WASTE MANAGEMENT

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1. ☐ RECEIVED IN ENFORCEMENT: 05/27/2022

May 27, 2022

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USEPA, Region IX
75 Hawthorne Street
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SUBJECT: Combined Title V Semi-Annual and Partial 8-34 Annual Report 40 CFR 63 Subpart AAAA Semi-Annual Report
Redwood Landfill, Inc.
8950 Redwood Highway, Novato, CA 94948
Facility Number A1179

Dear Sir or Madam:

The Redwood Landfill, Inc. (RLI) is submitting this Combined Title V Semi-Annual and Partial 8-34 Annual Report for the period of November 1, 2021 to April 30, 2022, to the Bay Area Air Quality Management District (BAAQMD) and the United States Environmental Protection Agency (USEPA), Region IX. The Semi-Annual Startup, Shutdown and Malfunction (SSM) Report is also enclosed, as required by 40 Code of Federal Regulations (CFR) Part 63 Subpart AAAA. The Combined Title V Semi-Annual and Partial 8-34 Annual Report satisfies the requirements of the Title V Permit listed in Condition Number 19867 Part 32 and Standard Condition I.F.

Based on information and belief formed after reasonable inquiry, I certify under penalty of law that the statements included in this report are true, accurate, and complete.

Sincerely,
Redwood Landfill, Inc.

Ramin Khany
District Manager

Attachments:
Combined Title V Semi-Annual and Partial 8-34 Annual Report

Combined Title V Semi-Annual and Partial 8-34 Annual Report

For the Redwood Landfill
8950 Redwood Highway
Novato, California 94948
Facility Number A1179

November 1, 2021 to April 30, 2022

Prepared for
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, CA

For Submittal to:
The Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

The United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

Prepared by:
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, CA

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1 INTRODUCTION

1.1 Purpose

This document is a Title V Combined Semi-Annual Report and Partial 8-34 Annual Report for Redwood Landfill, Inc. (RLI) pursuant to Title V Permit Standard Condition I.F and Condition Number 19867, Part 32. This Combined Report satisfies the requirements of Bay Area Air Quality Management District's (BAAQMD) Regulation 8, Rule 34, Section 411 and Title 40 Code of Federal Regulations (CFR) Part 60 Subpart WWW (40 CFR §60.757[f]), New Source Performance Standards (NSPS) for municipal solid waste (MSW) landfills, and the RLI Title V Standard Condition I.F. This report covers compliance activities conducted from November 1, 2021 to April 30, 2022. This Combined Report also includes the Semi-Annual Start-up, Shutdown, and Malfunction (SSM) Plan Report activities pursuant to National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, Subpart AAAA for Landfills.

Section 2 of this Report contains the elements required to satisfy both BAAQMD Regulation 8-34-411 and 40 CFR §60.757(f).

Section 3 of this Combined Report includes a discussion of the data from the most recent source tests, for the A-51 and A-60 Flares, in compliance with BAAQMD Regulation 8-34-412 and Title V Permit Condition Number 19867, Part 30.

Section 4 and Appendices B, D, and E of this Report contain the Semi-Annual Report of SSM Plan activities.

1.2 Record Keeping and Reporting

Records are maintained and available for inspection in accordance with BAAQMD Regulation 8-34-501.12 and 40 CFR §60.758. The primary location for records storage is Redwood Landfill. Records are maintained onsite at the Landfill for a minimum of five years.

2 SEMI-ANNUAL MONITORING REPORT

In accordance with RLI Title V Permit Standard Conditions I.F and 19867, Part 32; BAAQMD Regulation 8-34-411; and 40 CFR §60.757(f) of the NSPS for landfills, this report is a Title V Combined Semi-Annual Report and Partial 8-34 Annual Report that is required to be submitted by RLI. This Report contains monitoring data for the operation of the gas collection and control system (GCCS). The operational records have been reviewed and summarized. The timeframe included in this Report is November 1, 2021 to April 30, 2022. The following table lists the rules and regulations that are required to be included in this Combined Report:

Table 2-1 Semi-Annual Report Requirements

RULE	REQUIREMENT	LOCATION IN REPORT
8-34-501.1, §60.757(f)(4)	All collection system downtime, including individual well shutdown times and the reason for the shutdown.	Section 2.1, Appendices B & D
8-34-501.2, §60.757(f)(3)	All emission control system downtime and the reason for the shutdown.	Section 2.2, Appendix B
8-34-501.3, 8-34-507, §60.757(f)(1)	Continuous temperature for all operating flares and any enclosed combustor subject to Section 8-34-507.	Section 2.3, Appendices E & F
8-34-501.4, 8-34-505, 8-34-510	Testing performed to satisfy any of the requirements of this rule.	Sections 2.4 & 2.10, Appendices G & I
8-34-501.5	Monthly landfill gas (LFG) flow rates and well concentration readings for facilities subject to 8-34-404.	Sections 2.5 & 2.11, Appendix K
8-34-501.6, 8-34-503, 8-34-506, §60.757(f)(5)	For operations subject to Section 8-34-503 and 8-34-506, records of all monitoring dates, leaks in excess of the limits in Section 8-34-301.2 or 8-34-303 that are discovered by the operator, including the location of the leak, leak concentration in parts per million by volume (ppm_v), date of discovery, the action taken to repair the leak, date of the repair, date of any required re-monitoring, and the re-monitored concentration in ppm_v.	Sections 2.6 & 2.7, Appendix H
8-34-501.7	Annual waste acceptance rate and current amount of waste in-place.	Section 2.8
8-34-501.8	Records of the nature, location, amount, and date of deposition of non-degradable wastes, for any landfill areas excluded from the collection system requirement as documented in the GCCS Design Plan.	Section 2.9
8-34-501.9, 8-34-505, §60.757(f)(1)	For operations subject to Section 8-34-505, records of all monitoring dates and any excesses of the limits stated in Section 8-34-305 that are discovered by the operator, including well identification number, the measured excess, the action taken to repair the excess, and the date of repair.	Section 2.10, Appendices I & J
8-34-501.10, 8-34-508, §60.757(f)(1)	Continuous gas flow rate records for any site subject to Section 8-34-508.	Section 2.11, Appendix K

RULE	REQUIREMENT	LOCATION IN REPORT
8-34-501.11, 8-34-509	For operations subject to Section 8-34-509, records or key emission control system operating parameters.	Section 2.2.2
8-34-501.12	The records required above shall be made available and retained for a period of five years.	Section 1.2
§60.757(f)(2)	Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified under §60.756.	Section 2.2.1
§60.757(f)(6)	The date of installation and the location of each well or collection system expansion added pursuant to paragraphs (a)(3), (b), (c)(4) of §60.755.	Section 2.12
§60.10 (d)(5)(i)	Start-up, Shutdown, Malfunction Events	Section 4, Appendices B, D, and E

2.1 COLLECTION SYSTEM OPERATION [BAAQMD 8-34-501.1& §60.757(f)(4)]

Appendix A contains a map of the GCCS at RLI. Section 2.1.1 includes all collection system downtimes. The information contained in Appendix B, A-51 and A-60 Flares SSM Logs, GCCS Downtime Summary, S-64 and S-65 Landfill Gas Engine SSM logs, and S-71 Gas Treatment System Downtime Log, includes the individual well shutdown times and the reason for each shutdown.

2.1.1 FLARE SYSTEM DOWNTIME

The A-51 Flare commenced operation in June 2005, and the A-60 Flare commenced operation on April 1, 2009. Table 2-2 summarizes the A-51 and A-60 Flares' downtimes for the reporting period.

Table 2-2 A-51 and A-60 Downtimes

Month	A-51 Downtime (Hours)	A-60 Downtime (Hours)
November 2021	721.00	1.17
December 2021	744.00	0.13
January 2022	730.93	29.73
February 2022	672.00	0.10
March 2022	743.00	2.60
April 2022	720.00	0.33
Total Hours:	**4,330.93**	**34.07**

During the period covered in this report, the GCCS was not shut down for more than five days on any one occasion. Appendix B contains the A-51 and A-60 Flare SSM logs, and GCCS Downtime Summary which lists dates, times, and lengths of shutdowns for the reporting period and year-to-date.

2.1.2 LANDFILL GAS ENGINE SYSTEM DOWNTIME

The S-64 and S-65 Landfill Gas Engines (with accompanying S-71 Landfill Gas Treatment System) commenced operation in April 27, 2017. Table 2-3 summarizes the S-64 and S-65 Engines' downtimes for the reporting period.

Table 2-3 S-64 and S-65 Downtimes

Month	S-64 Downtime (Hours)	S-65 Downtime (Hours)
November 2021	15.33	14.50
December 2021	8.75	4.92
January 2022	79.82	59.15
February 2022	74.17	26.83
March 2022	55.00	67.00
April 2022	22.50	96.25
Total Hours:	**255.57**	**268.65**

Appendix B contains the S-64 and S-65 Engine SSM logs, and S-71 Downtime Log which lists dates, times, and lengths of shutdowns for the reporting period.

2.1.3 WELL DISCONNECTION LOG

A Wellfield SSM Log that lists dates, times, and lengths of disconnections for the reporting period is included in Appendix D. In addition, 5 wells (out of a possible 5) remains disconnected at the end of the reporting period, pursuant to BAAQMD Regulation 8-32-116.2 (Limited Exemption, Well Raising).

2.2 EMISSION CONTROL DEVICE DOWNTIME [BAAQMD 8-34-501.2 & §60.757(f)(3)]

No bypassing of the control system or emissions of raw LFG occurred. The Flare SSM Logs that include all downtimes and reasons for each shutdown for the A-51 and A-60 Flares are contained in Appendix B. Device downtime is summarized in Table 2-4.

Table 2-4 GCCS Downtime Summary

Total 2021 Downtime:	93.90
November 1, 2021 through April 30, 2022 Downtime:	26.13
January 1, 2022 through April 30, 2022 Total Downtime:	24.83
Total 2022 Downtime:	24.83

2.2.1 LFG BYPASS OPERATIONS (§60.757(f)(2))

Title 40 CFR §60.757(f)(2*)* is not applicable at RLI because no bypass line is installed. LFG cannot be diverted around the control equipment.

2.2.2 KEY EMISSION CONTROL OPERATING PARAMETERS (BAAQMD 8-34-501.11 & 8-34-509)

The A-51 and A-60 Flares are subject to continuous temperature monitoring as required in BAAQMD Regulation 8-34-507 and 40 CFR §60.757(f)(1).

2.3 TEMPERATURE MONITORING RESULTS [(BAAQMD 8-34-501.3, 8-34-507, & §60.757(f)(1)]

The RLI has two flares used to destroy LFG collected by the GCCS (A-51 and A-60). Combustion zone temperatures of the flares are monitored with thermocouples and recorded with Yokogawa DX100 paperless chart recorders. There were no continuous recorder device SSM events during the reporting period. As shown in Appendix F, there were no periods of missing temperature data for the flares during the reporting period.

Title V Permit Condition Number 19867 Part 22 states that the minimum combustion zone temperature shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50°F, provided that the minimum combustion zone temperature is not less than 1,400°F. Pursuant to Part 22, the following temperature limits applied during the reporting period:

Table 2-5 Applicable Temperature Limits

Device	Test Date	Report Submitted	Average Temperature During Test (°F)	3-hr Minimum Temperature (°F)
A-51	1/14/2021	3/10/2021	1,538	1,488
A-51	1/12/2022	3/11/2022	1,509	1,459
A-60 Zone A	7/13/2021	9/10/2021	1,575	1,525
A-60 Zone B	7/17/2018	9/14/2018	1,605	1,555

The three-hour minimum temperature applies upon submittal of the source test report. Operating records for the flares indicate all flares operated in compliance with the applicable three-hour average minimum temperatures from November 1, 2021 to April 30, 2022.

Pursuant to Title V Permit Condition Number 19867, Part 30g, the annual source test at A-60 may be conducted while A-60 is operating in either zone, provided that each operating zone is tested at least once every five years. The most recent source test for Zone A was completed in July 2021. Zone B was tested in July 2018, meeting the obligation to test each zone every five years.

2.4 MONTHLY COVER INTEGRITY MONITORING [BAAQMD 8-34-501.3, 8-34-507, & §60.757(f)(1)]

The Monthly Cover Integrity Monitoring Reports are included in Appendix G. The cover integrity monitoring was performed on the following dates:

- November 19, 2021
- December 22, 2021
- January 25, 2022
- February 18, 2022
- April 1, 2022
- April 29, 2022

No breaches of cover integrity (e.g., cover cracks or exposed garbage) were found during the reporting period. If areas of concern were observed, repairs were documented as required.

2.5 LESS THAN CONTINUOUS OPERATION (BAAQMD 8-34-501.5)

The RLI does not operate under BAAQMD Regulation 8-34-404 (Less Than Continuous Operation) and therefore is not required to submit monthly LFG flow rates.

2.6 SURFACE EMISSIONS MONITORING [BAAQMD 8-34-501.6, 8-34-506, & §60.757(f)(5)]

Quarterly Surface Emissions Monitoring (SEM), pursuant to BAAQMD Regulation 8-34-506, was conducted during the reporting period. A flame ionization detector (FID) was used during the SEM events to monitor the path along the landfill surface according to the Landfill SEM Map. Any areas suspected of having emission problems by visible observations also were monitored. Immediately prior to both monitoring events, the FID was zeroed and calibrated using zero air and a 500-ppm_v methane calibration gas.

The Fourth Quarter 2021 SEM event was conducted by Roberts Environmental Services (RES) personnel on November 16, 2021. Twenty-six exceedances were identified. Corrective action and re-monitoring are described below:

- The first 10-day re-monitoring was completed on November 23, 2021. All locations were observed at less than 500 ppmv as methane except for exceedance flag numbers O24, O26, O31, and O62.

- Corrective actions were implemented and flag numbers O24, O26, O31, and O62 were below 500 ppmv as methane upon the second 10-day remonitoring on December 1 and 2, 2021.

- 1-month remonitoring was completed on December 13 and 15, 2021. All locations cleared.

The First Quarter 2022 SEM was conducted by RES on January 25 and 26, 2022. Fourteen exceedances were identified. Corrective action and re-monitoring are described below:

- 10-day re-monitoring was completed on February 2 and 3, 2022. All locations cleared.

- 1-month remonitoring was completed February 23, 2022. All locations cleared.

Per the Compliance Agreement between RLI and BAAQMD, the SEM frequency was increased to bi-monthly. In the First Quarter 2022, the bi-monthly Instantaneous SEM was performed on March 14, 2022. There were no exceedances of 500-ppm_v methane detected. No re-monitoring was required.

SEM Reports are included in Appendix H.

2.7 COMPONENT LEAK TESTING [BAAQMD 8-34-501.6, 8-34-503)

Quarterly component leak testing, pursuant to BAAQMD Regulation 8-34-503, occurred during the reporting period on the following dates:

Fourth Quarter 2021 – November 17, 2021
First Quarter 2022 – January 25, 2022

No exceedances were identified during either monitoring event. The Component Leak Testing results are included with the SEM reports in Appendix H.

2.8 SOLID WASTE PLACEMENT RECORDS (BAAQMD 8-34-501.7)

The solid waste placement total was calculated for the period of November 1, 2021 to April 30, 2022. The current waste in place figure includes solid waste placed in the landfill through the end of the reporting period. Table 2-6 summarizes the RLI solid waste placement records for the reporting period.

Table 2-6 Solid Waste Placement

Waste Placement (November 1, 2021 to April 30, 2022)	104,818 tons
Current Waste In Place as of May 1, 2022	14.86 million tons

2.9 NON-DEGRADABLE WASTE ACCEPTANCE RECORDS (BAAQMD 8-34-501.8)

RLI does not have non-degradable waste areas that are excluded from the collection system. Therefore, BAAQMD Regulation 8-34-501.8 is not applicable.

2.10 WELLHEAD MONITORING DATA (BAAQMD 8-34-501.4 & 8-34-505)

Wellhead monitoring was performed monthly pursuant to BAAQMD Regulation 8-34-505. The well data for November 1, 2021 to April 30, 2022 are included in Appendix I. Each well was monitored in accordance with the following requirements:

- 8-34-305.1 – Each wellhead shall operate under a vacuum.
- 8-34-305.2 – The LFG temperature in each wellhead shall be less than 55 degrees Celsius (131 °F).
- 8-34-305.4 – The oxygen concentration in each wellhead shall be less than 5 percent by volume.

The wellhead monitoring was performed on the following dates:

- November 2, 4, 5, 10, 11, 12, 15, 16, 26, and 29, 2021
- December 3, 6, 7, 8, 9, 10, 16, 22, and 23, 2021
- January 3, 4, 5, 6, 7, 13, 20, 21, 24, 25, 27, and 28, 2022
- February 3, 4, 7, 8, 9, 10, 14, 15, 17, and 21, 2022
- March 4, 8, 9, 10, 11, and 22, 2022
- April 1, 4, 5, 7, 8, and 12, 2022

WELLHEAD DEVIATIONS [BAAQMD 8-34-501.9 & §60.757(f)(1)]

A total of fifteen (15) deviations from the wellhead standards in 8-34-305 occurred during the reporting period. All exceedances were addressed prior to issuance of this report.

The Wellfield Deviation Log is included in Appendix J.

2.11 GAS FLOW MONITORING RESULTS [BAAQMD 8-34-501.10, 8-34-508 & §60.757(f)(1)]

The LFG flow rates from both the A-51 and A-60 flares are measured with Veris flow meters. The S-64 and S65 LFG engines are measured with ABB flow meters. The flow meters meet the requirements of BAAQMD Regulation 8-34-508 by recording fuel flow at least every 15 minutes.

Appendix K contains a summary of the daily and monthly LFG flow rates and heat input for the flares and engine plant. The A-51 flare is utilized as a backup for the A-60 flares. These flow rates are summarized in Table 2-7:

Table 2-7 Total LFG Flow

Emission Control Device	Total Runtime (hours)	Average Flow Rate (scfm)	Average Methane (%)[1]	Total LFG Flow (scf)	12-Month Total LFG Flow (scf) Corrected to 500 BTU/scf	Max Daily Flow (scf) Corrected to 500 BTU/scf
A-51	13	882	50.0	691,570	700,094	405,072
A-60	4,310	1,030	45.7	266,290,840	540,938,858	2,336,399
S-64	4,088	659	48.5	161,758,013	297,936,668	1,073,759
S-65	4,075	627	44.1	153,201,984	237,259,558	915,267
Total	4,317	2,247	46.1	581,942,406	1,076,835,177	--

[1]Methane content was determined from the 7/17/18, 7/13/21, 7/14/21, and 1/12/22 Source Tests. Heating value of methane used in heat input calculations is 1,013 BTU/scf
scfm = standard cubic feet per minute
scf= standard cubic feet
MMBTU = million British thermal units

Pursuant to Title V Condition Number 19867, Part 20, the total LFG throughput to the either flare did not exceed 4,320,000 scf during any one day. The A-51 and A-60 Flares combined total LFG throughput did not exceed 2,207,520,000 scf during any consecutive 12-month period.

Appendix K contains a summary of the combined daily LFG flow rates for the A-51 and A-60 Flares and the consecutive 12-month summaries.

There were no periods of missing data or chart recorder non-operation for the A-51 and A-60 Flares or the landfill gas engine plant (S-64 and S-65 engines) during the reporting period. The Flare Missing Data Report Forms are included in Appendix F.

2.12 COMPLIANCE WITH §60.757(f)(6)

"The date of installation and the location of each well or collection system expansion added pursuant to (a)(3), (b), (c)(4) of §60.755."

Routine GCCS maintenance occurred during the reporting period. The Wellfield SSM Log is included in Appendix D, Wellfield SSM Log.

Zero (0) wells were added to and zero (0) wells were removed from the collection system during the reporting period (November 1, 2021 to April 30, 2022).

As of the end of this reporting period, 130 total collectors (123 vertical wells and 7 horizontal collectors) were in service at RLI. A map of the LFG collection system showing the positioning of all vertical wells, horizontal collectors, and other LFG extraction devices is included in Appendix A.

2.13 COMPLIANCE WITH TITLE V PERMIT CONDITION 13123 (S-34 & S-39)

The S-34 Compost Facility Operations and S-39 Screening Operations were utilized during the reporting period. The total amount of material processed did not exceed 160,368 tons during any consecutive 12-month period during the reporting period of November 1, 2021 to April 30, 2022. Monthly and 12-month rolling throughputs are summarized in Table 2-8.

Table 2-8 Composting and Screening Operations Throughput

Month	Total Throughput (tons)	Rolling 12-Month Throughput (tons)
November-2021	12,282	131,232
December-2021	10,779	129,399
January-2022	10,704	128,831
February-2022	9,309	127,966
March-2022	9,436	125,693
April-2022	10,390	124,574

Pursuant to Title V Permit Condition Number 13123 Part 7, all yard waste material was processed within 72 hours of receipt. In addition, pursuant to Title V Permit Condition Number 13123 Part 8, the plant received no public nuisance notices of violation during the reporting period of November 1, 2021 to April 30, 2022.

2.14 COMPLIANCE WITH TITLE V PERMIT CONDITIONS 14098 AND 16516 (S-55)

Pursuant to Title V Permit Condition Number 14098, the annual gasoline throughput for the S-55 Non-Retail Gasoline Dispensing Facility Number 8573 did not exceed 940,000 gallons in any consecutive 12-month period during the timeframe of this report. Monthly gasoline throughput totals for the reporting period are listed in Table 2-9:

Table 2-9 Unleaded Gasoline Throughput

Month	Total Throughput (gallons)	Rolling 12-Month Fuel Usage (gallons)
November-2021	219	3,040
December-2021	240	3,035
January-2022	240	3,129
February-2022	251	3,142
March-2022	232	3,088
April-2022	167	2,991

Pursuant to Title V Permit Condition Number 16516, the Static Pressure Performance Test (Leak Test) for S-55 was performed on March 31, 2022. S-55 also passed the 2021 Leak Test. The Static Pressure Performance Test results are included in Appendix O.

2.15 COMPLIANCE WITH TITLE V PERMIT CONDITIONS 22820 (S-49)

The permit for S-49 was surrendered to BAAQMD on November 4, 2013. The equipment is no longer on site.

2.16 COMPLIANCE WITH TITLE V PERMIT CONDITION 19865 (S-41)

Pursuant to Title V Permit Condition 19865, the total of waste processed at the S-41 Yard and Green Waste Shredding Operation did not exceed 820 tons per day or 200,000 tons per year. Table 2-10 summarizes the amount of waste processed at S-41 during the reporting period:

Table 2-10 Waste Processed at S-41

Month	Total Throughput (tons)	Rolling 12-Month Throughput (tons)
November-2021	12,282	131,232
December-2021	10,779	129,399
January-2022	10,704	128,831
February-2022	9,309	127,966
March-2022	9,436	125,693
April-2022	10,390	124,574

2.17 COMPLIANCE WITH TITLE V PERMIT CONDITION 19866 (S-42)

The total amount of material received at the S-42 Soil and Cover Stockpiles did not exceed 1,160 tons per day and 105,500 tons per year.

2.18 COMPLIANCE WITH TITLE V PERMIT CONDITION 19867, PARTS 6-10

The following is a summary of vehicle activity at the RLI:

- The mean vehicle fleet weight for all off-site vehicles traveling on paved roads was 15.00 tons, which is less than the permit limit of 15.31 tons.
- Mean vehicle fleet weight for all off-site vehicles traveling on gravel or dirt roads was 16.29 tons, which is less than the permit limit of 16.63 tons.
- The mean vehicle fleet weight for all on-site landfilling and construction related vehicles was 12.9 tons, which is below the permit limit of 28.37 tons.
- During the reporting period, the vehicle miles travelled (VMT) per day on gravel roads did not exceed the permit limit of 280 VMT per day. 2021 calendar year VMT on gravel roads was 26,490 VMT, below the limit of 87,080 VMT. 2022 partial calendar year VMT on gravel roads was 8,310 VMT, below the limit of 87,080 VMT.
- During the reporting period, the VMT per day on dirt roads did not exceed the permit limit of 639 VMT per day. 2021 calendar year VMT on dirt roads was 124,661 VMT, below the limit of 198,650 VMT. 2022 partial calendar year VMT on dirt roads was 39,104 VMT, below the limit of 198,650 VMT.
- During the reporting period, the VMT per day on paved roads did not exceed the permit limit of 622 VMT per day. 2021 calendar year VMT on paved roads was 84,884 VMT, below the limit of 205,880 VMT. 2022 partial calendar year VMT on paved roads was 24,143 VMT, below the limit of 205,880 VMT.
- During the reporting period, the VMT per day on dirt roads for the on-site vehicle fleet did not exceed the permit limit of 61 VMT per day. 2021 calendar year VMT on dirt roads is 15,754 VMT, below the limit of 19,080 VMT. 2022 partial calendar year VMT on dirt roads is 5,681 VMT, below the 19,080 VMT.

The records for VMT and average vehicle fleet weights are available for review at RLI.

2.19 COMPLIANCE WITH TITLE V PERMIT CONDITION 19867, PARTS 14 AND 15

No contaminated soil containing volatile organic compound (VOC) concentrations greater than 50 parts per million (ppm) was received during this reporting period. The total VOC emission rate for the reporting period (November 1, 2021 to April 30, 2022) is 0.00 lbs. The VOC soil log is included in Appendix L.

2.20 COMPLIANCE WITH TITLE V PERMIT CONDITION 19867, PARTS 31 AND 33

WEEKLY H_2S MONITORING

Pursuant to Title V Permit Condition Number 19867, Part 31b, weekly hydrogen sulfide (H_2S) readings were taken using Draeger/RAE tubes. This sampling frequency was increased to twice weekly starting November 22, 2016 per the Compliance Agreement between RLI and BAAQMD. This agreement is in effect and all terms of the agreement have been complied with.

The twice weekly H_2S readings and quarterly averages are summarized in Appendix M, H_2S Twice Weekly and Quarterly Monitoring.

QUARTERLY H_2S CHARACTERIZATION

Pursuant to Title V Permit Condition Number 19867, Part 31a, RLI collected the quarterly characterization of the LFG for analysis of sulfur compounds. The results are included in Tables 2-11 (LFG), 2-12 (Engine Inlet before pre-treatment), and Appendix M. As previously discussed, RLI has obtained a Compliance Agreement with BAAQMD covering the concentration limits of H_2S in the landfill gas. This agreement is in effect and all terms of the agreement have been complied with.

Table 2-11 LFG Characterization Results

Compound	Fourth Quarter 2021 Result (ppm_v)	First Quarter 2022 Result (ppm_v)
Hydrogen Sulfide	530	680
Carbonyl Sulfide	0.79	0.89
Methyl Mercaptan	1.70	1.50
Ethyl Mercaptan	0.24	0.23
Dimethyl Sulfide	1.50	1.00
Carbon Disulfide	0.26	0.13
Total Reduced Sulfur	**539**	**688**

ND = not detected
N/A = not applicable

Table 2-12 Engine Inlet (pre-treatment) Characterization Results

Compound	Fourth Quarter 2021 Result (ppm_v)	First Quarter 2022 Result (ppm_v)
Hydrogen Sulfide	1,100	800
Carbonyl Sulfide	1.10	0.59
Methyl Mercaptan	1.90	1.20
Ethyl Mercaptan	0.42	0.25
Dimethyl Sulfide	1.10	0.42
Carbon Disulfide	ND	0.10
Total Reduced Sulfur	**1,117**	**810**

ND = not detected
N/A = not applicable

ROLLING 4-QUARTER TRS LIMIT

The rolling 4-quarter average TRS concentration was calculated at the end of each quarter using data collected from twice weekly tube samples and quarterly analytical samples per Condition 19867, Part 31b. Results are shown in Table 2-13. As shown in the table, at the end of all the Quarters, the calculated TRS concentration was in excess of the 350 ppm_v limit. The Compliance Agreement also covers this limit. Follow-up actions are discussed later in this section.

Table 2-13 Rolling 4-Quarter TRS Concentration

Quarter	Calculated TRS (ppmv)	Rolling Quarterly Average Annual TRS (ppmv)
2021 Q2	868	973
2021 Q3	520	912
2021 Q4	696	810
2022 Q1	643	682

ANNUAL LFG CHARACTERIZATION

LFG characterization sampling was conducted concurrently with the A-51 annual source test as required by Title V Permit Condition Number 19867, Part 31 on January 14, 2021. The LFG sample was collected from the main LFG header and analyzed for the organic and sulfur compounds listed in Part 31. The results were included in the Annual Source Test report submitted on March 10, 2021.

Results for Toxic Air Contaminants (TACs) are presented in Table 2-14 and indicate that the LFG collected by S-5 did not exceed the limits listed in Title V Permit Condition 19867, Part 18.b.

Table 2-14 Annual LFG Characterization: Toxic Air Contaminants

Compound	Result (ppb_v)	Concentration Limit* (ppb_v)
Acrylonitrile	<SRL	300
Benzene	1,093	1,500
Benzyl Chloride	<SRL	500
Carbon Tetrachloride	<SRL	200
Chlorobenzene	<SRL	200
Chloroethane	<SRL	500
Chloroform	<SRL	200
1,4-Dichlorobenzene	180	1,000
Ethylbenzene	3,867	4,000
Ethylene Dibromide	<SRL	200
Ethylene Dichloride	448	200
Ethylidene Dichloride	<SRL	500
Hexane	1,480	2,000
Isopropyl Alcohol	8,977	10,000
Methyl Alcohol	30,533	300,000
Methyl Ethyl Ketone	7,860	15,000
Methylene Chloride	<SRL	1,000
Methyl tert-Butyl Ether	<SRL	500
Perchloroethylene	238	1,000
Styrene	278	500

Compound	Result (ppb_v)	Concentration Limit* (ppb_v)
1,1,2,2-Tetrachloroethane	<SRL	200
Toluene	3,720	20,000
1,1,1-Trichloroethane	<SRL	200
Trichloroethylene	<SRL	500
Vinyl Chloride	<SRL	2,000
Vinylidene Chloride	<SRL	500
Xylenes	8,463	20,000

ppb_v = parts per billion by volume
<SRL = less than the sample reporting limit

Per the Compliance Agreement, quarterly samples were collected and analyzed for ethylbenzene and 1,4-Dichlorobenzene on November 12, 2021 and March 4, 2022 at the Flare and the Engine Inlet (pre-treatment). Laboratory analyses were performed by ALS Environmental (ALS). Results from this sampling are presented in Table 2-15 below.

Table 2-15 Toxic Air Contaminants Sampling

Species	4th Quarter 2021 Flare (ppb_v)	4th Quarter 2021 Engine Inlet (ppb_v)	1st Quarter 2022 Flare (ppb_v)	1st Quarter 2022 Engine Inlet (ppb_v)	Limit (ppb_v)
Ethylbenzene	610	1,400	1,400	1,600	4,000
1,4-Dichlorobenzene	42	120	98	110	1,000

GROUND LEVEL H_2S MONITORING

RLI began conducting fenceline monitoring for ground level H_2S concentrations in accordance with the May 2011 Proposed Hydrogen Sulfide Monitoring Plan in November 2016. Monitoring was conducted on the following days:

- November 11, 2021
- December 23, 2021
- January 21, 2022
- February 18, 2022
- March 18, 2022
- April 21, 2022

There were no H_2S concentrations observed above 30 ppb averaged over 60 minutes or 60 ppb averaged over 3 minutes.

2.21 COMPLIANCE WITH TITLE V PERMIT CONDITION 22940 (S-56)

The permit for S-56 was surrendered to BAAQMD on October 8, 2020. The equipment is no longer on site.

2.22 COMPLIANCE WITH TITLE V PERMIT CONDITION 22941 (S-57)

The permit for S-57 was surrendered to BAAQMD on October 8, 2020. The equipment is no longer on site.

2.23 COMPLIANCE WITH TITLE V PERMIT CONDITION 23052 (S-58)

Pursuant to Permit Condition 23052 Part 1, the total leachate influent rate to the Aerated Leachate Pond (S-58), excluding non-contact storm runoff, did not exceed 39.42 million gallons during any consecutive 12-month period. Table 2-16 displays the leachate flow information for S-58.

Table 2-16 Leachate Flow Information for S-58

Month	Total Leachate Influent Rate to S-58 (gallons)	Total Rolling 12-Month Flow Rate to S-58 (millions of gallons)
November 2021	1,683,300	11,880,840
December 2021	2,432,640	13,430,200
January 2022	2,856,180	15,269,160
February 2022	1,962,040	16,177,780
March 2022	1,288,720	16,536,160
April 2022	1,252,520	17,021,240

As shown in Table 2-17, the average concentration of precursor organic compounds (POCs) in the leachate influent to S-58 did not exceed the limits specified by Title V Permit Condition Number 23052 Parts 2 and 3:

Table 2-17 POC Concentrations for S-58

Sample Date	Benzene (ppb)	1,4-Dichlorobenzene (ppb)	Vinyl Chloride (ppb)	Total POC Concentration (ppb)
June 9, 2021	6.0	5.1	ND<0.50	57.05
Limit	19	48	7	500

2.24 COMPLIANCE WITH TITLE V PERMIT CONDITION 24527 (S-61 AND S-62)

The S-61 Portable Diesel Engine for Waste Tipper and S-62 Portable Diesel Engine for Power Screens operated less than 4,992 hours combined during any 12-month period ending in the November 1, 2021 to April 30, 2022 reporting period. Table 2-18 displays runtime hours for S-61 and S-62 during the reporting period.

Table 2-18 S-61 and S-62 Portable Diesel Engines

Month	S-61 Total Runtime (Hours)	S-62 Total Runtime (Hours)	Combined Rolling 12-Month Total (Hours)
November 2021	0	0	0
December 2021	0	0	0
January 2022	0	0	0
February 2022	0	0	0
March 2022	0	0	0
April 2022	0	0	0

2.25 COMPLIANCE WITH TITLE V PERMIT CONDITION 25634

Permit Condition 25634 requires the calculation of monthly LFG Input to all LFG-Fired Combustion Equipment and calculation of monthly emissions of CO and SO_2. The calculations are summarized on a quarterly basis to show compliance with rolling 4-quarter limits. These calculations are summarized below. Complete calculations are presented in Appendix P.

Table 2-19 Rolling 4-Quarter LFG Input and CO and SO_2 Emissions

		Rolling 4-Quarter Totals		
Year	Quarter	LFG Input (MMscf)	CO Emissions (tons)	SO_2 Emissions (tons)
2021	2	1,127	27.22	46.53
2021	3	1,086	25.71	40.50
2021	4	1,093	22.61	36.65
2022	1	1,102	19.54	32.31
Limits		2,625	237.5	99

3 PERFORMANCE TEST REPORT

In accordance with BAAQMD Regulation 8-34-413 and 40 CFR §60.757(g) in NSPS, a Performance Test Report is required to be submitted from subject facilities containing performance and monitoring data for the operation of the GCCS. The operational records listed in Table 3-1 have been reviewed, summarized, and are included herein.

Table 3-1 Performance Test Requirements

Rule	Requirement	Location in Report
8-34-412, §60.8, §60.752(b)(2)(iii)(B), §60.754(d)	Compliance Demonstration Test	Section 3.1,
§60.757(g)(1)	A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for future collection system expansion.	Section 3.2, Appendix A
§60.757(g)(2)	The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based.	Section 3.3
§60.757(g)(3)	The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material.	Section 3.4
§60.757(g)(4)	The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area.	Section 3.5
§60.757(g)(5)	The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill.	Section 3.6
§60.757(g)(6)	The provisions for the control of off-site migration.	Section 3.7

3.1 SOURCE TEST RESULTS (BAAQMD 8-34-412)

3.1.1 FLARE (A-51) SOURCE TEST RESULTS

The 2022 Annual Compliance Demonstration Test (Source Test) was conducted on January 12, 2022. The Test Report was submitted to BAAQMD on March 11, 2022. A summary of the source test report is presented in Appendix N.

The results for the A-51 Flare indicated that the flare is in compliance with BAAQMD Regulation 8-34-301.3 and Title V Condition Number 19867, Parts 23 and 26. Inlet LFG samples were collected from the discharge side of the blower during the test to show compliance with the NMOC limits from Title V Permit Condition Number 18.a. Table 3-2 below shows the results of the source test, averaged from three test runs.

Table 3-2 A-51 Flare Source Test Results

Condition	Flare (A-51) Average Results	Permit Limit	8-34-301.3 limit	Compliance Status
NO_x (ppm_v @ 15% O_2)	12.4	15	---	In Compliance
CO (ppm_v @ 15% O_2)	33.7	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	1.8	---	30	In Compliance
NMOC Inlet (ppm_v)	232	360	---	In Compliance

3.1.2 FLARE (A-60) SOURCE TEST RESULTS

The A-60 Flare has two operating Zones (A and B). Title V Permit Condition 19867, Part 30 states that source testing can be conducted while the flare is operating in either zone, provided that each operating zone is tested at least once every five years.

The 2021 Source Test was performed on by Blue Sky Environmental, LLC on July 12, 2021 with the flare operating in Zone A. The Test Report was submitted to BAAQMD on September 10, 2021. A summary of the report is presented in Appendix N.

The results for Zone A of the A-60 Flare indicate that the flare is in compliance with BAAQMD Regulation 8-34-301.3 and Title V Condition Number 19867, Parts 23 and 26. Inlet LFG samples were collected from the discharge side of the blower during the test to show compliance with the NMOC limits from Title V Permit Condition Number 18.a. Table 3-3 below shows the results of the source test, averaged from three test runs.

Table 3-3 A-60 Zone A Flare Source Test Results

Condition	Flare (A-60 Zone A) Average Results	Permit Limit	8-34-301.3 limit	Compliance Status
NO_x (ppm_v @ 15% O_2)	11.7	15	---	In Compliance
CO (ppm_v @ 15% O_2)	38.5	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	3.6	---	30	In Compliance
NMOC Inlet (ppm_v)	120	360	---	In Compliance

The 2018 Source Test was performed on by Blue Sky Environmental, LLC on July 17, 2018 with the flare operating in Zone B. The Test Report was submitted to BAAQMD on September 14, 2018 and was included in the November 2018 semi-annual report. The revised Test Report was submitted on March 15, 2019 and was included in the May 2019 semi-annual report.

The results for Zone B of the A-60 Flare indicate that the flare is in compliance with BAAQMD Regulation 8-34-301.3 and Title V Condition Number 19867, Parts 23 and 26. Inlet LFG samples were collected from the discharge side of the blower during the test to show compliance with the NMOC limits from Title V Permit Condition Number 18.a. Table 3-4 below shows the results of the source test.

Table 3-4 A-60 Zone B Flare Source Test Results

Condition	Flare (A-60 Zone B) Average Results	Permit Limit	8-34-301.3 limit	Compliance Status
NO_x (ppm_v @ 15% O_2)	12.6	15	---	In Compliance
CO (ppm_v @ 15% O_2)	78.2	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	<9.1	---	30	In Compliance
NMOC Inlet (ppm_v)	233	360		In Compliance

3.3 COMPLIANCE WITH §60.757(G)(1)

"A diagram of the collection system showing collection system positioning including wells, horizontal collectors…"

A map of the LFG collection system showing the positioning of all vertical wells, horizontal collectors, and other LFG extraction devices is included in Appendix A.

3.4 COMPLIANCE WITH §60.757(g)(2)

"The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based."

RLI's GCCS has historically provided LFG wells and collectors spaced in accordance with standard industry practices. The A-51 and A-60 flares, LFG extraction wells, and piping are more than adequate to move the current LFG flow rate. RLI will continue to add additional LFG control capacity as necessary with the approval of the BAAQMD. The installed collector density appears more than adequate for controlling surface emissions, based on continuous compliance and operational experience.

The total capacity of the LFG mover equipment was designed and will be designed to meet the current United States Environmental Protection Agency (EPA) Model AP-42 projections of LFG generation and the historic LFG extraction rates determined to be continuously available from the facility.

DEMONSTRATING COMPLIANCE WITH §60.757(g)(2)

"The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based."

Compliance with 40 CFR §60.757(g)(2) is maintained by performing quarterly SEM. Refer to Section 2.6, Surface Emissions Monitoring for information pertaining to the SEM results. These results show that the GCCS has sufficient coverage over the waste footprint. The current flaring system has the capacity to destroy more than twice the actual recovery. Well monitoring data shows that adequate vacuum is available at all points in the wellfield, demonstrating that the piping network is sufficient to handle all extracted LFG.

3.6 COMPLIANCE WITH §60.757(g)(3)

"The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material."

No segregated areas or accumulations of asbestos material are documented for the site in the GCCS Design Plan. Therefore, 40 CFR §60.757(g)(3) is not applicable.

3.7 COMPLIANCE WITH §60.757(g)(4)

"The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area."

No non-productive areas have been excluded from the coverage of the GCCS. Therefore, 40 CFR §60.757(g)(4) is not applicable.

3.8 COMPLIANCE WITH §60.757(g)(5)

"The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill."

The present LFG mover equipment capacity is adequate to move the current LFG flow rate. RLI will continue to add additional LFG control capacity as necessary with the approval of the BAAQMD.

Zero (0) wells were added to and zero (0) wells were removed to the collection system during the reporting period (November 1, 2021 to April 30, 2022).

As of the end of this reporting period, 130 total collectors (123 vertical wells and 7 horizontal collectors) were in service at RLI.

3.9 COMPLIANCE WITH §60.757(g)(6)

"The provisions for the control of off-site migration."

