1	0.0	6.4	7.2	0	-0.25
GP-9S	KCSWD	6/4/2020 11:20	30.02	0.0	7.2	6.6	NA	0.11
GP-9S	Aspect	6/15/2020 10:56	29.04	0.0	1.0	18.3	0	0.04

Notes:

Shading delineates locations for ease of reading

NA indicates not available

NM indicates not measured

FF indicated flow fault occurred during purge

Landfill gas monitoring point locations from Table 2 from Landfill Gas Rebound Test Work Plan Report (Aspect and Herrera, 2019b) and 2014 Findings Report (Aspect, 2014)

Table 3. Groundwater Monitoring Data During Rebound Test

Location ID	Sample Date	Sample Code	Alkalinity, Total (mg/L)	Alakalinity, Bicarbonate (mg/L)	Chloride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Carbon Dioxide (mg/L)	Methane (mg/L)	Spec Cond (µS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)
MW-1	12/18/2019	MW-1-121819	NA	141	1.9	34.4	7.49	138	0.0554	269.5	0.8	7.47	76.3	1.61
MW-2	12/18/2019	MW-2-121819	NA	2.5 U	1.32	8.34	1.82	37.5	0.101	69.8	2.09	6.24	74	0.81
MW-9	12/18/2019	MW-9-121819	NA	2.5 U	1.55	13.7	3.03	61.5	0.00863 U	101.5	3.65	6.21	85.3	0.68
MW-1	1/20/2020	MW-1-012020	127	127	1.98	32.9	8.68	6.1 n	0.06	268	0.58	7.42	77.8	0.45
MW-2	1/20/2020	MW-2-012020	25	25	1.33	6.08	2.08	24 n	0.00014	66.8	4.17	5.97	74.6	0.71
MW-9	1/20/2020	MW-9-012020	41.1	41.1	0.624	9.64	3.11	41 n	0.0005	88.7	7.26	6.09	66.5	0.41
MW-1	2/13/2020	MW-1-021320	103	103	1.52	24.4	6.71	9.6 n	0.014	221.8	0.52	7.05	69.7	0.15
MW-2	2/13/2020	MW-2-021320	25.1	25.1	1.29	5.45	1.98	22 n	0.0005	65.7	1.73	6.21	58.5	0.15
MW-9	2/13/2020	MW-9-021320	25.3	25.3	0.41	5.49	1.84	21 n	0.0005	58.7	7.94	6.2	52.4	1.31
MW-1	3/12/2020	MW-1-031220	66.9	66.9	1.53	17.2 D	4.13	36 n	0.00038	147.7	0.72	6.37	63.4	0.24
MW-2	3/12/2020	MW-2-031220	40.8	40.8	1.41	9.84 D	3.22	64 n	0.00015	100.2	2.14	6.13	54.2	0.22
MW-9	3/12/2020	MW-9-031220	20.9	20.9	0.313	4.59 D	1.39	16 n	0.000047	48.7	4.02	6.29	45.7	6.12
MW-1	4/16/2020	MW-1-041620	58.8	58.8	1.63	14.8	4.04	33 n	0.00023	123.8	0.92	6.41	32.6	2.39
MW-2	4/16/2020	MW-2-041620	42.9	42.9	3.41	15.3	4.94	67 n	0.000058	14.05	4.41	6.09	57.4	0.29
MW-9	4/16/2020	MW-9-041620	31.4	31.4	1.33	9.2	2.9	30 n	0.000031	78.2	7.72	5.88	62.4	2.12
MW-1	5/14/2020	MW-1-051420	56.5	56.5	1.41	13.9	3.91	68.2	0.00863 U	117.5	0.98	6.05	54.2	0.69
MW-2	5/14/2020	MW-2-051420	40.2	40.2	6.54	19.7	6.36	48.4	0.00863 U	192.3	5.54	5.77	74.1	0.65
MW-9	5/14/2020	MW-9-051420	51.8	51.8	0.788	12.7	3.88	63.3	0.00863 U	102.1	7.11	5.94	61.5	1.36
MW-1	6/3/2020	WE1-200603-	61.2	NA	1.61	16.9	5.28	NA	NA	138.7	0.95	6.13	168.4	0.64
MW-2	6/3/2020	WE2-200603-	38.4	NA	3.49	14.6	5.25	NA	NA	144.3	4.83	5.74	291.8	1.17
MW-9	6/3/2020	WE9-200603-	62.2	NA	1.55	17.7	6	NA	NA	149.1	4.94	5.95	235.7	0.5
MW-1	6/15/2020	MW-1-061520	68.3	68.3	1.87	20.4	6.13	146	0.00863 U	172.2	2.25	6.52	57.9	0.19
MW-2	6/15/2020	MW-2-061520	41.3	41.3	2.45	13.3	4.57	97.1	0.00863 U	136.4	4.44	6.27	56.9	0.33
MW-9	6/15/2020	MW-9-061520	62.1	62.1	1.48	16.9	5.58	143	0.00863 U	145.1	5.09	6.35	53.2	0.27