RLI is a diked area that is completely surrounded by permanent surface water features (San Antonio Creek, Hans Slough, West Slough, and South Slough) which present a barrier to gas migration. The waste footprint is also surrounded by an engineered leachate collection trench that provides a further barrier to LFG migration. Based on the location of RLI and on existing LFG monitoring data, the existing GCCS has been adequate in preventing subsurface lateral migration of LFG to off-site locations.

DEMONSTRATING COMPLIANCE WITH §60.757(g)(6)

"The provisions for the control of off-site migration."

The landfill operator will continue surface monitoring in accordance with the approved monitoring plans. If the GCCS at RLI does not meet the measures of performance set forth in the NSPS/Emissions Guidelines (EG), the GCCS will be adjusted or modified in accordance with the NSPS/EG requirements.

3.10 COMPLIANCE AGREEMENT SUMMARY

In response to increased concentrations of H_2S, 1,4-dichlorobenzene and ethylbenzene observed both during routine sampling events and the 2016 Source Test. RLI entered into a Compliance Agreement with BAAQMD on November 22, 2016. The agreement includes enhanced monitoring and reporting activities for RLI:

- The frequency for H_2S monitoring using Draeger/RAE tubes was increased from weekly to twice per week.

- Monthly fenceline monitoring for ground-level H_2S is now required.

- The frequency for TO-15 sampling for 1,4-dichlorobenzene and ethylbenzene was increased to quarterly.

- The frequency for instantaneous SEM was increased from quarterly to bi-monthly.

Reports summarizing this monitoring are required to be submitted to BAAQMD by the 20^{th} day of each month.

All terms of the Agreement were complied with during the reporting period. The monthly compliance reports were submitted to BAAQMD on the following days:

- December 8, 2021
- January 6, 2022
- February 3, 2022
- March 8, 2022
- April 13, 2022
- May 5, 2022

4 START-UP, SHUTDOWN, MALFUNCTION REPORT

Start-up, Shutdown, Malfunction (SSM) Report for the Collection and Control Systems at the Redwood Landfill

The NESHAP contained in 40 CFR Part 63, AAAA for MSW landfills to control hazardous air pollutants include the regulatory requirements for submittal of a semi-annual report (under 40 CFR §63.10(d)(5) of the general provisions) if an SSM event occurred during the reporting period. The reports required by 40 CFR §63.1980(a) of the NESHAP and §60.757(f) of the NSPS summarize the GCCS exceedances. These two semi-annual reports contain similar information and have been combined as allowed by 40 CFR §63.10(d)(5)(i) of the General Provisions.

NESHAP 40 CFR Part 63, AAAA became effective on January 16, 2004. SSM events that occurred during the semi-annual reporting period (November 1, 2021 to April 30, 2022) are noted in this section and included in Appendix B. The following information is included as required:

- During the reporting period, 4 A-51 Flare SSM events, 18 A-60 Flare Zone A SSM events, and 1 A-60 Flare Zone B SSM events occurred. The time, duration, and cause of each event are included in Appendix B, Flare and Engine SSM Logs.

- During the reporting period, 15 wellfield SSM events occurred. The time and duration of these events are included in Appendix D, Wellfield SSM Log.

- During the reporting period, 50 S-64 Engine (#1) SSM events, 50 S-65 Engine (#2) SSM events occurred. The time, duration, and cause of each event are included in Appendix B, Flare & Engine SSM Logs

- During the reporting period, 0 monitoring/recorder equipment SSM event occurred.

- In all 138 flare, wellfield, and engine SSM events, automatic systems and operator actions were consistent with the standard operating procedures contained in the SSM Plan.

- Revisions of the SSM Plan to correct deficiencies in the landfill operations or procedures were neither required nor prepared (§63.6(e)(3)(viii)).

I certify the following:

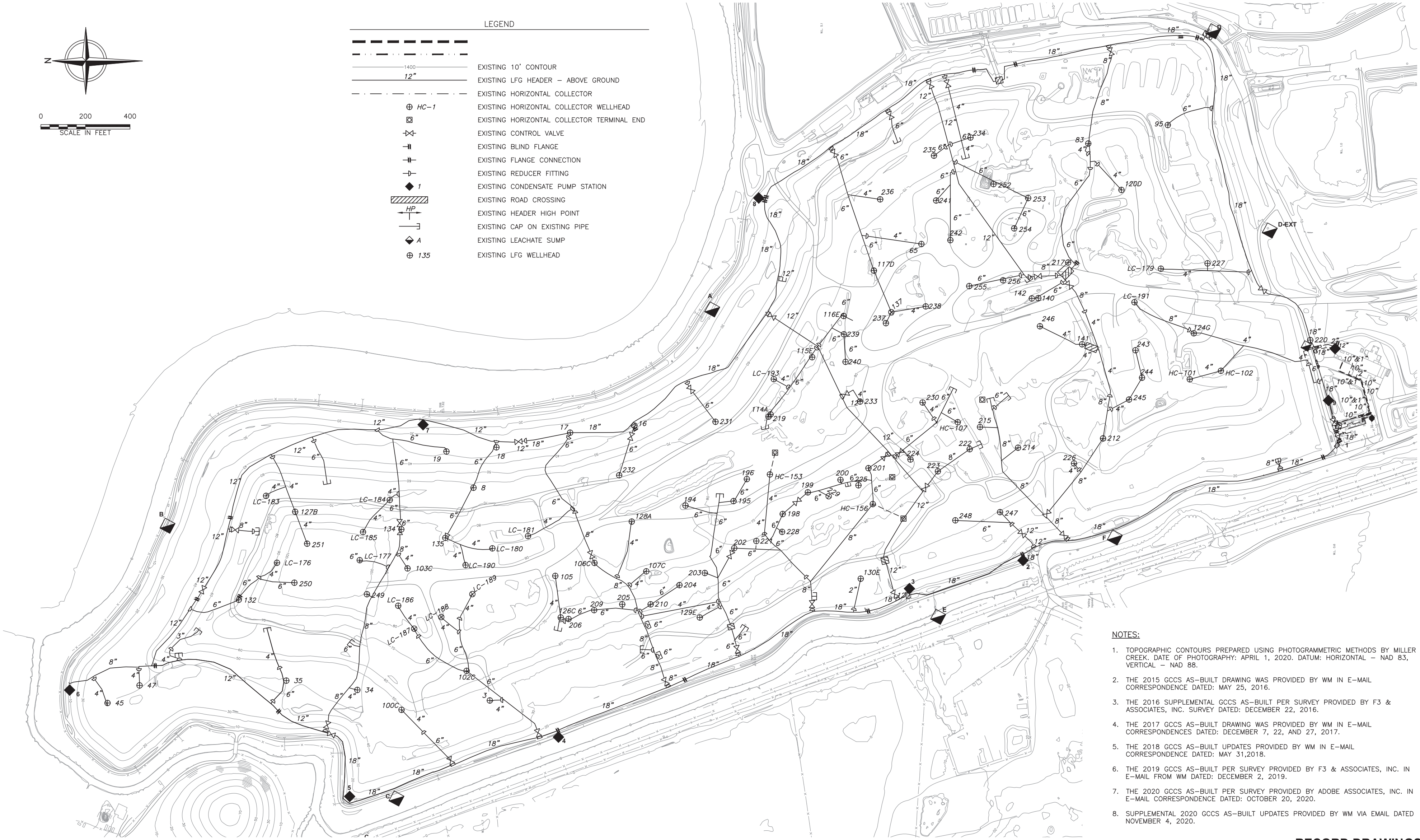
> ***Based on information and belief formed after reasonable inquiry, information on the startup, shutdown, malfunction forms, all accompanying reports, and other required certifications are true, accurate, and complete.***

Signature of Responsible Official — **May 27, 2022** (**Date**)

Ramin Khany
Name of Responsible Official

APPENDIX A

SITE MAP



NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK. DATE OF PHOTOGRAPHY: APRIL 1, 2020. DATUM: HORIZONTAL – NAD 83, VERTICAL – NAD 88.
2. THE 2015 GCCS AS-BUILT DRAWING WAS PROVIDED BY WM IN E-MAIL CORRESPONDENCE DATED: MAY 25, 2016.
3. THE 2016 SUPPLEMENTAL GCCS AS-BUILT PER SURVEY PROVIDED BY F3 & ASSOCIATES, INC. SURVEY DATED: DECEMBER 22, 2016.
4. THE 2017 GCCS AS-BUILT DRAWING WAS PROVIDED BY WM IN E-MAIL CORRESPONDENCES DATED: DECEMBER 7, 22, AND 27, 2017.
5. THE 2018 GCCS AS-BUILT UPDATES PROVIDED BY WM IN E-MAIL CORRESPONDENCE DATED: MAY 31,2018.
6. THE 2019 GCCS AS-BUILT PER SURVEY PROVIDED BY F3 & ASSOCIATES, INC. IN E-MAIL FROM WM DATED: DECEMBER 2, 2019.
7. THE 2020 GCCS AS-BUILT PER SURVEY PROVIDED BY ADOBE ASSOCIATES, INC. IN E-MAIL CORRESPONDENCE DATED: OCTOBER 20, 2020.
8. SUPPLEMENTAL 2020 GCCS AS-BUILT UPDATES PROVIDED BY WM VIA EMAIL DATED NOVEMBER 4, 2020.

RECORD DRAWINGS

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE 11/20/20		DRAWN BY GVP / DESIGNED BY DHK			CHECKED BY AMN / APPROVED BY HLV	

TETRA TECH

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

GCCS RECORD LAYOUT

AS-BUILT SITE PLAN

SHEET NO. 1

PROJECT NO. 200129

File: X:\PROJECTS\REDWOOD\200129 – AS-BUILT UPDATE\Project Drawings\200129_REDWOOD_AS-BUILT_RECORD DRAWING.DWG Layout: S1 User: GERARDO.PAREDES Nov 20, 2020 – 3:00pm

APPENDIX B

FLARE (A-51 & A-60) SSM LOGS,
ENGINE (S-64 & S65) SSM LOGS,
AND GCCS DOWNTIME SUMMARY

REDWOOD LANDFILL, INC.

A-51 CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
			1/14/21 12:08	1/14/21 12:10	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
1	x Shutdown	A-51 Flare				8518.27	A51 Source Testing on January 14, 2021. After test, operate system with A60 only.	116: Well Raising	Automatic (Go to 9)		x No	No		Mike Chan	1/4/2022
	x Startup		1/4/22 10:24	1/4/22 10:26	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			1/4/22 10:26	1/4/22 10:28	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
2	x Shutdown	A-51 Flare				164.90	Manual Shutdown for flare inspection/maintenance. Operate system with A60 only.	116: Well Raising	Automatic (Go to 9)		x No	No		Mike Chan	1/11/2022
	x Startup		1/11/22 7:20	1/11/22 7:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			1/11/22 11:40	1/11/22 11:42	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
3	x Shutdown	A-51 Flare				19.37	After A51 maintenance, operate system with A60 only. A51 Source Test 1/12/22	116: Well Raising	Automatic (Go to 9)		x No	No		Mike Chan	1/12/2022
	x Startup		1/12/22 7:02	1/12/22 7:04	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			1/12/22 15:44	1/12/22 15:46	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
4	x Shutdown	A-51 Flare				2600.27	A51 Source Testing January 12, 2022. After test, operate system with A60 only.	116: Well Raising	Automatic (Go to 9)		x No	No		Mike Chan	5/1/2022
	Startup		A-51 shut down as of May 1, 2022					117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			

REDWOOD LANDFILL, INC.

A-60 ZONE A CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event		Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation		(6) Type of Event		(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)		(9) Did Event Cause Any Emission Limit Exceedance?		(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1			A-60 Zone A	11/15/21 12:20	11/15/21 12:22	0.03	1.17	Manual Shutdown for flare inspection/maintenance	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	11/15/2021
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		11/15/21 13:30	11/15/21 13:32	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
2			A-60 Zone A	12/15/21 0:30	12/15/21 0:32	0.03	0.13	Varying flow/temperature alarm shutdown. Engine Plant shutdown.	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	12/15/2021
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		12/15/21 0:38	12/15/21 0:40	0.03				117: Gas Collection		Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities	x	Automatic (Go to 9)			No	x	No			
3			A-60 Zone A	1/4/22 10:20	1/4/22 10:22	0.03	0.30	Manual Shutdown for flare inspection/maintenance	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/4/2022
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/4/22 10:38	1/4/22 10:40	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
4			A-60 Zone A	1/10/22 16:18	1/10/22 16:20	0.03	19.77	Varying flow/temperature alarm shutdown. Engine Plant Starting up. Sump pump maintenance	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/11/2022
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		1/11/22 12:04	1/11/22 12:06	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
5			A-60 Zone A	1/11/22 12:26	1/11/22 12:28	0.03	0.23	Sump pump maintenance	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/11/2022
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/11/22 12:40	1/11/22 12:42	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
6			A-60 Zone A	1/11/22 14:40	1/11/22 14:42	0.03	0.10	Sump pump maintenance	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/11/2022
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/11/22 14:46	1/11/22 14:48	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
7			A-60 Zone A	1/11/22 16:30	1/11/22 16:32	0.03	0.73	Sump pump maintenance	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/11/2022
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/11/22 17:14	1/11/22 17:16	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
8			A-60 Zone A	1/12/22 6:58	1/12/22 7:00	0.03	8.87	Shutdown for A51 source testing	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/12/2022
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/12/22 15:50	1/12/22 15:52	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
9			A-60 Zone A	1/13/22 8:44	1/13/22 8:46	0.03	0.20	Sump pump maintenance	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/13/2022
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/13/22 8:56	1/13/22 8:58	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
10			A-60 Zone A	1/13/22 9:40	1/13/22 9:42	0.03	0.23	Sump pump maintenance	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	1/13/2022
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/13/22 9:54	1/13/22 9:56	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
11			A-60 Zone A	2/10/22 10:24	2/10/22 10:26	0.03	0.10	Varying flow/temperature alarm shutdown.	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	2/10/2022
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		2/10/22 10:30	2/10/22 10:32	0.03				117: Gas Collection		Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities	x	Automatic (Go to 9)			No	x	No			
12			A-60 Zone A	3/7/22 4:44	3/7/22 4:46	0.03	0.10	Varying flow/temperature alarm shutdown.	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		Mike Chan	3/7/2022
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		3/7/22 4:50	3/7/22 4:52	0.03				117: Gas Collection		Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities	x	Automatic (Go to 9)			No	x	No			

REDWOOD LANDFILL, INC.

A-60 ZONE A CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13		A-60 Zone A	3/12/22 11:48	3/12/22 11:50	0.03	1.67	Shutdown due to varying temperature. Thermocouple replaced and restarted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	3/12/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/12/22 13:28	3/12/22 13:30	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
14		A-60 Zone A	3/18/22 8:26	3/18/22 8:28	0.03	0.13	High temperature alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	3/18/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/18/22 8:34	3/18/22 8:36	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
15		A-60 Zone A	3/23/22 9:54	3/23/22 9:56	0.03	0.70	Manual shutdown to replace thermocouple and restarted.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	3/23/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/23/22 10:36	3/23/22 10:38	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
16		A-60 Zone A	4/13/22 12:58	4/13/22 13:00	0.03	0.10	Varying flow/temperature alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	4/13/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/13/22 13:04	4/13/22 13:06	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	x Automatic (Go to 9)		No	x No			
17		A-60 Zone A	4/13/22 13:48	4/13/22 13:50	0.03	0.07	Varying flow/temperature alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	4/13/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/13/22 13:52	4/13/22 13:54	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	x Automatic (Go to 9)		No	x No			
18		A-60 Zone A	4/13/22 14:22	4/13/22 14:24	0.03	0.23	Varying flow/temperature alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	4/13/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/13/22 14:36	4/13/22 14:38	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	x Automatic (Go to 9)		No	x No			

REDWOOD LANDFILL, INC.

A-60 ZONE B CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1	x Shutdown Startup Malfunction	A-60 Zone B	12/18/19 13:28	12/18/19 13:30	0.03	20746.53	Manual shutdown. Running on A60A only.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	5/1/2022
			Zone B shut down as of May 1, 2022												

(a) **STANDARD OPERATING PROCEDURES**

Shutdown

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present, contact manager immediately
2.	Initiate shutdown sequence below by one or more of the following (Note date and time in Section 1 of form above) a. Press Emergency Stop if necessary b. Close On/Off switch(es) or Push On/Off button(s) c. Close adjacent valves if necessary
3.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note date and time in Section 2 of form above)

Startup

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present
2.	Ensure that the system is ready to start by one of the following: a. Valves are in correct position b. Levels, pressures, and temperatures are within normal starting range c. Alarms are cleared d. Power is on and available to control panel and ready to energized equipment. e. Emergency stop is de-energized
3.	Initiate start sequence (Note time and date in section 1 of form above)
4.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note time and date in Section 2 of form above)

Malfunction

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	PROCEDURE NO. -TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioratior -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Loss of power -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	1. Repair breakages in extraction piping 2. Clean flame arrestor 3. Repair blockages in extraction piping 4. Verify automatic valve operation, compressed air/nitrogen supply 5. Notify power utility, if appropriate 6. Provide/utilize auxiliary power source, if necessar 7. Repair Settlement in Collection Piping 8. Repair Blower 9. Activate back-up blower, if available 10. Clean knock-up pot/demister 11. Drain knock-out pot
Extraction Wells and Collection Piping	Conduits for extractions and movement of LFG flow	Collection well and pipe failures	-Break/crack in header or lateral piping -Leaks at wellheads, valves, flanges, Test ports, seals, couplings, etc. -Collection piping blockages -Problems due to settlement (e.g. pipe separation, deformation, development of low points	12. Repair leaks or breaks in lines or wellheads 13. Follow procedures for loss of LFG flow/blower malfunction 14. Repair blockages in collection piping 15. Repair settlement in collection piping 16. Re-install, repair, or replace piping
Blower or Other Gas Mover Equipment And Control Device	Collection and control of LFG	Loss of electrical power	- Force majeure/Act of God (e.g., lightning, flood, earthquake, etc.) -Area-wide or local blackout or brown-ou -Interruption in service (e.g. blown service fuse -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	17. Check/reset breaker 18. Check/repair electrical panel components 19. Check/repair transformer 20. Check/repair motor starter 21. Check/repair electrical line 22. Test amperage to various equipment 23. Contact electricity supplier 24. Contact/contract electrician 25.Provide auxiliary power (if necessary
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature -monitoring equipmen -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	26. Check/repair temperature monitoring equipmen 27. Check/repair thermocouple and/or wiring 28. Follow procedures for loss of flow/blower malfunction 29. Check/adjust louvers 30. Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipmen	31. Check/repair temperature monitoring equipmen 32. Check/repair thermocouple 33. Follow procedures for loss of flow/blower malfunction 34. Check/adjust air/fuel controls 35. Check/adjust/repair flame sensor 36. Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	37. Check/adjust/repair flow measuring device and/or wiring 38. Check/repair chart recorder 39. Replace paper in chart recorder
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	40. Check/adjust/repair thermocouple 41. Check/adjust/repair controller and/or wiring 42. Check/adjust/repair electrical panel components 43. Check/repair chart recorder 44. Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	45. Site-specific diagnosis procedures 46. Site-specific responses actions based on diagnosis 47. Open manual louvers 48. Clean pitot orifice 49. Clean/drain flame arrestor 50. Refill propane supply 51. Check/repair pilot sparking system

(b) For each permit limit exceedance complete an "SSM Plan Departure Form".

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		Engine #1 (S-64)	11/11/21 22:40	11/11/21 22:42	0.03	6.75	Turbo inlet pressure sensor voltage high	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/12/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/12/21 5:25	11/12/21 5:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		Engine #1 (S-64)	11/12/21 13:30	11/12/21 13:32	0.03	2.83	Exhaust temp deviating low cyl. 14	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/12/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/12/21 16:20	11/12/21 16:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		Engine #1 (S-64)	11/12/21 16:40	11/12/21 16:42	0.03	0.25	High oil to coolant temp differential	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/12/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/12/21 16:55	11/12/21 16:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		Engine #1 (S-64)	11/22/21 18:35	11/22/21 18:37	0.03	3.25	Detonation Cyl. 15	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/22/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/22/21 21:50	11/22/21 21:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		Engine #1 (S-64)	11/30/21 11:30	11/30/21 11:32	0.03	0.42	oil change	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/30/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/30/21 11:55	11/30/21 11:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
6		Engine #1 (S-64)	11/30/21 12:05	11/30/21 12:07	0.03	1.67	Cyl. 4 exhaust temp deviating low	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/30/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/30/21 13:45	11/30/21 13:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
7		Engine #1 (S-64)	11/30/21 14:55	11/30/21 14:57	0.03	0.17	High oil to coolant temp differential	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/30/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/30/21 15:05	11/30/21 15:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
8		Engine #1 (S-64)	12/1/21 10:30	12/1/21 10:32	0.03	2.67	Valve lash service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/1/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/1/21 13:10	12/1/21 13:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
9		Engine #1 (S-64)	12/3/21 12:30	12/3/21 12:32	0.03	0.50	High exhaust temp Cylinder 4	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/3/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/3/21 13:00	12/3/21 13:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
10		Engine #1 (S-64)	12/6/21 11:35	12/6/21 11:37	0.03	0.67	Oil Change	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/6/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/6/21 12:15	12/6/21 12:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
11		Engine #1 (S-64)	12/15/21 0:25	12/15/21 0:27	0.03	4.92	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/15/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/15/21 5:20	12/15/21 5:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
12		Engine #1 (S-64)	1/4/22 20:20	1/4/22 20:22	0.03	39.00	Main Harness Failure	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/6/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/6/22 11:20	1/6/22 11:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13	x Shutdown	Engine #1 (S-64)	1/6/22 11:55	1/6/22 11:57	0.03	0.17	Oil filter pressure differential high	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/6/2022
	x Startup							116: Well Raising	x Automatic (Go to 9)		No	x No			
	Malfunction		1/6/22 12:05	1/6/22 12:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
14	x Shutdown	Engine #1 (S-64)	1/6/22 12:50	1/6/22 12:52	0.03	0.17	Turbo bypass abnormal update rate	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/6/2022
	x Startup							116: Well Raising	x Automatic (Go to 9)		No	x No			
	Malfunction		1/6/22 13:00	1/6/22 13:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
15	x Shutdown	Engine #1 (S-64)	1/9/22 13:10	1/9/22 13:12	0.03	1.67	EEE high voltage maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/9/2022
	x Startup							116: Well Raising	Automatic (Go to 9)		x No	No			
	Malfunction		1/9/22 14:50	1/9/22 14:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
16	x Shutdown	Engine #1 (S-64)	1/9/22 19:10	1/9/22 19:12	0.03	1.08	Turbo bypass abnormal update rate	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/9/2022
	x Startup							116: Well Raising	x Automatic (Go to 9)		No	x No			
	Malfunction		1/9/22 20:15	1/9/22 20:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
17	x Shutdown	Engine #1 (S-64)	1/10/22 7:45	1/10/22 7:47	0.03	8.17	EEE high voltage maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/10/2022
	x Startup							116: Well Raising	Automatic (Go to 9)		x No	No			
	Malfunction		1/10/22 15:55	1/10/22 15:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
18	x Shutdown	Engine #1 (S-64)	1/11/22 3:35	1/11/22 3:37	0.03	6.08	surge from wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/11/2022
	x Startup							116: Well Raising	x Automatic (Go to 9)		No	x No			
	Malfunction		1/11/22 9:40	1/11/22 9:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
19	x Shutdown	Engine #1 (S-64)	1/11/22 14:40	1/11/22 14:42	0.03	1.67	High O2, low methane from Wellfield	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/11/2022
	x Startup							116: Well Raising	Automatic (Go to 9)		x No	No			
	Malfunction		1/11/22 16:20	1/11/22 16:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
20	x Shutdown	Engine #1 (S-64)	1/15/22 14:55	1/15/22 14:57	0.03	9.33	Power surged caused blown fuse to communications module	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/16/2022
	x Startup							116: Well Raising	Automatic (Go to 9)		x No	No			
	Malfunction		1/16/22 0:15	1/16/22 0:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
21	x Shutdown	Engine #1 (S-64)	1/16/22 13:20	1/16/22 13:22	0.03	0.50	Replace fuses to comm. Module	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/16/2022
	x Startup							116: Well Raising	Automatic (Go to 9)		x No	No			
	Malfunction		1/16/22 13:50	1/16/22 13:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
22	x Shutdown	Engine #1 (S-64)	1/21/22 20:55	1/21/22 20:57	0.03	0.83	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/21/2022
	x Startup							116: Well Raising	x Automatic (Go to 9)		No	x No			
	Malfunction		1/21/22 21:45	1/21/22 21:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
23	x Shutdown	Engine #1 (S-64)	1/26/22 11:10	1/26/22 11:12	0.03	3.58	Valve lash, recession, spark plugs, orings	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/26/2022
	x Startup							116: Well Raising	Automatic (Go to 9)		x No	No			
	Malfunction		1/26/22 14:45	1/26/22 14:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			
24	x Shutdown	Engine #1 (S-64)	1/28/22 10:25	1/28/22 10:27	0.03	2.75	Valve lash, recession, spark plugs, orings	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/28/2022
	x Startup							116: Well Raising	Automatic (Go to 9)		x No	No			
	Malfunction		1/28/22 13:10	1/28/22 13:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
								118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
			1/29/22 14:00	1/29/22 14:02	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
25	x Shutdown	Engine #1 (S-64)				0.67	Broken wire on oil level sensor	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	1/29/2022
	x Startup		1/29/22 14:40	1/29/22 14:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			1/30/22 8:45	1/30/22 8:47	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
26	x Shutdown	Engine #1 (S-64)				3.92	Engine Overspeed	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	1/30/2022
	x Startup		1/30/22 12:40	1/30/22 12:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			1/31/22 22:45	1/31/22 22:47	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
27	x Shutdown	Engine #1 (S-64)				0.23	Losss of Vacuum from Wellfield	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	1/31/2022
	x Startup		1/31/22 22:59	1/31/22 23:01	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/1/22 0:00	2/1/22 0:02	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
28	x Shutdown	Engine #1 (S-64)				2.67	Losss of Vacuum from Wellfield	116: Well Raising	Automatic (Go to 9)		x No	No		P Madison	2/1/2022
	x Startup		2/1/22 2:40	2/1/22 2:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/2/22 4:35	2/2/22 4:37	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
29	x Shutdown	Engine #1 (S-64)				4.50	Losss of Vacuum from Wellfield	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	2/2/2022
	x Startup		2/2/22 9:05	2/2/22 9:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/7/22 9:35	2/7/22 9:37	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
30	x Shutdown	Engine #1 (S-64)				0.67	Surge from Wellfield	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	2/7/2022
	x Startup		2/7/22 10:15	2/7/22 10:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/7/22 11:10	2/7/22 11:12	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
31	x Shutdown	Engine #1 (S-64)				0.25	Swingiung KW	116: Well Raising	Automatic (Go to 9)		x No	No		P Madison	2/7/2022
	x Startup		2/7/22 11:25	2/7/22 11:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/8/22 18:55	2/8/22 18:57	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
32	x Shutdown	Engine #1 (S-64)				2.92	Vibration Switch fault	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	2/8/2022
	x Startup		2/8/22 21:50	2/8/22 21:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/9/22 6:50	2/9/22 6:52	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
33	x Shutdown	Engine #1 (S-64)				2.25	Detonation	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	2/9/2022
	x Startup		2/9/22 9:05	2/9/22 9:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/9/22 12:35	2/9/22 12:37	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
34	x Shutdown	Engine #1 (S-64)				3.33	Replace Vibration Switch	116: Well Raising	Automatic (Go to 9)		x No	No		P Madison	2/9/2022
	x Startup		2/9/22 15:55	2/9/22 15:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/10/22 10:25	2/10/22 10:27	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
35	x Shutdown	Engine #1 (S-64)				0.92	Surge from Wellfield	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	2/10/2022
	x Startup		2/10/22 11:20	2/10/22 11:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
			2/10/22 14:20	2/10/22 14:22	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)			
36	x Shutdown	Engine #1 (S-64)				17.83	Surge from Wellfield	116: Well Raising	x Automatic (Go to 9)		No	x No		P Madison	2/11/2022
	x Startup		2/11/22 8:10	2/11/22 8:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
			2/11/22 8:20	2/11/22 8:22	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
37	x Shutdown	Engine #1 (S-64)				30.75	Replaced O-rings & clamp @ aftercooler pipe	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	2/12/2022
	x Startup		2/12/22 15:05	2/12/22 15:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			2/15/22 5:55	2/15/22 5:57	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
38	x Shutdown	Engine #1 (S-64)				3.17	Surge from Wellfield	116: Well Raising	x Automatic (Go to 9)	1 to 3	No	x No		P Madison	2/15/2022
	x Startup		2/15/22 9:05	2/15/22 9:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			2/17/22 15:45	2/17/22 15:47	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
39	x Shutdown	Engine #1 (S-64)				0.67	Oil & Filter Change	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	2/17/2022
	x Startup		2/17/22 16:25	2/17/22 16:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			2/17/22 19:35	2/17/22 19:37	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
40	x Shutdown	Engine #1 (S-64)				4.00	Surge from Wellfield	116: Well Raising	x Automatic (Go to 9)	1 to 3	No	x No		P Madison	2/17/2022
	x Startup		2/17/22 23:35	2/17/22 23:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			2/21/22 11:20	2/21/22 11:22	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
41	x Shutdown	Engine #1 (S-64)				0.25	Oil leak on rocker box cylinder 16	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	2/21/2022
	x Startup		2/21/22 11:35	2/21/22 11:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			3/6/22 2:45	3/6/22 2:47	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
42	x Shutdown	Engine #1 (S-64)				11.50	Engine maintenance	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	3/6/2022
	x Startup		3/6/22 14:15	3/6/22 14:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			3/8/22 14:15	3/8/22 14:17	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
43	x Shutdown	Engine #1 (S-64)				25.00	Engine maintenance	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	3/9/2022
	x Startup		3/9/22 15:15	3/9/22 15:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			3/10/22 1:30	3/10/22 1:32	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
44	x Shutdown	Engine #1 (S-64)				3.00	Engine maintenance	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	3/10/2022
	x Startup		3/10/22 4:30	3/10/22 4:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			3/14/22 11:45	3/14/22 11:47	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
45	x Shutdown	Engine #1 (S-64)				3.75	Engine maintenance	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	3/14/2022
	x Startup		3/14/22 15:30	3/14/22 15:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			3/16/22 17:30	3/16/22 17:32	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
46	x Shutdown	Engine #1 (S-64)				2.50	Engine maintenance	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	3/16/2022
	x Startup		3/16/22 20:00	3/16/22 20:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			3/24/22 9:30	3/24/22 9:32	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
47	x Shutdown	Engine #1 (S-64)				8.50	Engine maintenance	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	3/24/2022
	x Startup		3/24/22 18:00	3/24/22 18:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			
			3/25/22 13:15	3/25/22 13:17	0.03			x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
48	x Shutdown	Engine #1 (S-64)				0.75	Engine maintenance	116: Well Raising	Automatic (Go to 9)	1 to 3	x No	No		P Madison	3/25/2022
	x Startup		3/25/22 14:00	3/25/22 14:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)	1 to 4	x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
49		Engine #1 (S-64)	4/6/22 16:45	4/6/22 16:47	0.03	17.75	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/7/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/7/22 10:30	4/7/22 10:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
50		Engine #1 (S-64)	4/23/22 6:00	4/23/22 6:02	0.03	4.75	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/23/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/23/22 10:45	4/23/22 10:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		Engine #2 (S-65)	11/3/21 9:55	11/3/21 9:57	0.03	0.25	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/3/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/3/21 10:10	11/3/21 10:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		Engine #2 (S-65)	11/11/21 11:55	11/11/21 11:57	0.03	4.58	Valve lash adj. & spark plugs	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/11/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/11/21 16:30	11/11/21 16:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		Engine #2 (S-65)	11/11/21 23:35	11/11/21 23:37	0.03	5.08	Low exhaust temp	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/12/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/12/21 4:40	11/12/21 4:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		Engine #2 (S-65)	11/15/21 4:20	11/15/21 4:22	0.03	3.83	Engine overspeed	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/15/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/15/21 8:10	11/15/21 8:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		Engine #2 (S-65)	11/15/21 14:00	11/15/21 14:02	0.03	0.25	Surge from wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/15/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/15/21 14:15	11/15/21 14:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
6		Engine #2 (S-65)	11/30/21 10:50	11/30/21 10:52	0.03	0.50	Oil & Filter Change	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/30/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/30/21 11:20	11/30/21 11:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
7		Engine #2 (S-65)	12/15/21 0:30	12/15/21 0:32	0.03	4.92	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/15/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/15/21 5:25	12/15/21 5:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
8		Engine #2 (S-65)	1/5/22 10:20	1/5/22 10:22	0.03	0.58	Oil & filter change	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/5/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/5/22 10:55	1/5/22 10:57	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
9		Engine #2 (S-65)	1/9/22 8:40	1/9/22 8:42	0.03	3.17	EEE high Voltage maintenance	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/9/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/9/22 11:50	1/9/22 11:52	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
10		Engine #2 (S-65)	1/10/22 8:10	1/10/22 8:12	0.03	7.58	EEE high Voltage maintenance	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/10/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/10/22 15:45	1/10/22 15:47	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
11		Engine #2 (S-65)	1/11/22 6:40	1/11/22 6:42	0.03	2.75	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/11/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/11/22 9:25	1/11/22 9:27	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
12		Engine #2 (S-65)	1/11/22 14:40	1/11/22 14:42	0.03	0.25	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/11/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/11/22 14:55	1/11/22 14:57	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13		Engine #2 (S-65)	1/11/22 15:05	1/11/22 15:07	0.03	1.00	high o2 from wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/11/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/11/22 16:05	1/11/22 16:07	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
14		Engine #2 (S-65)	1/12/22 3:45	1/12/22 3:47	0.03	6.58	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/12/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/12/22 10:20	1/12/22 10:22	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
15		Engine #2 (S-65)	1/13/22 22:15	1/13/22 22:17	0.03	10.67	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/14/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/14/22 8:55	1/14/22 8:57	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
16		Engine #2 (S-65)	1/14/22 12:40	1/14/22 12:42	0.03	0.58	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/14/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		No	No			
	x Startup		1/14/22 13:15	1/14/22 13:17	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
17		Engine #2 (S-65)	1/15/22 14:55	1/15/22 14:57	0.03	9.03	Power surged caused blown fuse to communications module	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/15/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/15/22 23:57	1/15/22 23:59	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
18		Engine #2 (S-65)	1/16/22 13:20	1/16/22 13:22	0.03	0.30	Replace fuses	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/16/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/16/22 13:38	1/16/22 13:40	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
19		Engine #2 (S-65)	1/23/22 2:20	1/23/22 2:22	0.03	0.58	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/23/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/23/22 2:55	1/23/22 2:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
20		Engine #2 (S-65)	1/28/22 13:30	1/28/22 13:32	0.03	0.17	Turbo pressure voltage high	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/28/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/28/22 13:40	1/28/22 13:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
21		Engine #2 (S-65)	1/30/22 8:45	1/30/22 8:47	0.03	4.08	Engine Overspeed	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/30/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/30/22 12:50	1/30/22 12:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
22		Engine #2 (S-65)	1/30/22 23:25	1/30/22 23:27	0.03	10.58	Engine overspeed	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/31/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/31/22 10:00	1/31/22 10:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
23		Engine #2 (S-65)	1/31/22 22:45	1/31/22 22:47	0.03	1.23	Unstable throttle	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/31/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		x No	x No			
	x Startup		1/31/22 23:59	2/1/22 0:01	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
24		Engine #2 (S-65)	2/1/22 0:00	2/1/22 0:02	0.03	3.08	Low Vacuum	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/1/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/1/22 3:05	2/1/22 3:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
25		Engine #2 (S-65)	2/2/22 4:40	2/2/22 4:42	0.03	4.58	Low Vacuum	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/2/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/2/22 9:15	2/2/22 9:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
26		Engine #2 (S-65)	2/3/22 13:05	2/3/22 13:07	0.03	0.92	Low coolant temp	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/3/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/3/22 14:00	2/3/22 14:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
27		Engine #2 (S-65)	2/6/22 4:40	2/6/22 4:42	0.03	3.25	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/6/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/6/22 7:55	2/6/22 7:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
28		Engine #2 (S-65)	2/8/22 18:55	2/8/22 18:57	0.03	2.50	Vibration sensors failed	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/8/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/8/22 21:25	2/8/22 21:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
29		Engine #2 (S-65)	2/9/22 6:55	2/9/22 6:57	0.03	1.92	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/9/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/9/22 8:50	2/9/22 8:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
30		Engine #2 (S-65)	2/9/22 12:35	2/9/22 12:37	0.03	3.17	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/9/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/9/22 15:45	2/9/22 15:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
31		Engine #2 (S-65)	2/10/22 11:20	2/10/22 11:22	0.03	0.25	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/10/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/10/22 11:35	2/10/22 11:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
32		Engine #2 (S-65)	2/11/22 5:20	2/11/22 5:22	0.03	1.75	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/11/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/11/22 7:05	2/11/22 7:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
33		Engine #2 (S-65)	2/11/22 14:15	2/11/22 14:17	0.03	0.33	Surge from Wellfield	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/11/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/11/22 14:35	2/11/22 14:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
34		Engine #2 (S-65)	2/15/22 11:55	2/15/22 11:57	0.03	0.67	Oil & filter Change	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/15/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/15/22 12:35	2/15/22 12:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
35		Engine #2 (S-65)	2/17/22 10:45	2/17/22 10:47	0.03	4.42	Replaced detonation and ex. Temp harness	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/17/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/17/22 15:10	2/17/22 15:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
36		Engine #2 (S-65)	3/4/22 8:45	3/4/22 8:47	0.03	2.00	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/4/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/4/22 10:45	3/4/22 10:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
37		Engine #2 (S-65)	3/7/22 5:00	3/7/22 5:02	0.03	4.75	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/7/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/7/22 9:45	3/7/22 9:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
38		Engine #2 (S-65)	3/7/22 23:00	3/7/22 23:02	0.03	11.50	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/8/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/8/22 10:30	3/8/22 10:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
39		Engine #2 (S-65)	3/12/22 23:15	3/12/22 23:17	0.03	9.75	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/13/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/13/22 9:00	3/13/22 9:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
40		Engine #2 (S-65)	3/13/22 15:15	3/13/22 15:17	0.03	2.00	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/13/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/13/22 17:15	3/13/22 17:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
41		Engine #2 (S-65)	3/18/22 8:00	3/18/22 8:02	0.03	2.50	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/18/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/18/22 10:30	3/18/22 10:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
42		Engine #2 (S-65)	3/22/22 0:30	3/22/22 0:32	0.03	35.00	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/23/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/23/22 11:30	3/23/22 11:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
43		Engine #2 (S-65)	3/25/22 12:00	3/25/22 12:02	0.03	0.50	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/25/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/25/22 12:30	3/25/22 12:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
44		Engine #2 (S-65)	4/17/22 14:00	4/17/22 14:02	0.03	24.50	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/18/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/18/22 14:30	4/18/22 14:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
45		Engine #2 (S-65)	4/18/22 20:30	4/18/22 20:32	0.03	41.00	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/20/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/20/22 13:30	4/20/22 13:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
46		Engine #2 (S-65)	4/20/22 19:00	4/20/22 19:02	0.03	11.25	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/21/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/21/22 6:15	4/21/22 6:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
47		Engine #2 (S-65)	4/21/22 10:45	4/21/22 10:47	0.03	0.75	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/21/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/21/22 11:30	4/21/22 11:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
48		Engine #2 (S-65)	4/23/22 3:45	4/23/22 3:47	0.03	1.00	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/23/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/23/22 4:45	4/23/22 4:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
49		Engine #2 (S-65)	4/23/22 14:45	4/23/22 14:47	0.03	14.50	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/24/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/24/22 5:15	4/24/22 5:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
50		Engine #2 (S-65)	4/25/22 13:30	4/25/22 13:32	0.03	3.25	Engine maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Nielsen	4/25/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/25/22 16:45	4/25/22 16:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE TREATMENT SYSTEM (S-71) DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
No S-71 SSM events in November 2021															
No S-71 SSM events in December 2021															
1		Treatment System (S-71)	1/10/22 7:50	1/10/22 7:52	0.03	7.17	EEE maintenance	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/10/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/10/22 15:00	1/10/22 15:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		Treatment System (S-71)	1/15/22 15:00	1/15/22 15:02	0.03	8.98	Power surged caused blown fuse to communications module	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/15/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/15/22 23:59	1/16/22 0:01	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		Treatment System (S-71)	1/16/22 13:25	1/16/22 13:27	0.03	0.17	Replace fuses to comm module	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/16/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/16/22 13:35	1/16/22 13:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		Treatment System (S-71)	2/8/22 18:55	2/8/22 18:57	0.03	2.50	Vibration sensors failed	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/8/2022
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/8/22 21:25	2/8/22 21:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		Treatment System (S-71)	2/9/22 12:35	2/9/22 12:37	0.03	3.33	Replace vibration sensors	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/9/2022
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/9/22 15:55	2/9/22 15:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
No S-71 SSM events in March 2022															
No S-71 SSM events in April 2022															

Emission Control Devices
Gas Collection and Control System (GCCS) Downtime Summary

Redwood Landfill, Novato, CA GCCS DOWNTIME REPORT Period:		**November 1, 2021 to April 30, 2022**	
SHUTDOWN DATE/TIME	**START-UP DATE/TIME**	**TOTAL DOWNTIME (hours)**	**COMMENTS/ACTION TAKEN**
11/15/21 12:20	11/15/21 13:30	1.17	Manual Shutdown for flare inspection/maintenance
12/15/21 00:30	12/15/21 00:38	0.13	Varying flow/temperature alarm shutdown. Engine Plant shutdown.
01/04/22 10:20	01/04/22 10:38	0.30	Manual Shutdown for flare inspection/maintenance
01/10/22 16:18	01/11/22 12:04	19.77	Varying flow/temperature alarm shutdown. Engine Plant Starting up. Sump pump maintenance
01/11/22 12:26	01/11/22 12:40	0.23	Sump pump maintenance
01/11/22 14:40	01/11/22 14:46	0.10	Sump pump maintenance
01/11/22 16:30	01/11/22 17:14	0.73	Sump pump maintenance
01/12/22 06:58	01/12/22 07:02	0.07	A60 Shutdown for A51 source testing.
01/12/22 15:44	01/12/22 15:50	0.10	A51 shutdown after source testing. Run on A60 only
01/13/22 08:44	01/13/22 08:56	0.20	Sump pump maintenance
01/13/22 09:40	01/13/22 09:54	0.23	Sump pump maintenance
02/10/22 10:24	02/10/22 10:30	0.10	Varying flow/temperature alarm shutdown.
03/07/22 04:44	03/07/22 04:50	0.10	Varying flow/temperature alarm shutdown.
03/12/22 11:48	03/12/22 13:28	1.67	Shutdown due to varying temperature. Thermocouple replaced and restarted.
03/18/22 08:26	03/18/22 08:34	0.13	High temperature alarm shutdown.
03/23/22 09:54	03/23/22 10:36	0.70	Manual shutdown to replace thermocouple and restarted.
04/13/22 12:58	04/13/22 13:04	0.10	Varying flow/temperature alarm shutdown.
04/13/22 13:48	04/13/22 13:52	0.07	Varying flow/temperature alarm shutdown.
04/13/22 14:22	04/13/22 14:36	0.23	Varying flow/temperature alarm shutdown.