Table 3. Groundwater Monitoring Data During Rebound Test

Location ID	Sample Date	Sample Code	Alkalinity, Total (mg/L)	Alakalinity, Bicarbonate (mg/L)	Chloride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Carbon Dioxide (mg/L)	Methane (mg/L)	Spec Cond (µS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)
MW-1	8/11/2020	WE1-200811-	92.6	92.6	1.91	25.7	7.16	59.6	0.00863 U	219.7	0.99	6.1	197.8	0.31
MW-2	8/11/2020	WE2-200811-	23.2	23.2	1.24	5.81	2.03	84.1	0.015	65.1	1.41	5.99	214	0.38
MW-9	8/11/2020	WE9-200811-	47.7	47.7	11.7	17.1	5.7	37.9	0.00863 U	160.2	1.26	5.75	441.2	0.58
MW-1	9/1/2020	WE1-200901-	82.3	82.3	1.64	21.4	5.86	78.6	0.0108	170.9	1.42	6.18	75.1	0.15
MW-2	9/1/2020	WE2-200901-	23.9	23.9	1.23	5.78	2.04	38	0.00863 U	63	1.91	5.82	227.3	0.57
MW-9	9/1/2020	WE9-200901-	56	56	5.68	16.2	5.4	55	0.00863 U	140.5	0.93	5.48	237.1	0.25
MW-1	10/21/2020	WE1-201021-	105	105	1.61	27.2	6.9	150	0.0285	230	0.93	7	76.5	0.43
MW-2	10/21/2020	WE2-201021-	23.9	23.9	1.26	6.17	2.12	47.2	0.00863 U	67.1	2.14	5.7	266	0.35
MW-9	10/21/2020	WE9-201021-	28.6	28.6	1.54	8.42	2.81	37.2	0.00863 U	86.8	0.87	5.9	432.4	0.72
MW-1	11/19/2020	WE1-201119-	115	115	1.72	27.8	7.48	120	0.0309	230.8	0.62	7.21	-21	0.21
MW-2	11/19/2020	WE2-201119-	25.9	25.9	1.45	5.67	2.08	37.8	0.00863 U	62	1.13	5.94	246.1	0.94
MW-9	11/19/2020	WE9-201119-	44.7	44.7	4.1	12.7	4.38	51.9	0.00863 U	119.3	0.69	5.66	267.2	0.29
MW-1	12/14/2020	WE1-201214-	120	120	1.7	30.2	7.97	156	0.0416	226.4	0.85	7.23	176.3	0.36
MW-2	12/14/2020	WE2-201214-	25.8	25.8	2.15	6.11	2.33	53.9	0.00863 U	62.1	1.28	5.92	376.6	0.64
MW-9	12/14/2020	WE9-201214-	48.8	48.8	3.05	12.7	4.42	109	0.00863 U	110.4	3.16	5.92	446.4	0.38

Notes:

Shading delineates sample date for ease of reading

NA indicates not analyzed

U indicates constituent was analyzed for but not detected at or above the noted concentration (i.e., laboratory reporting limit)

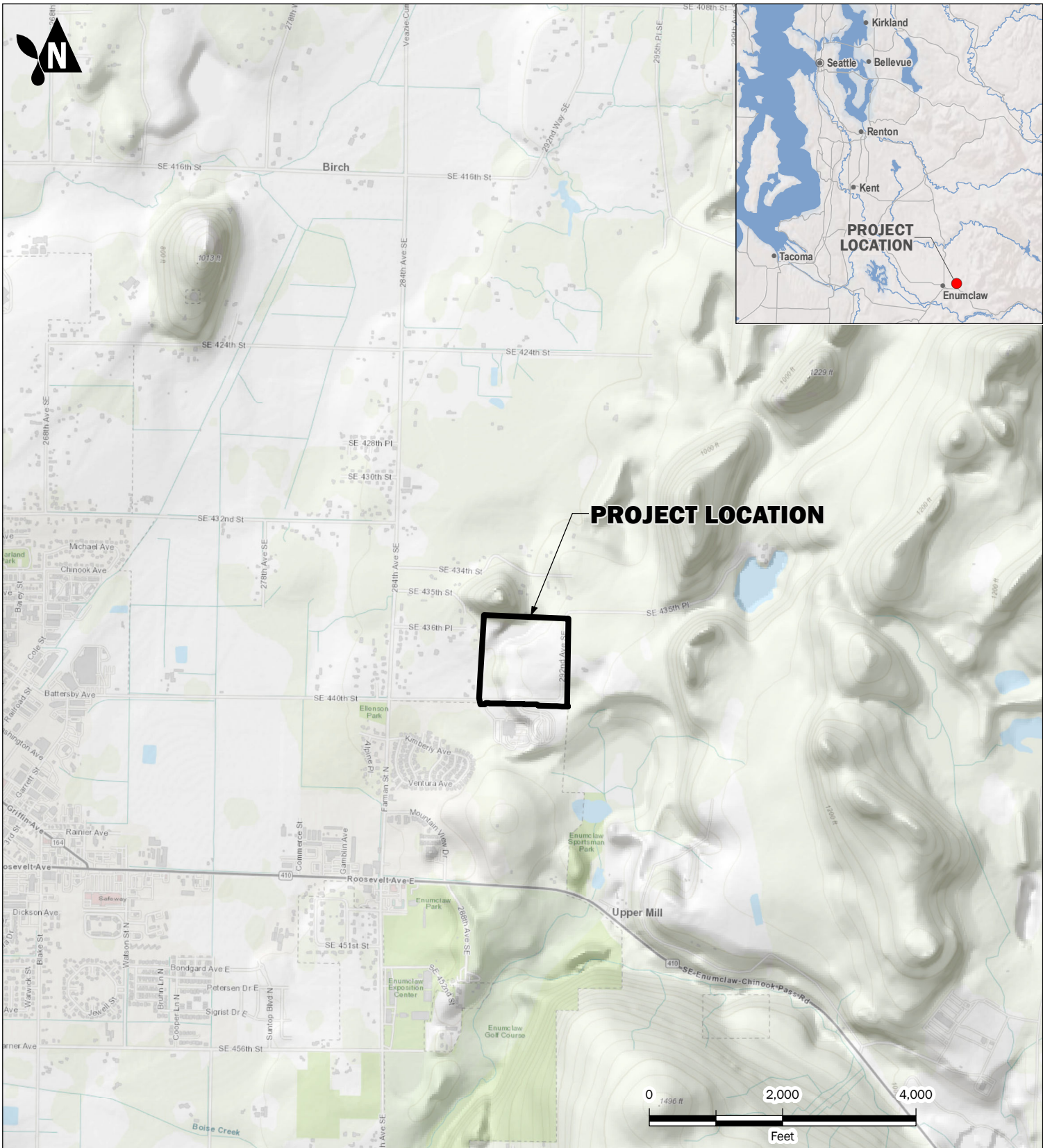
J indicates an estimated concentration greater than the laboratory method detection limit (MDL) and less than the laboratory reporting limit (PQL)

Table 6. GP-7S Landfill Gas Monitoring Data: Before and during Rebound Test (January 2019 to December 2020)

Location ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)
GP-7S	1/23/19 14:14	0	2.1	16.6
GP-7S	2/7/19 13:11	0	2.4	13.1
GP-7S	3/14/19 14:11	0	3.7	13.3
GP-7S	4/4/19 11:22	0	0.2	20.9
GP-7S	5/2/19 14:23	0	0.5	19.6
GP-7S	6/6/19 11:33	0	2.6	16.7
GP-7S	7/18/19 11:42	0	3.3	13.5
GP-7S	8/7/19 11:26	0	3.8	12.3
GP-7S	9/10/19 10:17	0	4.1	9.8
GP-7S	10/3/2019 11:30	0.0	3.6	11.6
GP-7S	11/21/2019 11:53	0.0	6.2	8.2
GP-7S	12/5/2019 11:52	0	0.2	21
GP-7S	12/17/2019 10:44	0	7.5	8.1
GP-7S	1/2/2020 10:06	0	2.6	18
GP-7S	1/15/2020 10:40	0.1	7.9	6.1
GP-7S	2/3/2020 11:41	0	2.2	17.2
GP-7S	2/13/2020 10:30	0	5.1	11
GP-7S	3/3/2020 10:42	0	4.5	21
GP-7S	3/12/2020 9:35	0	6.5	8.8
GP-7S	4/2/2020 13:06	0.0	1.3	17.4
GP-7S	4/16/2020 9:17	0	2.3	14.8
GP-7S	5/7/2020 12:02	0	4.5	10.2
GP-7S	5/14/2020 10:40	0	6.2	6.1
GP-7S	6/4/2020 11:23	0	4.9	10.4
GP-7S	6/15/2020 10:38	0	7.1	3.7
GP-7S	1/5/17 13:53	0.00	2.50	14.00
GP-7S	2/2/17 14:18	0.00	3.70	13.60
GP-7S	3/9/17 16:11	0.00	2.60	15.40
GP-7S	4/13/17 9:59	0.00	5.90	6.70
GP-7S	5/11/17 12:45	0.00	5.30	5.20
GP-7S	6/1/17 13:37	0.00	4.90	8.80
GP-7S	7/13/17 12:01	0.00	4.50	10.10
GP-7S	8/10/17 10:50	0.00	1.10	17.10
GP-7S	9/7/17 13:44	0.00	1.70	15.30
GP-7S	10/5/17 11:24	0.00	1.20	17.00
GP-7S	11/30/17 13:47	0.00	6.30	6.20
GP-7S	12/7/17 11:03	0.00	0.10	20.70
GP-7S	1/4/18 13:57	0.00	6.40	7.30
GP-7S	2/1/18 13:57	0.00	6.50	7.30
GP-7S	3/8/18 15:23	0.00	5.60	7.70
GP-7S	4/5/18 12:21	0.00	5.60	9.20
GP-7S	5/10/18 11:54	0.00	4.40	9.10
GP-7S	6/14/18 12:02	0.00	3.80	10.40

Location ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)
GP-7S	7/12/18 13:43	0.00	4.30	4.70
GP-7S	8/2/18 12:39	0.00	5.60	3.80
GP-7S	9/6/18 12:59	0.00	0.00	21.00
GP-7S	10/4/18 12:14	0.00	5.60	4.80
GP-7S	11/29/18 11:07	0.00	6.30	0.60
GP-7S	12/6/18 12:31	0.00	4.80	6.10
GP-7S	1/23/19 14:14	0.00	2.10	16.60
GP-7S	2/7/19 13:11	0.00	2.40	13.10
GP-7S	3/14/19 14:11	0.00	3.70	13.30
GP-7S	4/4/19 11:22	0.00	0.20	20.90
GP-7S	5/2/19 14:23	0.00	0.50	19.60
GP-7S	6/6/19 11:33	0.00	2.60	16.70
GP-7S	7/18/19 11:42	0.00	3.30	13.50
GP-7S	8/7/19 11:26	0.00	3.80	12.30
GP-7S	9/10/19 10:17	0.00	4.10	9.80
GP-7S	10/3/19 11:30	0.00	3.60	11.60
GP-7S	11/21/19 11:53	0.00	6.20	8.20
GP-7S	12/5/19 11:52	0.00	0.20	21.00
GP-7S	12/17/19 10:44	0.00	7.50	8.10
GP-7S	1/2/20 10:06	0.00	2.60	18.00
GP-7S	1/15/20 10:40	0.10	7.90	6.10
GP-7S	2/3/2020 11:41	0.00	2.20	17.20
GP-7S	2/13/2020 10:30	0.00	5.10	11.00
GP-7S	3/3/2020 10:42	0.00	4.50	21.00
GP-7S	3/12/2020 9:35	0.00	6.50	8.80
GP-7S	4/2/2020 13:06	0.00	1.30	17.40
GP-7S	4/16/2020 9:17	0.00	2.30	14.80
GP-7S	5/7/2020 12:02	0.00	4.50	10.20
GP-7S	5/14/2020 10:40	0.00	6.20	6.10
GP-7S	6/4/2020 11:23	0.00	4.90	10.40
GP-7S	6/15/2020 10:38	0.00	7.10	3.70
GP-7S	7/14/2020 10:23	0.00	2.70	14.60
GP-7S	8/6/2020 10:39	0.00	5.40	7.60
GP-7S	9/22/2020 14:47	0.00	5.70	4.90
GP-7S	10/7/2020 12:04	0.00	6.20	89.40
GP-7S	11/6/2020 12:31	0.00	7.80	1.00
GP-7S	11/6/20 12:31	0.00	7.80	1.00
GP-7S	12/17/20 11:40	0.00	7.90	0.70