Combined Emission Control Devices	
Total 2021 Downtime:	**93.90**
November 1, 2021 through April 30, 2022 Downtime:	**26.13**
January 1, 2022 through April 30, 2022 Total Downtime:	**24.83**
Total 2022 Downtime:	**24.83**

APPENDIX C

CORRESPONDENCE   (NONE THIS PERIOD)

APPENDIX D

WELLFIELD SSM LOG

REDWOOD LANDFILL, INC.

COLLECTION SYSTEM DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1	x Shutdown x Startup Malfunction	RLI0128A	6/10/21 11:00	6/10/21 11:02	0.03	5,210.08	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	1/13/2022
			1/13/22 13:05	1/13/22 13:07	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
2	x Shutdown x Startup Malfunction	RLLC0181	6/14/21 11:00	6/14/21 11:02	0.03	3,414.33	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	11/3/2021
			11/3/21 17:20	11/3/21 17:22	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
3	x Shutdown x Startup Malfunction	RLLC0194	9/29/21 16:50	9/29/21 16:52	0.03	2,540.25	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	1/13/2022
			1/13/22 13:05	1/13/22 13:07	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
4	x Shutdown x Startup Malfunction	RLLC0195	10/6/21 16:30	10/6/21 16:32	0.03	4,487.50	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	4/11/2022
			4/11/22 16:00	4/11/22 16:02	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
5	x Shutdown x Startup Malfunction	RLLC0196	10/6/21 16:30	10/6/21 16:32	0.03	4,487.50	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	4/11/2022
			4/11/22 16:00	4/11/22 16:02	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
6	x Shutdown x Startup Malfunction	RLI0116E	11/9/21 8:30	11/9/21 8:32	0.03	3.08	Well maintenance	x 113: Inspection/Maintenance 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	11/9/2021
			11/9/21 11:35	11/9/21 11:37	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
7	x Shutdown x Startup Malfunction	RLI0117D	11/9/21 8:30	11/9/21 8:32	0.03	4.17	Well maintenance	x 113: Inspection/Maintenance 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	11/9/2021
			11/9/21 12:40	11/9/21 12:42	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
8	x Shutdown x Startup Malfunction	RLI00140	1/14/22 11:00	1/14/22 11:02	0.03	843.67	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	2/18/2022
			2/18/22 14:40	2/18/22 14:42	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
9	x Shutdown x Startup Malfunction	RLI00142	1/14/22 11:00	1/14/22 11:02	0.03	843.75	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	2/18/2022
			2/18/22 14:45	2/18/22 14:47	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
10	x Shutdown x Startup Malfunction	RLLC0272	1/14/22 16:40	1/14/22 16:42	0.03	837.92	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	2/18/2022
			2/18/22 14:35	2/18/22 14:37	0.03			117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) x No	Yes (Go to 10) No			
11	x Shutdown Startup Malfunction	RLLC0246	2/18/22 15:25	2/18/22 15:27	0.03	1,712.58	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	5/1/2022
			Well offline as of May 1, 2022					117: Gas Collection 118: Construction Activities	Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) No	Yes (Go to 10) No			
12	x Shutdown Startup Malfunction	RLLC0265	2/18/22 15:30	2/18/22 15:32	0.03	1,712.50	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	5/1/2022
			Well offline as of May 1, 2022					117: Gas Collection 118: Construction Activities	Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) No	Yes (Go to 10) No			

REDWOOD LANDFILL, INC.

COLLECTION SYSTEM DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13	x Shutdown Startup Malfunction	RLI00141	2/28/22 8:20	2/28/22 8:22	0.03	1,479.67	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	5/1/2022
			Well offline as of May 1, 2022												
14	x Shutdown Startup Malfunction	RLLC0212	4/12/22 11:15	4/12/22 11:17	0.03	444.75	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	5/1/2022
			Well offline as of May 1, 2022												
15	x Shutdown Startup Malfunction	RLLC0226	4/12/22 11:15	4/12/22 11:17	0.03	444.75	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	5/1/2022
			Well offline as of May 1, 2022												

(a) **STANDARD OPERATING PROCEDURES**

Shutdown

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present, contact manager immediately
2.	Initiate shutdown sequence below by one or more of the following (Note date and time in Section 1 of form above) a. Press Emergency Stop if necessary b. Close On/Off switch(es) or Push On/Off button(s) c. Close adjacent valves if necessary
3.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note date and time in Section 2 of form above)

Startup

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present
2.	Ensure that the system is ready to start by one of the following: a. Valves are in correct position b. Levels, pressures, and temperatures are within normal starting range c. Alarms are cleared d. Power is on and available to control panel and ready to energized equipment. e. Emergency stop is de-energized
3.	Initiate start sequence (Note time and date in section 1 of form above)
4.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note time and date in Section 2 of form above)

Malfunction

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	PROCEDURE NO. -TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Loss of power -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	1. Repair breakages in extraction piping 2. Clean flame arrestor 3. Repair blockages in extraction piping 4. Verify automatic valve operation, compressed air/nitrogen supply 5. Notify power utility, if appropriate 6. Provide/utilize auxiliary power source, if necessary 7. Repair Settlement in Collection Piping 8. Repair Blower 9. Activate back-up blower, if available 10. Clean knock-up pot/demister 11. Drain knock-out pot
Extraction Wells and Collection Piping	Conduits for extractions and movement of LFG flow	Collection well and pipe failures	-Break/crack in header or lateral piping -Leaks at wellheads, valves, flanges, Test ports, seals, couplings, etc. -Collection piping blockages -Problems due to settlement (e.g. pipe separation, deformation, development of low points	12. Repair leaks or breaks in lines or wellheads 13. Follow procedures for loss of LFG flow/blower malfunction 14. Repair blockages in collection piping 15. Repair settlement in collection piping 16. Re-install, repair, or replace piping
Blower or Other Gas Mover Equipment And Control Device	Collection and control of LFG	Loss of electrical power	- Force majeure/Act of God (e.g., lightning, flood, earthquake, etc.) -Area-wide or local blackout or brown-out -Interruption in service (e.g. blown service fuse -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	17. Check/reset breaker 18. Check/repair electrical panel components 19. Check/repair transformer 20. Check/repair motor starter 21. Check/repair electrical line 22. Test amperage to various equipment 23. Contact electricity supplier 24. Contact/contract electrician 25.Provide auxiliary power (if necessary
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature -monitoring equipment -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	26. Check/repair temperature monitoring equipment 27. Check/repair thermocouple and/or wiring 28. Follow procedures for loss of flow/blower malfunction 29. Check/adjust louvers 30. Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	31. Check/repair temperature monitoring equipment 32. Check/repair thermocouple 33. Follow procedures for loss of flow/blower malfunction 34. Check/adjust air/fuel controls 35. Check/adjust/repair flame sensor 36. Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	37. Check/adjust/repair flow measuring device and/or wiring 38. Check/repair chart recorder 39. Replace paper in chart recorder
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	40. Check/adjust/repair thermocouple 41. Check/adjust/repair controller and/or wiring 42. Check/adjust/repair electrical panel components 43. Check/repair chart recorder 44. Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	45. Site-specific diagnosis procedures 46. Site-specific responses actions based on diagnosis 47. Open manual louvers 48. Clean pitot orifice 49. Clean/drain flame arrestor 50. Refill propane supply 51. Check/repair pilot sparking system

(b) For each permit limit exceedance complete an "SSM Plan Departure Form".

APPENDIX E

A-51 AND A-60 FLARE TEMPERATURE REPORTS

Redwood Landfill, Novato, CA

A-51 Flare TEMPERATURE DEVIATION/ INOPERATIVE MONITOR REPORT **November 1, 2021 to April 30, 2022**

REPORT PREPARED BY: Michael Chan **DATE:** May 25, 2022

TEMPERATURE SENSING DEVICE: Thermocouple **MODEL:** Thermo-Electric

START DATE & TIME	END DATE & TIME	TEMP (^{o}F) / FLOW	CAUSE	EXPLANATION	ACTION TAKEN
No deviations or inoperative monitors during the month of November 2021					
No deviations or inoperative monitors during the month of December 2021					
No deviations or inoperative monitors during the month of January 2022					
No deviations or inoperative monitors during the month of February 2022					
No deviations or inoperative monitors during the month of March 2022					
No deviations or inoperative monitors during the month of April 2022					

COMMENTS:

1 In accordance with Title V Permit Condition Number 19867, Part 22b, the A-51 Flare combustion zone 3-hour average temperature did not drop below 1,400 degrees Fahrenheit (°F) while the flare was in operation.

2 The A-51 Flare combustion zone 3-hour average temperature did not drop below the 1,488°F (3/10/2021 to 3/10/22) or 1459°F (3/11/22 to current) limits established during the January 14, 2021 and January 12, 2022 Annual Source Tests, while the flare was in operation, pursuant to Title V Permit Condition Number 19867, Part 22, and 40 CFR 60.752 b(2)(iii)(B)(2) in Subpart WWW of the NSPS.

Redwood Landfill, Novato, CA

A-60 Flare TEMPERATURE DEVIATION/ INOPERATIVE MONITOR REPORT **November 1, 2021 to April 30, 2022**

REPORT PREPARED BY:	Michael Chan	**DATE:**	May 25, 2022
TEMPERATURE SENSING DEVICE:	Thermocouple	**MODEL:**	Thermo-Electric

START DATE & TIME	END DATE & TIME	TEMP (°F) / FLOW	CAUSE	EXPLANATION	ACTION TAKEN
No deviations or inoperative monitors during the month of November 2021					
No deviations or inoperative monitors during the month of December 2021					
No deviations or inoperative monitors during the month of January 2022					
No deviations or inoperative monitors during the month of February 2022					
No deviations or inoperative monitors during the month of March 2022					
No deviations or inoperative monitors during the month of April 2022					

COMMENTS:

1 In accordance with Authority To Construct (ATC) 19098 Condition Number 19867, Part 22b, the A-60 Flare combustion Zone A 3-hour average temperature did not drop below 1,400 degrees Fahrenheit (°F) while the flare was in operation, and the A-60 Flare combustion Zone B 3-hour average temperature did not drop below 1,400°F while the flare was in operation.

2 The A-60 Flare Zone A combustion zone three-hour average temperature did not drop below 1,551°F (9/15/20 - 9/9/21) or 1,525°F (9/10/21 - current) limits established during the July 22 & 23, 2020 and July 13, 2021 source tests. Source Tests, pursuant to 40 CFR 60.752 b(2)(iii)(B)(2) in Subpart WWW of the NSPS.
Zone B of the A-60 Flare combustion zone 3-hour average temperature did not drop below the 1,555°F (9/14/18 to current) limits established in the July 17, 2018 Source Test. Pursuant to Title V Condition 19867 Part 30g, the Annual Source Test at A-60 may be conducted while it is operating in either zone, provided that each operating zone is tested at least once every five years.

APPENDIX F

MISSING A-51 AND A-60 FLOW AND TEMPERATURE RECORDS

Emission Control Devices

A-51 Flare Missing Data Summary

Redwood Landfill, Novato, CA

FLARE MISSING DATA REPORT November 1, 2021 to April 30, 2022

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2021				
There was no missing data for December 2021				
There was no missing data for January 2022				
There was no missing data for February 2022				
There was no missing data for March 2022				
There was no missing data for April 2022				

Flare A-51	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,343.00	180.96
Missing Data Percentage:	0.00%	0.00%

Emission Control Devices
A-60 Flare Missing Data Summary

Redwood Landfill, Novato, CA
FLARE MISSING DATA REPORT November 1, 2021 to April 30, 2022

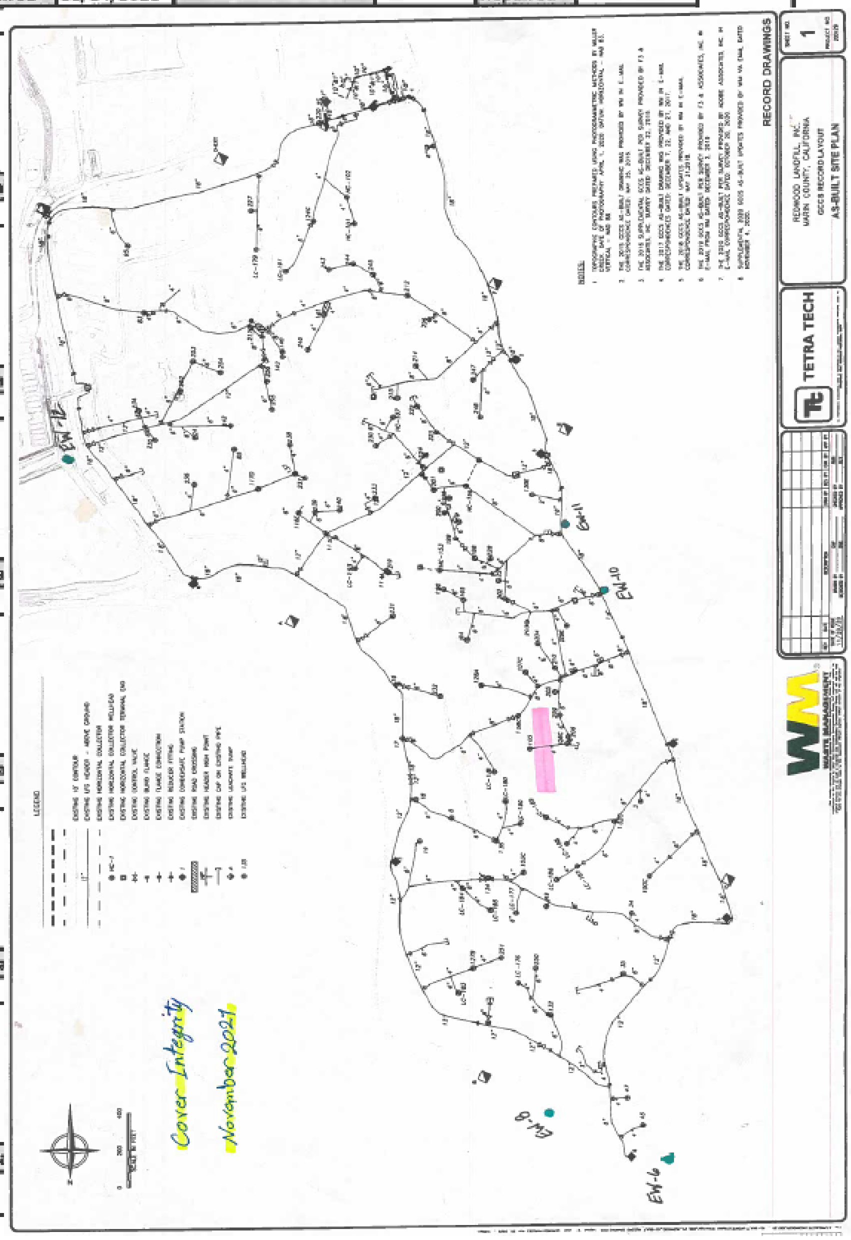
Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2021				
There was no missing data for December 2021				
There was no missing data for January 2022				
There was no missing data for February 2022				
There was no missing data for March 2022				
There was no missing data for April 2022				

Flare A-60	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,343.00	180.96
Missing Data Percentage:	0.00%	0.00%

APPENDIX G

COVER INTEGRITY MONITORING REPORTS

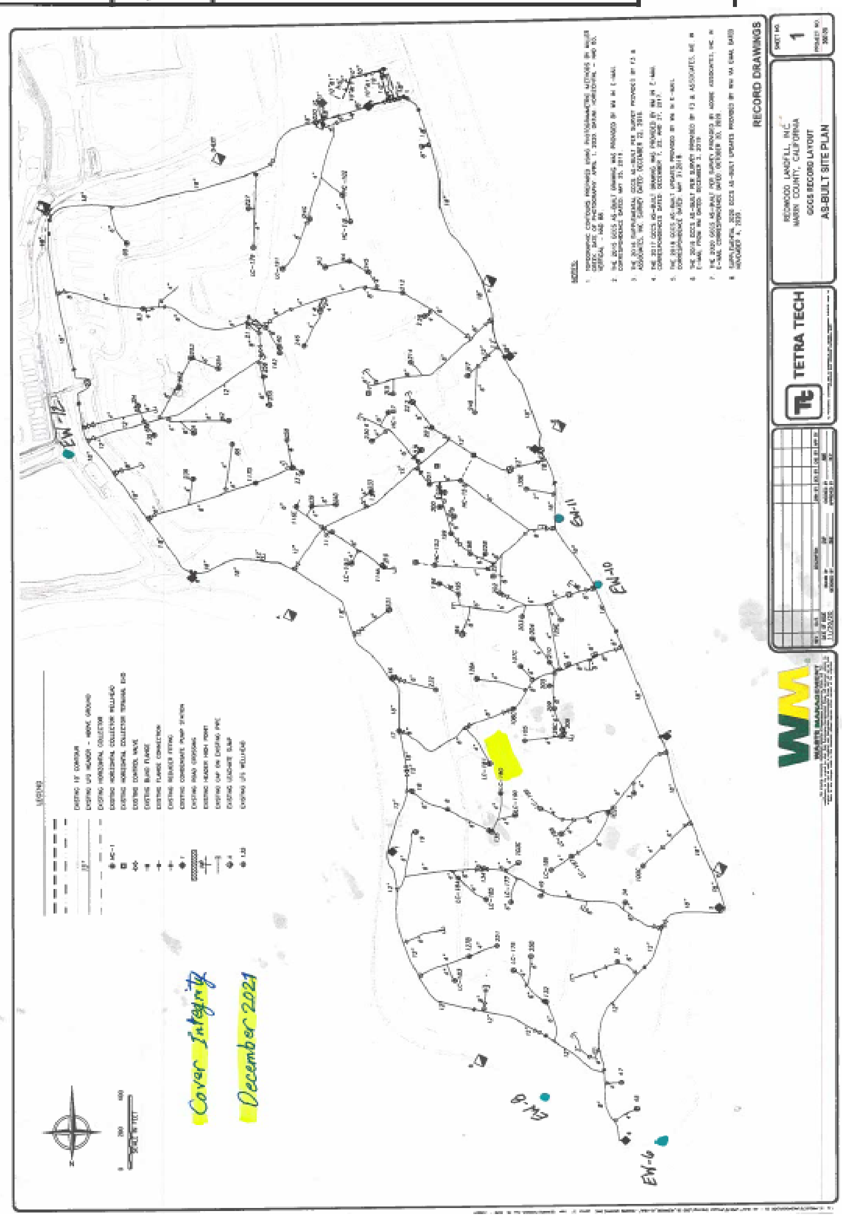
WM	Monthly Cover Integrity Inspection Form						
Facility	Waste Management- Redwood Landfill						
Date	11/19/2021	Received		Manager	Ramin Khany	Date	11/29/2021
Technician	M. Sotoudeh	Repairs Complete		Manager	Ramin Khany	Date	11/21
Cell/Pad	Area C (East end)			Cell/Pad			
Description of finding and corrective action: In Area C, Additional cover is needed. West side of the well 105. See attached map for details. Corrective Action: Added extra soil for cover				Description of finding and corrective action:			
Date Identified	11/19/2021	Repaired	11/24/2021	Date Identified		Repaired	
Cell/Pad	Area E south border						
Description of finding and corrective action:							
Date Identified		Repa					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repa					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repa					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repa					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repa					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repa					



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill				
Date	12/22/2021	Received	Manager	Ramin Khany	Date 1-6-22
Technician	M. Sotoudeh	Repairs Complete	Manager		Date

Cell/Pad		Cell/Pad	
Description of finding and corrective action: Additional cover is needed on west side of the well 181. See attached map for details. Corrective Action: Added extra soil for cover		Description of finding and corrective action:	
Date Identified 12/22/2021	Repaired 12/30/2021	Date Identified	Repaired
Cell/Pad	Area E south border	Cell/Pad	
Description of finding and corrective action:			
Date Identified	Repaired		
Cell/Pad			
Description of finding and corrective action:			
Date Identified	Repaired		
Cell/Pad			
Description of finding and corrective action:			
Date Identified	Repaired		
Cell/Pad			
Description of finding and corrective action:			
Date Identified	Repaired		
Cell/Pad			
Description of finding and corrective action:			
Date Identified	Repaired		
Cell/Pad			
Description of finding and corrective action:			
Date Identified	Repaired		



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill					
Date	1/25/2022	Received	Manager	Ramin Khany	Date	2/17/22
Technician	M. Sotoudeh	Repairs Complete	Manager	[signature]	Date	2/17/22

Cell/Pad		Cell/Pad	
Description of finding and corrective action: Additional cover is needed on north and west sides of the well 128A. See attached map for details. Corrective Action: Added extra soil for cover		Description of finding and corrective action: [initials]	
Date Identified 1/25/2022	Repaired 1/31/2022	Date Identified	Repaired

Cell/Pad Area E south border

Description of finding and corrective action:

Date Identified | Repaired

Cell/Pad

Description of finding and corrective action:

Date Identified | Repaired

Cell/Pad

Description of finding and corrective action:

Date Identified | Repaired

Cell/Pad

Description of finding and corrective action:

Date Identified | Repaired

Cell/Pad

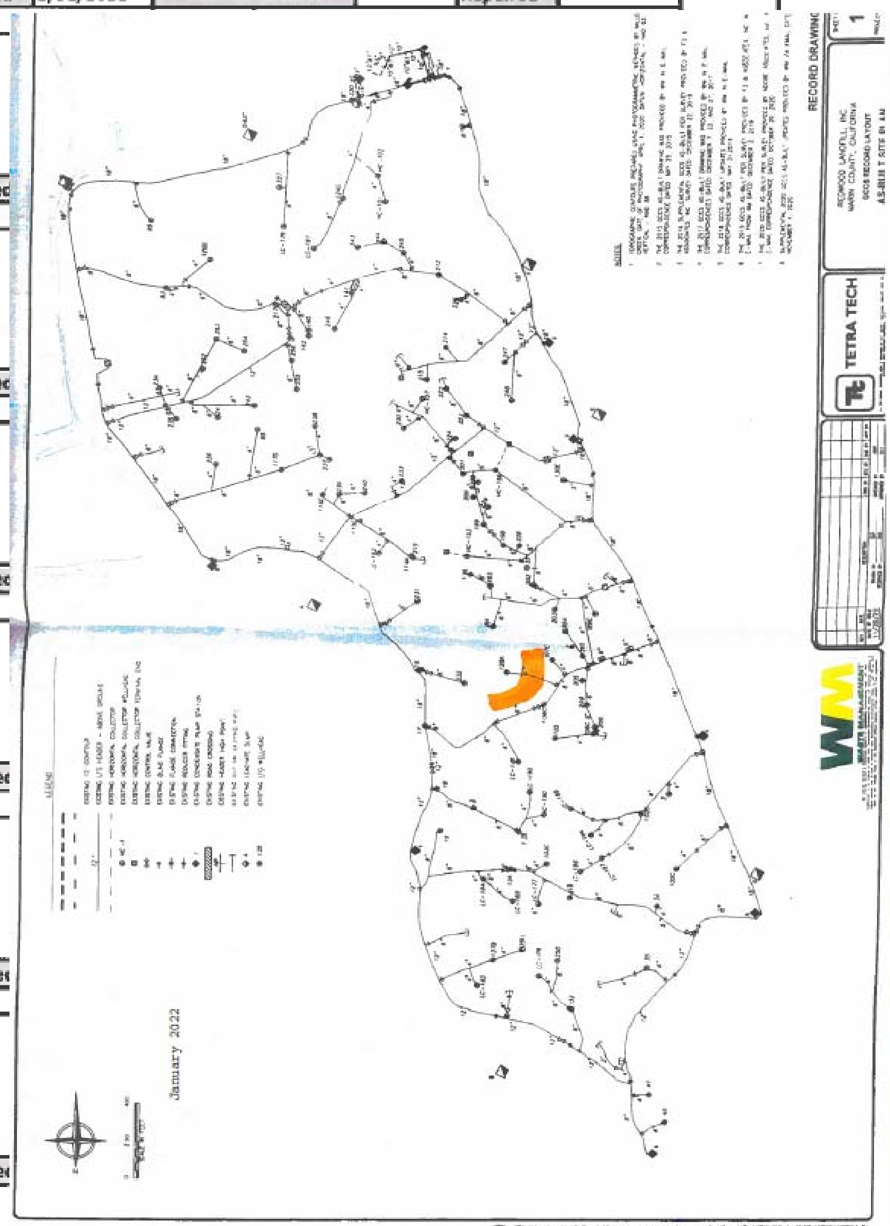
Description of finding and corrective action:

Date Identified | Repaired

Cell/Pad

Description of finding and corrective action:

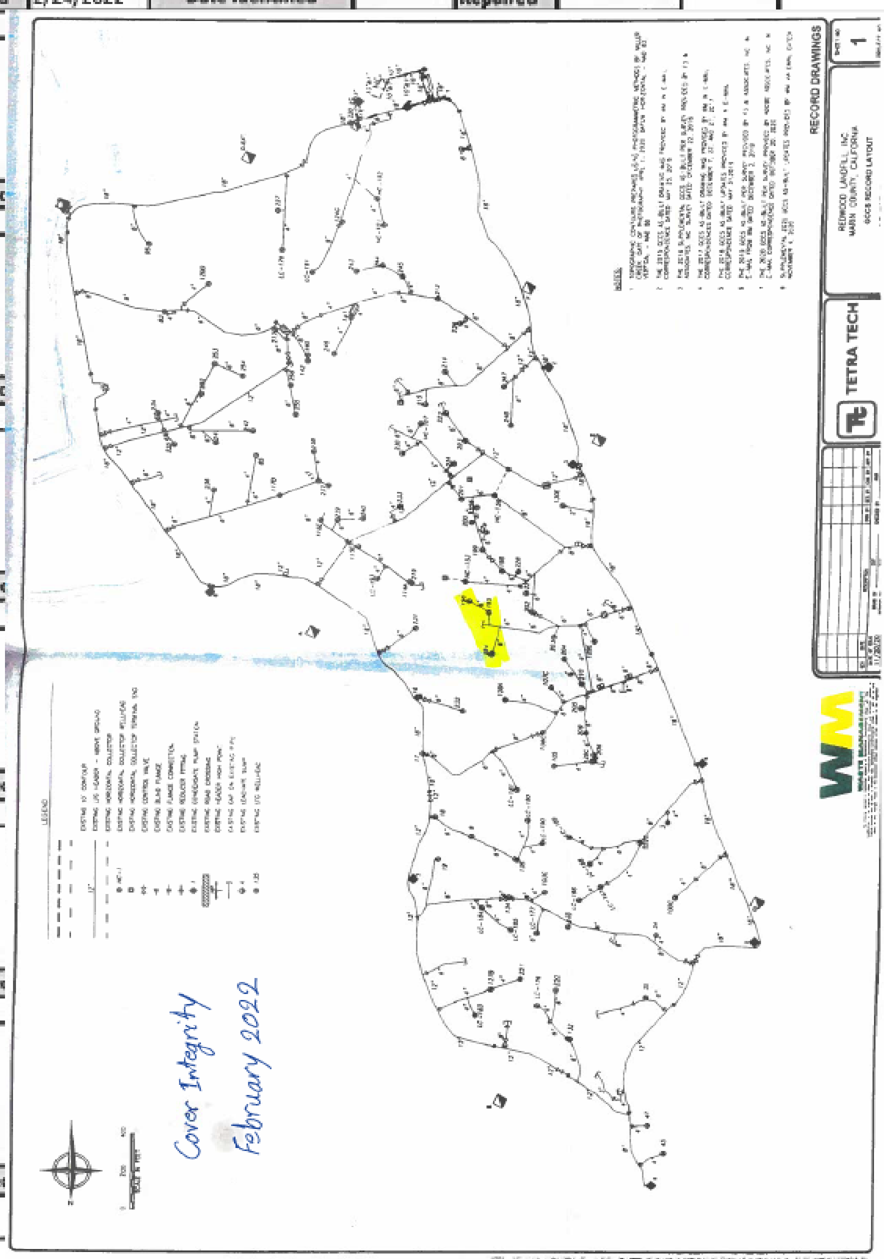
Date Identified | Repaired



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill				
Date	2/18/2022	Received	Manager	Ramin Khany	Date	
Technician	M. Sotoudeh	Repairs Complete	Manager	Ram A. Khy	Date	3/11/22

Cell/Pad				Cell/Pad			
Description of finding and corrective action: Additional cover is needed on the area around and between wells 194, 195 and 196. See attached map for details. Corrective Action: Added extra soil for cover				Description of finding and corrective action:			
Date Identified	2/18/2022	Repaired	2/24/2022	Date Identified		Repaired	
Cell/Pad	Area E south border						
Description of finding and corrective action:							
Date Identified		Repaired					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repaired					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repaired					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repaired					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repaired					
Cell/Pad							
Description of finding and corrective action:							
Date Identified		Repaired					



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill					
Date	March 2022	Received	Manager	Ramin Khany	Date	
Technician	M. Sotoudeh	Repairs Complete	Manager	Zamin A. Khy	Date	4-1-22

Cell/Pad				Cell/Pad			
Description of finding and corrective action: No area of concern was observed during the monitoring event. Corrective Action:				Description of finding and corrective action:			
Date Identified	4/1/2022	Repaired		Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			
Date Identified		Repaired		Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			
Date Identified		Repaired		Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			
Date Identified		Repaired		Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			
Date Identified		Repaired		Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			
Date Identified		Repaired		Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			
Date Identified		Repaired		Date Identified		Repaired	

Monthly Cover Integrity Inspection Form

Facility	Redwood Landfill				
Month	April 2022	Received	Manager	Ramon [illegible]	Date 4/28/22
Technician	Mo	Repairs Complete	Manager		Date

Cell/ Pad					Cell/ Pad				
Description of finding and corrective action: No area of concern was observed during the monitoring event.					Description of finding and corrective action:				
Date	Identified	4/29/2022	Repaired	N/A	Date	Identified		Repaired	
Cell/ Pad					Cell/ Pad				
Description of finding and corrective action:					Description of finding and corrective action:				
Date	Identified		Repaired		Date	Identified		Repaired	
Cell/ Pad					Cell/ Pad				
Description of finding and corrective action:					Description of finding and corrective action:				
Date	Identified		Repaired		Date	Identified		Repaired	
Cell/ Pad					Cell/ Pad				
Description of finding and corrective action:					Description of finding and corrective action:				
Date	Identified		Repaired		Date	Identified		Repaired	
Cell/ Pad					Cell/ Pad				
Description of finding and corrective action:					Description of finding and corrective action:				
Date	Identified		Repaired		Date	Identified		Repaired	
Cell/ Pad					Cell/ Pad				
Description of finding and corrective action:					Description of finding and corrective action:				
Date	Identified		Repaired		Date	Identified		Repaired	
Cell/ Pad					Cell/ Pad				
Description of finding and corrective action:					Description of finding and corrective action:				
Date	Identified		Repaired		Date	Identified		Repaired	

APPENDIX H

SURFACE EMISSIONS MONITORING / COMPONENT LEAK

WASTE MANAGEMENT
172 98th Avenue
Oakland, CA 94603
(510) 430-8509

March 10, 2022

Ms. Alisha McCutcheon
Redwood Landfill, Inc.
8590 Redwood Highway
Novato, California 94948

Re: Fourth Quarter 2021 Surface Emissions and Component Leak Monitoring Report for Redwood Landfill, Inc.

Dear Ms. McCutcheon:

This monitoring report for "**Redwood Landfill, Inc. (RLI)**" contains the results of the Fourth Quarter 2021 Integrated and Instantaneous Surface Emissions Monitoring (SEM) and Component Leak Monitoring. Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES). Re-monitoring of surface emissions and site-wide component leak monitoring was conducted by RES and/or Waste Management (WM) personnel.

APPLICABLE REQUIREMENTS

The monitoring discussed in this report was conducted in accordance with the following requirements:

Surface Emission Monitoring (SEM)

- New Source Performance Standard (NSPS), Title 40 of the Code of Federal Regulations (CFR) §60.755 (c) and (d), 40 CFR 60, Appendix A Method 21, promulgated by the United States Environmental Protection Agency (USEPA).
- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95460 to §95476, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).
- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) and Section 607 (Landfill Surface Inspection procedures).
- National Emission Standards for Hazardous Air Pollutants (NESHAP): Municipal Solid Waste Landfills, Title 40: Chapter I: Subchapter C: Part 63: Subpart AAAA, §63.1981(h)(5)

Component Leak

- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 301 (Landfill Gas Collection and Emission Control System Requirements) and Section 602 (Collection and Control System Leak Inspection procedures).

- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95464, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).

RLI Plan and Alternative Compliance Measures

An Alternative Compliance Option (ACO) Request was submitted to the California Air Resources Board (CARB) on March 24, 2011. After receipt of comments, this ACO was amended, restated, and submitted to BAAQMD on July 1, 2016. SEM and Component Leak monitoring was conducted per the methods outlined in the July 1, 2016 ACO.

PROCEDURES

General

The surface of the RLI disposal area has been divided into two hundred-eight (208), approximately 50,000 square foot monitoring grids. The entire landfill surface is monitored with the exception of active portions of the Landfill, slope areas, and as requested in the approved ACO, areas containing only asbestos-containing waste, inert waste and/or non-decomposable waste which are excluded for safety as allowed by CCR Title 17 §95466.

Field personnel walked the surface of the landfill following the walking pattern as depicted the 2011 RLI AB-32 SEM Plan, which traverses each monitoring grid. Additionally, in accordance with the provisions of 40 CFR 60.753(d) and 60.755(c)(1-3), the entire perimeter of the landfill surface was monitored. During the event, special attention was given to monitoring unusual cover conditions (stressed vegetation, cracks, seeps, etc.) and any areas with unusual odors.

Instantaneous Surface Emissions Monitoring

The Instantaneous SEM was conducted using a Toxic Vapor Analyzer (TVA) 1000 flame ionization detector (FID), which was calibrated to 500 parts per million by volume (ppm_v) methane, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a) and NSPS. The FID was calibrated prior to use in accordance with the United States Environmental Protection Agency (USEPA) Method 21 requirements. The Instantaneous SEM procedures followed the requirements of 40 CFR 60.755 (c) and (d) and CCR Title 17 §95471(c)(2).

RES personnel walked the surface of the landfill on a grid by grid basis with the wand tip held at 2 inches from the landfill surface. While sampling the grid; the technicians also checked any surface impoundments (wells or otherwise) for leaks. Technicians also checked any surface cracks, seeps, or other areas that show evidence of surface emissions (odors or distressed vegetation). Active and sloped areas excluded for safety were documented on field data sheets and maps.

All instantaneous surface monitoring was performed in accordance with the applicable requirements referenced in this report. Any detections of methane above 200 ppm_v (areas of concern) or 500 ppm_v (exceedances) for instantaneous were recorded, flagged, and marked on an SEM Map, which, wherever required, is included in the Appendices of this report. Applicable corrective action and re-monitoring timelines are listed below:

- Corrective actions must be initiated within 5 days of the initial exceedance and re-monitoring shall be conducted within 10 days of the initial exceedance.
    - If the re-monitoring event shows the exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance.
    - If the 1-month re-monitoring event shows the location is still corrected, all re-monitoring requirements have been completed.
- If either the first 10-day or 1-month re-monitoring events show a second exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance. If the 1-month re-monitoring event shows the area is still corrected, monitoring requirements have been completed.

If any location shows three exceedances, an additional well shall be installed within 120 days of the initial exceedance.

Integrated Surface Emissions Monitoring

The Integrated surface monitoring was conducted using a TVA 1000 calibrated to 25 ppm_v for the integrated monitoring, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a). The field technician traversed the grid walking path over a continuous 25-minute period using the TVA 1000 held at 3 inches above the landfill surface. The Integrated monitoring procedures followed the requirements of CCR Title 17 §95471(c)(2).

Grids with results greater than 25 ppm_v were recorded, marked on the SEM map, and flagged for remediation. Any grids with integrated concentrations greater than 25 ppm_v are subject to the following re-monitoring timeline:

- Re-monitoring shall be conducted within 10 days of the initial exceedance.
- If the 10-day re-monitoring event shows the exceedance is corrected, all re-monitoring requirements have been completed.
- If either the first 10-day re-monitoring event shows a second grid exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.

- If the second 10-day re-monitoring event shows the second exceedance is corrected, all re-monitoring requirements have been completed.

- The second 10-day re-monitoring event shows a third grid exceedance, an additional well shall be installed within 120 days of the third exceedance.

Component Leak Monitoring Procedures

RES personnel monitored the exposed LFG components under positive pressure (pipes, wellheads, valves, blowers, and other mechanical appurtenances) using a TVA 1000 calibrated to 500 ppm_v. All leaks measured one half inch or less from the component exceeding the compliance limit of 500 ppm_v per requirements outlined in pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B) and 1,000 ppm_v per requirements outlined in BAAQMD 8-34-303 were recorded. Applicable corrective action and re-monitoring timelines are listed below:

- Leaks between 500 and 999 ppm_v must be corrected and re-monitored within 10 days of the initial exceedance.

- Leaks at or above 1000 ppm_v must be corrected and re-monitored within 7 days of the initial exceedance.

FOURTH QUARTER 2021 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the Fourth Quarter 2021.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on November 16, 2021 in accordance with the NSPS, BAAQMD 8-34, CCR Title 17 §95469, NESHAP Subpart AAAA, and ACO. Results and data from the monitoring are presented in Attachment A.

Initial Monitoring Event Exceedances of 500 ppm_v

There were twenty-six (26) exceedances of 500 ppm_v as methane detected on November 16, 2021. Corrective actions to initiate repairs of the exceedances were completed within five days for all locations.

First Ten-Day Re-Monitoring Results

The first 10-day re-monitoring was completed on November 23, 2021. All locations were observed at less than 500 ppm_v as methane except for exceedance flag numbers O24, O26, O31, and O62.

Second Ten-Day Re-Monitoring Results

Corrective actions were implemented and flag numbers O24, O26, O31, and O62 were below 500 ppm_v as methane upon the 2nd 10-day remonitoring on December 1 and 2, 2021.

One-Month Re-Monitoring Results

The 1-month re-monitoring event was completed on December 13 and 15, 2021. All locations were observed at less than 500 ppm_v.

Readings between 200 ppm_v and 499 ppm_v (Initial and Re-monitored)

There were no readings between 200 ppm_v and 499 ppm_v as methane detected during the initial monitoring event on November 16, 2021. Pursuant to CCR Title 17 §95471(c), instantaneous surface emissions exceeding 200 ppm_v but below 500 ppm_v are required to be recorded.

Integrated Surface Emissions Monitoring Results

The Integrated surface sampling (ISS) was performed on November 15, 17, and 18, 2021 in accordance with the ACO and requirements outlined in CCR Title 17 §95469.

Initial Monitoring Event Exceedances of 25 ppm_v

There were 0 grids with exceedances of 25 ppm_v as methane detected during the initial monitoring event.

The average methane concentration of each grid was recorded during the monitoring event per applicable requirements. See Attachment B, Integrated SEM 25 ppm_v Exceedances and Monitoring Log, and SEM Map included in Attachment B, for details.

Component Leak Monitoring Results

Component leak monitoring was conducted per the applicable requirements on November 17, 2021. No leaks greater than 500 ppm_v were identified. Please see Attachment C, for details.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

Wind speeds during initial monitoring were monitored using a portable weather station. The station has a strip chart that records the wind speed and direction. After completion of monitoring, the strip chart is reviewed by RES office staff to determine the average and maximum wind speeds during the monitoring and the average wind direction during each grid and ensure that the wind speed requirements are met (no gusts greater than 20 mph, average wind speed cannot exceed 10 mph). These values are documented in the field data sheets. The chart data is scanned and included in Attachment D.

Precipitation Requirements

Per the RLI's ACO, the initial monitoring event was carefully scheduled so that it could be conducted in compliance with the precipitation requirements (no precipitation ≥0.01" within 24 hours, ≥0.16" within 48 hours, nor ≥0.25" within 72 hours). Re-monitoring events are required to adhere to strict timelines. Any conflicts with precipitation requirements are discussed in the results section of this document.

EQUIPMENT CALIBRATION

The portable analyzers were calibrated to meet the instrument specifications requirements of U.S. EPA Method 21. The calibration gas used was methane, diluted to a nominal concentration of 25 ppm_v in air for integrated sample analyses and 500 ppm_v in air for instantaneous monitoring to comply with the requirements.

All analyzers were calibrated prior to use with required response time and precision related instrument checks. Calibration records include the following: One time response time test record; One time response factor determination for methane; Calibration Precision test records (test to be performed every 3 months); and Daily Instrument Calibration and Background test records for each gas meter that was used during the quarterly monitoring event. The calibration log records are included in Attachment E.

All monitoring was completed in accordance with the applicable regulatory requirements or approved alternatives. If you have any questions regarding this report, please do not hesitate to contact me at (510) 613-2852.

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment B – Integrated Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment C – Component Leak Monitoring Event Records

- Component Leak Exceedances and Monitoring Logs

Attachment D – Weather Station Data

- Strip Chart Data

Attachment E – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Instantaneous Surface Emission Monitoring Event Records

Table A.1
Instantaneous Landfill Surface Emissions Monitoring
Initial Monitoring Event Areas of Concern

2021 QUARTER: 4
PERFORMED BY: RES
LANDFILL NAME: Redwood Landfill, Inc.

Flag Number	Grid Number	Latitude	Longitude	Date of Monitoring	Concentration of Emission (ppm$_v$)	Comments
O2	189	38.16937	-122.56889	11/16/2021	835	surface
O26	83	38.17426	-122.56506	11/16/2021	900	b2 p44
O1	68	38.16345	-122.56415	11/16/2021	680	well 243
O21	10	38.16239	-122.55997	11/16/2021	1,100	blk pipe p1
O22	82	38.16137	-122.56427	11/16/2021	570	LN-1
O23	82	38.16140	-122.56429	11/16/2021	5,000	LS-2
O24	197	38.17518	-122.57001	11/16/2021	800	p-76
O25	161	38.17588	-122.56825	11/16/2021	630	p56
O27	83	38.17418	-122.56513	11/16/2021	550	p48
O28	84	38.17309	-122.56521	11/16/2021	1,800	p43
O29	64	38.16917	-122.56441	11/16/2021	800	p85
O30	64	38.16893	-122.56427	11/16/2021	3,000	p83
O31	48	38.16847	-122.56325	11/16/2021	900	p47
O3	195	38.16956	-122.56937	11/16/2021	1,700	white pipe
O41	50	38.16464	-122.56320	11/16/2021	600	well272
O42	187	38.17167	-122.56925	11/16/2021	700	well102c
O43	108	38.16980	-122.56614	11/16/2021	800	well232
O4	33	38.16779	-122.56260	11/16/2021	559	surface
O5	33	38.16784	-122.56237	11/16/2021	830	surface
O61	16	38.16570	-122.56105	11/16/2021	700	surface
O62	168	38.16709	-122.56820	11/16/2021	1,500	surface
O63	150	38.16714	-122.56686	11/16/2021	700	P12
O64	15	38.16712	-122.56081	11/16/2021	700	p9
O65	7	38.16649	-122.56044	11/16/2021	600	surface
O66	166	38.16912	-122.56786	11/16/2021	650	surface
O67	157	38.16933	-122.56777	11/16/2021	560	surface

Notes: Please refer to field data sheets for details

Table A.2
Instantaneous Landfill Surface Emissions Monitoring
Exceedance and Monitoring Logs (NSPS/BAAQMD 8-34)

2021 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Mo Sotoudeh
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			Corrective Action		1st 10-day Follow-Up			2nd 10-day Follow-Up			1st 30-day Follow-Up			
Flag Number	Monitoring Date	Reading ppm	Repair Date	Action Taken	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Comments
O2	11/16/2021	835	11/19/2021	Compacted, Added soil	11/23/2021	50					12/13/2021	41		surface
O26	11/16/2021	900	11/18/2021	Compacted, Added soil	11/23/2021		2,100	12/1/2021	257		12/13/2021	137		b2 p44
O1	11/16/2021	680	11/19/2021	Compacted, Added soil	11/23/2021	0					12/13/2021	0		well 243
O21	11/16/2021	1,100	11/19/2021	Compacted, Added soil	11/23/2021	44					12/13/2021	0		blk pipe p1
O22	11/16/2021	570	11/18/2021	Compacted, Added soil	11/23/2021	30					12/15/2021	12		LN-1
O23	11/16/2021	5,000	11/18/2021	Compacted, Added soil	11/23/2021	62					12/15/2021	255		LS-2
O24	11/16/2021	800	11/18/2021	Compacted, Added soil	11/23/2021		1,800	12/2/2021	277		12/13/2021	387		p-76
O25	11/16/2021	630	11/18/2021	Compacted, Added soil	11/23/2021	40					12/13/2021	21		p56
O27	11/16/2021	550	11/18/2021	Compacted, Added soil	11/23/2021	50					12/13/2021	19		p48
O28	11/16/2021	1,800	11/18/2021	Compacted, Added soil	11/23/2021	70					12/13/2021	33		p43
O29	11/16/2021	800	11/19/2021	Compacted, Added soil	11/23/2021	0					12/13/2021	48		p85
O30	11/16/2021	3,000	11/19/2021	Compacted, Added soil	11/23/2021	16					12/15/2021	75		p83
O31	11/16/2021	900	11/19/2021	Compacted, Added soil	11/23/2021		2,900	12/2/2021	41		12/13/2021	125		p47
O3	11/16/2021	1,700	11/19/2021	Compacted, Added soil	11/23/2021	0					12/13/2021	8		white pipe
O41	11/16/2021	600	11/18/2021	Compacted, Added soil	11/23/2021	0					12/13/2021	0		well272
O42	11/16/2021	700	11/19/2021	Compacted, Added soil	11/23/2021	0					12/13/2021	69		well102c
O43	11/16/2021	800	11/19/2021	Compacted, Added soil	11/23/2021	0					12/15/2021	0		well232
O4	11/16/2021	559	11/19/2021	Compacted, Added soil	11/23/2021	90					12/13/2021	7		surface
O5	11/16/2021	830	11/19/2021	Compacted, Added soil	11/23/2021	35					12/13/2021	5		surface
O61	11/16/2021	700	11/18/2021	Compacted, Added soil	11/23/2021	40					12/15/2021	16		surface
O62	11/16/2021	1,500	11/19/2021	Compacted, Added soil	11/23/2021		1,000	12/1/2021	94		12/13/2021	19		surface
O63	11/16/2021	700	11/19/2021	Compacted, Added soil	11/23/2021	220					12/13/2021	3		P12
O64	11/16/2021	700	11/18/2021	Compacted, Added soil	11/23/2021	400					12/15/2021	29		p9
O65	11/16/2021	600	11/18/2021	Compacted, Added soil	11/23/2021	14					12/15/2021	47		surface
O66	11/16/2021	650	11/19/2021	Compacted, Added soil	11/23/2021	0					12/15/2021	0		surface
O67	11/16/2021	560	11/19/2021	Compacted, Added soil	11/23/2021	0					12/15/2021	0		surface

Table A.3
Instantaneous Landfill Surface Emissions Monitoring
Exceedance and Monitoring Logs (AB-32)

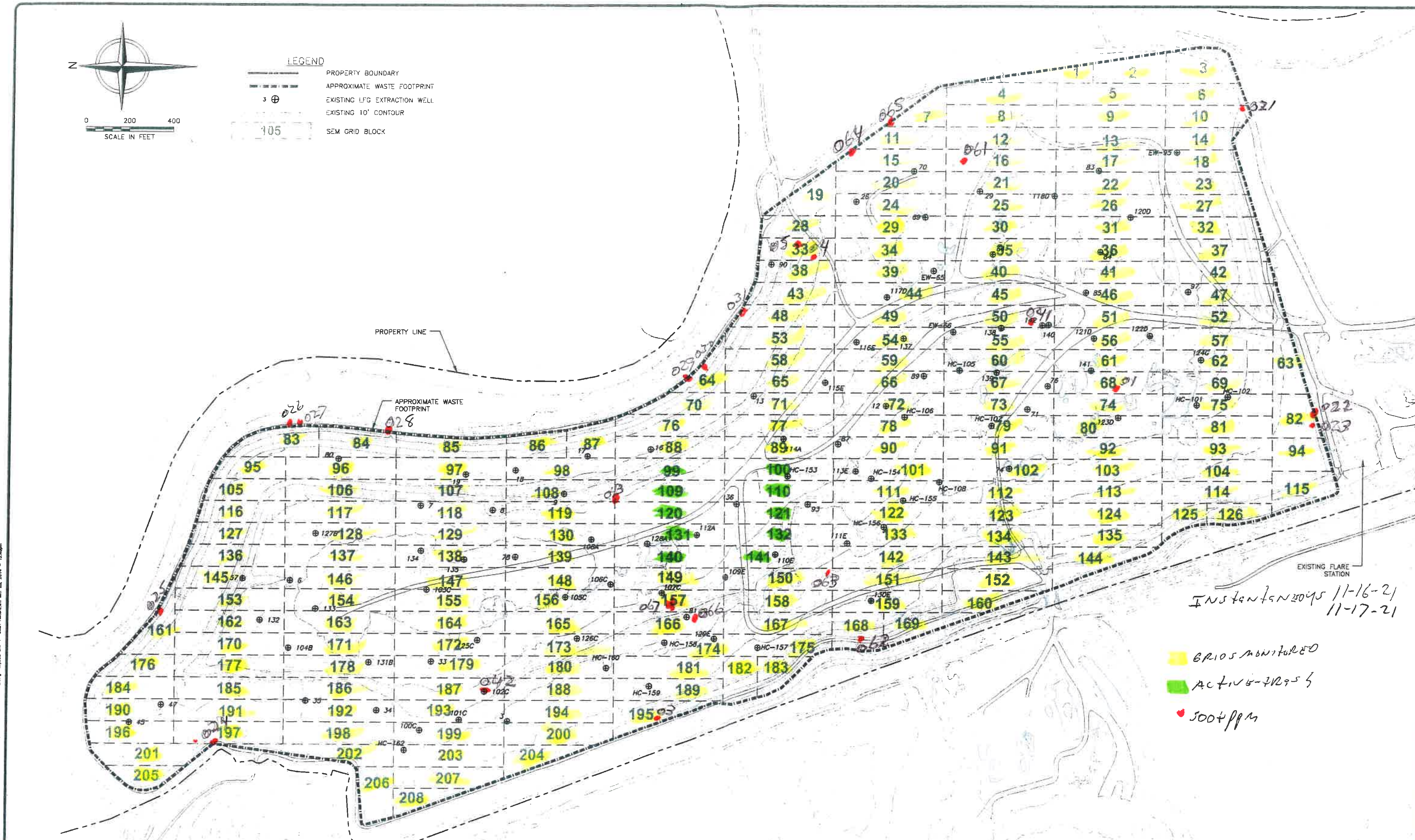
2021 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Mo Sotoudeh
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Comments
O2	11/16/2021	835	11/23/2021	50					surface
O26	11/16/2021	900	11/23/2021		2,100	12/1/2021	257		b2 p44
O1	11/16/2021	680	11/23/2021	0					well 243
O21	11/16/2021	1,100	11/23/2021	44					blk pipe p1
O22	11/16/2021	570	11/23/2021	30					LN-1
O23	11/16/2021	5,000	11/23/2021	62					LS-2
O24	11/16/2021	800	11/23/2021		1,800	12/2/2021	277		p-76
O25	11/16/2021	630	11/23/2021	40					p56
O27	11/16/2021	550	11/23/2021	50					p48
O28	11/16/2021	1,800	11/23/2021	70					p43
O29	11/16/2021	800	11/23/2021	0					p85
O30	11/16/2021	3,000	11/23/2021	16					p83
O31	11/16/2021	900	11/23/2021		2,900	12/2/2021	41		p47
O3	11/16/2021	1,700	11/23/2021	0					white pipe
O41	11/16/2021	600	11/23/2021	0					well272
O42	11/16/2021	700	11/23/2021	0					well102c
O43	11/16/2021	800	11/23/2021	0					well232
O4	11/16/2021	559	11/23/2021	90					surface
O5	11/16/2021	830	11/23/2021	35					surface
O61	11/16/2021	700	11/23/2021	40					surface
O62	11/16/2021	1,500	11/23/2021		1,000	12/1/2021	94		surface
O63	11/16/2021	700	11/23/2021	220					P12
O64	11/16/2021	700	11/23/2021	400					p9
O65	11/16/2021	600	11/23/2021	14					surface
O66	11/16/2021	650	11/23/2021	0					surface
O67	11/16/2021	560	11/23/2021	0					surface

Table A.4
Instantaneous Landfill Surface Emissions Monitoring
Areas of Concern Greater than 200 ppmv

2021 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			**Re-mon Event**		**Comments**
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	Reading ppm	
No 200-499 ppmv locations					



NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014

WM WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014 | DRAWN BY RL | DESIGNED BY MLH | CHECKED BY MED | APPROVED BY PJS

cornerstone environmental

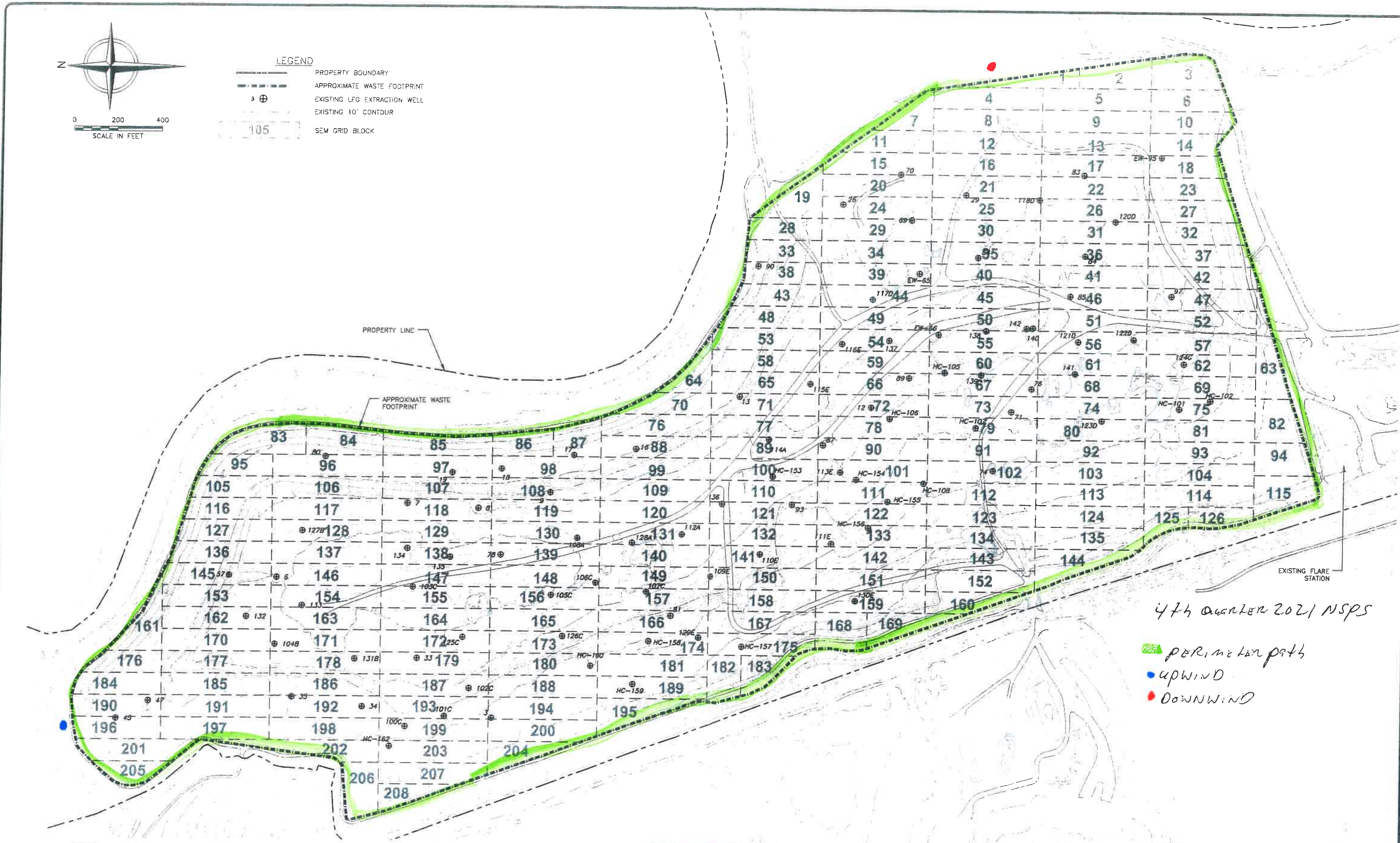
PREPARED BY CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO. 1

PROJECT NO. 140521



NOTES:
1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014.

WASTE MANAGEMENT

DATE OF ISSUE 6/24/2014 · DRAWN BY RL · DESIGNED BY MLH · CHECKED BY MED · APPROVED BY PJS

cornerstone environmental

PREPARED BY: CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO 1

PROJECT NO 140521

wpt ID	lat	lon	time	name	cmt
			redwood 4th 2021		
1	38.16937496	-122.568886	2021-11-16T19:35:14Z	O2	835Ppm surface
2	38.17426404	-122.565057	2021-11-16T20:36:08Z	O26	900ppm b2 p44
3	38.16344501	-122.56415	2021-11-16T16:48:35Z	O1	680Ppm well 243
4	38.16238898	-122.559966	2021-11-16T15:52:47Z	O21	1100Ppm blk pipe p1
5	38.16136999	-122.564267	2021-11-16T16:16:57Z	O22	570Ppm LN-1
6	38.161401	-122.56429	2021-11-16T16:18:56Z	O23	5000Ppm LS-2
7	38.17518001	-122.570012	2021-11-16T20:01:15Z	O24	800Ppm p-76
8	38.17587596	-122.568252	2021-11-16T20:21:14Z	O25	630Ppm p56
9	38.17417997	-122.565126	2021-11-16T20:37:49Z	O27	550Ppm p48
10	38.17308898	-122.565215	2021-11-16T20:43:18Z	O28	1800Ppm p43
11	38.169167	-122.564408	2021-11-16T20:55:42Z	O29	800Ppm p85
12	38.16892896	-122.564268	2021-11-16T20:57:21Z	O30	3000Ppm p83
13	38.16846502	-122.563246	2021-11-16T21:01:06Z	O31	900Ppm p47
14	38.16955802	-122.569373	2021-11-16T19:40:11Z	O3	1700Ppm white pipe
15	38.164636	-122.563199	2021-11-16T16:05:40Z	O41	600Ppm well272
16	38.17167202	-122.569246	2021-11-16T19:53:37Z	O42	700Ppm well102c
17	38.16980302	-122.566142	2021-11-16T20:52:13Z	O43	800Ppm well232
18	38.16779296	-122.5626	2021-11-16T21:00:16Z	O4	559Ppm surface
19	38.16783998	-122.562372	2021-11-16T21:02:36Z	O5	830Ppm surface
20	38.16569698	-122.561048	2021-11-16T15:53:26Z	O61	700Ppmsurface
21	38.16708603	-122.568199	2021-11-16T16:37:50Z	O62	1500Ppmsurface
22	38.167139	-122.566863	2021-11-16T16:44:40Z	O63	700PpmP12
23	38.16711796	-122.560806	2021-11-16T17:12:35Z	O64	700Ppmpipe p9
24	38.166491	-122.560444	2021-11-16T17:16:55Z	O65	600Ppmsurface
25	38.16911898	-122.567856	2021-11-16T19:36:47Z	O66	650Ppmsurface
26	38.16933498	-122.567769	2021-11-16T19:39:48Z	O67	560Ppmsurface

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year:	4th 2021												Page of Pages
Technician:	LEIGHWADE												
Instrument:	TVA1000												
Calibration Standard:	500ppm												
Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	
θ-21	10	1100	11-16-21										Black pipe P1
θ-22	82	570											LN
θ-23	82	5,000											LS-2
θ-24	197	800											P76
θ-25	161	630											P56
θ-26	83	900											B2 P44?
θ-27	83	550											P48
θ-28	84	1,800											P43
θ-29	64	800											P85
θ-30	64	3000											P83
θ-31	48	900											P47
θ-1	68	680											Well 243
θ-2	189	835											SURFACE
θ-3	195	1700											white pipe
θ-4	33	559											SURFACE
θ-5	33	830											SURFACE
θ-61	16	700											SURFACE
θ-62	168	1500											SURFACE
θ-63	150	700											P12
θ-64	15	700											P9
θ-65	7	600											SURFACE
θ-66	166	650											SURFACE
θ-67	157	560											SURFACE
θ-41	50	600											Well 272
θ-42	187	700											Well 1026
θ-43	108	800											Well 232

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021

No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (PPM)	NOTES
1		P-2	Other (See Comments) (OT)	38.16264033	-122.5593088	3		4.83	
2		P-4	Other (See Comments) (OT)	38.16458567	-122.5597367	4		16	
3		P-5	Other (See Comments) (OT)	38.1659435	-122.559745	7		50	
4		P-6	Other (See Comments) (OT)	38.16590933	-122.5597347	7		55	
5		P-7	Other (See Comments) (OT)	38.16601117	-122.5596422	7		42	
6		P-8	Other (See Comments) (OT)	38.16601483	-122.5596808	7		35	EW 12 ?
7		P-1	Other (See Comments) (OT)	38.16237717	-122.559976	10		1100	021
8		P-9	Other (See Comments) (OT)	38.16708483	-122.560793	15		700	
9	59567	LC-234	LFG Collector - Standard	38.1654038	-122.5607993	16		9	
10	877	83	LFG Collector - Standard	38.1640668	-122.5610008	17		4.82	
11	889	95	LFG Collector - Standard	38.1630983	-122.5606295	17		10.74	
12	59568	LC-235	LFG Collector - Standard	38.1659611	-122.5611811	20		31	
13	62176	LC-252	LFG Collector - Standard	38.164918	-122.5618217	25		6.75	
14	59569	LC-236	LFG Collector - Standard	38.1666116	-122.5618882	29		16	
15	59574	LC-241	LFG Collector - Standard	38.1659295	-122.5619612	29		11	
16	62177	LC-253	LFG Collector - Standard	38.1648188	-122.5617898	30		4.53	
17		P-10	Other (See Comments) (OT)	38.16413217	-122.5619648	31		11	
18	62178	LC-254	LFG Collector - Standard	38.1649718	-122.5622977	35		6.83	
19		P-14	Other (See Comments) (OT)	38.16814117	-122.562457	38		108	
20	859	65	LFG Collector - Standard	38.1660924	-122.5624656	39		5.72	
21	59575	LC-242	LFG Collector - Standard	38.1657546	-122.5624878	39		17	
22		P-16	Other (See Comments) (OT)	38.1681825	-122.5629578	43		81	
23		P-17	Other (See Comments) (OT)	38.1682025	-122.5629357	43		57	
24	36862	117 D	LFG Collector - Standard	38.1667142	-122.5629642	44		13	
25	49444	LC-179	LFG Collector - Standard	38.1714265	-122.5672832	46		30	
26	54623	LC-217	LFG Collector - Standard	38.1642982	-122.5627832	46		3.33	
27	56613	LC-227	LFG Collector - Standard	38.1625588	-122.5627977	47		7.90	
28		P-47	Other (See Comments) (OT)	38.1684925	-122.5632173	48		900	031
29	41945	140	LFG Collector - Standard	38.1646417	-122.5634152	50		8.96	
30	44328	142	LFG Collector - Standard	38.1647059	-122.5633469	50		7.56	
31	62179	LC-255	LFG Collector - Standard	38.1654921	-122.563161	50		14	
32	62180	LC-256	LFG Collector - Standard	38.1651125	-122.563103	50		29	
33		P-19	Other (See Comments) (OT)	38.1686105	-122.5637285	53		45	
34	36861	116 E	LFG Collector - Standard	38.1670675	-122.5636515	54		65	
35	41725	137	LFG Collector - Standard	38.1664956	-122.5635508	54		7.73	
36	59570	LC-237	LFG Collector - Standard	38.1665481	-122.5637343	54		7.57	
37	59571	LC-238	LFG Collector - Standard	38.1660756	-122.5635479	54		6.46	
38		P-11	Other (See Comments) (OT)	38.16337667	-122.5635122	56		35	
39	59572	LC-239	LFG Collector - Standard	38.1670255	-122.5639206	59		26	

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021									
No.	**Point ID**	**DESCRIPTION**	**POINT TYPE**	**LATITUDE**	**LONGITUDE**	**SEM GRID BLOCK NO.**	**DATE**	**READING (PPM)**	**NOTES**
40	41996	141	LFG Collector - Standard	38.1641195	-122.5641272	60		4.76	
41	62170	LC-246	LFG Collector - Standard	38.1646082	-122.5640043	60		5.88	
42	36869	124 G	LFG Collector - Standard	38.1627022	-122.5638785	62		10.98	
43	56162	220	LFG Collector - Standard	38.1613197	-122.5642922	63			CN1-OR 252 ?
44		P-21	Other (See Comments) (OT)	38.16887917	-122.5642652	64		25	
45		P-22	Other (See Comments) (OT)	38.16887883	-122.5642492	64		58	
46		P-23	Other (See Comments) (OT)	38.1688705	-122.5642428	64		71	
47		P-82	Other (See Comments) (OT)	38.1688325	-122.5641177	64		50	
48		P-83	Other (See Comments) (OT)	38.16892133	-122.5643035	64		3000	030
49		P-84	Other (See Comments) (OT)	38.16910133	-122.564327	64		49	
50		P-85	Other (See Comments) (OT)	38.16914767	-122.5644217	64		800	029
51	36860	115 E	LFG Collector - Standard	38.1674718	-122.564332	65		42	
52	59573	LC-240	LFG Collector - Standard	38.1670241	-122.5644225	66		30	
53	59576	LC-243	LFG Collector - Standard	38.1634542	-122.5641759	68		680	
54	59577	LC-244	LFG Collector - Standard	38.1633506	-122.5645797	74		10.50	021
55	44039	HC-101	LFG Collector - Standard	38.1628293	-122.5646008	75		10.30	
56	44040	HC-102	LFG Collector - Standard	38.1623785	-122.5644932	75		9.07	
57	56619	LC-230	LFG Collector - Standard	38.1660713	-122.5650072	78		65	
58	56624	LC-233	LFG Collector - Standard	38.1668967	-122.5649932	78		14	
59	59578	LC-245	LFG Collector - Standard	38.1634761	-122.5650176	80		9.20	
60		P-86	Other (See Comments) (OT)	38.16314633	-122.5649933	80		14	
61		P-48	Other (See Comments) (OT)	38.17419167	-122.5651825	83		550	027
62		P-43	Other (See Comments) (OT)	38.1730765	-122.5652423	84		1800	028
63		P-36	Other (See Comments) (OT)	38.17149783	-122.5653047	85		3.19	
64		P-38	Other (See Comments) (OT)	38.17183867	-122.5653647	85		26.95	
65	811	17	LFG Collector - Standard	38.1703617	-122.5655321	87		25.95	
66	810	16	LFG Collector - Standard	38.1696262	-122.5654417	88		7.16	
67	56620	LC-231	LFG Collector - Standard	38.1686286	-122.565354	88		54	
68	36859	114 A	LFG Collector - Standard	38.1679373	-122.5652196	89		60	
69	54625	LC-219	LFG Collector - Standard	38.1679709	-122.5652163	89		42	
70	54621	LC-215	LFG Collector - Standard	38.1650547	-122.5653325	91		11	
71	43673	HC-107	LFG Collector - Standard	38.1656909	-122.5652975	91			
72		P-49	Other (See Comments) (OT)	38.17493067	-122.5655627	95		3.13	
73	812	18	LFG Collector - Standard	38.1713486	-122.5657009	97		20.75	
74	813	19	LFG Collector - Standard	38.1720321	-122.5657371	97		12.85	
75	54620	LC-214	LFG Collector - Standard	38.1644529	-122.5654859	102		5.66	
76	56608	LC-222	LFG Collector - Standard	38.1654792	-122.5656981	102		15	
77	54618	LC-212	LFG Collector - Standard	38.1639036	-122.5656472	103		8.90	
78		P-50	Other (See Comments) (OT)	38.17512867	-122.5660458	105		6.08	

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021									
No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (PPM)	NOTES
79	56621	LC-232	LFG Collector - Standard	38.1697835	-122.5661705	109		800	Active 0.43
80	54599	LC-196	LFG Collector - Standard	38.1682071	-122.5661163	110			
81	56618	LC-229	LFG Collector - Standard	38.1672291	-122.5664904	110		17	
82	45852	HC-153	LFG Collector - Standard	38.1679467	-122.5661684	110			
83	54603	LC-200	LFG Collector - Standard	38.167125	-122.5662454	111		5.38	
84	54605	LC-201	LFG Collector - Standard	38.166682	-122.5660752	111		6.36	
85	56609	LC-223	LFG Collector - Standard	38.1658602	-122.5660864	111		17	
86	56610	LC-224	LFG Collector - Standard	38.1662079	-122.5659064	111		6.42	
87	56612	LC-226	LFG Collector - Standard	38.1641725	-122.5658872	113		3.92	
88	52613	LC-183	LFG Collector - Standard	38.1741572	-122.5665373	116		7	
89		P-51	Other (See Comments) (OT)	38.17522917	-122.5664445	116		4.04	
90	52614	LC-184	LFG Collector - Standard	38.1729705	-122.5670855	117		27	
91	802	8	LFG Collector - Standard	38.1716005	-122.566374	118		4.49	
92	54598	LC-195	LFG Collector - Standard	38.1683749	-122.5665931	121			Active
93	54602	LC-199	LFG Collector - Standard	38.1674912	-122.5663974	121		12	
94	56611	LC-225	LFG Collector - Standard	38.1669138	-122.566333	122		12.67	
95		P-52	Other (See Comments) (OT)	38.1753825	-122.5669377	127		15.97	
96	36872	127 B	LFG Collector - Standard	38.1738351	-122.5667563	128		14	
97	36873	128 A	LFG Collector - Standard	38.1698037	-122.5673679	131			Active
98	54597	LC-194	LFG Collector - Standard	38.1689615	-122.5665835	131			
99	54601	LC-198	LFG Collector - Standard	38.1677646	-122.566832	132			
100	45855	HC-156	LFG Collector - Standard	38.1666548	-122.5666904	133		6.59	
101		P-13	Other (See Comments) (OT)	38.16627267	-122.5667888	133			
102	62171	LC-247	LFG Collector - Standard	38.1650576	-122.5667205	134		11	
103	62172	LC-248	LFG Collector - Standard	38.1656523	-122.5668544	134		13	
104		P-53	Other (See Comments) (OT)	38.175473	-122.567267	136		4.19	
105	62175	LC-251	LFG Collector - Standard	38.1736281	-122.5672672	137		17	
106	41722	134	LFG Collector - Standard	38.1725194	-122.5670213	138		18	
107	41723	135	LFG Collector - Standard	38.1721529	-122.5672934	138		12	
108	56607	LC-221	LFG Collector - Standard	38.1681175	-122.5672286	141		75	Active
109	56617	LC-228	LFG Collector - Standard	38.1677564	-122.5670458	141		26	
110		P-12	Other (See Comments) (OT)	38.16712983	-122.5670528	141		700	
111	49441	LC-176	LFG Collector - Standard	38.1740513	-122.5675294	145		15	
112		P-55	Other (See Comments) (OT)	38.17551583	-122.5676485	145		4.25	
113	36848	103 C	LFG Collector - Standard	38.172415	-122.5677142	147		41	
114	52620	LC-190	LFG Collector - Standard	38.1634359	-122.5634027	147		9	
115	36851	106 C	LFG Collector - Standard	38.1700882	-122.5675715	148		42	
116	54607	LC-202	LFG Collector - Standard	38.1683618	-122.5672804	150		25	
117		P-54	Other (See Comments) (OT)	38.17572183	-122.5679133	153		3.77	

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021									
No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (PPM)	NOTES
118	62174	LC-250	LFG Collector - Standard	38.1738242	-122.5678612	154		19	
119	36850	105 C	LFG Collector - Standard	38.1706173	-122.5677909	156		34	
120	36852	107 C	LFG Collector - Standard	38.1694971	-122.5676143	157		113	
121	54609	LC-203	LFG Collector - Standard	38.1687352	-122.5676688	157		67	
122	54610	LC-204	LFG Collector - Standard	38.1690544	-122.5678759	157		131	
123	36875	130 E	LFG Collector - Standard	38.1667905	-122.5677676	159		47	
124		P-56	Other (See Comments) (OT)	38.17588233	-122.5682602	161		632	025
125	41720	132	LFG Collector - Standard	38.1719093	-122.5679846	162		6.71	
126	62173	LC-249	LFG Collector - Standard	38.1729121	-122.5680262	163		39	
127	52616	LC-186	LFG Collector - Standard	38.1722291	-122.5686197	164		19	
128	54615	LC-209	LFG Collector - Standard	38.1700423	-122.5682426	165		6.01	
129	54611	LC-205	LFG Collector - Standard	38.1697844	-122.5682198	166		7.68	
130	54616	LC-210	LFG Collector - Standard	38.1694802	-122.5681831	166		8.73	
131	52618	LC-188	LFG Collector - Standard	38.171603	-122.5680363	172		21	
132	36871	126 C	LFG Collector - Standard	38.1705307	-122.5683679	174		31	
133	36874	129 E	LFG Collector - Standard	38.1688503	-122.5683779	174		26	
134	54612	LC-206	LFG Collector - Standard	38.1703914	-122.5684577	174		25	
135		P-61	Other (See Comments) (OT)	38.17628833	-122.5690028	176		3.01	
136	829	35	LFG Collector - Standard	38.1739165	-122.5693927	186		7.86	
137	36847	102 C	LFG Collector - Standard	38.1716815	-122.5692653	187		700	0-43
138		P-81	Other (See Comments) (OT)	38.16884867	-122.569311	189		7.89	
139	839	45	LFG Collector - Standard	38.1760433	-122.5697611	190		10.61	
140	841	47	LFG Collector - Standard	38.1757422	-122.5694936	190		6.58	
141		P-74	Other (See Comments) (OT)	38.17652617	-122.5696552	190		4.69	
142	828	34	LFG Collector - Standard	38.1730762	-122.5695551	192		4.13	
143	797	3	LFG Collector - Standard	38.1713895	-122.569684	193		5.60	
144		P-76	Other (See Comments) (OT)	38.17518783	-122.570047	197		800	024
145		P-77	Other (See Comments) (OT)	38.17460717	-122.5700413	197		3.08	
146		P-78	Other (See Comments) (OT)	38.17432767	-122.5702018	197		4.16	
147	36845	100 C	LFG Collector - Standard	38.1724647	-122.5698034	199		5.75	
148		P-75	Other (See Comments) (OT)	38.17632433	-122.5704643	200		10.72	
149		P-79	Other (See Comments) (OT)	38.17342533	-122.5702742	202		3.77	
150	52622	LC-192	LFG Collector - Standard	38.1679347	-122.5646219			9	
151		P-44	Other (See Comments) (OT)					900	
152		P-45	Other (See Comments) (OT)						
153		P-73	Other (See Comments) (OT)					3.11	

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - 2021 Q4

No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (ppm)	NOTES
43	56162	220	LFG Collector- Standard	38.1613197	-122.564292	63	12/21/2021	0	
71	43673	HC-107	LFG Collector- Standard	38.1656909	-122.565298	91	12/21/2021	0	
101		P-13	Other (See Comments) (OT)	38.16627267	-122.566789	133	12/21/2021	0	
152		P-45	Other (See Comments) (OT)						Point 152 no longer exist

Redwood Landfill
Penetrations Workbook

WELL	GRID	PPM								
266	73	6								NOT ON MAP OR LOG
267	79	11								
268	79	8								
269	79	21								
270	67-73	27								
265	67	17								
259	195	12								
258	189	14								
262	193	11								
261	180	75								
274	156	8								
264	156	21								

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, CELVIN ORTIZ, DWIGHT ANDERSON, RICK LEWIS

Date: 11-16-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 52 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
1	LW	0545	0600	38	1	2	15	
2	DA	0545	0600	40	1	2	15	
3	RL	0545	0600	17	1	2	15	
4	CO	0545	0600	55	1	2	15	
5	LW	0600	0615	38	1	2	16	
6	DA	0600	0615	22	1	2	16	
7	RL	0600	0615	600	1	2	16	SURFACE
8	CO	0600	0615	50	1	2	16	
9	LW	0615	0630	37	1	2	16	
10	DA	0615	0630	1100	1	2	16	BlackPIPE P1
11	RL	0615	0630	71	1	2	16	
12	CO	0615	0630	54	1	2	16	
13	LW	0630	0645	22	1	2	16	
14	DA	0630	0645	26	1	2	16	
15	RL	0630	0645	700	1	2	16	P9
16	CO	0630	0645	700	1	2	16	SURFACE
17	LW	0645	0700	11	1	2	16	
18	DA	0645	0700	21	1	2	16	
19	RL	0645	0700	39	1	2	16	
20	CO	0645	0700	89	1	2	16	
21	LW	0700	0715	115	2	3	14	
22	DA	0700	0715	17	2	3	14	
23	RL	0700	0715	38	2	3	14	
24	CO	0700	0715	72	2	3	14	
25	LW	0715	0730	60	2	4	15	
26	DA	0715	0730	45	2	4	15	
27	RL	0715	0730	31	2	4	15	
28	CO	0715	0730	87	2	4	15	
29	LW	0730	0745	40	2	4	15	
30	DA	0730	0745	37	2	4	15	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 6

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Calvin Ortiz; Dwight Anderson; Rick Lemos

Date: 11-16-21 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 54 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
31	RL	0730	0745	19	2	4	15	
32	CO	0730	0745	14	2	4	15	
33	LW	0745	0800	830	3	5	15	surface
34	DA	0745	0800	65	3	5	15	
35	RL	0745	0800	52	3	5	15	
36	CO	0745	0800	21	3	5	15	
37	LW	0800	0815	24	2	3	14	
38	DA	0800	0815	108	2	3	14	
39	RL	0800	0815	42	2	3	14	
40	CO	0800	0815	52	2	3	14	
41	LW	0815	0830	36	2	3	15	
42	DA	0815	0830	29	2	3	15	
43	RL	0815	0830	81	2	3	15	
44	CO	0815	0830	57	2	3	15	
45	LW	0830	0845	28	1	2	14	
46	DA	0830	0845	30	1	2	14	
47	RL	0830	0845	11	1	2	14	
48	CO	0830	0845	900	1	2	14	P47
49	LW	0845	0900	33	1	2	14	
50	DA	0845	0900	600	1	2	14	Well 272
51	RL	0845	0900	22	1	2	14	
52	CO	0845	0900	19	1	2	14	
53	LW	0900	0915	45	1	2	12	
54	DA	0900	0915	65	1	2	12	
55	RL	0900	0915	31	1	2	12	
56	CO	0900	0915	35	1	2	12	
57	LW	0915	0930	26	1	2	12	
58	DA	0915	0930	102	1	2	12	
59	RL	0915	0930	26	1	2	12	
60	CO	0915	0930	49	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Calvin Ortiz, Dwight Anderson, Rick Lenos

Date: 11-16-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
61	LW	0930	0945	36	1	2	6	
62	DA	0930	0945	18	1	2	6	
63	RL	0930	0945	54	1	2	6	
64	CO	0930	0945	3,000	1	2	6	P83
65	LW	0945	1000	42	1	2	8	
66	DA	0945	1000	30	1	2	8	
67	RL	0945	1000	39	1	2	8	
68	CO	0945	1005	680	1	2	8	Well 243
69	LW	1000	1015	21	1	2	8	
70	DA	1000	1015	44	1	2	8	
71	RL	1000	1015	58	1	2	8	
72	CO	1000	1015	34	1	2	8	
73	LW	1015	1030	26	1	2	7	
74	DA	1015	1030	19	1	2	7	
75	RL	1015	1030	26	1	2	7	
76	CO	1015	1030	42	1	2	7	
77	LW	1030	1045	35	1	2	7	
78	DA	1030	1045	65	1	2	7	
79	RL	1030	1045	21	1	2	7	
80	CO	1030	1045	36	1	2	7	
81	LW	1045	1100	45	1	2	8	
82	DA	1045	1100	5,000	1	2	8	LS2
88	RL	1045	1100	60	1	2	8	
89	CO	1045	1100	54	1	2	8	
90	LW	1100	1115	32	1	3	7	
91	DA	1100	1115	26	1	3	7	
92	RL	1100	1115	24	1	3	7	
93	CO	1100	1115	26	1	3	7	
94	LW	1115	1130	37	1	3	8	
101	DA	1115	1130	36	1	3	8	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Ward [illegible] | Calvin Ortiz
Dwight Anderson
Rick Leno