FIGURES

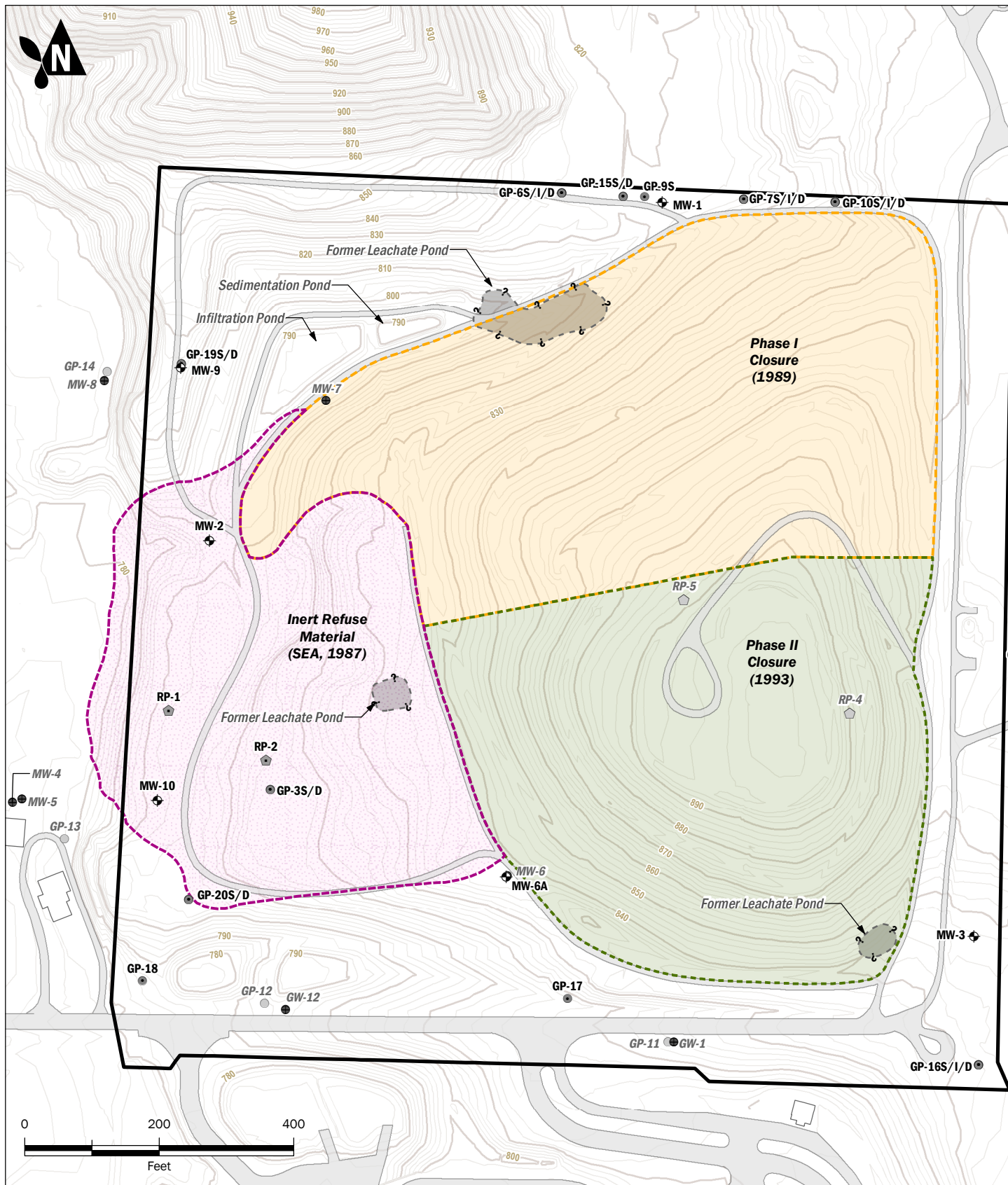


Project Location

Landfill Gas Rebound Test Tech Memo
Enumclaw Closed Landfill
King County, Washington



FIGURE NO.
1



- | | | |
|---------------------------|---|---------------------------------|
| ● Gas Probe | ⬮ Refuse Probe | ⬮ Refuse Probe (Decommissioned) |
| ⬮ Monitoring Well | ⬮ Monitoring Well (Decommissioned) | ● Gas Probe (Decommissioned) |
| ⬮ Phase I Closure (1989) | ⬮ Former Leachate Pond Approximate Location | □ Building |
| ⬮ Phase II Closure (1993) | □ Enumclaw Landfill Property | □ Road |
| ⬮ Inert Refuse Material | | |

Note: Topographic contours from King County survey dated May 18, 2016.

Site Features

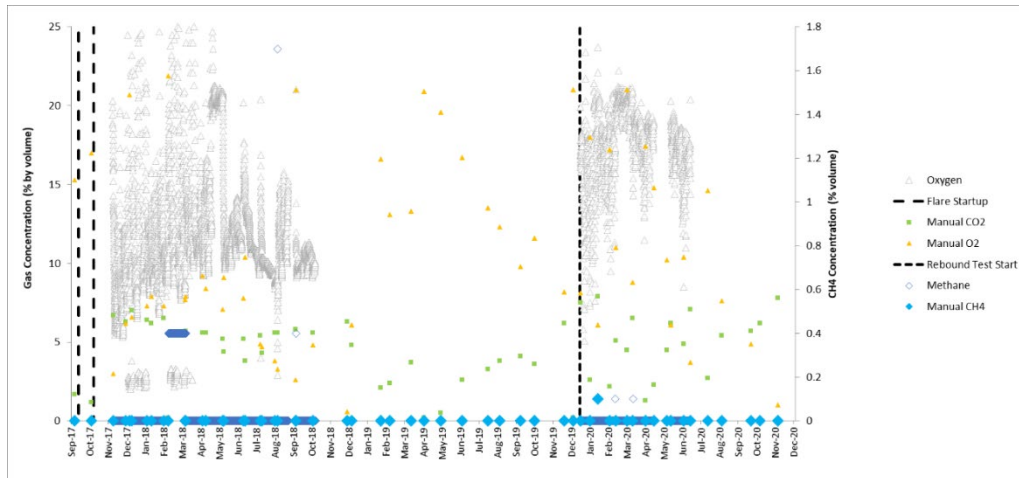
Landfill Gas Rebound Test Tech Memo
Enumclaw Closed Landfill
King County, Washington