Date: 11-16-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 65 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
102	RL	1115	1130	28	1	3	8	
103	CO	1115	1130	26	1	3	8	
104	LW	1130	1145	21	2	4	14	
111	DA	1130	1145	26	2	4	14	
112	RL	1130	1145	118	2	4	14	
113	CO	1130	1145	40	2	4	14	
114	LW	1145	1200	28	2	4	14	
115	DA	1145	1200	86	2	4	14	
122	RL	1145	1200	29	2	4	14	
123	CO	1145	1200	41	2	4	14	
124	LW	1200	1215	38	2	4	15	
125	DA	1200	1215	26	2	4	15	
126	RL	1200	1215	20	2	4	15	
133	CO	1200	1215	47	2	4	15	
134	LW	1215	1230	59	2	4	15	
135	DA	1215	1230	36	2	4	15	
142	RL	1215	1230	31	2	4	15	
143	CO	1215	1230	34	2	4	15	
144	LW	1230	1245	66	2	4	15	
150	DA	1230	1245	700	2	4	16	PIZ
151	RL	1230	1245	39	2	4	16	
152	CO	1230	1245	45	2	4	16	
158	LW	1245	1300	126	2	4	16	
159	DA	1245	1300	47	2	4	16	
160	RL	1245	1300	35	2	4	16	
167	CO	1245	1300	34	2	4	16	
168	LW	1300	1315	1500	2	3	1	surface
169	DA	1300	1315	32	2	3	1	
175	RL	1300	1315	92	2	3	1	
182	CO	1300	1315	41	2	3	1	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, CALVIN ORTIZ, DWIGHT ANDERSON, RICK LEROS

Date: 11-16-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 70 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
183	LW	1315	1330	31	2	3	1	
86	DA	1315	1330	31	2	3	1	
87	RL	1315	1330	106	2	3	1	
98	CO	1315	1330	109	2	3	1	
108	LW	1330	1345	800	2	3	16	Well 232
119	DA	1330	1345	77	2	3	16	
130	RL	1330	1345	46	2	3	16	
139	CO	1330	1345	55	2	3	16	
148	LW	1345	1400	42	2	3	16	
149	DA	1345	1400	84	2	3	16	
156	RL	1345	1400	138	2	3	16	
157	CO	1345	1400	560	2	3	16	Surface
165	LW	1400	1415	98	2	3	14	
166	DA	1400	1415	650	2	3	14	Surface
173	RL	1400	1415	75	2	3	14	
174	CO	1400	1415	58	2	3	14	
180	LW	1415	1430	35	2	3	14	
181	DA	1415	1430	29	2	3	14	
188	RL	1415	1430	33	2	3	14	
189	CO	1415	1430	835	2	3	14	Surface
194	LW	1430	1445	36	2	3	15	
195	DA	1430	1445	1700	2	3	15	White pipe
200	RL	1430	1445	21	2	3	15	
204	CO	1430	1445	35	2	3	15	
186	LW	1445	1500	31	2	3	1	
187	DA	1445	1500	700	2	3	1	Well 102C
192	RL	1445	1500	60	2	3	1	
193	CO	1445	1500	29	2	3	1	
198	LW	1500	1515	40	2	3	16	
199	DA	1500	1515	26	2	3	16	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE | CALVIN ORTIZ
DWIGHT ANDERSON
RICK JENUS

Date: 11-16-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 70 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
202	RJ	1500	1515	22	2	3	16	
203	CO	1500	1515	26	2	3	16	
206	LW	1515	1530	21	2	3	16	
207	DA	1515	1530	35	2	3	16	
208	RC	1515	1530	39	2	3	16	
205	CO	1515	1530	45	2	3	16	
201	LW	1530	1545	32	2	3	16	
196	DA	1530	1545	45	2	3	16	
197	RC	1530	1545	800	2	3	16	P76
190	CO	1530	1545	29	2	3	16	
191	LW	1545	1600	45	2	3	15	
184	DA	1545	1600	37	2	3	15	
185	RC	1545	1600	20	2	3	15	
176	CO	1545	1600	32	2	3	15	
177	LW	1600	1615	20	1	2	12	
170	DA	1600	1615	39	1	2	12	
161	RC	1600	1615	630	1	2	12	P56
162	CO	1600	1615	34	1	2	12	
153	LW	1615	1630	19	1	2	12	
145	DA	1615	1630	58	1	2	12	
136	RC	1615	1630	25	1	2	12	
127	CO	1615	1630	28	1	2	12	
116	LW	1630	1645	23	1	2	12	
105	DA	1630	1645	31	1	2	12	
95	RC	1630	1645	40	1	2	12	
83	CO	1630	1645	900	1	2	12	B2-P44
84	LW	1645	1700	1800	1	2	10	P43
85	DA	1645	1700	26	1	2	10	
96	RC	1645	1700	84	1	2	10	
97	CO	1645	1700	28	1	2	10	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leishwnor

Date: 11-16-21 Instrument Used: ______ Grid Spacing: ______

Temperature: ______ Precip: ______ Upwind BG: ______ Downwind BG: ______

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
99								Active-faces
100								
109								
110								
120								
121								
131								
132								
140								
141								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGHWNOR | CALVIN ORTIZ
DWIGHT ANDERSON
RICK/ENOS

Date: 11-17-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 44 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
106	LW	0550	0605	27	1	2	9	
107	DA	0550	0605	38	1	2	9	
117	RC	0550	0605	27	1	2	9	
118	CO	0550	0605	22	1	2	9	
128	LW	0605	0620	51	1	2	11	
129	DA	0615	0620	36	1	2	11	
137	RC	0605	0620	86	1	2	11	
138	CO	0605	0620	18	1	2	11	
146	LW	0620	0635	55	1	2	12	
147	DA	0620	0635	41	1	2	12	
154	RC	0620	0635	38	1	2	12	
155	CO	0620	0635	78	1	2	12	
163	LW	0635	0650	64	1	2	12	
164	DA	0635	0650	81	1	2	12	
171	RC	0635	0650	52	1	2	12	
172	CO	0635	0650	45	1	2	12	
178	LW	0650	0705	65	1	2	13	
179	DA	0650	0705	37	1	2	13	

Attach Calibration Sheet
Attach site map showing grid ID

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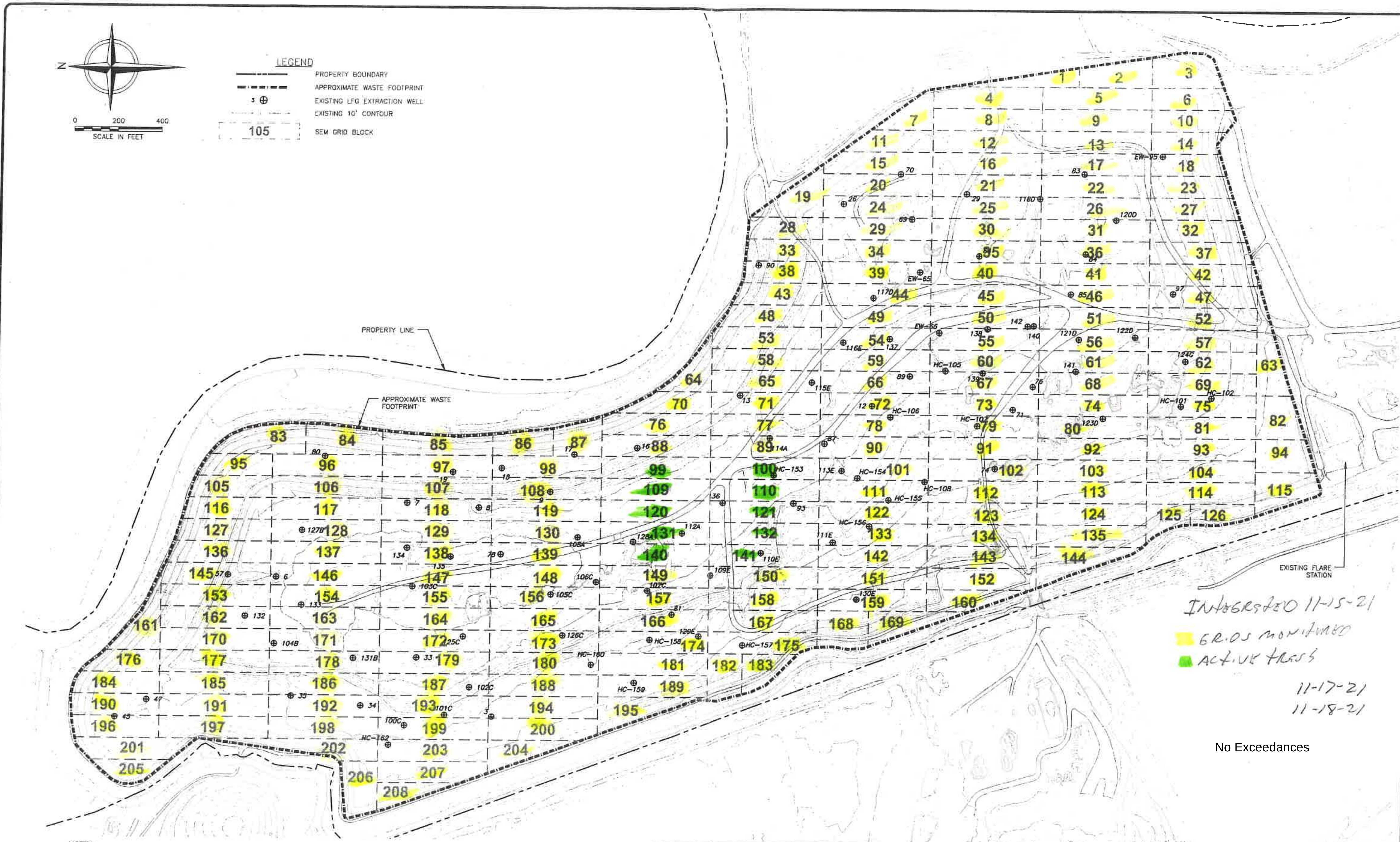
Attachment B

Integrated Surface Emission Monitoring Event Records

Table B.1
Integrated Landfill Surface Monitoring
Exceedances and Monitoring Log

2021 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			**1st Re-mon Event - 10 Days**			**2nd Re-mon Event - 10 Days**			
Exceedance Grid ID No.	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <25 ppm	No Exced. >25 ppm	Monitoring Date	No Exced. <25 ppm	No Exced. >25 ppm	**Comments**
No Exceedances									



NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014.

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014 DRAWN BY RL DESIGNED BY MLH CHECKED BY MED APPROVED BY PJS

cornerstone environmental

PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO. 1

PROJECT NO. 140521

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Hurst, Calvin Ortiz, Dwight Anderson, R. Clemens

Cal. Gas Exp. Date: 6-9-22

Date: 11-15-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 54 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	1230	1255	6.13	1	2	13	
2	DA	1230	1255	7.23	1	2	13	
3	RC	1230	1255	6.11	1	2	13	
4	CO	1230	1255	9.52	1	2	13	
5	LW	1255	1320	6.80	1	2	13	
6	DA	1255	1320	5.06	1	2	13	
7	RC	1255	1320	9.71	1	2	13	
8	CO	1255	1320	21.86	1	2	13	
9	LW	1320	1345	11.26	2	3	1	
10	DA	1320	1345	5.45	2	3	1	
11	RC	1320	1345	10.75	2	3	1	
12	CO	1320	1345	22.24	2	3	1	
13	LW	1345	1410	10.22	2	3	13	
14	DA	1345	1410	5.67	2	3	13	
15	RC	1345	1410	12.62	2	3	13	
16	CO	1345	1410	23.58	2	3	13	
17	LW	1410	1435	12.60	1	2	14	
18	DA	1410	1435	5.58	1	2	14	
19	RC	1410	1435	7.32	1	2	14	
20	CO	1410	1435	14.91	1	2	14	
21	LW	1435	1500	14.70	1	2	4	
22	DA	1435	1500	6.99	1	2	4	
23	RC	1435	1500	5.82	1	2	4	
24	CO	1435	1500	18.45	1	2	4	
25	LW	1500	1525	7.66	1	2	8	
26	DA	1500	1525	6.04	1	2	8	
27	RC	1500	1525	5.92	1	2	8	
28	CO	1500	1525	8.30	1	2	8	
29	LW	1525	1550	9.36	1	2	4	
30	DA	1525	1550	7.22	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, CALVIN ORTIZ, DWIGHT ANDERSON, R. CLEMOS

Cal. Gas Exp. Date: 6-9-22

Date: 11-15-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 64 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
31	RL	1525	1550	6.14	1	2	4	
32	CO	1525	1550	5.25	1	2	4	
33	LW	1550	1615	7.14	1	2	8	
34	DA	1550	1615	8.59	1	2	8	
35	RL	1550	1615	7.61	1	2	8	
36	CO	1550	1615	6.84	1	2	8	
37	LW	1615	1640	5.53	1	2	8	
38	DA	1615	1640	6.97	1	2	8	
39	RL	1615	1640	7.13	1	2	8	
40	CO	1615	1640	5.96	1	2	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIS/WADE ______ ______
______ ______ ______
______ ______ Cal. Gas Exp. Date: ______

Date: 11-15-21 Instrument Used: ______ Grid Spacing: ______

Temperature: ______ Precip: ______ Upwind BG: ______ Downwind BG: ______

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
99								ACTIVE-TRASH
100								
109								
110								
120								
121								
131								
132								
140								
141								

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leighwade, Calvin Ortiz, Dwight Ardenjev, Rick Lenis

Cal. Gas Exp. Date: 6-9-22

Date: 11-17-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 46 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
41	LW	0715	0740	5.28	1	2	12	
42	DA	0715	0740	5.60	1	2	12	
43	RL	0715	0740	7.32	1	2	12	
44	CO	0715	0740	6.95	1	2	12	
45	LW	0740	0805	7.30	1	2	12	
46	DA	0740	0805	5.41	1	2	12	
47	RL	0740	0805	5.12	1	2	12	
48	CO	0740	0805	6.54	1	2	12	
49	LW	0805	0830	6.79	1	2	12	
50	DA	0805	0830	6.04	1	2	12	
51	RL	0805	0830	5.11	1	2	12	
52	CO	0805	0830	5.46	1	2	12	
53	LW	0830	0855	6.21	1	2	12	
54	DA	0830	0855	6.77	1	2	12	
55	RL	0830	0855	5.30	1	2	12	
56	CO	0830	0855	5.21	1	2	12	
57	LW	0855	0920	4.78	1	2	13	
58	DA	0855	0920	5.64	1	2	13	
59	RL	0855	0920	6.13	1	2	13	
60	CO	0855	0920	6.39	1	2	13	
61	LW	0920	0945	5.12	1	2	14	
62	DA	0920	0945	5.06	1	2	14	
63	RL	0920	0945	6.84	1	2	14	
64	CO	0920	0945	6.76	1	2	14	
65	LW	0945	1010	6.39	1	2	14	
66	DA	0945	1010	7.11	1	2	14	
67	RL	0945	1010	6.42	1	2	14	
68	CO	0945	1010	5.94	1	2	14	
69	LW	1010	1035	5.12	1	2	12	
70	DA	1010	1035	6.07	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Ceijhvarz, Calvin Ortiz, Dwight Anderson, Ricki Lemos

Cal. Gas Exp. Date: 6-9-22

Date: 11-17-21 Instrument Used: TVA1000 Grid Spacing: 25

Temperature: 52 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
71	RL	1010	1035	6.14	1	2	12	
72	CO	1010	1035	5.36	1	2	12	
73	LV	1035	1100	6.18	1	2	10	
74	DA	1035	1100	5.39	1	2	6	
75	RL	1035	1100	6.16	1	2	10	
76	CO	1035	1100	7.45	1	2	10	
77	LV	1130	1155	6.92	1	3	12	
78	DA	1130	1155	6.04	1	3	12	
79	RL	1130	1155	5.96	1	3	12	
80	CO	1130	1155	7.41	1	3	12	
81	LV	1155	1220	6.80	1	2	12	
82	DA	1155	1220	7.08	1	2	12	
88	RL	1155	1220	9.41	1	2	12	
89	CO	1155	1220	10.55	1	2	12	
90	LV	1220	1245	6.39	1	2	16	
91	DA	1220	1245	5.77	1	2	16	
92	RL	1220	1245	6.15	1	2	16	
93	CO	1220	1245	5.79	1	2	16	
94	LV	1245	1310	7.21	1	2	12	
101	DA	1245	1310	6.50	1	2	12	
102	RL	1245	1310	5.89	1	2	12	
103	CO	1245	1310	6.26	1	2	12	
104	LV	1310	1335	6.13	1	2	16	
111	DA	1310	1335	7.44	1	2	16	
112	RL	1310	1335	5.90	1	2	16	
113	CO	1310	1335	6.27	1	2	16	
114	LV	1335	1400	6.01	1	2	16	
115	DA	1335	1400	7.46	1	2	16	
122	RL	1335	1400	6.67	1	2	16	
123	CO	1335	1400	6.11	1	2	16	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Alvarez | Calvin Ortiz
Dwight Anderson
Rick Lean

Cal. Gas Exp. Date: 6-9-22

Date: 11-17-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 60 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
124	LV	1400	1425	5.32	1	2	16	
125	DA	1400	1425	6.90	1	2	16	
126	RL	1400	1425	8.15	1	2	16	
133	CO	1400	1425	7.24	1	2	16	
134	LV	1425	1450	6.18	1	2	16	
135	DA	1425	1450	6.90	1	2	16	
142	RL	1425	1450	6.67	1	2	16	
143	CO	1425	1450	5.92	1	2	16	
144	LV	1450	1515	6.85	1	2	16	
149	DA	1450	1515	12.71	1	2	16	
150	RL	1450	1515	14.68	1	2	16	
151	CO	1450	1515	10.49	1	2	16	
152	LV	1515	1540	7.66	1	2	15	
157	DA	1515	1540	23.10	1	2	15	
158	RL	1515	1540	12.70	1	2	15	
159	CO	1515	1540	6.41	1	2	15	
160	LV	1540	1605	6.07	1	2	13	
166	DA	1540	1605	14.90	1	2	13	
167	RL	1540	1605	12.54	1	2	13	
168	CO	1540	1605	7.22	1	2	13	
169	LV	1605	1630	6.10	1	2	12	
174	DA	1605	1630	9.24	1	2	12	
175	RL	1605	1630	11.51	1	2	12	
183	CO	1605	1630	8.12	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Loeshuanr | Celvin Ortiz
Dwight Anderson
Rick Ienos

Cal. Gas Exp. Date: 6-9-22

Date: 11-18-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 42 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
182	LW	0550	0615	6.07	1	2	8	
181	DA	0550	0615	7.34	1	2	8	
189	RL	0550	0615	6.96	1	2	8	
195	CO	0550	0615	7.33	1	2	8	
83	LW	0615	0640	6.41	1	2	8	
84	DA	0615	0640	7.12	1	2	8	
85	RL	0615	0640	6.86	1	2	8	
86	CO	0615	0640	6.13	1	2	8	
87	LW	0640	0705	6.55	2	3	6	
95	DA	0640	0705	5.37	2	3	6	
96	RL	0640	0705	6.10	2	3	6	
97	CO	0640	0705	5.98	2	3	6	
98	LW	0705	0730	6.03	1	2	6	
105	DA	0705	0730	5.41	1	2	6	
106	RL	0705	0730	6.17	1	2	6	
107	CO	0705	0730	6.35	1	2	6	
108	LW	0730	0755	7.21	1	2	7	
116	DA	0730	0755	5.47	1	2	7	
117	RL	0730	0755	11.95	1	2	7	
118	CO	0730	0755	13.26	1	2	7	
119	LW	0755	0820	15.23	1	2	7	
127	DA	0755	0820	9.53	1	2	7	
128	RL	0755	0820	11.16	1	2	7	
129	CO	0755	0820	8.39	1	2	7	
130	LW	0820	0845	12.71	1	2	7	
136	DA	0820	0845	6.15	1	2	7	
137	RL	0820	0845	19.28	1	2	7	
138	CO	0820	0845	8.78	1	2	7	
139	LW	0845	0910	22.78	2	4	8	
145	DA	0845	0910	6.23	2	4	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Calvin Ortiz, Dwight Anderson, Rick Lemos

Cal. Gas Exp. Date: 6-9-22

Date: 11-18-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 50 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
146	RL	0845	0910	6.35	2	4	8	
147	CO	0845	0910	8.10	2	4	8	
148	LW	0915	0940	11.45	2	3	7	
153	DA	0915	0940	6.21	2	3	7	
154	RL	0915	0940	6.68	2	3	7	
155	CO	0915	0940	8.13	2	3	7	
156	LW	0940	1005	21.80	2	4	7	
161	DA	0940	1005	5.71	2	4	7	
162	RL	0940	1005	6.20	2	4	7	
163	CO	0940	1005	8.35	2	4	7	
164	LW	1005	1030	8.28	2	4	7	
165	DA	1005	1030	11.30	2	4	7	
170	RL	1005	1030	6.13	2	4	7	
171	CO	1005	1030	7.58	2	4	7	
172	LW	1030	1055	9.73	2	4	7	
173	DA	1030	1055	10.60	2	4	7	
176	RL	1030	1055	5.38	2	4	7	
177	CO	1030	1055	5.13	2	4	7	
178	LW	1130	1155	6.62	2	4	7	
179	DA	1130	1155	7.59	2	4	7	
180	RL	1130	1155	9.11	2	4	7	
184	CO	1130	1155	5.51	2	4	7	
185	LW	1155	1220	6.12	2	4	8	
186	DA	1155	1220	7.34	2	4	8	
187	RL	1155	1220	6.97	2	4	8	
188	CO	1155	1220	7.21	2	4	8	
190	LW	1220	1245	5.66	2	3	7	
191	DA	1220	1245	5.11	2	3	7	
192	RL	1220	1245	6.97	2	3	7	
193	CO	1220	1245	8.14	2	3	7	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leishwade — Calvin Ortiz
Dwight Anderson
Rick Ienos

Cal. Gas Exp. Date: 6-9-22

Date: 11-18-21 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 64 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
194	LW	1245	1310	6.21	2	3	7	
196	DA	1245	1310	5.28	2	3	7	
197	RL	1245	1310	5.92	2	3	7	
198	CO	1245	1310	6.27	2	3	7	
199	LW	1310	1335	6.84	2	3	6	
200	DA	1310	1335	6.54	2	3	6	
201	RL	1310	1335	5.58	2	3	6	
202	CO	1310	1335	6.21	2	3	6	
203	LW	1335	1400	5.94	2	4	6	
204	DA	1335	1400	6.16	2	4	6	
205	RL	1335	1400	6.02	2	4	6	
206	CO	1335	1400	6.45	2	4	6	
207	LW	1400	1425	5.98	2	3	6	
208	DA	1400	1425	6.03	2	3	6	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 3

Attachment C

Component Leak Monitoring Event Records

Table C.1
AB-32 Component Leak Monitoring
Summary of Component Leaks Greater than 500 ppmv

2021 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Location	Initial Monitoring			Corrective Action		10-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

Table C.2
BAAQMD Component Leak Monitoring
Summary of Component Leaks Greater than 1,000 ppmv

2021 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Location	Initial Monitoring			Corrective Action		7-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

LANDFILL NAME: REDWOOD
QUARTERLY LFG COMPONENT LEAK MONITORING

INSTRUMENT FID
MAKE: Thermo Environr
MODEL: TVA 1000
S/N: 1036346773

DATE OF SAMPLING: 11-17-21
TECHNICIAN: LEIGH WADE

LOCATION OF LEAK	LEAK CONCENTRATION (ppmv)	DATE OF DISCOVERY	TECHNICIAN	ACTION TAKEN TO REPAIR LEAK	DATE OF REPAIR	DATE OF ANY REQUIRED RE-MONITORING	RE-MONITORED CONCENTRATION (ppmv)
NO EXCEEDANCE							

In the event that an exceedance is detected, please intiate corrective action and re-monitor the exceedance location within 7 days of the initial exceedance.

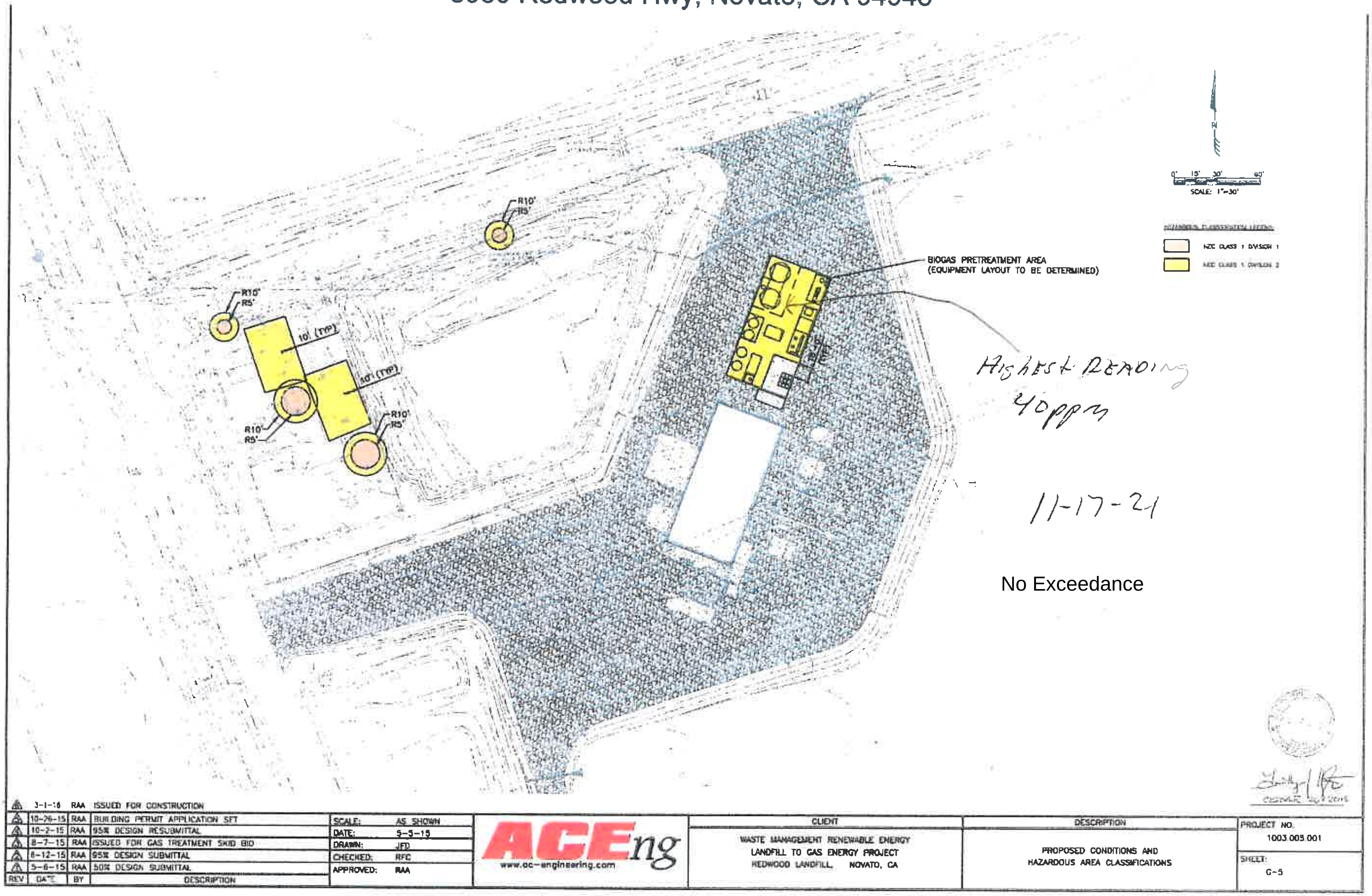
NOTE: Leaks over 500 ppmv methane are exceedances at any component containing landfill gas, pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B).

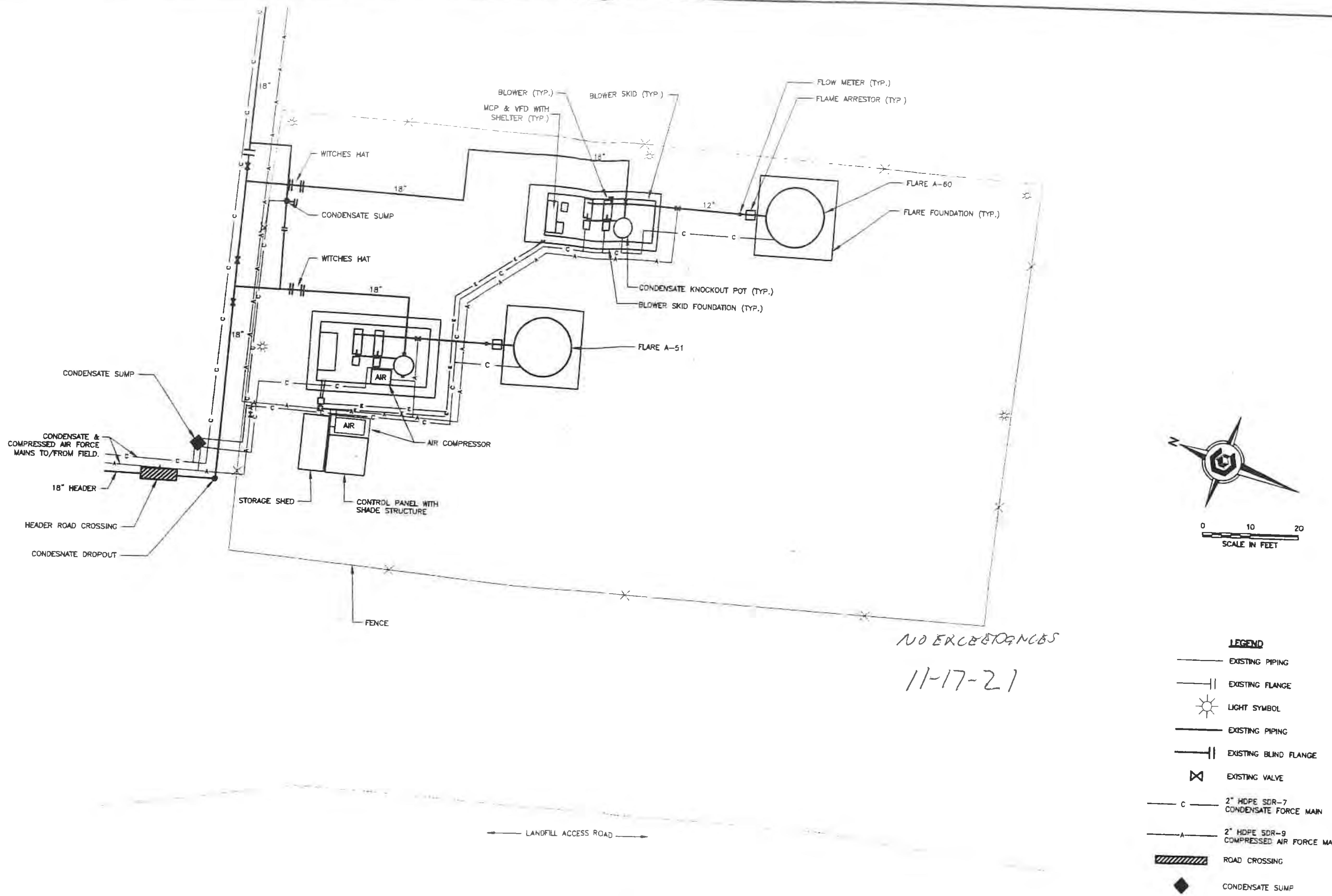
NOTE: Leaks over 1,000 ppmv methane are exceedances at any component containing landfill gas, pursuant to BAAQMD Regulation 8-34-301.2.

REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948





DRAFT

WASTE MANAGEMENT

PAUL J. STOUT, P.E.

P.E. Lic. No. C52827 Date

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE
DRAWN BY
DESIGNED BY
CHECKED BY
APPROVED BY

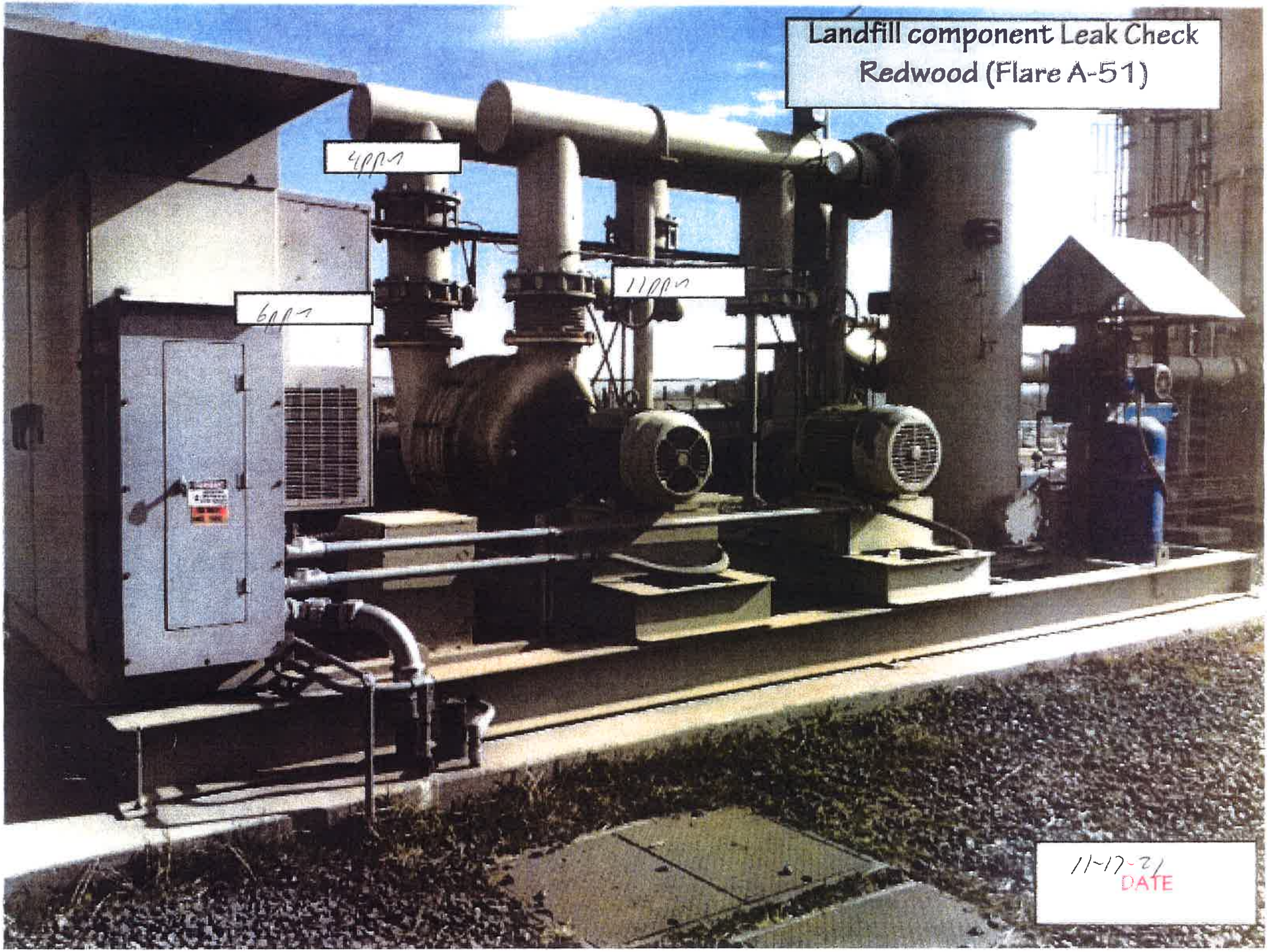
CORNERSTONE Environmental Group, LLC

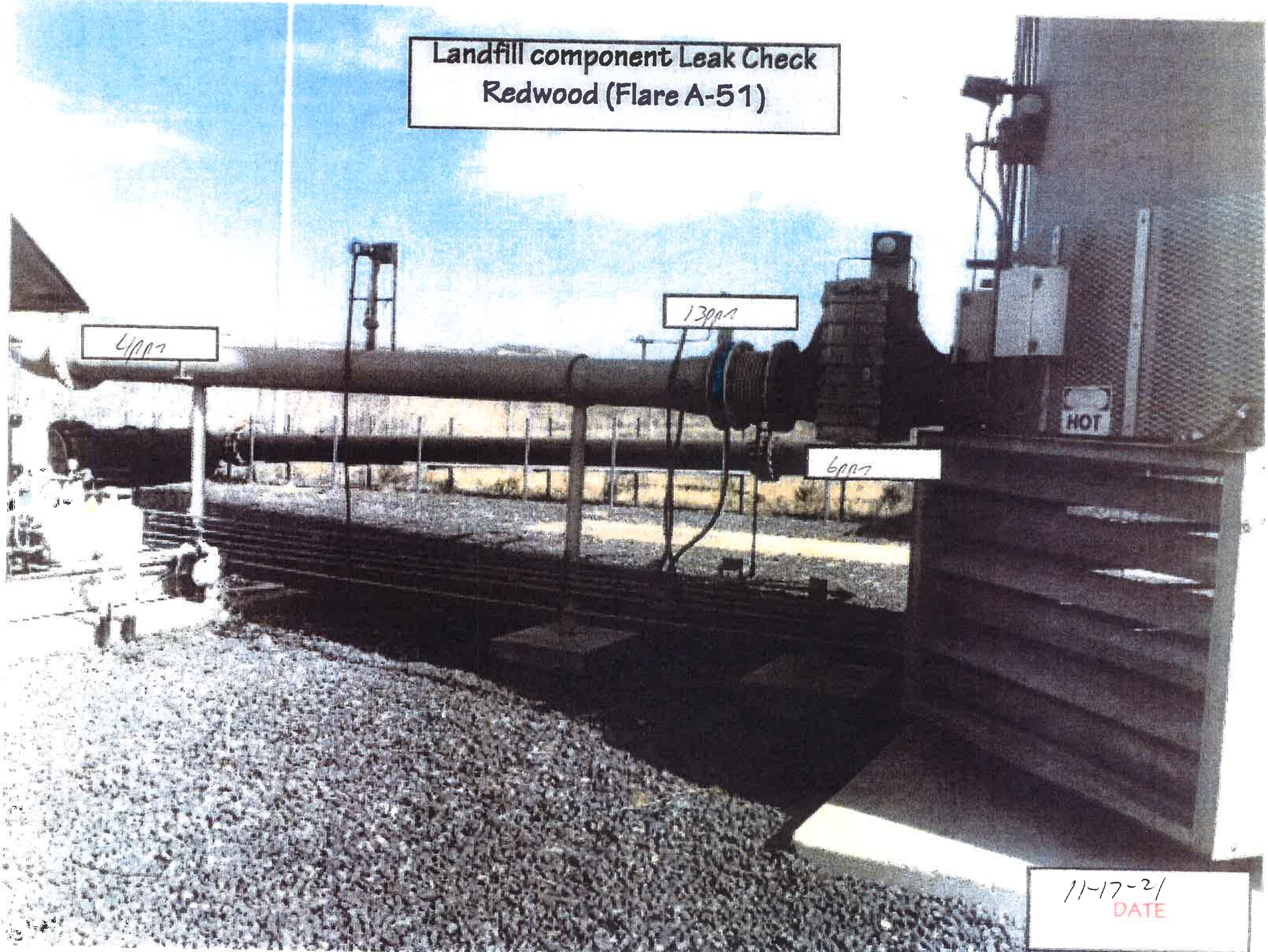
WASTE MANAGEMENT OF CALIFORNIA, INC.
REDWOOD LANDFILL, INC.
NOVATO, MARIN COUNTY, CALIFORNIA

LFG FLARE AND GCCS AS-BUILT FACILITY SITE PLAN

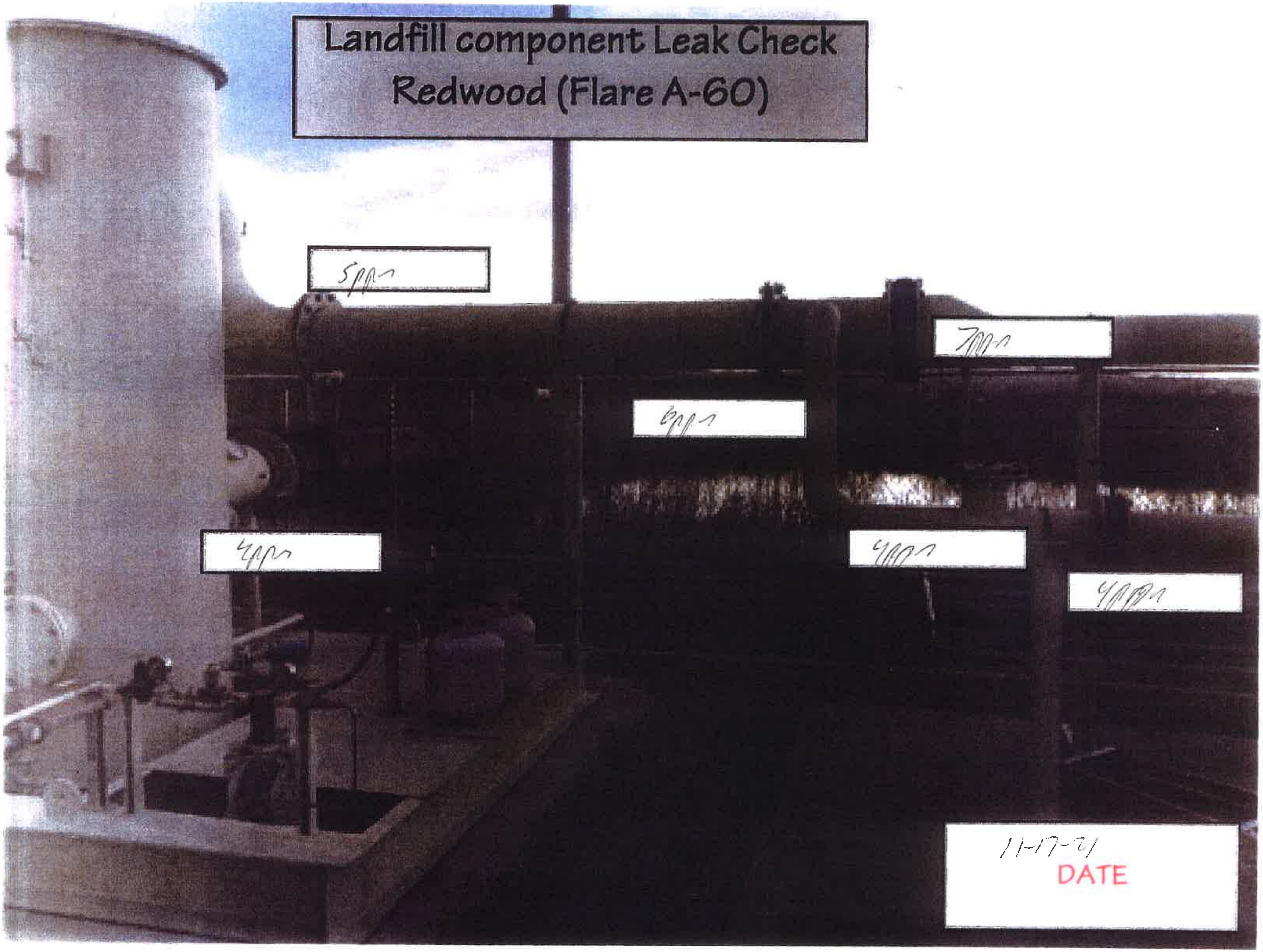
SHEET NO. 1

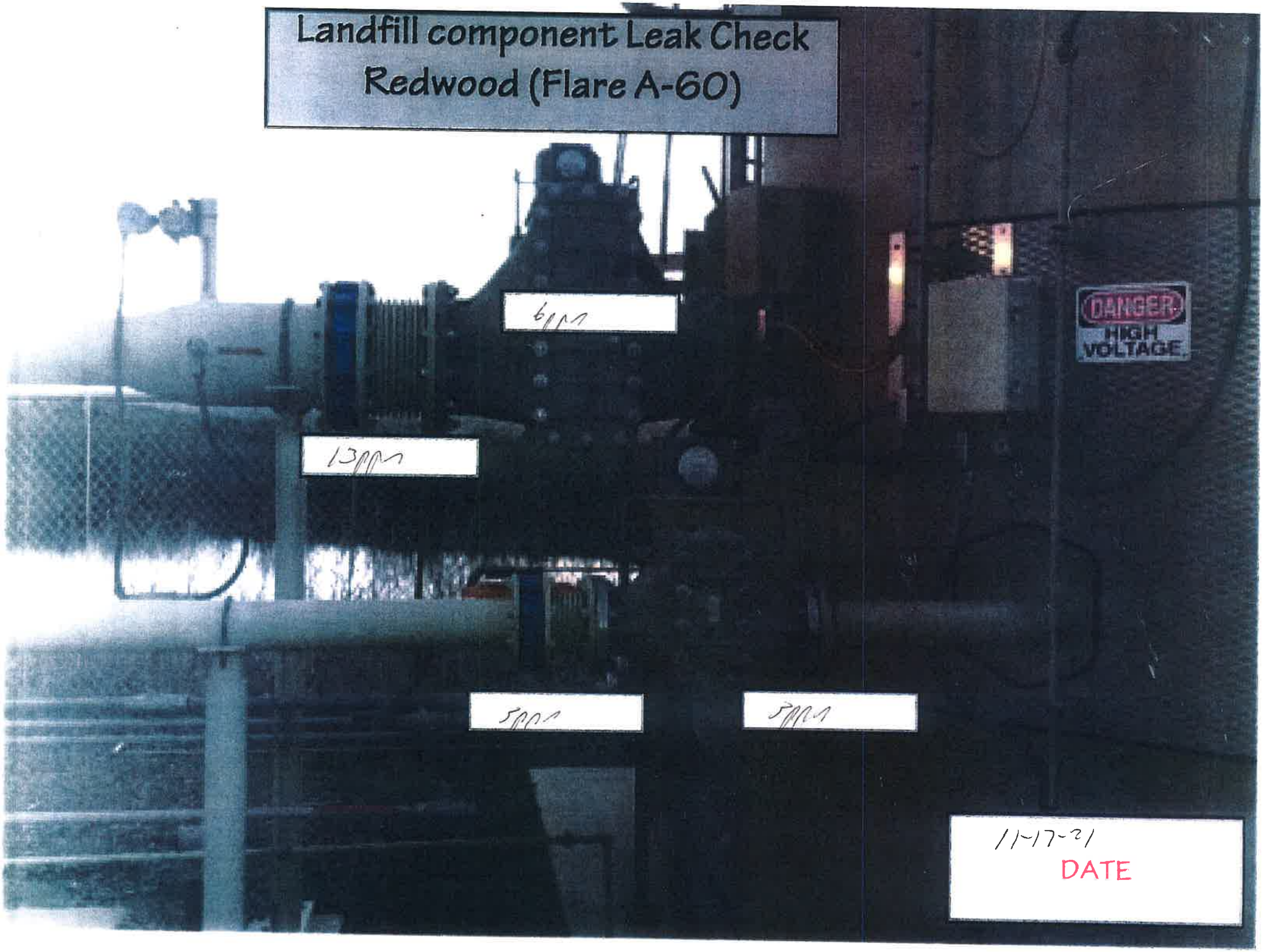
PROJECT NO.


Landfill component Leak Check
Redwood (Flare A-51)
4ppm
11ppm
6ppm
11-17-21
DATE


Landfill component Leak Check
Redwood (Flare A-51)
4ppm
13ppm
6ppm
HOT
11-17-21
DATE


Landfill component Leak Check
Redwood (Flare A-60)
7ppm
7ppm
11ppm
11-17-21
DATE


Landfill component Leak Check
Redwood (Flare A-60)
5ppm
7ppm
6ppm
4ppm
4ppm
4ppm
11-17-21
DATE


Landfill component Leak Check
Redwood (Flare A-60)
6ppm
13ppm
5ppm
5ppm
11-17-21
DATE
DANGER
HIGH
VOLTAGE

Attachment D

Weather Station Data

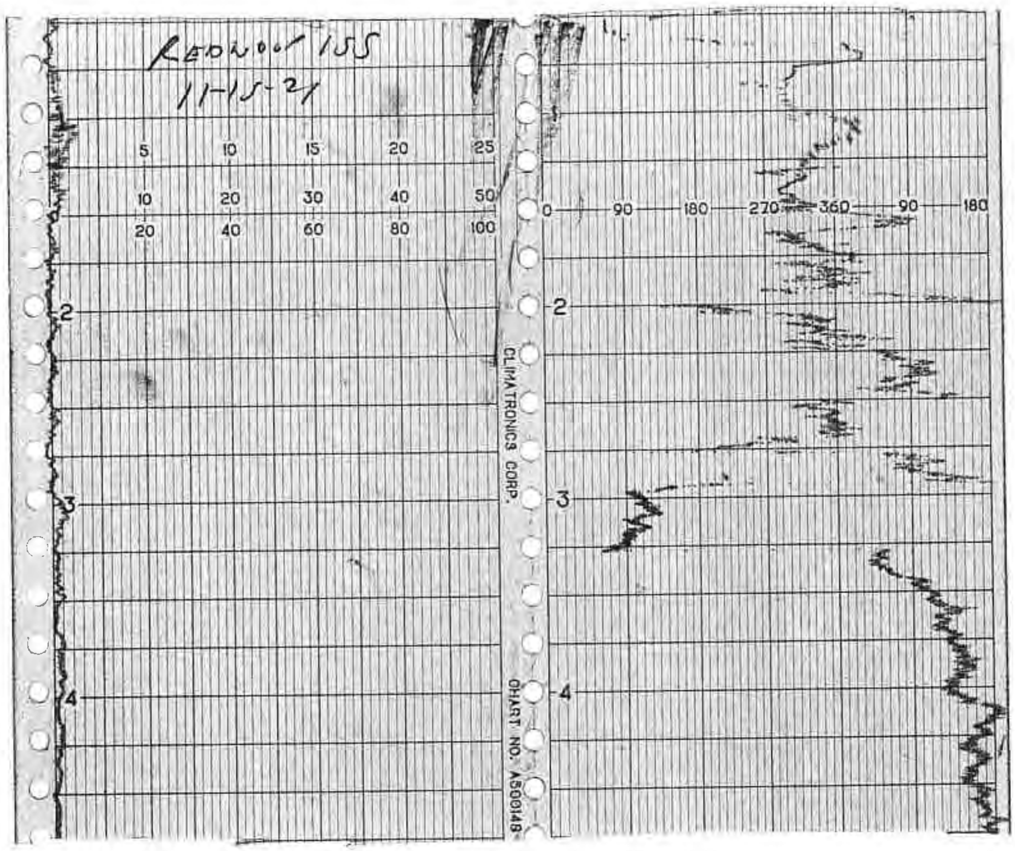
RES
Environmental Inc.

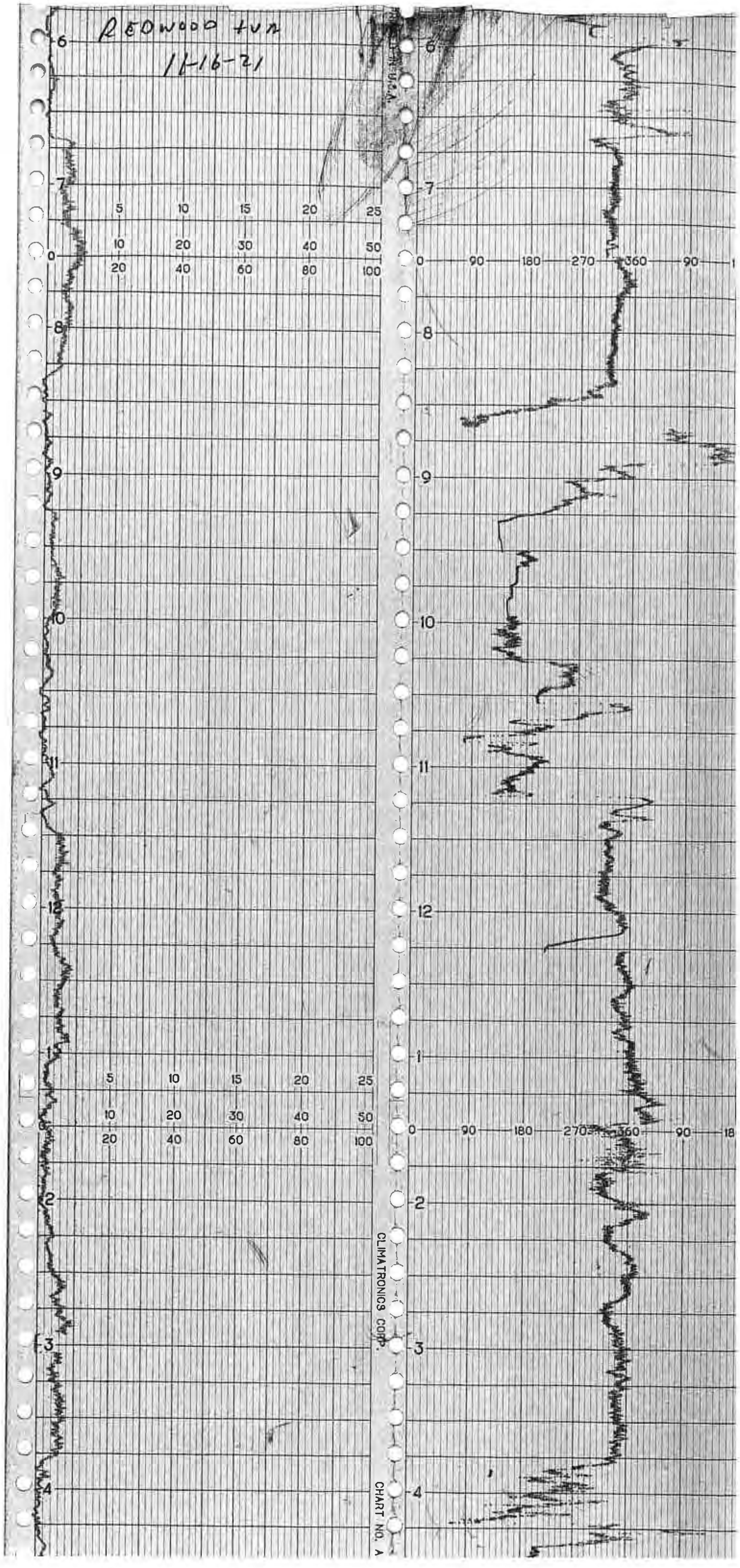
16-POINT WIND DIRECTION INDEX

NO	DIRECTION	DEGREES FROM	DEGREES CENTER	DEGREES TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (SSE)	146.3	157.5	168.8
8	SOUTH (S)	168.8	180.0	191.3
9	SOUTH-SOUTHWEST (SSW)	191.3	202.5	213.8
10	SOUTHWEST (SW)	213.8	225.0	236.3
11	WEST-SOUTHWEST (WSW)	236.3	247.5	258.8
12	WEST (W)	258.8	270.0	281.3
13	WEST-NORTHWEST (WNW)	281.3	292.5	303.8
14	NORTHWEST (NW)	303.8	315.0	326.3
15	NORTH-NORTHWEST (NNW)	326.3	337.5	348.8

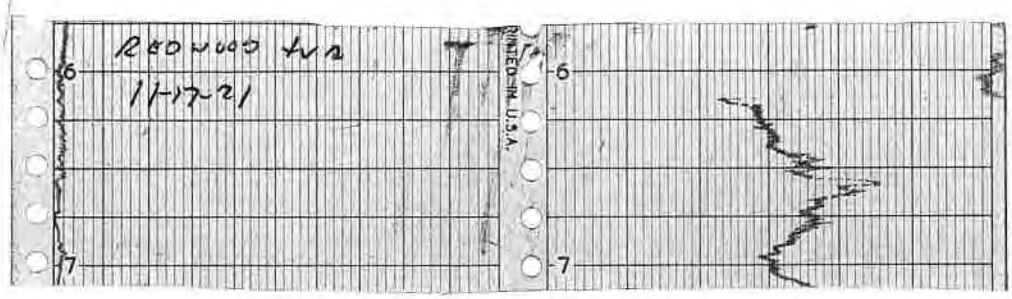
865 Via Lata ■ Colton, California 92324 ■ (909) 422-1001 Fax (909) 422-0707

WIND SPEED & DIRECTION CHART ROLL

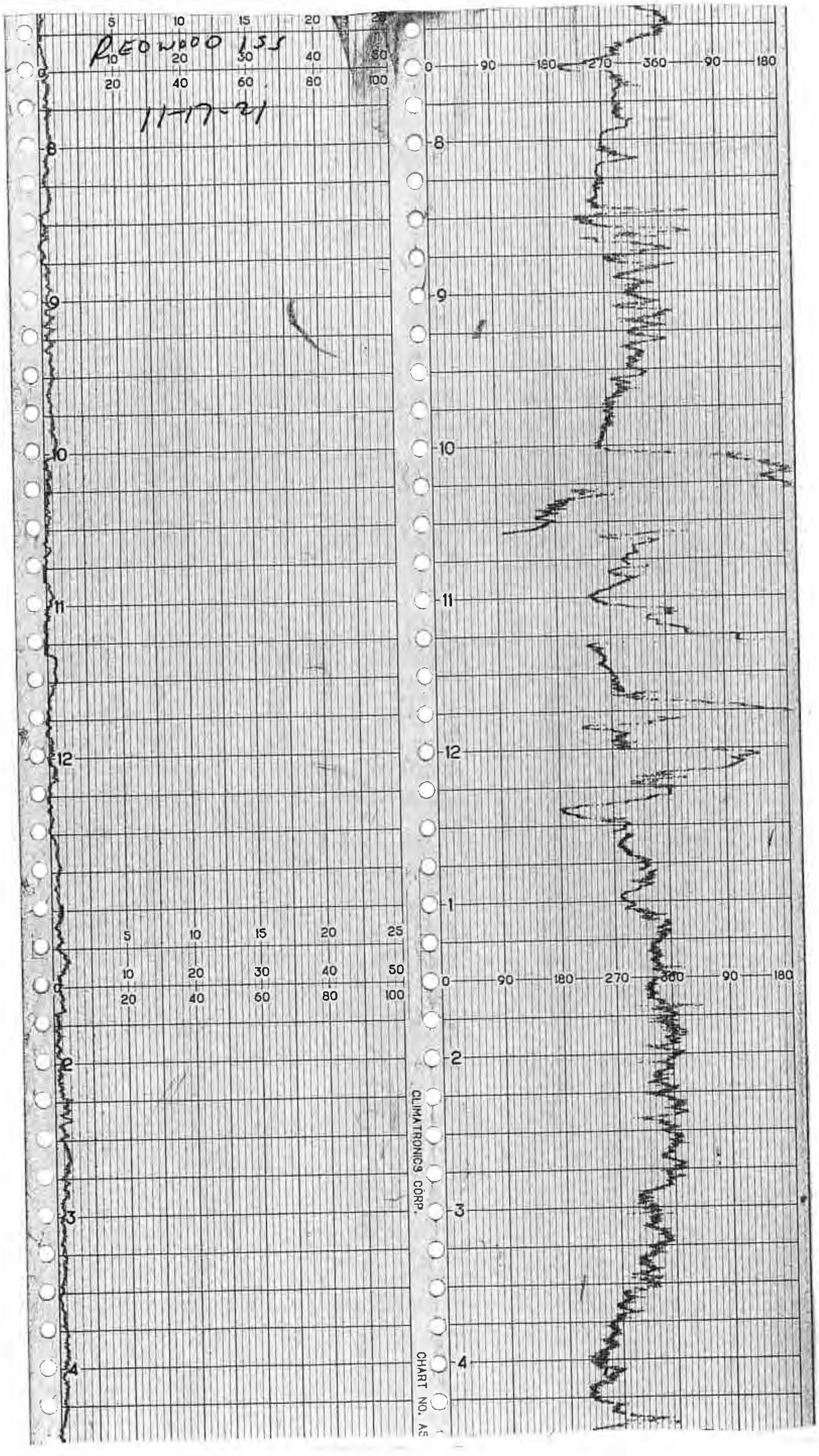



REDWOOD twr
11-16-21
CLIMATRONICS CORP.
CHART NO. A

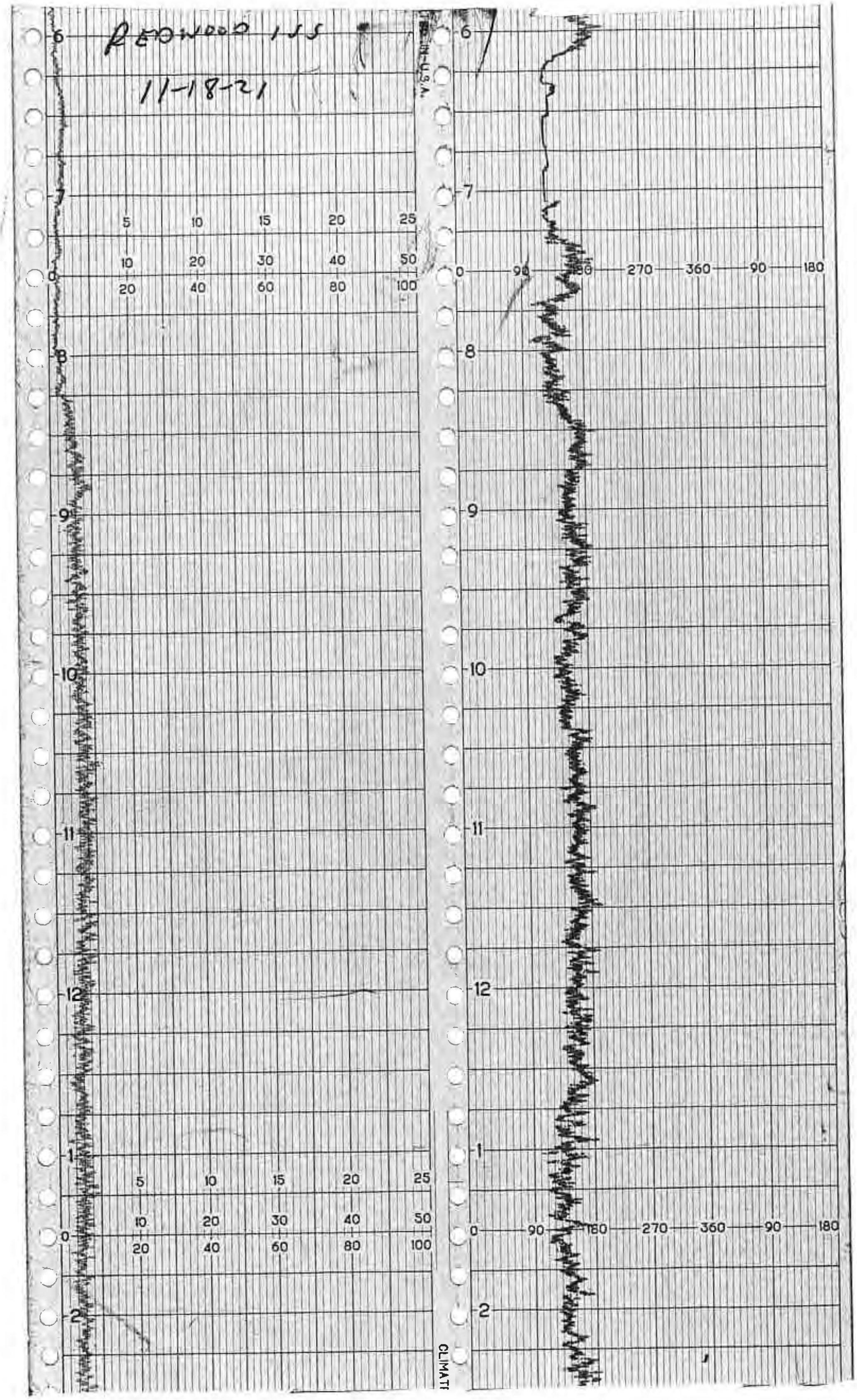
WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 12/24/2021

Expiration Date (3 months): 3/24/2022

Time: ______ AM 12:15 PM

Instrument Make: Photovac Model: MicroFID S/N: CZMF340

Measurement #1:

Stabilized Reading Using Calibration Gas: 498 ppm
90% of the Stabilized Reading: 448 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 6 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 494 ppm
90% of the Stabilized Reading: 445 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 6 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 500 ppm
90% of the Stabilized Reading: 450 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 6 seconds (c)

Calculate Response Time:

$\frac{(a) + (b) + (c)}{3}$ = 6 seconds (must be less than 30 seconds)

Performed By: Mo

CALIBRATION PRECISION TEST RECORD

Date: 12/24/2021

Expiration Date (3 months): 3/24/2022

Time: ______ AM 12:15 PM

Instrument Make: Photovac Model: MicroFID S/N: CZMF340

Measurement #1:

Meter Reading for Zero Air: 0 ppm (a)

Meter Reading for Calibration Gas: 497 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0 ppm (c)

Meter Reading for Calibration Gas: 496 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0 ppm (e)

Meter Reading for Calibration Gas: 496 ppm (f)

Calculate Precision:

$$\frac{\{|(500)-(b)| + |(500)-(d)| + |(500)-(f)|\}}{3} \times \frac{1}{500} \times 100$$

0.7 % (must be < than 10%)

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 11/18/2021

Time: 8:55 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ MF 340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 498 ppm
3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) \div (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 11/19/2021

Time: 8:20 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ MF 340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 495 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 11/23/2021

Time: 9:00 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ MF 340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 504 ppm
3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 12/1/2021

Time: 8:45 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ DJ 222

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 501 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 12/2/2021

Time: 10:00 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ DJ 222

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 497 ppm
3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 12/13/2021

Time: 9:30 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ DJ 222

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 495 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) \div (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood   Date: 12/15/2021

Time: 8:10 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ FF 211

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 498 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 12/21/2021

Time: 7:30 AM ______ PM

Instrument Make: Photovac Model: MicroFiD S/N: CZ FF 211

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 493 ppm
3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) \div (b)}{2}$ Background = 0 ppm

Performed By: Mo

RJ&S
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-16-21 TIME: 0540

Calibration Procedure.

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	490 ppm	440 ppm	4
#2	502 ppm	452 ppm	4
#3	500 ppm	450 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.10 ppm	490 ppm	10
#2	0.08 ppm	502 ppm	2
#3	0.06 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.80 #DIV/0! Must be less than 10%

Performed By: LEISHWADE Date/Time: 11-16-22-0540

RJMS
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT # 11 SERIAL # 1036346774

MONITORING DATE 11-16-21 TIME: 0540

Calibration Procedure.

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	495 ppm	445 ppm	5
#2	501 ppm	451 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.15 ppm	495 ppm	5
#2	0.11 ppm	501 ppm	1
#3	0.09 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.40 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time 11-16-21-0540

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741
MONITORING DATE: 11-16-21 TIME: 0540

Calibration Procedure.

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	489 ppm	439 ppm	4
#2	500 ppm	450 ppm	4
#3	500 ppm	450 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.17 ppm	489 ppm	11
#2	0.11 ppm	500 ppm	0
#3	0.05 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.73 #DIV/0! Must be less than 10%

Performed By: Rick Lemos Date/Time: 11-16-21 - 0540

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT # 13 SERIAL #: 110274675

MONITORING DATE 11-16-21 TIME 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	507 ppm	457 ppm	4
#2	500 ppm	450 ppm	4
#3	500 ppm	450 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.14 ppm	507 ppm	7
#2	0.12 ppm	500 ppm	0
#3	0.08 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By: Edwin Ortiz Date/Time 11-16-21 - 0540

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo
MODEL TVA1000 EQUIPMENT # 10 SERIAL #: 1036346773
MONITORING DATE 11-17-21 TIME 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{(\text{Upwind + Downwind})}{2}$
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	506 ppm	456 ppm	5
#2	500 ppm	450 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time $\frac{(1+2+3)}{3}$			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.20 ppm	506 ppm	6
#2	0.16 ppm	500 ppm	0
#3	0.10 ppm	500 ppm	0
Calculate Precision	$\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.40 #DIV/0! Must be less than 10%

Performed By: Leigh Vance Date/Time 11-17-21 – 0545

RMS
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA 2000 EQUIPMENT # 11 SERIAL # 1036346774

MONITORING DATE 11-17-21 TIME 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	485 ppm	435 ppm	5
#2	502 ppm	452 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.16 ppm	489 ppm	11
#2	0.09 ppm	502 ppm	2
#3	0.07 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.86 #DIV/0! Must be less than 10%

Performed By Dwight Brown Date Time 11-17-21 0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT # 12 SERIAL # 1036246741

MONITORING DATE 11-17-21 TIME 0545

Calibration Procedure.

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	497 ppm	447 ppm	5
#2	505 ppm	455 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.13 ppm	497 ppm	3
#2	0.06 ppm	505 ppm	5
#3	0.04 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		0.53 #DIV/0! Must be less than 10%

Performed By Rick Lewis Date Time 11-17-21 - 0545

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT # 13 SERIAL #: 110774672S

MONITORING DATE 11-17-21 TIME 0545

Calibration Procedure.

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	499 ppm	449 ppm	6
#2	502 ppm	452 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time	**(1+2+3) / 3**		6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.11 ppm	499 ppm	1
#2	0.09 ppm	502 ppm	2
#3	0.08 ppm	500 ppm	0
Calculate Precision	**([STD-B1] + [STD-B2] + [STD-B3]) / 3 X 1/500 X 100/1**		0.20 #DIV/0! Must be less than 10%

Performed By: Cesar Ortiz Date/Time: 11-17-21 0560

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-15-21 TIME: 1225

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time (1+2+3) / 3		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.10 ppm	24 ppm	1
#2	0.08 ppm	24 ppm	1
#3	0.07 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		2.8 #DIV/0! Must be less than 10%

Performed By: Lois Lwnot Date/Time: 11-15-21 1225

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 11-15-21 TIME: 1225

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	25 ppm	22.5 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.13 ppm	24 ppm	1
#2	0.09 ppm	25 ppm	0
#3	0.07 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 11-15-21 1225

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-15-21 TIME 1225

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.22 ppm	23 ppm	2
#2	0.16 ppm	25 ppm	0
#3	0.12 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Rick Jenkins Date/Time: 11-15-21 -1225

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THermo
MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775
MONITORING DATE: 11-15-21 TIME: 1225

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 21 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.14 ppm	23 ppm	2
#2	0.11 ppm	24 ppm	1
#3	0.09 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		4.0 #DIV/0! Must be less than 10%

Performed By: CELVIN ORTIZ Date/Time: 11-15-21 1225

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-17-21 TIME: 0710

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	25 ppm	22.5 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.10 ppm	24 ppm	1
#2	0.06 ppm	25 ppm	0
#3	0.04 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By: Leishman Date/Time: 11-17-21 0710

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346779

MONITORING DATE: 11-17-21 TIME: 0710

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.14 ppm	24 ppm	1
#2	0.11 ppm	24 ppm	1
#3	0.09 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 11-17-21 0710

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-17-21 TIME: 0710

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.17 ppm	23 ppm	2
#2	0.11 ppm	24 ppm	1
#3	0.06 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		4.0 #DIV/0! Must be less than 10%

Performed By: Rick Lenos Date/Time: 11-17-21 0710

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102741775

MONITORING DATE: 11-17-21 TIME: 0710

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.15 ppm	23 ppm	2
#2	0.10 ppm	25 ppm	0
#3	0.06 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Calvin Ortiz Date/Time: 11-17-21 – 0710

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036546773

MONITORING DATE: 11-18-21 TIME 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	24 ppm	21.6 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.20 ppm	24 ppm	1
#2	0.11 ppm	24 ppm	1
#3	0.09 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Longhuanr Date/Time: 11-18-21 - 0545

SCS Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 11-18-21 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time	(1+2+3) / 3		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.26 ppm	24 ppm	1
#2	0.18 ppm	25 ppm	0
#3	0.11 ppm	25 ppm	0
Calculate Precision	([STD-B1] + [STD-B2] + [STD-B3]) / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 11-18-21 0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-18-21 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	25 ppm	22.5 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 **ppm**

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.15 ppm	24 ppm	1
#2	0.09 ppm	25 ppm	0
#3	0.07 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By: Rick Llanos Date/Time: 11-18-21 - 0545

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1162746775

MONITORING DATE: 11-18-21 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time	(1+2+3) / 3		6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.13 ppm	23 ppm	2
#2	0.14 ppm	24 ppm	1
#3	0.10 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By: Cecuil Ortiz Date/Time: 11-18-21 -0545

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______________________

Purpose: ______________________

Operator: [signature]

Date: 11-6-21 Time: 0900

Model # TVA 1000B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	2.4 ppm	Calibration Gas (ppm): 500; Actual (ppm): 500; % Accuracy: 100%
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	10-2-21	Time required to attain 90% of Cal Gas ppm: 1. 5; 2. 5; 3. 6; Average 5.3
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH4 gas.

Comments: ______________________

465

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator: [signature]

Date: 11-6-21 Time: 0915

Model # TVA 1000 B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100%
Reading following ignition	2.5 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500 90% of Calibration Gas, ppm: 450
H2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 6 2. 6 3. 6
Date of last factory calibration	10-2-21	Average 6.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH4 gas.

Comments:

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RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator: [signature]

Date: 11-6-21 Time: 0930

Model # TVA-1000B

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	2.6 ppm	Calibration Gas (ppm): 500; Actual (ppm): 500; % Accuracy: 100%
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	10-2-21	Time required to attain 90% of Cal Gas ppm: 1. 6; 2. 6; 3. 6; Average 6.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH4 gas.

Comments:

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ____________________

Purpose: ____________________

Operator: [signature]

Date: 11-6-21 Time: 0945

Model # TVA 1000B

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	2.4 ppm	Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100%
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
		90% of Calibration Gas, ppm: 450
H2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 5 2. 6 3. 6
Date of last factory calibration	10-2-21	Average 5.6
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH4 gas.

Comments: ____________________

465

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 10

SERIAL NUMBER: 1036346773

TECHNICIAN: M [illegible]   DATE: 10-2-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,006	+/- 2500
< 1	ZERO GAS	0.74	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT # 11

SERIAL NUMBER: 1036346774

TECHNICIAN: [illegible] DATE: 10-2-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0.61	< 3
PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 12

SERIAL NUMBER: 1036246741

TECHNICIAN: M. Nubenes DATE: 10-2-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,003	+/- 2500
< 1	ZERO GAS	0.64	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #13

SERIAL NUMBER: 1102746775

TECHNICIAN: M. Ulberts DATE: 10-2-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0.72	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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INTERMOUNTAIN SPECIALTY GASES

520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Air - Zero		
THC	< 2 PPM	
Oxygen	20.9%	± 2%
Nitrogen	Balance	

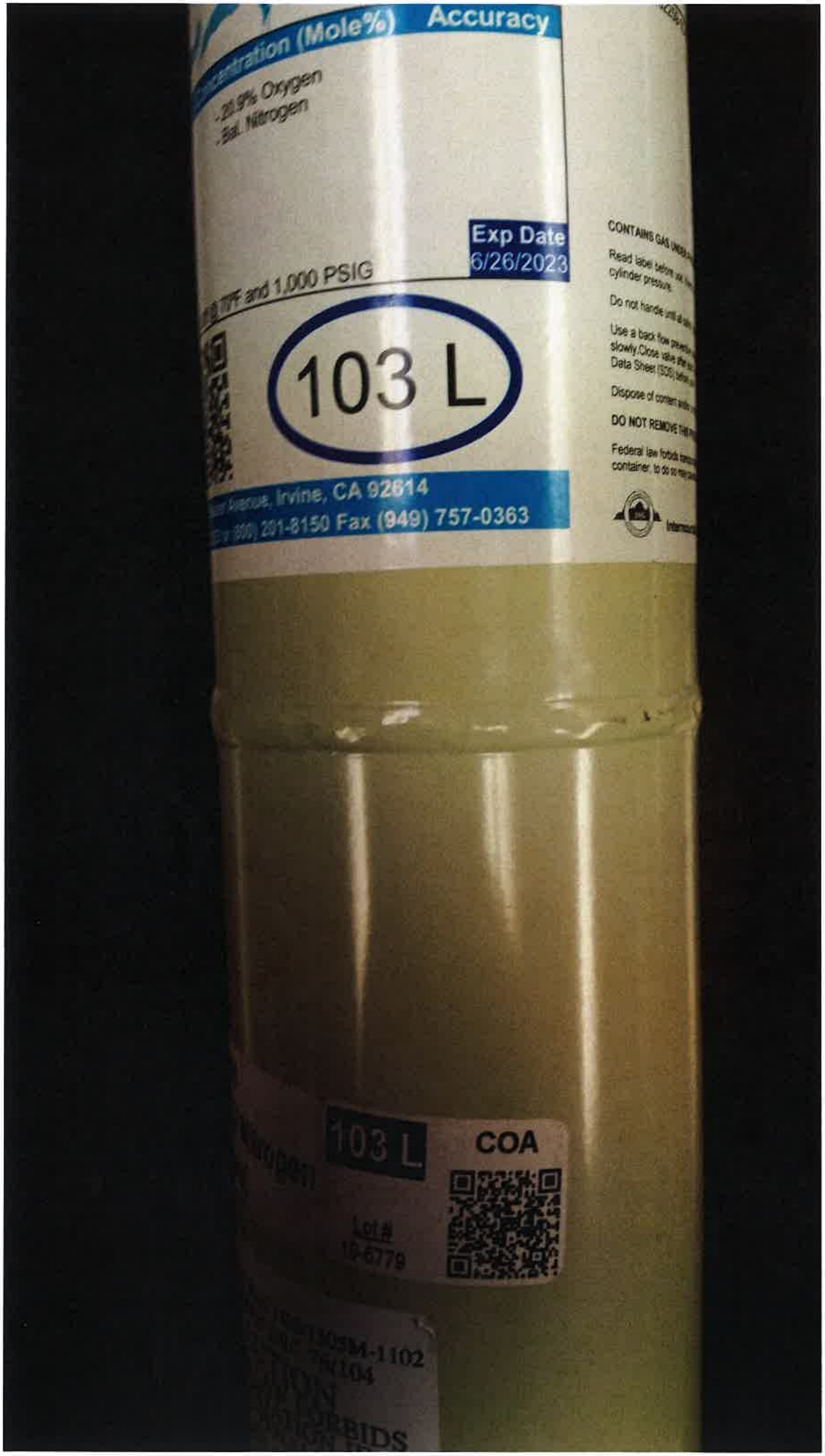
Lot # 19-6779

Mfg. Date:	4/3/2019
Parent Cylinder ID Number:	001739, 02268

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
This mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 4/3/2019



Accuracy
(Mole%)
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
6/26/2023
and 1,000 PSIG
103 L
Irvine, CA 92614
291-8150 Fax (949) 757-0363
CONTAINS GAS
Read label before use
cylinder pressure.
Do not handle until
Use a back flow
DO NOT REMOVE
Federal law forbids
container.
103 L
COA
Lot#
19-6779
1305M-1102
BIDS

INTERMOUNTAIN SPECIALTY GASES
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CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

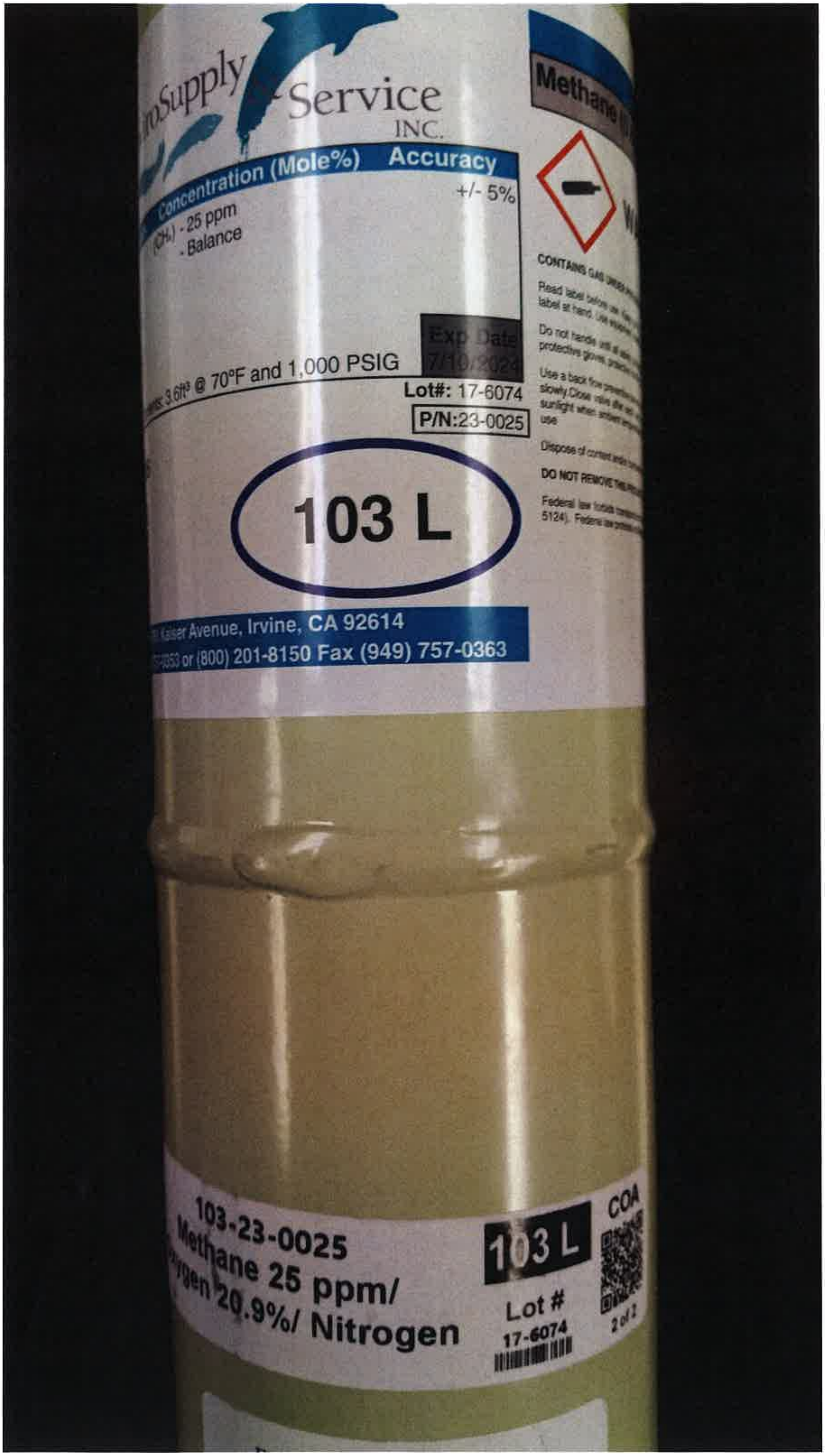
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017