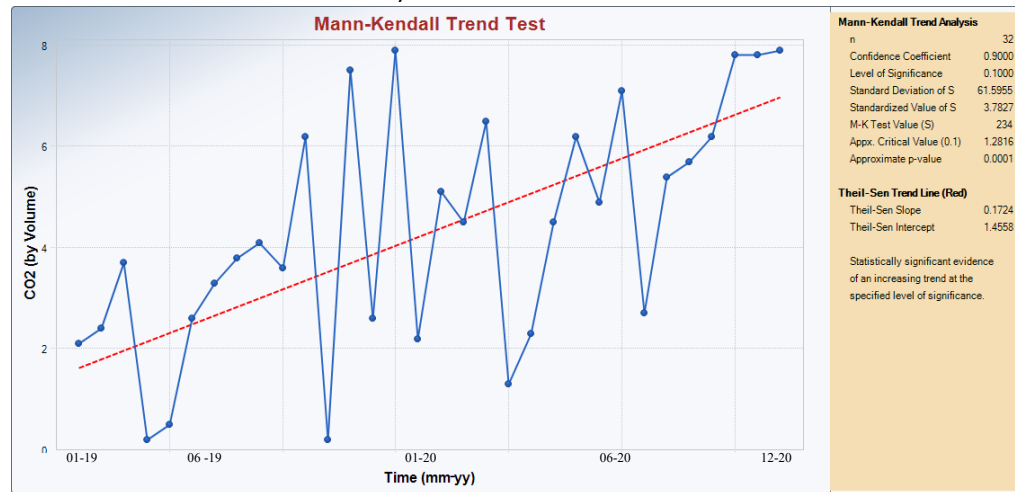
FIGURE NO.

2

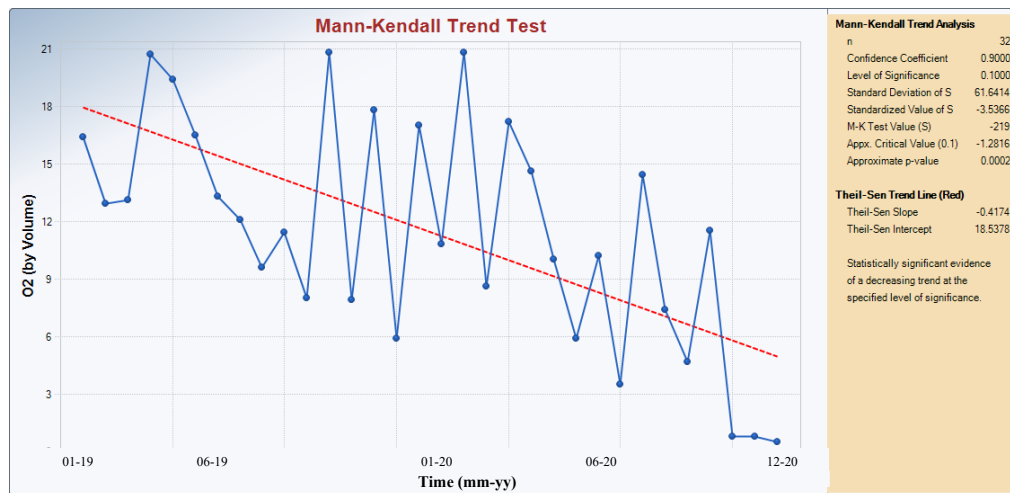




a) Plot of Landfill Gas



b) Landfill Gas (Dissolved CO₂) concentration at GP-7



c) Landfill Gas (Dissolved Oxygen) concentration at GP-7

**** Dissolved Methane showed insufficient evidence of identifying a significant trend**

Figure 4. Landfill Gas Concentrations at GP-7S