Service
INC.
Concentration (Mole%)
Accuracy
+/- 5%
- 25 ppm
- Balance
Exp Date
7/10/2024
3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
Methane
CONTAINS GAS UNDER
DO NOT REMOVE THIS
103-23-0025
Methane 25 ppm/
20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
2 of 2

INTERMOUNTAIN SPECIALTY GASES
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800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

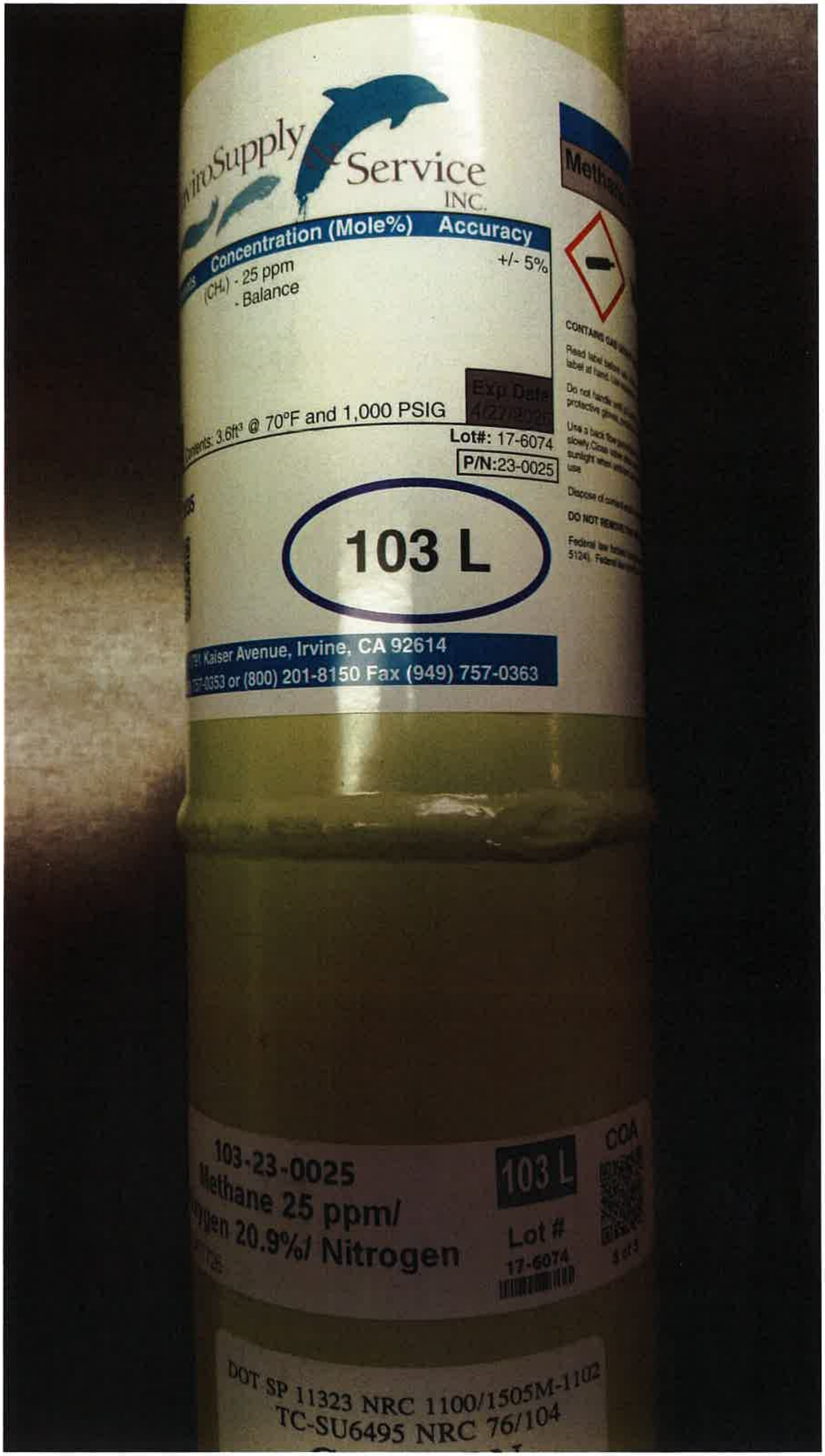
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017



Service
INC.
Concentration (Mole%)
Accuracy
(CH_4) - 25 ppm
- Balance
+/- 5%
Exp Date
Contents: 3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
Methane 25 ppm/
20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
DOT SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN SPECIALTY GASES
"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	20-7497
Mfg. Date:	7/10/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	TWC001763

Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By:	Tony Janquart
Title:	Quality Assurance Manager
Certificate Date:	7/10/2020


Service
INC.
Accuracy
+/- 2%
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Irvine, CA 92614
201-8150 Fax (949) 757-0363
Methane
CONTAINS GAS UNDER
Read label before use.
Do not handle until all safety
protective gloves, protective clothing
Use a back flow preventive
DO NOT REMOVE THIS PRODUCT
Federal law forbids
500 ppm/
Nitrogen
103 L
COA
Lot #
4 of 4

INTERMOUNTAIN SPECIALTY GASES

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CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	500 ppm	± 2%
Air	Balance	

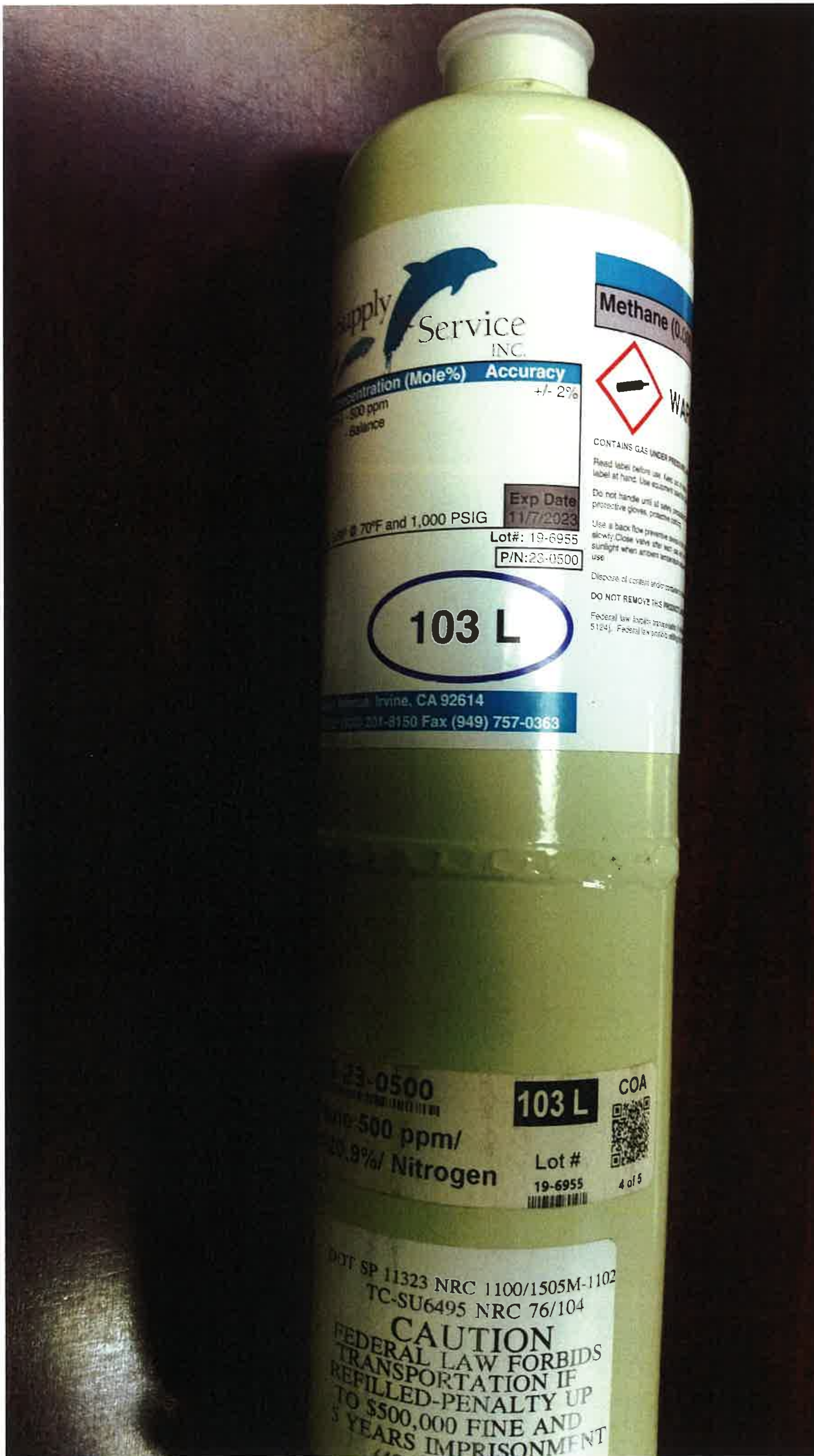
Lot # 19-6955

Mfg. Date:	7/24/2019
Parent Cylinder ID Number:	001763

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 7/24/2019



Service
INC.
Accuracy
+/- 2%
Methane
Exp Date
11/7/2023
@ 70°F and 1,000 PSIG
Lot#: 19-6955
P/N:23-0500
103 L
Irvine, CA 92614
Fax (949) 757-0363
CONTAINS GAS
DO NOT REMOVE
23-0500
103 L
500 ppm/
Nitrogen
COA
Lot #
19-6955
4 of 5
SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104
CAUTION
FEDERAL LAW FORBIDS
TRANSPORTATION IF
REFILLED-PENALTY UP
TO $500,000 FINE AND
YEARS IMPRISONMENT

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

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CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	18-6641
Mfg. Date:	12/18/2018
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	001763

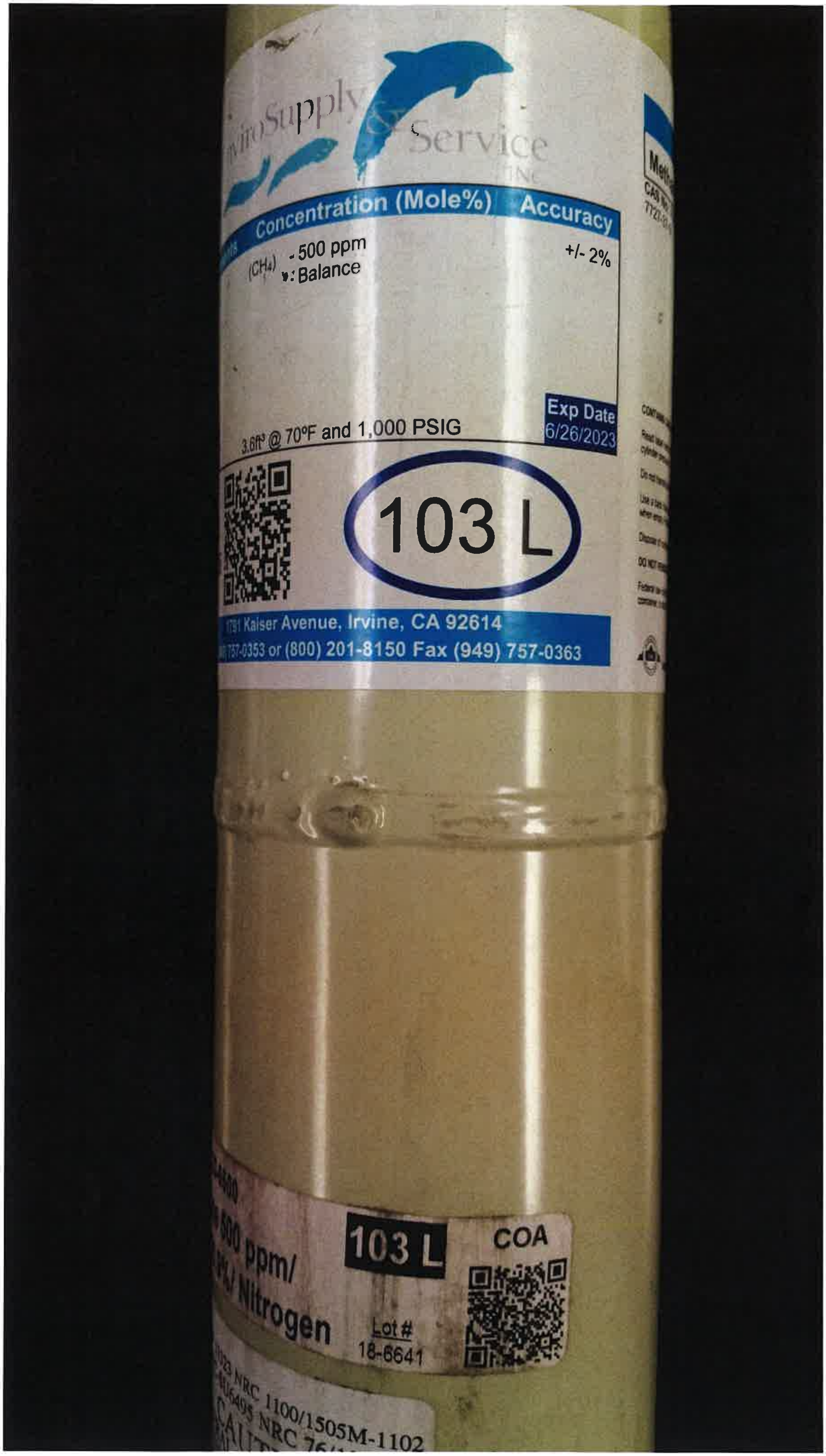
Method of Preparation:

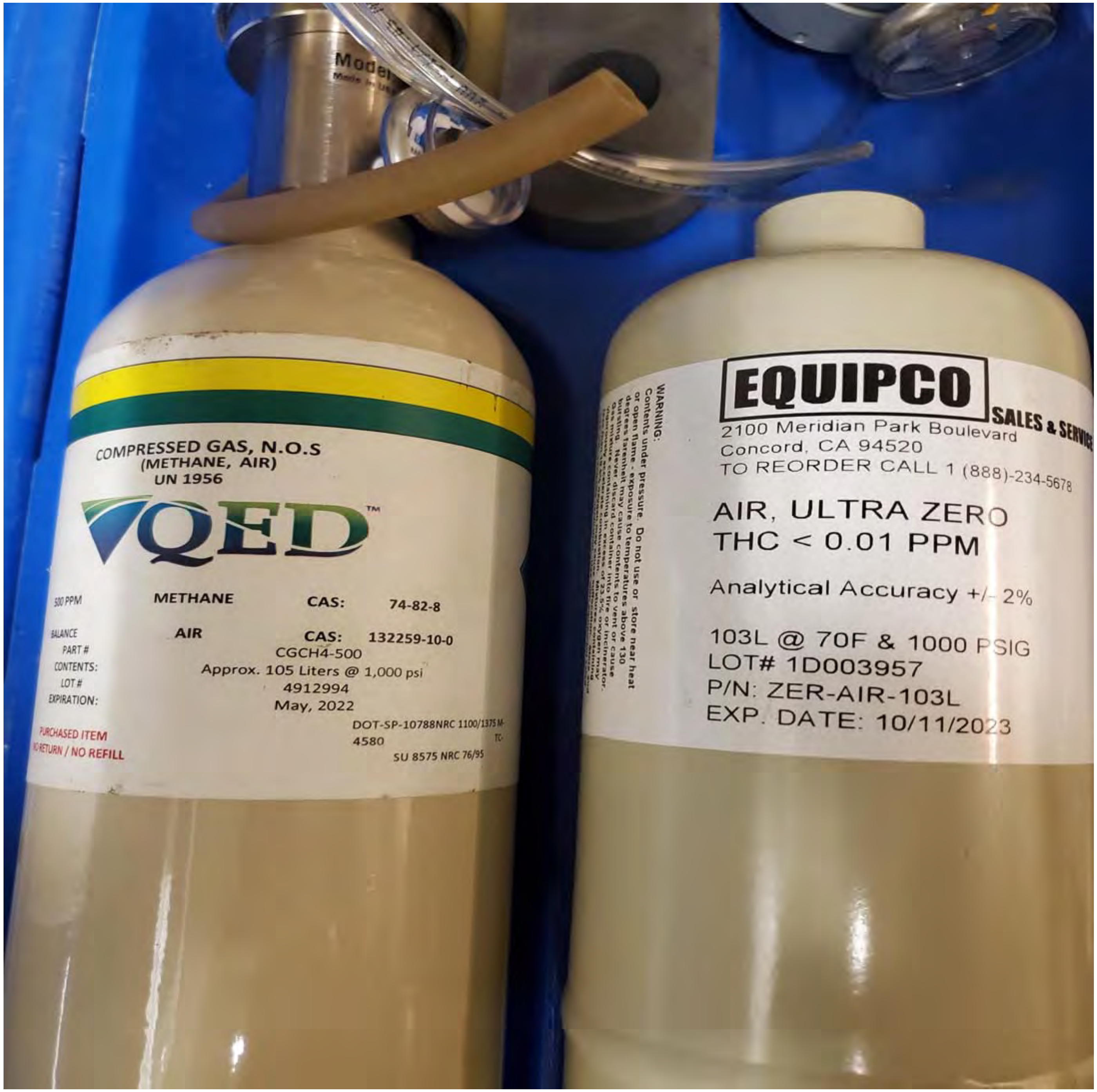
Gravimetric/Pressure Transfilled

Method of Analysis:

The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Title: Quality Assurance Manager
Certificate Date: 12/18/2018


Service
Concentration (Mole%)
Accuracy
(CH4) - 500 ppm
Balance
+/- 2%
Exp Date
6/26/2023
3.6ft³ @ 70ºF and 1,000 PSIG
103 L
Kaiser Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
103 L
COA
500 ppm/
Nitrogen
Lot #
18-6641


COMPRESSED GAS, N.O.S
(METHANE, AIR)
UN 1956
QED™
500 PPM METHANE CAS: 74-82-8
BALANCE AIR CAS: 132259-10-0
PART # CGCH4-500
CONTENTS: Approx. 105 Liters @ 1,000 psi
LOT # 4912994
EXPIRATION: May, 2022
DOT-SP-10788NRC 1100/1375
4580
SU 8575 NRC 76/95
PURCHASED ITEM
NO RETURN / NO REFILL
EQUIPCO
SALES & SERVICE
2100 Meridian Park Boulevard
Concord, CA 94520
TO REORDER CALL 1 (888)-234-5678
AIR, ULTRA ZERO
THC < 0.01 PPM
Analytical Accuracy +/- 2%
103L @ 70F & 1000 PSIG
LOT# 1D003957
P/N: ZER-AIR-103L
EXP. DATE: 10/11/2023
WARNING:
Contents under pressure. Do not use or store near heat or open flame - exposure to temperatures above 130 degrees farenheit may cause contents to vent or cause bursting. Never discard container into fire or incinerator.

WASTE MANAGEMENT
172 98th Avenue
Oakland, CA 94603
(510) 430-8509

March 30, 2022

Ms. Alisha McCutcheon
Redwood Landfill, Inc.
8590 Redwood Highway
Novato, California 94948

Re: First Quarter 2022 Surface Emissions and Component Leak Monitoring Report for Redwood Landfill, Inc.

Dear Ms. McCutcheon:

This monitoring report for "**Redwood Landfill, Inc. (RLI)**" contains the results of the First Quarter 2022 Integrated and Instantaneous Surface Emissions Monitoring (SEM) and Component Leak Monitoring. Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES). Re-monitoring of surface emissions and site-wide component leak monitoring was conducted by RES and/or Waste Management (WM) personnel.

APPLICABLE REQUIREMENTS

The monitoring discussed in this report was conducted in accordance with the following requirements:

Surface Emission Monitoring (SEM)

- New Source Performance Standard (NSPS), Title 40 of the Code of Federal Regulations (CFR) §60.755 (c) and (d), 40 CFR 60, Appendix A Method 21, promulgated by the United States Environmental Protection Agency (USEPA).

- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95460 to §95476, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).

- National Emission Standards for Hazardous Air Pollutants (NESHAP): Municipal Solid Waste Landfills, Title 40: Chapter I: Subchapter C: Part 63: Subpart AAAA, §63.1981(h)(5)

- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) and Section 607 (Landfill Surface Inspection procedures).

Component Leak

- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 301 (Landfill Gas Collection and Emission Control System Requirements) and Section 602 (Collection and Control System Leak Inspection procedures).

- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95464, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).

RLI Plan and Alternative Compliance Measures

An Alternative Compliance Option (ACO) Request was submitted to the California Air Resources Board (CARB) on March 24, 2011. After receipt of comments, this ACO was amended, restated, and submitted to BAAQMD on July 1, 2016. SEM and Component Leak monitoring was conducted per the methods outlined in the July 1, 2016 ACO.

PROCEDURES

General

The surface of the RLI disposal area has been divided into two hundred-eight (208), approximately 50,000 square foot monitoring grids. The entire landfill surface is monitored with the exception of active portions of the Landfill, slope areas, and as requested in the approved ACO, areas containing only asbestos-containing waste, inert waste and/or non-decomposable waste which are excluded for safety as allowed by CCR Title 17 §95466.

Field personnel walked the surface of the landfill following the walking pattern as depicted the 2011 RLI AB-32 SEM Plan, which traverses each monitoring grid. Additionally, in accordance with the provisions of 40 CFR 60.753(d) and 60.755(c)(1-3), the entire perimeter of the landfill surface was monitored. During the event, special attention was given to monitoring unusual cover conditions (stressed vegetation, cracks, seeps, etc.) and any areas with unusual odors.

Instantaneous Surface Emissions Monitoring

The Instantaneous SEM was conducted using a Toxic Vapor Analyzer (TVA) 1000 flame ionization detector (FID), which was calibrated to 500 parts per million by volume (ppm_v) methane, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a) and NSPS. The FID was calibrated prior to use in accordance with the United States Environmental Protection Agency (USEPA) Method 21 requirements. The Instantaneous SEM procedures followed the requirements of 40 CFR 60.755 (c) and (d) and CCR Title 17 §95471(c)(2).

RES personnel walked the surface of the landfill on a grid by grid basis with the wand tip held at 2 inches from the landfill surface. While sampling the grid; the technicians also checked any surface impoundments (wells or otherwise) for leaks. Technicians also checked any surface cracks, seeps, or other areas that show evidence of surface emissions (odors or distressed vegetation). Active and sloped areas excluded for safety were documented on field data sheets and maps.

All instantaneous surface monitoring was performed in accordance with the applicable requirements referenced in this report. Any detections of methane above 200 ppm_v (areas of concern) or 500 ppm_v (exceedances) for instantaneous were recorded, flagged, and marked on an SEM Map, which, wherever required, is included in the Appendices of this report. Applicable corrective action and re-monitoring timelines are listed below:

- Corrective actions must be initiated within 5 days of the initial exceedance and re-monitoring shall be conducted within 10 days of the initial exceedance.
    - If the re-monitoring event shows the exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance.
    - If the 1-month re-monitoring event shows the location is still corrected, all re-monitoring requirements have been completed.
- If either the first 10-day or 1-month re-monitoring events show a second exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance. If the 1-month re-monitoring event shows the area is still corrected, monitoring requirements have been completed.

If any location shows three exceedances, an additional well shall be installed within 120 days of the initial exceedance.

Integrated Surface Emissions Monitoring

The Integrated surface monitoring was conducted using a TVA 1000 calibrated to 25 ppm_v for the integrated monitoring, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a). The field technician traversed the grid walking path over a continuous 25-minute period using the TVA 1000 held at 3 inches above the landfill surface. The Integrated monitoring procedures followed the requirements of CCR Title 17 §95471(c)(2).

Grids with results greater than 25 ppm_v were recorded, marked on the SEM map, and flagged for remediation. Any grids with integrated concentrations greater than 25 ppm_v are subject to the following re-monitoring timeline:

- Re-monitoring shall be conducted within 10 days of the initial exceedance.
- If the 10-day re-monitoring event shows the exceedance is corrected, all re-monitoring requirements have been completed.
- If either the first 10-day re-monitoring event shows a second grid exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.

- If the second 10-day re-monitoring event shows the second exceedance is corrected, all re-monitoring requirements have been completed.

- The second 10-day re-monitoring event shows a third grid exceedance, an additional well shall be installed within 120 days of the third exceedance.

Component Leak Monitoring Procedures

RES personnel monitored the exposed LFG components under positive pressure (pipes, wellheads, valves, blowers, and other mechanical appurtenances) using a TVA 1000 calibrated to 500 ppm_v. All leaks measured one half inch or less from the component exceeding the compliance limit of 500 ppm_v per requirements outlined in pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B) and 1,000 ppm_v per requirements outlined in BAAQMD 8-34-303 were recorded. Applicable corrective action and re-monitoring timelines are listed below:

- Leaks between 500 and 999 ppm_v must be corrected and re-monitored within 10 days of the initial exceedance.

- Leaks at or above 1000 ppm_v must be corrected and re-monitored within 7 days of the initial exceedance.

FIRST QUARTER 2022 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the First Quarter 2022.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on January 25 and 26, 2022 in accordance with the NSPS, BAAQMD 8-34, and CCR Title 17 §95469, NESHAP Subpart AAAA, and ACO. Results and data from the monitoring are presented in Attachment A.

Initial Monitoring Event Exceedances of 500 ppm_v

There were fourteen (14) exceedances of 500 ppm_v as methane detected on January 25, 2022. Corrective actions to initiate repairs of the exceedances were completed within five days for all locations.

First Ten-Day Re-Monitoring Results

The first 10-day re-monitoring was completed on February 2 and 3, 2022. All locations were observed at less than 500 ppm_v as methane.

One-Month Re-Monitoring Results

The 1-month re-monitoring event was completed on February 23, 2022. All locations were observed at less than 500 ppm_v.

Readings between 200 ppm$_v$ and 499 ppm$_v$ (Initial and Re-monitored)

There were no readings between 200 ppm$_v$ and 499 ppm$_v$ as methane detected during the initial monitoring event on January 25 and 26, 2022. Pursuant to CCR Title 17 §95471(c), instantaneous surface emissions exceeding 200 ppm$_v$ but below 500 ppm$_v$ are required to be recorded.

Integrated Surface Emissions Monitoring Results

The Integrated surface sampling (ISS) was performed on January 24, 26, and February 14, and 15, 2022 in accordance with the ACO and requirements outlined in CCR Title 17 §95469.

Initial Monitoring Event Exceedances of 25 ppm$_v$

There were 0 grids with exceedances of 25 ppm$_v$ as methane detected during the initial monitoring event.

The average methane concentration of each grid was recorded during the monitoring event per applicable requirements. See Attachment B, Integrated SEM 25 ppm$_v$ Exceedances and Monitoring Log, and SEM Map included in Attachment B, for details.

Component Leak Monitoring Results

Component leak monitoring was conducted per the applicable requirements on January 25, 2022. No leaks greater than 500 ppm$_v$ were identified. Please see Attachment C, for details.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

Wind speeds during initial monitoring were monitored using a portable weather station. The station has a strip chart that records the wind speed and direction. After completion of monitoring, the strip chart is reviewed by RES office staff to determine the average and maximum wind speeds during the monitoring and the average wind direction during each grid and ensure that the wind speed requirements are met (no gusts greater than 20 mph, average wind speed cannot exceed 10 mph). These values are documented in the field data sheets. The chart data is scanned and included in Attachment D.

Precipitation Requirements

Per the RLI's ACO, the initial monitoring event was carefully scheduled so that it could be conducted in compliance with the precipitation requirements (no precipitation ≥0.01" within 24 hours, ≥0.16" within 48 hours, nor ≥0.25" within 72 hours). Re-monitoring events are required to adhere to strict timelines. Any conflicts with precipitation requirements are discussed in the results section of this document.

EQUIPMENT CALIBRATION

The portable analyzers were calibrated to meet the instrument specifications requirements of U.S. EPA Method 21. The calibration gas used was methane, diluted to a nominal concentration of 25 ppm_v in air for integrated sample analyses and 500 ppm_v in air for instantaneous monitoring to comply with the requirements.

All analyzers were calibrated prior to use with required response time and precision related instrument checks. Calibration records include the following: One time response time test record; One time response factor determination for methane; Calibration Precision test records (test to be performed every 3 months); and Daily Instrument Calibration and Background test records for each gas meter that was used during the quarterly monitoring event. The calibration log records are included in Attachment E.

All monitoring was completed in accordance with the applicable regulatory requirements or approved alternatives. If you have any questions regarding this report, please do not hesitate to contact me at (510) 613-2852.

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment B – Integrated Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment C – Component Leak Monitoring Event Records

- Component Leak Exceedances and Monitoring Logs

Attachment D – Weather Station Data

- Strip Chart Data

Attachment E – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Instantaneous Surface Emission Monitoring Event Records

Table A.1
Instantaneous Landfill Surface Emissions Monitoring
Initial Monitoring Event Areas of Concern

2022 QUARTER: 1
PERFORMED BY: RES
LANDFILL NAME: Redwood Landfill, Inc.

Flag Number	Grid Number	Latitude	Longitude	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
O1	193	38.17137	-122.56970	1/25/2022	3,000	Well 3
O11	141	38.16803	-122.56700	1/25/2022	1,400	Surface
O12	157	38.16905	-122.56789	1/25/2022	14,000	Well 204
O13	89	38.16795	-122.56525	1/25/2022	1,200	Well 219
O14	89	38.16792	-122.56522	1/25/2022	16,000	Well 114
O16	62	38.16273	-122.56393	1/25/2022	1,600	Well 124
O2	199	38.17256	-122.56978	1/25/2022	600	Well 100c
O21	150	38.16787	-122.56723	1/25/2022	800	Surface
O22	121	38.16839	-122.56652	1/25/2022	4,000	Well 195
O23	110	38.16825	-122.56621	1/25/2022	1,000	Well 196
O24	131	38.16899	-122.56663	1/25/2022	25,000	Well 194
O25	141	38.16868	-122.56684	1/25/2022	4,000	Surface
O3	82	38.16143	-122.56433	1/25/2022	2,000	In1
O4	82	38.16139	-122.56433	1/25/2022	3,500	Is2

Notes: Please refer to field data sheets for details

Table A.2
Instantaneous Landfill Surface Emissions Monitoring
Exceedance and Monitoring Logs (NSPS/BAAQMD 8-34)

2022 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Mo Sotoudeh
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			Corrective Action		1st 10-day Follow-Up			2nd 10-day Follow-Up			1st 30-day Follow-Up			
Flag Number	Monitoring Date	Reading ppm	Repair Date	Action Taken	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Comments
O1	1/25/2022	3,000	1/28/2022	Compacted, Added soil	2/2/2022	12		N/A			2/23/2022	0		Well 3
O11	1/25/2022	1,400	1/28/2022	Compacted, Added soil	2/3/2022	168		N/A			2/23/2022	129		Surface
O12	1/25/2022	14,000	1/27/2022	Compacted, Added soil	2/3/2022	75		N/A			2/23/2022	54		Well 204
O13	1/25/2022	1,200	1/27/2022	Compacted, Added soil	2/3/2022	0		N/A			2/23/2022	0		Well 219
O14	1/25/2022	16,000	1/27/2022	Compacted, Added soil	2/3/2022	0		N/A			2/23/2022	0		Well 114
O16	1/25/2022	1,600	1/28/2022	Compacted, Added soil	2/2/2022	2		N/A			2/23/2022	2		Well 124
O2	1/25/2022	600	1/28/2022	Compacted, Added soil	2/2/2022	0		N/A			2/23/2022	0		Well 100c
O21	1/25/2022	800	1/28/2022	Compacted, Added soil	2/3/2022	9		N/A			2/23/2022	0		Surface
O22	1/25/2022	4,000	1/28/2022	Compacted, Added soil	2/3/2022	143		N/A			2/23/2022	196		Well 195
O23	1/25/2022	1,000	1/28/2022	Compacted, Added soil	2/3/2022	151		N/A			2/23/2022	118		Well 196
O24	1/25/2022	25,000	1/27/2022	Compacted, Added soil	2/3/2022	100		N/A			2/23/2022	0		Well 194
O25	1/25/2022	4,000	1/28/2022	Compacted, Added soil	2/3/2022	96		N/A			2/23/2022	7		Surface
O3	1/25/2022	2,000	1/27/2022	Compacted, Added soil	2/2/2022	27		N/A			2/23/2022	0		In1
O4	1/25/2022	3,500	1/27/2022	Compacted, Added soil	2/2/2022	285		N/A			2/23/2022	0		Is2

Table A.3
Instantaneous Landfill Surface Emissions Monitoring
Exceedance and Monitoring Logs (AB-32)

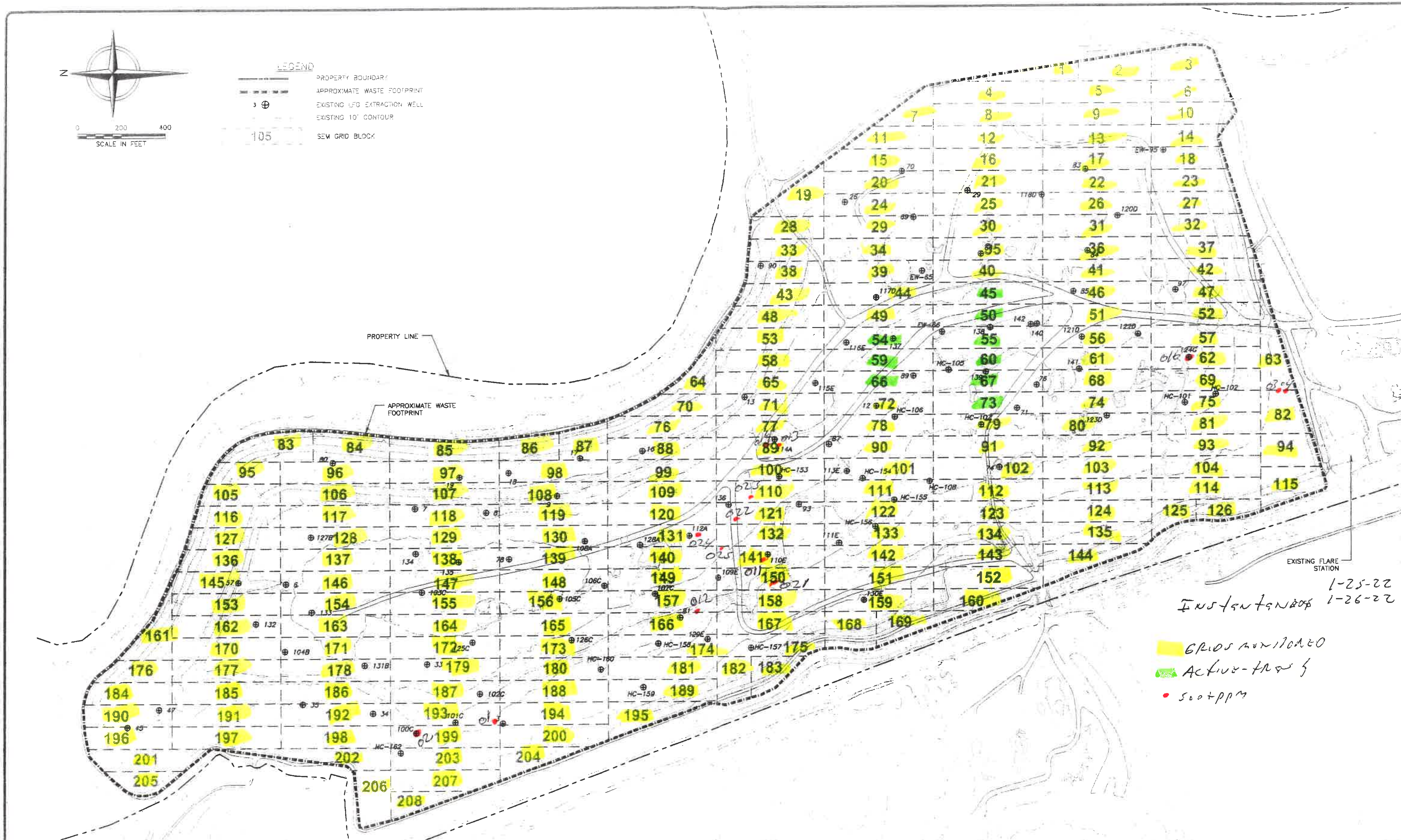
2022 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Mo Sotoudeh
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	**Comments**
O1	1/25/2022	3,000	2/2/2022	12		N/A			Well 3
O11	1/25/2022	1,400	2/3/2022	168		N/A			Surface
O12	1/25/2022	14,000	2/3/2022	75		N/A			Well 204
O13	1/25/2022	1,200	2/3/2022	0		N/A			Well 219
O14	1/25/2022	16,000	2/3/2022	0		N/A			Well 114
O16	1/25/2022	1,600	2/2/2022	2		N/A			Well 124
O2	1/25/2022	600	2/2/2022	0		N/A			Well 100c
O21	1/25/2022	800	2/3/2022	9		N/A			Surface
O22	1/25/2022	4,000	2/3/2022	143		N/A			Well 195
O23	1/25/2022	1,000	2/3/2022	151		N/A			Well 196
O24	1/25/2022	25,000	2/3/2022	100		N/A			Well 194
O25	1/25/2022	4,000	2/3/2022	96		N/A			Surface
O3	1/25/2022	2,000	2/2/2022	27		N/A			In1
O4	1/25/2022	3,500	2/2/2022	285		N/A			Is2

Table A.4
Instantaneous Landfill Surface Emissions Monitoring
Areas of Concern Greater than 200 ppmv

2022 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			**Re-mon Event**		**Comments**
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	Reading ppm	
No 200-499 ppmv locations					



NOTES:
1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 18, 2014.

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

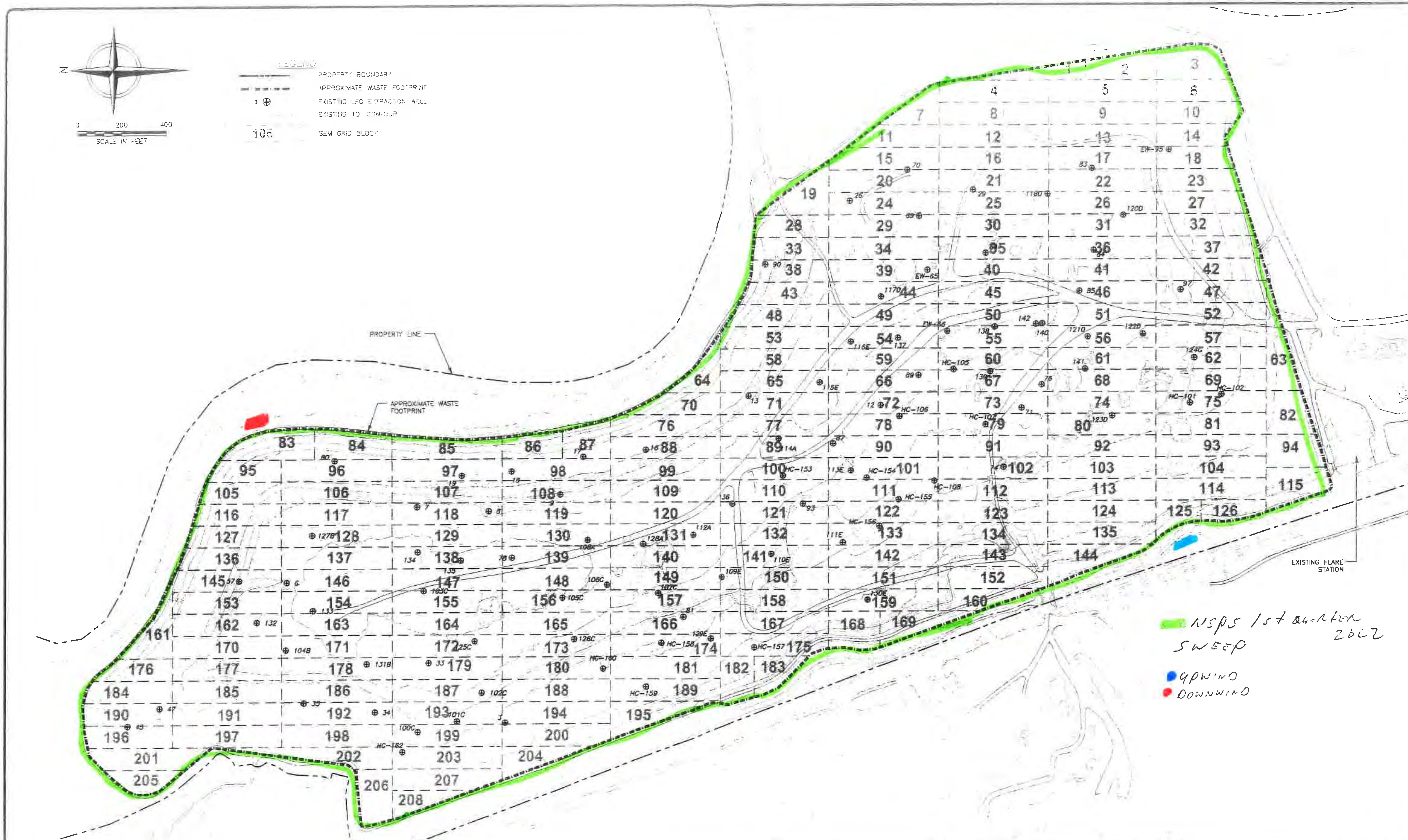
DATE OF ISSUE: 6/24/2014 | DRAWN BY: RL | DESIGNED BY: MLF | CHECKED BY: MEC | APPROVED BY: PHE

cornerstone environmental
PREPARED BY CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO
1



NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY FC AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013), AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 & OCTOBER 18, 2013.