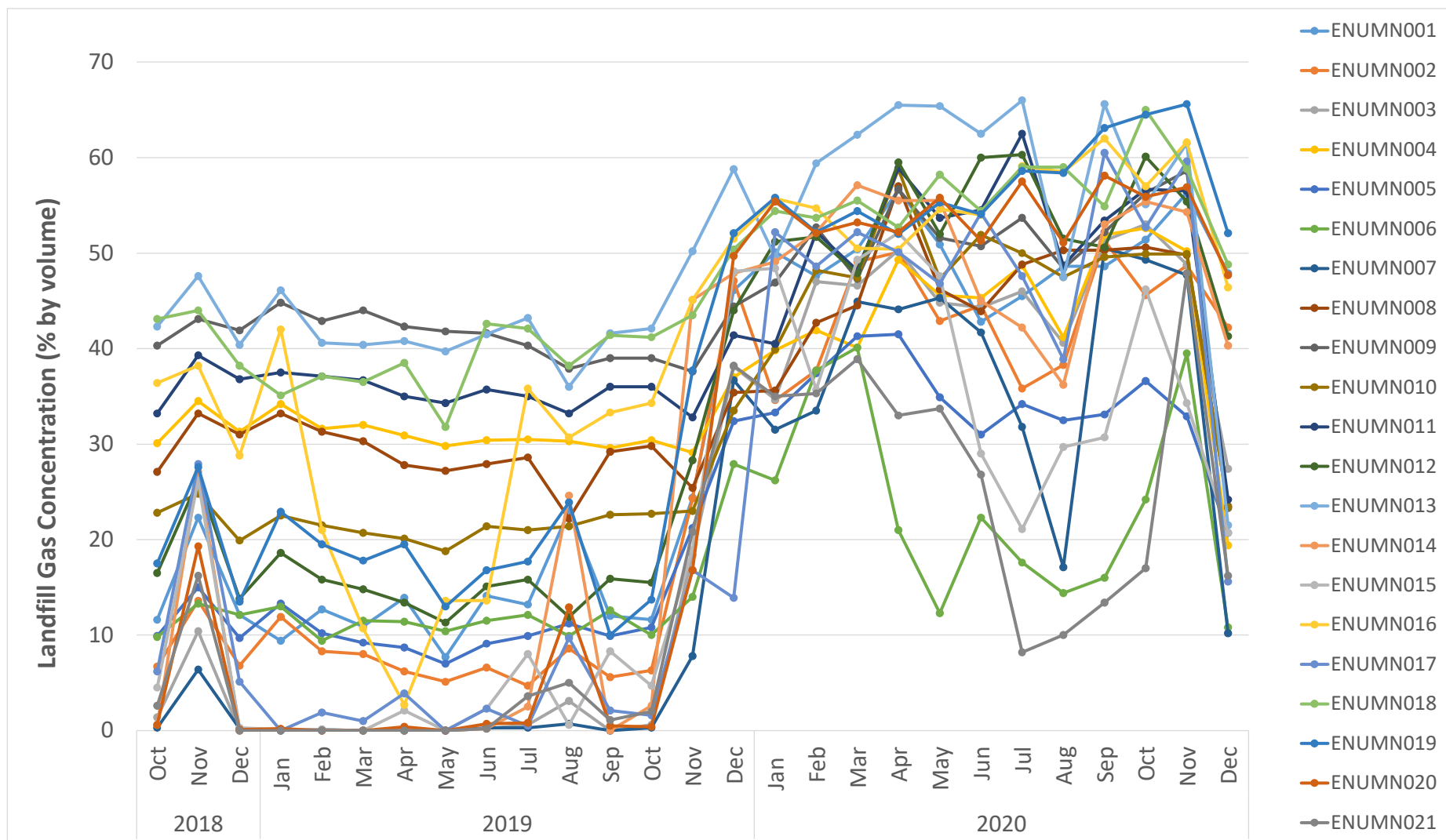


Figure 5a. Methane Concentrations at Wellheads

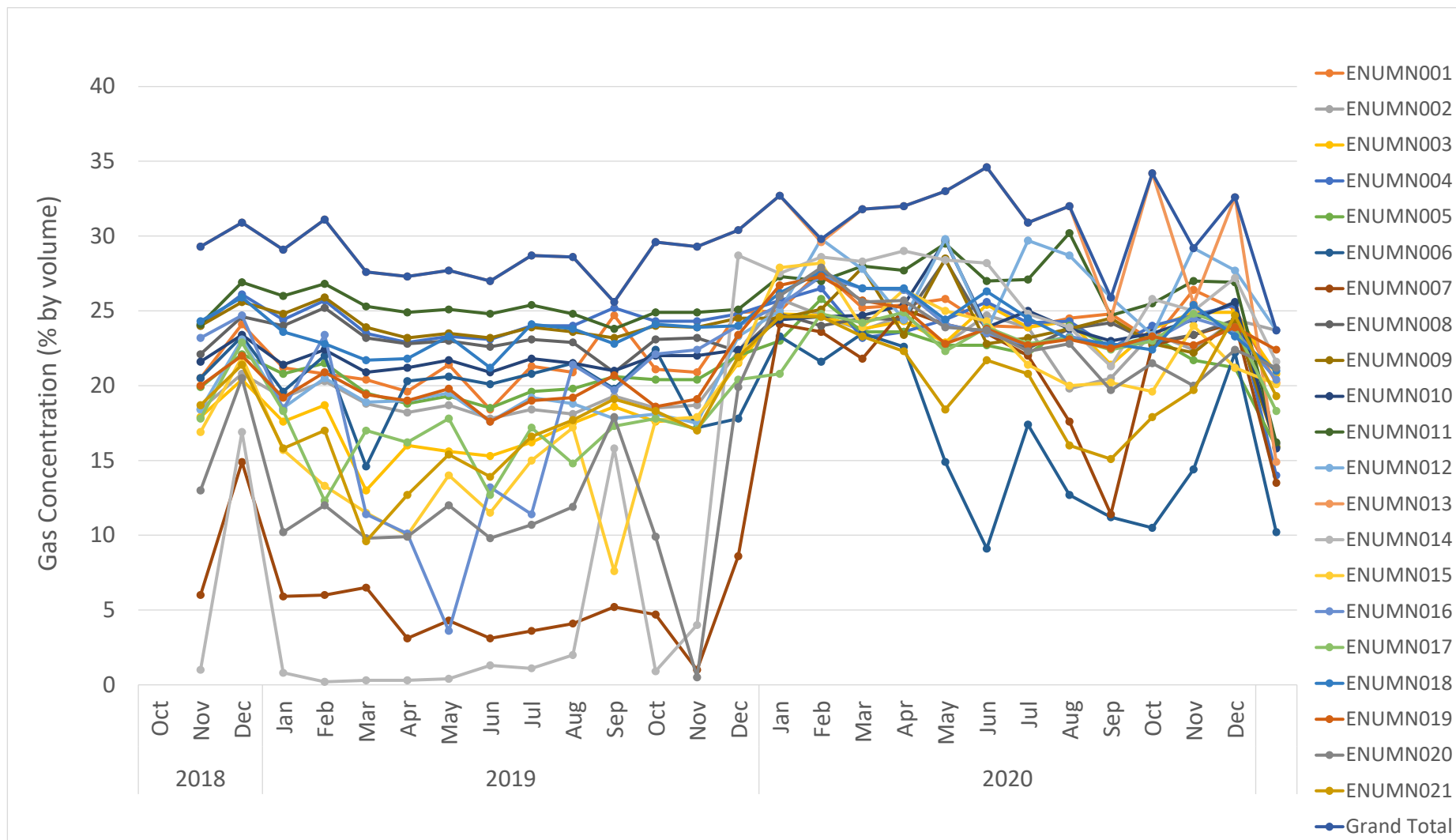
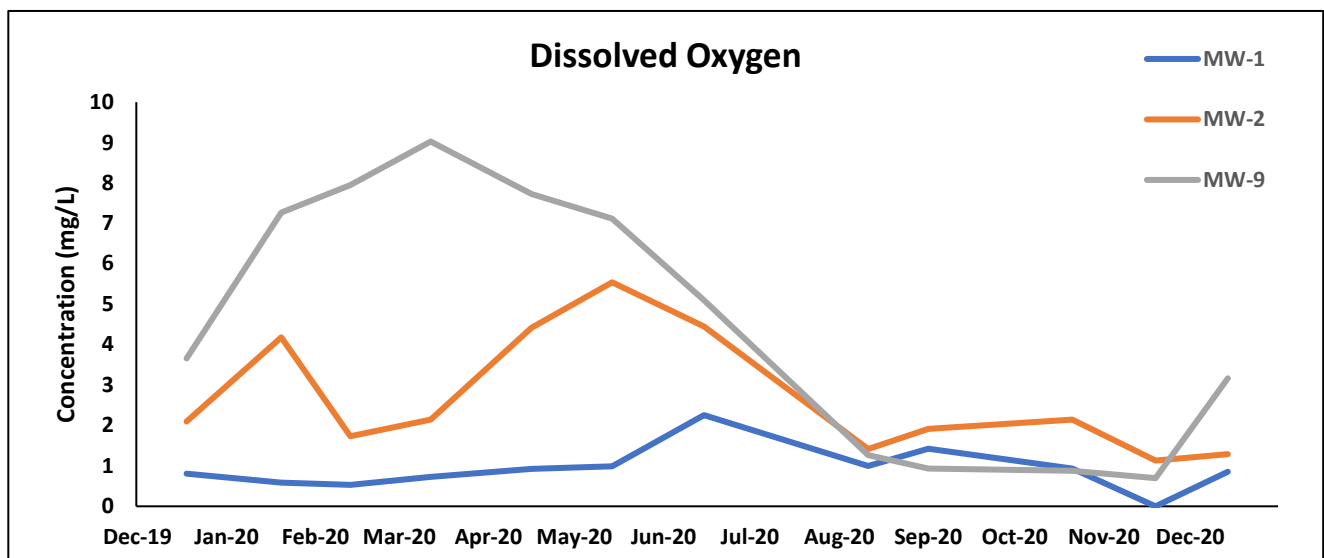
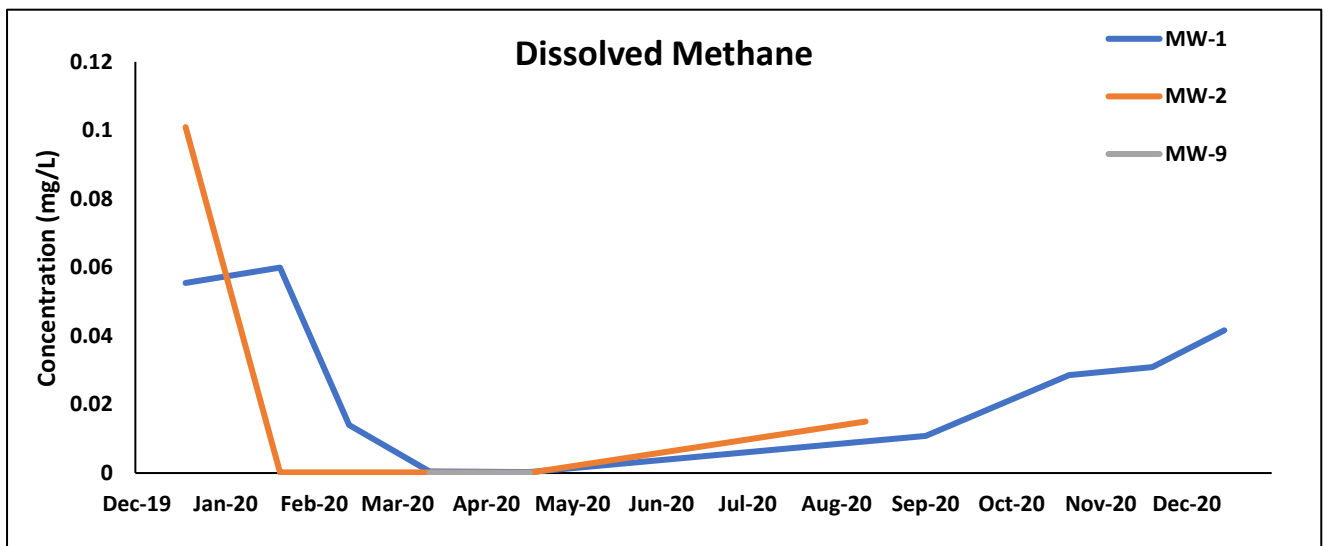
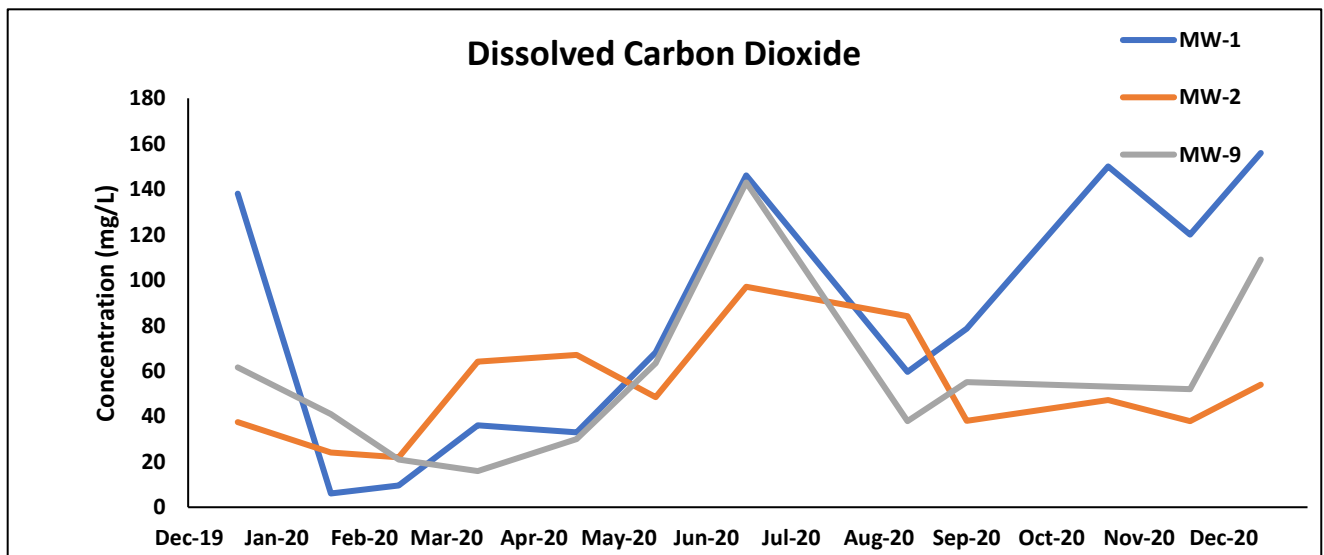
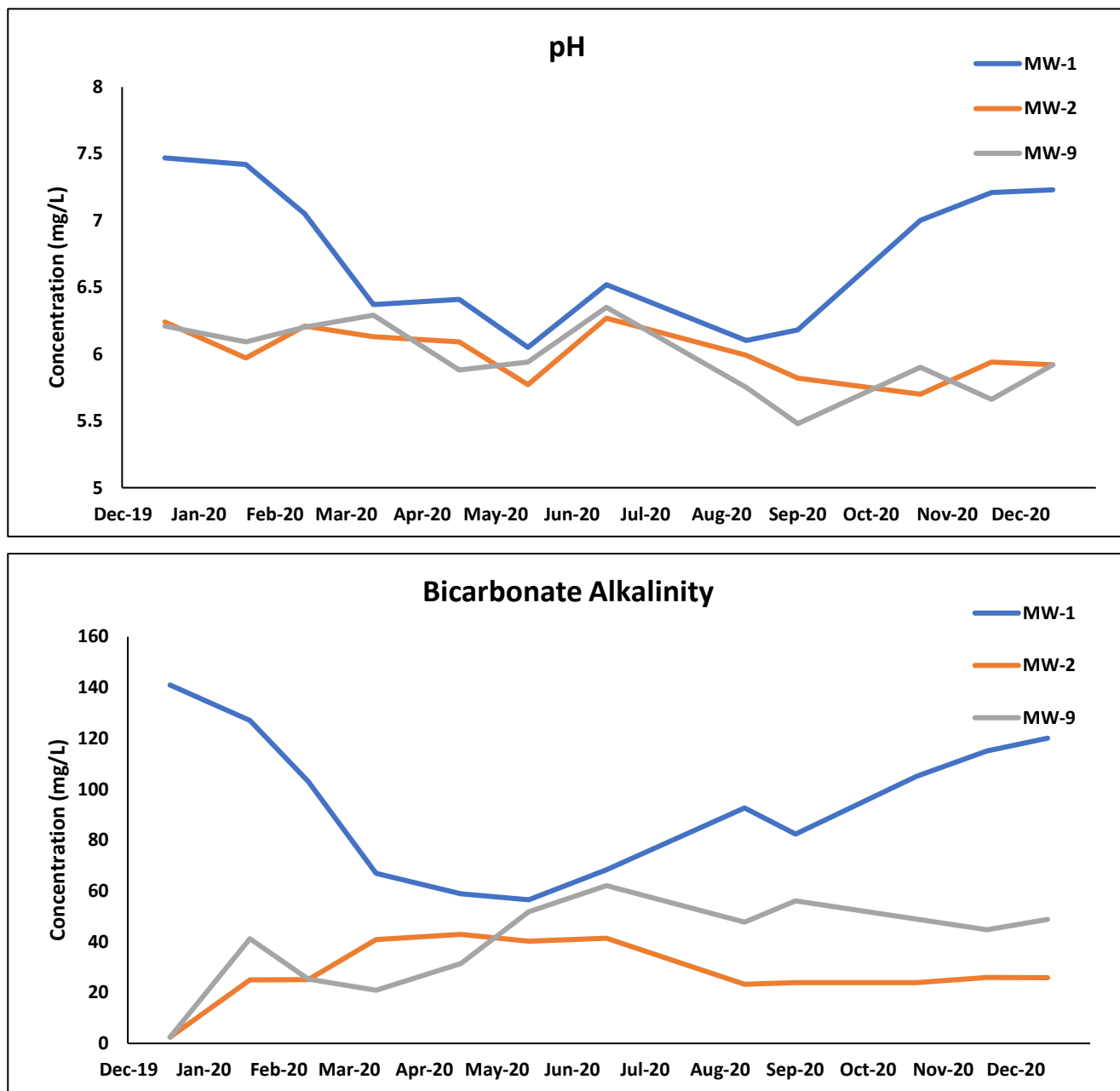


Figure 5b. Carbon Dioxide Concentrations At Wellheads



***Non-detected values were not plotted in Figure 6*

Figure 6. Groundwater Sampling Results



*Non-detected values were not plotted in Figure 6

Figure 6. Groundwater Sampling Results