WASTE MANAGEMENT

cornerstone environmental

PREPARED BY
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO
1

wpt			redwood 1st 2022		
ID	lat	lon	time	name	cmt
1	38.17136901	-122.569698	2022-01-25T16:56:33Z	O1	3000Ppm well 3
2	38.16802899	-122.566998	2022-01-25T16:52:24Z	O11	1400ppmsurface
3	38.16904597	-122.567886	2022-01-25T17:01:56Z	O12	14000ppmWell204
4	38.16795297	-122.565248	2022-01-25T17:52:13Z	O13	1200ppmWell219
5	38.16792296	-122.565224	2022-01-25T17:53:26Z	O14	16000ppmWell114
7	38.16272803	-122.563929	2022-01-25T20:43:09Z	O16	1600ppmWell124
8	38.17255899	-122.569781	2022-01-25T17:02:31Z	O2	600Ppm well 100c
9	38.16787099	-122.567233	2022-01-25T16:48:50Z	O21	800Ppmsurface
10	38.168389	-122.566524	2022-01-25T16:54:51Z	O22	4000Ppmwell195
11	38.16825103	-122.566206	2022-01-25T16:57:50Z	O23	1000Ppmwell196
12	38.16899098	-122.566626	2022-01-25T17:02:55Z	O24	25000Ppmwell194
13	38.16868404	-122.566845	2022-01-25T17:35:30Z	O25	4000Surface
14	38.16143302	-122.564331	2022-01-25T20:48:14Z	O3	2000Ppm ln1
6	38.16139002	-122.564332	2022-01-25T20:50:21Z	O4	3500Ppm ls2

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year:	1st 2022											Page of Pages
Technician:	LEISHNADE											
Instrument:	TVA 1000											
Calibration Standard:	500 ppm											

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	
O- 11	141	1400	1-25-22										SURFACE
O- 12	157	14,000											WELL 204
O- 13	89	1200											WELL 219
O- 14	89	16,000											WELL 114
O- 16	62	1,600											WELL 124
O- 1	193	3,000											WELL 3
O- 2	199	600											WELL 100C
O- 3	63	2,000											CN 1
O- 4	63	3500											CS 2
O- 21	150	800											SURFACE
O- 22	121	4,000											WELL 195
O- 23	110	1,000											WELL 196
O- 24	131	25,000											WELL 194
O- 25	141	4,000											SURFACE
O-													
O-													
O-													
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1-25 - 1-26 - 2022

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021

No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (PPM)	NOTES
1		P-2	Other (See Comments) (OT)	38.16264033	-122.5593088	3		39	
2		P-4	Other (See Comments) (OT)	38.16458567	-122.5597367	4		25	
3		P-5	Other (See Comments) (OT)	38.1659435	-122.559745	7		71	
4		P-6	Other (See Comments) (OT)	38.16590933	-122.5597347	7		43	
5		P-7	Other (See Comments) (OT)	38.16601117	-122.5596422	7		26	
6		P-8	Other (See Comments) (OT)	38.16601483	-122.5596808	7		51	
7		P-1	Other (See Comments) (OT)	38.16237717	-122.559976	10		45	
8		P-9	Other (See Comments) (OT)	38.16708483	-122.560793	15		31	
9	59567	LC-234	LFG Collector - Standard	38.1654038	-122.5607993	16		20	
10	877	83	LFG Collector - Standard	38.1640668	-122.5610008	17		45	
11	889	95	LFG Collector - Standard	38.1630983	-122.5606295	17		36	
12	59568	LC-235	LFG Collector - Standard	38.1659611	-122.5611811	20		67	
13	62176	LC-252	LFG Collector - Standard	38.164918	-122.5618217	25		45	
14	59569	LC-236	LFG Collector - Standard	38.1666116	-122.5618882	29		58	
15	59574	LC-241	LFG Collector - Standard	38.1659295	-122.5619612	29		39	
16	62177	LC-253	LFG Collector - Standard	38.1648188	-122.5617898	30		107	
17		P-10	Other (See Comments) (OT)	38.16413217	-122.5619648	31		68	
18	62178	LC-254	LFG Collector - Standard	38.1649718	-122.5622977	35		52	
19		P-14	Other (See Comments) (OT)	38.16814117	-122.562457	38		39	
20	859	65	LFG Collector - Standard	38.1660924	-122.5624656	39		30	
21	59575	LC-242	LFG Collector - Standard	38.1657546	-122.5624878	39		24	
22		P-16	Other (See Comments) (OT)	38.1681825	-122.5629578	43		31	
23		P-17	Other (See Comments) (OT)	38.1682025	-122.5629357	43		55	
24	36862	117 D	LFG Collector - Standard	38.1667142	-122.5629642	44		30	
25	49444	LC-179	LFG Collector - Standard	38.1714265	-122.5672832	46		17	
26	54623	LC-217	LFG Collector - Standard	38.1642982	-122.5627832	46		15	
27	56613	LC-227	LFG Collector - Standard	38.1625588	-122.5627977	47		22	
28		P-47	Other (See Comments) (OT)	38.1684925	-122.5632173	48		71	
29	41945	140	LFG Collector - Standard	38.1646417	-122.5634152	50			Active
30	44328	142	LFG Collector - Standard	38.1647059	-122.5633469	50			
31	62179	LC-255	LFG Collector - Standard	38.1654921	-122.563161	50			
32	62180	LC-256	LFG Collector - Standard	38.1651125	-122.563103	50			
33		P-19	Other (See Comments) (OT)	38.1686105	-122.5637285	53		110	
34	36861	116 E	LFG Collector - Standard	38.1670675	-122.5636515	54			Active
35	41725	137	LFG Collector - Standard	38.1664956	-122.5635508	54			
36	59570	LC-237	LFG Collector - Standard	38.1665481	-122.5637343	54			
37	59571	LC-238	LFG Collector - Standard	38.1660756	-122.5635479	54			
38		P-11	Other (See Comments) (OT)	38.16337667	-122.5635122	56		47	
39	59572	LC-239	LFG Collector - Standard	38.1670255	-122.5639206	59			Active
40	41996	141	LFG Collector - Standard	38.1641195	-122.5641272	60			

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021

No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (PPM)	NOTES
41	62170	LC-246	LFG Collector - Standard	38.1646082	-122.5640043	60			ACTIVE
42	36869	124 G	LFG Collector - Standard	38.1627022	-122.5638785	62		1600	
43	56162	220	LFG Collector - Standard	38.1613197	-122.5642922	63		2,000-3500	CN / 3 CS2 ?
44		P-21	Other (See Comments) (OT)	38.16887917	-122.5642652	64		71	
45		P-22	Other (See Comments) (OT)	38.16887883	-122.5642492	64		55	
46		P-23	Other (See Comments) (OT)	38.1688705	-122.5642428	64		60	
47		P-82	Other (See Comments) (OT)	38.1688325	-122.5641177	64		42	
48		P-83	Other (See Comments) (OT)	38.16892133	-122.5643035	64		59	
49		P-84	Other (See Comments) (OT)	38.16910133	-122.564327	64		37	
50		P-85	Other (See Comments) (OT)	38.16914767	-122.5644217	64		42	
51	36860	115 E	LFG Collector - Standard	38.1674718	-122.564332	65		82	
52	59573	LC-240	LFG Collector - Standard	38.1670241	-122.5644225	66		40	ACTIVE
53	59576	LC-243	LFG Collector - Standard	38.1634542	-122.5641759	68		107	
54	59577	LC-244	LFG Collector - Standard	38.1633506	-122.5645797	74		72	
55	44039	HC-101	LFG Collector - Standard	38.1628293	-122.5646008	75		41	
56	44040	HC-102	LFG Collector - Standard	38.1623785	-122.5644932	75		37	
57	56619	LC-230	LFG Collector - Standard	38.1660713	-122.5650072	78		40	
58	56624	LC-233	LFG Collector - Standard	38.1668967	-122.5649932	78		32	
59	59578	LC-245	LFG Collector - Standard	38.1634761	-122.5650176	80		27	
60		P-86	Other (See Comments) (OT)	38.16314633	-122.5649933	80		33	
61		P-48	Other (See Comments) (OT)	38.17419167	-122.5651825	83		110	
62		P-43	Other (See Comments) (OT)	38.1730765	-122.5652423	84		75	
63		P-36	Other (See Comments) (OT)	38.17149783	-122.5653047	85		92	
64		P-38	Other (See Comments) (OT)	38.17183867	-122.5653647	85		65	
65	811	17	LFG Collector - Standard	38.1703617	-122.5655321	87		46	
66	810	16	LFG Collector - Standard	38.1696262	-122.5654417	88		25	
67	56620	LC-231	LFG Collector - Standard	38.1686286	-122.565354	88		54	
68	36859	114 A	LFG Collector - Standard	38.1679373	-122.5652196	89		16,000	
69	54625	LC-219	LFG Collector - Standard	38.1679709	-122.5652163	89		1200	
70	54621	LC-215	LFG Collector - Standard	38.1650547	-122.5653325	91		49	
71	43673	HC-107	LFG Collector - Standard	38.1656909	-122.5652975	91		32	
72		P-49	Other (See Comments) (OT)	38.17493067	-122.5655627	95		86	
73	812	18	LFG Collector - Standard	38.1713486	-122.5657009	97		30	
74	813	19	LFG Collector - Standard	38.1720321	-122.5657371	97		24	
75	54620	LC-214	LFG Collector - Standard	38.1644529	-122.5654859	102		51	
76	56608	LC-222	LFG Collector - Standard	38.1654792	-122.5656981	102		37	
77	54618	LC-212	LFG Collector - Standard	38.1639036	-122.5656472	103		25	
78		P-50	Other (See Comments) (OT)	38.17512867	-122.5660458	105		52	
79	56621	LC-232	LFG Collector - Standard	38.1697835	-122.5661705	109		31	
80	54599	LC-196	LFG Collector - Standard	38.1682071	-122.5661163	110		1,000	IN GRID 120

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021									
No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (PPM)	NOTES
81	56618	LC-229	LFG Collector - Standard	38.1672291	-122.5664904	110		51	
82	45852	HC-153	LFG Collector - Standard	38.1679467	-122.5661684	110		39	
83	54603	LC-200	LFG Collector - Standard	38.167125	-122.5662454	111		71	
84	54605	LC-201	LFG Collector - Standard	38.166682	-122.5660752	111		32	
85	56609	LC-223	LFG Collector - Standard	38.1658602	-122.5660864	111		58	
86	56610	LC-224	LFG Collector - Standard	38.1662079	-122.5659064	111		26	
87	56612	LC-226	LFG Collector - Standard	38.1641725	-122.5658872	113		20	
88	52613	LC-183	LFG Collector - Standard	38.1741572	-122.5665373	116		54	
89		P-51	Other (See Comments) (OT)	38.17522917	-122.5664445	116		39	
90	52614	LC-184	LFG Collector - Standard	38.1729705	-122.5670855	117		27	
91	802	8	LFG Collector - Standard	38.1716005	-122.566374	118		49	
92	54598	LC-195	LFG Collector - Standard	38.1683749	-122.5665931	121		4,000	
93	54602	LC-199	LFG Collector - Standard	38.1674912	-122.5663974	121		77	
94	56611	LC-225	LFG Collector - Standard	38.1669138	-122.566333	122		42	
95		P-52	Other (See Comments) (OT)	38.1753825	-122.5669377	127		51	
96	36872	127 B	LFG Collector - Standard	38.1738351	-122.5667563	128		30	
97	36873	128 A	LFG Collector - Standard	38.1698037	-122.5673679	131		34	
98	54597	LC-194	LFG Collector - Standard	38.1689615	-122.5665835	131		25,000	
99	54601	LC-198	LFG Collector - Standard	38.1677646	-122.566832	132		55	
100	45855	HC-156	LFG Collector - Standard	38.1666548	-122.5666904	133		36	
101		P-13	Other (See Comments) (OT)	38.16627267	-122.5667888	133		51	
102	62171	LC-247	LFG Collector - Standard	38.1650576	-122.5667205	134		40	
103	62172	LC-248	LFG Collector - Standard	38.1656523	-122.5668544	134		38	
104		P-53	Other (See Comments) (OT)	38.175473	-122.567267	136		41	
105	62175	LC-251	LFG Collector - Standard	38.1736281	-122.5672672	137		35	
106	41722	134	LFG Collector - Standard	38.1725194	-122.5670213	138		29	
107	41723	135	LFG Collector - Standard	38.1721529	-122.5672934	138		41	
108	56607	LC-221	LFG Collector - Standard	38.1681175	-122.5672286	141		38	
109	56617	LC-228	LFG Collector - Standard	38.1677564	-122.5670458	141		74	
110		P-12	Other (See Comments) (OT)	38.16712983	-122.5670528	141		60	
111	49441	LC-176	LFG Collector - Standard	38.1740513	-122.5675294	145		31	
112		P-55	Other (See Comments) (OT)	38.17551583	-122.5676485	145		48	
113	36848	103 C	LFG Collector - Standard	38.172415	-122.5677142	147		52	
114	52620	LC-190	LFG Collector - Standard	38.1634359	-122.5634027	147		30	
115	36851	106 C	LFG Collector - Standard	38.1700882	-122.5675715	148		25	
116	54607	LC-202	LFG Collector - Standard	38.1683618	-122.5672804	150		37	
117		P-54	Other (See Comments) (OT)	38.17572183	-122.5679133	153		45	
118	62174	LC-250	LFG Collector - Standard	38.1738242	-122.5678612	154		60	
119	36850	105 C	LFG Collector - Standard	38.1706173	-122.5677909	156		32	
120	36852	107 C	LFG Collector - Standard	38.1694971	-122.5676143	157		58	

REDWOOD LANDFILL - MONITORING POINTS FOR SEM - UPDATED ON 11-14-2021

No.	Point ID	DESCRIPTION	POINT TYPE	LATITUDE	LONGITUDE	SEM GRID BLOCK NO.	DATE	READING (PPM)	NOTES
121	54609	LC-203	LFG Collector - Standard	38.1687352	-122.5676688	157		49	
122	54610	LC-204	LFG Collector - Standard	38.1690544	-122.5678759	157		14,000	
123	36875	130 E	LFG Collector - Standard	38.1667905	-122.5677676	159		37	
124		P-56	Other (See Comments) (OT)	38.17588233	-122.5682602	161		25	
125	41720	132	LFG Collector - Standard	38.1719093	-122.5679846	162		32	
126	62173	LC-249	LFG Collector - Standard	38.1729121	-122.5680262	163		45	
127	52616	LC-186	LFG Collector - Standard	38.1722291	-122.5686197	164		30	
128	54615	LC-209	LFG Collector - Standard	38.1700423	-122.5682426	165		47	
129	54611	LC-205	LFG Collector - Standard	38.1697844	-122.5682198	166		32	
130	54616	LC-210	LFG Collector - Standard	38.1694802	-122.5681831	166		24	
131	52618	LC-188	LFG Collector - Standard	38.171603	-122.5680363	172		51	
132	36871	126 C	LFG Collector - Standard	38.1705307	-122.5683679	174		68	
133	36874	129 E	LFG Collector - Standard	38.1688503	-122.5683779	174		30	
134	54612	LC-206	LFG Collector - Standard	38.1703914	-122.5684577	174		28	
135		P-61	Other (See Comments) (OT)	38.17628833	-122.5690028	176		21	
136	829	35	LFG Collector - Standard	38.1739165	-122.5693927	186		39	
137	36847	102 C	LFG Collector - Standard	38.1716815	-122.5692653	187		51	
138		P-81	Other (See Comments) (OT)	38.16884867	-122.569311	189		34	
139	839	45	LFG Collector - Standard	38.1760433	-122.5697611	190		20	
140	841	47	LFG Collector - Standard	38.1757422	-122.5694936	190		26	
141		P-74	Other (See Comments) (OT)	38.17652617	-122.5696552	190		31	
142	828	34	LFG Collector - Standard	38.1730762	-122.5695551	192		77	
143	797	3	LFG Collector - Standard	38.1713895	-122.569684	193		3,000	
144		P-76	Other (See Comments) (OT)	38.17518783	-122.570047	197		55	
145		P-77	Other (See Comments) (OT)	38.17460717	-122.5700413	197		36	
146		P-78	Other (See Comments) (OT)	38.17432767	-122.5702018	197		81	
147	36845	100 C	LFG Collector - Standard	38.1724647	-122.5698034	199		600	
148		P-75	Other (See Comments) (OT)	38.17632433	-122.5704643	200		35	
149		P-79	Other (See Comments) (OT)	38.17342533	-122.5702742	202		28	
150	52622	LC-192	LFG Collector - Standard	38.1679347	-122.5646219				
151		P-44	Other (See Comments) (OT)					70	
152		P-45	Other (See Comments) (OT)						
153		P-73	Other (See Comments) (OT)					17	

WELL	GRID	PPM								
266	73	27								NOT ON MAP OR log
267	79	19								
268	79	35								
269	79	29								
270	67-73	44								
265	67	18								
259	195	25								
258	189	41								
262	193	36								
261	180	57								
274	186	30								
264	156	23								
195	132	4,000								Not ~~[illegible]~~ on map
196	121	1,000								
194	131	25,000								

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leighwnor / Nick Banks
Dwight Anderson
Rick Lenard

Date: 1-25-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 37 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	0600	0615	42	3	5	8	
2	DA	0600	0615	37	3	5	8	
3	RL	0600	0615	39	3	5	8	
4	ND	0600	0615	25	3	5	8	
5	LW	0615	0630	29	3	4	5	
6	DA	0615	0630	35	3	4	5	
7	RL	0615	0630	31	3	4	5	
8	ND	0615	0630	49	3	4	5	
9	LW	0630	0645	36	3	3	3	
10	DA	0630	0645	45	3	3	3	
11	RL	0630	0645	52	3	3	3	
12	ND	0630	0645	108	3	3	3	
13	LW	0645	0700	26	3	4	6	
14	DA	0645	0700	28	3	4	6	
15	RL	0645	0700	31	3	4	6	
16	ND	0645	0700	20	3	4	6	
17	LW	0700	0715	45	2	2	4	
18	DA	0700	0715	32	2	2	4	
19	RL	0700	0715	108	2	2	4	
20	ND	0700	0715	95	2	2	4	
21	LW	0715	0730	115	2	3	1	
22	DA	0715	0730	26	2	3	1	
23	RL	0715	0730	21	2	3	1	
24	ND	0715	0730	89	2	3	1	
25	LW	0730	0745	45	3	4	2	
26	DA	0730	0745	32	3	4	2	
27	RL	0730	0745	25	3	4	2	
28	ND	0730	0745	82	3	4	2	
29	LW	0745	0800	58	2	3	16	
30	DA	0745	0800	107	2	3	16	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leishnaot | Nick Benko
Dwight Andrews
Rick Lenos

Date: 1-25-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 42 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
31	RL	0745	0800	68	2	3	16	
32	NB	0745	0800	24	2	3	16	
33	LW	0800	0815	52	3	4	15	
34	DA	0800	0815	68	3	4	15	
35	RL	0800	0815	52	3	4	15	
36	NB	0800	0815	27	3	4	15	
37	LW	0815	0830	22	2	3	13	
38	DA	0815	0830	39	2	3	13	
39	RL	0815	0830	30	2	3	13	
40	NB	0815	0830	61	2	3	13	
41	LW	0830	0845	27	3	4	9	
42	DA	0830	0845	18	3	4	9	
43	RL	0830	0845	55	3	4	9	
44	NB	0830	0845	30	3	4	9	
46	LW	0845	0900	17	3	5	12	
47	DA	0845	0900	22	3	5	12	
48	RL	0845	0900	71	3	5	12	
49	NB	0845	0900	60	3	5	12	
51	LW	0900	0915	35	4	5	11	
52	DA	0900	0915	21	4	5	11	
53	RL	0900	0915	110	4	5	11	
56	NB	0900	0915	47	4	5	11	
57	LW	0915	0930	35	5	7	10	
58	DA	0915	0930	77	5	7	10	
61	RL	0915	0930	35	5	7	10	
62	NB	0915	0930	1600	5	7	10	Well 124
63	LW	0930	0945	3500	6	7	10	LS2
64	DA	0930	0945	71	6	7	10	
65	RL	0930	0945	82	6	7	10	
6F	NB	0930	0945	107	6	7	10	

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Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Ward, Nick Banks, Dwight Anderson, Rick Lenis

Date: 1-25-22 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 46 Precip. 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
69	LW	0945	1000	37	5	8	10	
70	DA	0945	1000	45	5	8	10	
71	RL	0945	1000	52	5	8	10	
72	ND	0945	1000	66	5	8	10	
74	LW	1000	1015	72	6	7	10	
75	DA	1000	1015	86	6	7	10	
76	RL	1000	1015	40	6	7	10	
77	ND	1000	1015	32	6	7	10	
78	LW	1015	1030	40	6	7	10	
79	DA	1015	1030	29	6	7	10	
80	RL	1015	1030	33	6	7	10	
81	ND	1015	1030	27	6	7	10	
82	LW	1030	1045	45	5	7	10	
88	DA	1030	1045	54	5	7	10	
89	RL	1030	1045	16,000	5	7	10	Well 114
90	ND	1030	1045	35	5	7	10	
91	LW	1045	1100	49	6	7	12	
92	DA	1045	1100	37	6	7	12	
93	RL	1045	1100	24	6	7	12	
94	ND	1045	1100	51	6	7	12	
99	LW	1100	1115	36	6	7	10	
100	DA	1100	1115	106	6	7	10	
101	RL	1100	1115	54	6	7	10	
102	ND	1100	1115	51	6	7	10	
103	LW	1115	1130	25	5	6	11	
104	DA	1115	1130	21	5	6	11	
109	RL	1115	1130	31	5	6	11	
110	ND	1115	1130	1,000	5	6	11	Well 196
111	LW	1200	1215	31	6	9	10	
112	DA	1200	1215	45	6	9	10	

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leighvnor | Nick Banks
Dwight Anderson
Rick Lanio

Date: 1-25-22 Instrument Used: tva1000 Grid Spacing: 25'

Temperature: 59 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
113	RL	1200	1215	70	6	9	10	
114	NB	1200	1215	46	6	9	10	
115	LW	1215	1230	78	5	7	12	
120	DA	1215	1230	47	5	7	12	
121	RL	1215	1230	4,000	5	7	12	Well 195
122	NB	1215	1230	42	5	7	12	
123	LW	1230	1245	61	6	7	12	
124	DA	1230	1245	45	6	7	12	
125	RL	1230	1245	31	6	7	12	
126	NB	1230	1245	37	6	7	12	
131	LW	1245	1300	25,000	3	5	12	Well 194
132	DA	1245	1300	55	3	5	12	
133	RL	1245	1300	51	3	5	12	
134	NB	1245	1300	40	3	5	12	
135	LW	1300	1315	36	5	6	12	
140	DA	1300	1315	114	5	6	12	
141	RL	1300	1315	4,000	5	6	12	Surface
142	NB	1300	1315	65	5	6	12	
143	LW	1315	1330	25	5	7	12	
144	DA	1315	1330	31	5	7	12	
149	RL	1315	1330	57	5	7	12	
150	NB	1315	1330	800	5	7	12	Surface
151	LW	1330	1345	65	4	6	10	
152	DA	1330	1345	40	4	6	10	
157	RL	1330	1345	14,000	4	6	10	Well 204
158	NB	1330	1345	92	4	6	10	
159	LW	1345	1410	37	5	7	12	
180	DA	1345	1400	29	5	7	12	
166	RL	1345	1400	32	5	7	12	
167	NB	1345	1400	45	5	7	12	

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Nick Banks, Dwight Anderson, Rick Lerro

Date: 1-25-22 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
168	LW	1400	1415	30	5	7	12	
169	DA	1400	1415	24	5	7	12	
174	RL	1400	1415	68	5	7	12	
175	NB	1400	1415	32	5	7	12	
181	LW	1415	1430	25	3	4	12	
182	DA	1415	1430	31	3	4	12	
183	RL	1415	1430	20	3	4	12	
189	NB	1415	1430	34	3	4	12	
195	LW	1430	1445	25	2	3	12	
138	DA	1430	1445	41	2	3	12	
139	RL	1430	1445	57	2	3	12	
147	NB	1430	1445	52	2	3	12	
148	LW	1445	1500	28	3	4	13	
155	DA	1445	1500	31	3	4	13	
156	RL	1445	1500	32	3	4	13	
164	NB	1445	1500	30	3	4	13	
165	LW	1500	1515	47	3	4	13	
172	DA	1500	1515	51	3	4	13	
173	RL	1500	1515	76	3	4	13	
179	NB	1500	1515	46	3	4	13	
180	LW	1515	1530	57	2	2	10	
187	DA	1515	1530	51	2	2	10	
188	RL	1515	1530	42	2	2	10	
193	NB	1515	1530	3,000	2	2	10	well 3
194	LW	1530	1545	61	1	2	9	
199	DA	1530	1545	600	1	2	9	well 1000
200	RL	1530	1545	39	1	2	9	
203	NB	1530	1545	27	1	2	9	
204	LW	1545	1600	21	2	2	11	
207	RL	1545	1600	33	2	2	11	

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Ward   Nick Banks
Rick Lenos
Dwight Anderson

Date: 1-25-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 65 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
208	DA	1545	1610	36	2	2	11	
206	NB	1545	1610	18	2	2	11	
202	LW	1600	1615	28	1	2	9	
205	RL	1600	1615	31	1	2	9	
201	DA	1600	1615	37	1	2	9	
196	NB	1600	1615	28	1	2	9	
197	LW	1615	1630	87	3	4	8	
198	RL	1615	1630	110	3	4	8	
190	DA	1615	1630	31	3	4	8	
191	NB	1615	1630	58	3	4	8	
192	LW	1630	1645	77	1	2	15	
189	RL	1630	1645	41	1	2	15	
185	DA	1630	1645	67	1	2	15	
186	NB	1630	1645	35	1	2	15	

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: [illegible]

Date: 1-25-22 Instrument Used: ______ Grid Spacing: ______

Temperature: ______ Precip: ______ Upwind BG: ______ Downwind BG: ______

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
54								Active-[illegible]
59								
66								
45								
50								
55								
60								
67								
73								

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade | Nick Banks
Rick Lear
Dwight Anderson

Date: 1-26-22 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 37 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
83	LW	0600	0615	110	4	5	16	
84	RL	0600	0615	75	4	5	16	
85	DA	0600	0615	52	4	5	16	
86	NB	0600	0615	41	4	5	16	
87	LW	0615	0630	46	2	3	3	
95	RL	0615	0630	86	2	3	3	
96	DA	0615	0630	31	2	3	3	
97	NB	0615	0630	30	2	3	3	
98	LW	0630	0645	35	2	2	4	
105	RL	0630	0645	52	2	2	4	
106	DA	0630	0645	37	2	2	4	
107	NB	0630	0645	30	2	2	4	
108	LW	0645	0700	42	3	3	2	
116	RL	0645	0700	54	3	3	2	
117	DA	0645	0700	27	3	3	2	
118	NB	0645	0700	49	3	3	2	
119	LW	0700	0715	32	3	3	2	
127	RL	0700	0715	51	3	3	2	
128	DB	0700	0715	30	3	3	2	
129	NB	0700	0715	46	3	3	2	
130	LW	0715	0730	37	1	2	4	
136	RL	0715	0730	41	1	2	4	
137	DA	0715	0730	35	1	2	4	
145	NB	0715	0730	48	1	2	4	
146	LW	0730	0745	37	2	2	1	
153	RL	0730	0745	45	2	2	1	
154	DB	0730	0745	60	2	2	1	
161	NB	0730	0745	25	2	2	1	
162	LW	0745	0800	32	2	3	13	
163	RL	0745	0800	55	2	3	13	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leishwaod, Nick Benks, Rick Leass, Dwight Anderson

Date: 1-26-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 39 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
170	DA	0745	0800	82	2	3	13	
171	NB	0745	0800	50	2	3	13	
176	LW	0800	0815	21	1	1	6	
177	RC	0800	0815	48	1	1	6	
178	DA	0800	0815	103	1	1	6	

Attach Calibration Sheet
Attach site map showing grid ID

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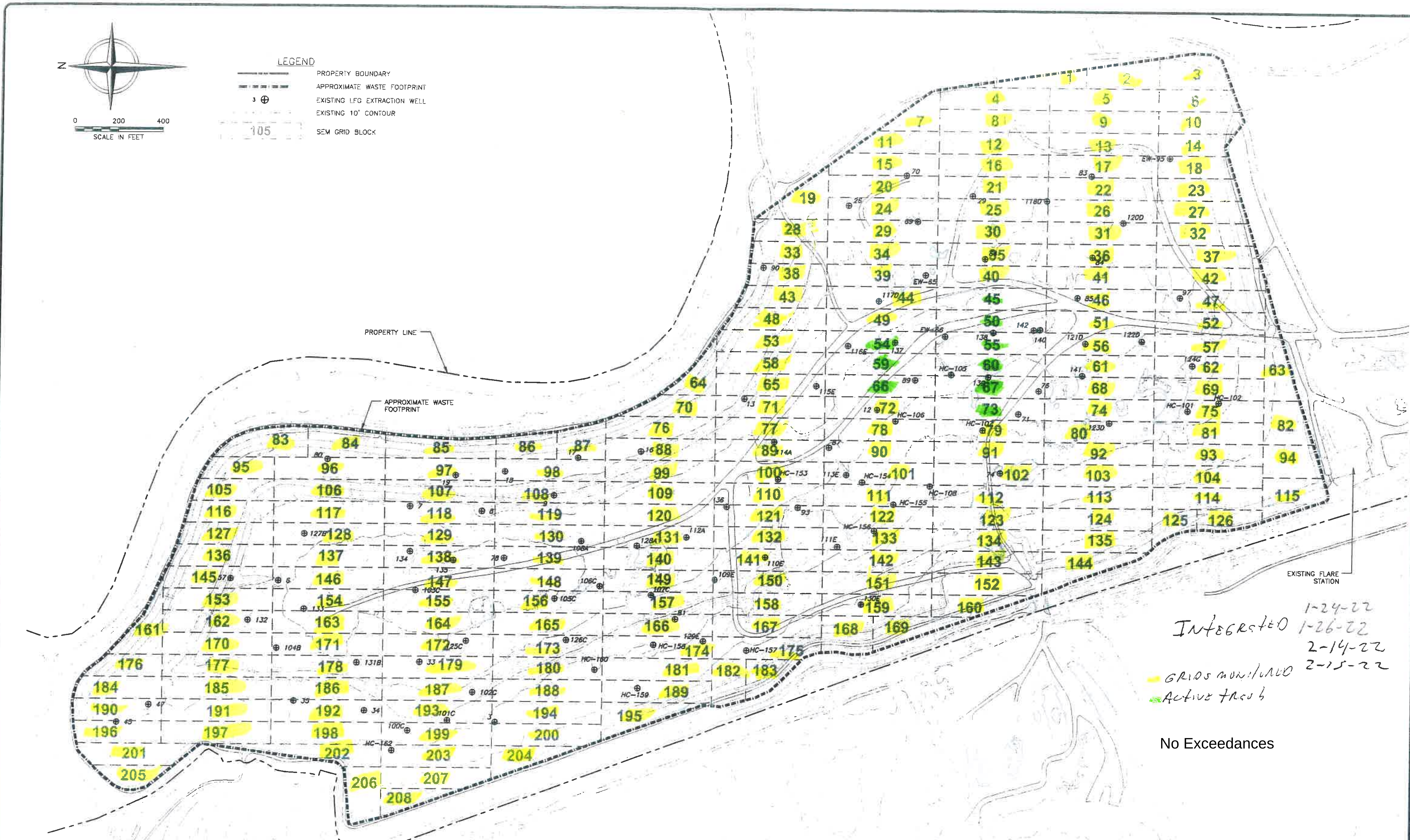
Attachment B

Integrated Surface Emission Monitoring Event Records

Table B.1
Integrated Landfill Surface Monitoring
Exceedances and Monitoring Log

2022 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			Comments
Exceedance Grid ID No.	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <25 ppm	No Exced. >25 ppm	Monitoring Date	No Exced. <25 ppm	No Exced. >25 ppm	
No Exceedances									



NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014 | DRAWN BY RL | DESIGNED BY MLH | CHECKED BY MED | APPROVED BY PJS

PREPARED BY
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO. 1

PROJECT NO. 140521

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leishwado | Nicil Benks
Ricil Lenao
Dwight Anderson

Cal. Gas Exp. Date: 6-9-22

Date: 1-24-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 56 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
1	LW	1205	1230	5.12	6	9	12	
2	RL	1205	1230	4.77	6	9	12	
3	DA	1205	1230	4.46	6	9	12	
4	ND	1205	1230	5.72	6	9	12	
5	LW	1230	1255	5.45	5	7	13	
6	RL	1230	1255	4.87	5	7	13	
7	DA	1230	1255	6.10	5	7	13	
8	ND	1230	1255	8.32	5	7	13	
9	LW	1255	1320	6.63	5	7	13	
10	RL	1255	1320	4.57	5	7	13	
11	DA	1255	1320	6.90	5	7	13	
12	ND	1255	1320	11.51	5	7	13	
13	LW	1320	1345	6.11	3	5	12	
14	RL	1320	1345	5.10	3	5	12	
15	DA	1320	1345	7.26	3	5	12	
16	ND	1320	1345	14.51	3	5	12	
17	LW	1345	1410	7.38	5	6	12	
18	RL	1345	1410	4.60	5	6	12	
19	DA	1345	1410	6.06	5	6	12	
20	ND	1345	1410	14.51	5	6	12	
21	LW	1410	1435	16.10	4	5	12	
22	RL	1410	1435	6.15	4	5	12	
23	DA	1410	1435	5.31	4	5	12	
24	ND	1410	1435	9.77	4	5	12	
25	LW	1435	1500	13.51	5	7	13	
26	RL	1435	1500	6.57	5	7	13	
27	DA	1435	1500	5.09	5	7	13	
28	ND	1435	1500	7.49	5	7	13	
29	LW	1500	1525	9.04	5	7	12	
30	RL	1500	1525	11.27	5	7	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leighwade | Nick Banks
Rick Leroy
Dwight Anderson

Cal. Gas Exp. Date: 6-9-22

Date: 1-24-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 66 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
31	DA	1500	1525	6.41	5	7	12	
32	NB	1500	1525	5.77	5	7	12	
33	LW	1525	1550	7.15	5	7	13	
34	RL	1525	1550	10.25	5	7	13	
35	DA	1525	1550	9.67	5	7	13	
36	NB	1525	1550	7.21	5	7	13	
37	LW	1550	1615	5.41	2	2	1	
38	RL	1550	1615	7.28	2	2	1	
39	DA	1550	1615	8.65	2	2	1	
40	NB	1550	1615	9.81	2	2	1	
41	LW	1615	1640	5.65	3	3	2	
42	RL	1615	1640	5.78	3	3	2	
43	DA	1615	1640	7.22	3	3	2	
44	NB	1615	1640	9.16	3	3	2	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LeishWade / NickBen... / RickLemos / DwightAnderson

Cal. Gas Exp. Date: 6-9-22

Date: 1-26-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 49 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
46	LW	0825	0850	5.21	2	3	4	
47	RL	0825	0850	5.06	2	3	4	
48	DA	0825	0850	7.35	2	3	4	
49	NB	0825	0850	9.21	2	3	4	
51	LW	0850	0915	6.99	0	0	6	
52	RL	0850	0915	5.38	0	0	6	
53	DA	0850	0915	7.12	0	0	6	
56	NB	0850	0915	6.24	0	0	6	
57	LW	0915	0940	5.51	2	2	15	
58	RL	0915	0940	7.38	2	2	15	
61	DA	0915	0940	6.31	2	2	15	
62	NB	0915	0940	5.70	2	2	15	
63	LW	0940	1005	6.07	2	2	16	
64	RL	0940	1005	6.45	2	2	16	
65	DA	0940	1005	7.20	2	2	16	
68	NB	0940	1005	6.03	2	2	16	
69	LW	1005	1030	5.21	2	2	16	
70	RL	1005	1030	6.94	2	2	16	
71	DA	1005	1030	7.22	2	2	16	
72	NB	1005	1030	5.86	2	2	16	
74	LW	1030	1055	6.21	3	3	2	
75	RL	1030	1055	6.08	3	3	2	
76	DA	1030	1055	8.50	3	3	2	
77	NB	1030	1055	5.91	3	3	2	
78	LW	1055	1120	5.57	4	4	14	
79	RL	1055	1120	6.21	4	4	14	
80	DA	1055	1120	5.38	4	4	14	
81	NB	1055	1120	5.06	4	4	14	
82	LW	1120	1145	6.15	3	3	1	
94	RL	1120	1145	5.38	3	3	1	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Chris Wade | Nick Bonds
Rick Leaso
Dwight Anderson

Cal. Gas Exp. Date: 6-9-22

Date: 1-26-22 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 51 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
90	DA	1120	1145	7.35	3	3	1	
91	NB	1120	1145	6.55	3	3	1	
92	CW	1215	1240	5.31	3	3	16	
93	RL	1215	1240	5.98	3	3	16	
101	DA	1215	1240	6.70	3	3	16	
102	NB	1215	1240	7.15	3	3	16	
103	CW	1240	1305	5.19	1	2	6	
104	RL	1240	1305	5.47	1	2	6	
111	DA	1240	1305	7.71	1	2	6	
112	NB	1240	1305	6.09	1	2	6	
113	CW	1305	1330	5.31	2	2	2	
114	RL	1305	1330	6.74	2	2	2	
115	DA	1305	1330	5.55	2	2	2	
122	NB	1305	1330	6.21	2	2	2	
123	CW	1330	1355	6.06	2	2	2	
124	RL	1330	1355	5.13	2	2	2	
125	DA	1330	1355	4.71	2	2	2	
126	NB	1330	1355	5.60	2	2	2	
133	CW	1355	1420	5.50	1	2	16	
134	RL	1355	1420	6.35	1	2	16	
135	DA	1355	1420	6.77	1	2	16	
142	NB	1355	1420	6.19	1	2	16	
143	CW	1420	1445	6.70	1	2	2	
144	RL	1420	1445	5.17	1	2	2	
151	DA	1420	1445	7.97	1	2	2	
152	NB	1420	1445	6.50	1	2	2	
159	CW	1445	1510	6.13	2	3	1	
160	RL	1445	1510	5.97	2	3	1	
168	DA	1445	1510	6.21	2	3	1	
169	NB	1445	1510	6.47	2	3	1	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel. Leslwada · Nicicbanks
Rllleras
Dwight Abramow

Cal. Gas Exp. Date: 6-9-22

Date: 1-26-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
157	LW	1510	1535	9.65	2	2	16	
158	RL	1510	1535	10.30	2	2	16	
166	DA	1510	1535	8.50	2	2	16	
167	NB	1510	1535	7.38	2	2	16	
174	LW	1535	1600	7.10	4	4	1	
175	RL	1535	1600	6.59	4	4	1	
181	DA	1535	1600	5.37	4	4	1	
182	NB	1535	1600	5.51	4	4	1	
183	LW	1600	1625	6.06	4	5	15	
189	RL	1600	1625	5.60	4	5	15	
195	DA	1600	1625	5.38	4	5	15	
204	NB	1600	1625	6.06	4	5	15	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leishman ______ ______
______ ______ ______
______ ______ Cal. Gas Exp. Date: ______

Date: 1-26-22 Instrument Used: ______ Grid Spacing: ______

Temperature: ______ Precip: ______ Upwind BG: ______ Downwind BG: ______

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
45								Active Areas
50								
54								
55								
59								
60								
66								
67								
73								

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Lou Shuman, Calvin Ortiz, Dwight Anderson, Nick Banks, R. Clemos

Cal. Gas Exp. Date: 6-9-22

Date: 2-14-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
88	LW	1200	1225	6.89	3	4	13	
89	DA	1200	1225	7.32	3	4	13	
99	RC	1200	1225	11.70	3	4	13	
100	CO	1200	1225	7.95	3	4	13	
109	NB	1200	1225	22.17	3	4	13	
110	LW	1225	1250	15.64	4	5	13	
120	DA	1225	1250	20.16	4	5	13	
121	RC	1225	1250	11.55	4	5	13	
131	CO	1225	1250	16.42	4	5	13	
132	NB	1225	1250	9.71	4	5	13	
140	LW	1250	1315	11.16	4	6	12	
141	DA	1250	1315	9.59	4	6	12	
149	RC	1250	1315	10.65	4	6	12	
150	CO	1250	1315	8.71	4	6	12	
85	NB	1250	1315	5.74	4	6	12	
86	LW	1315	1340	6.10	5	5	12	
87	DA	1315	1340	5.91	5	5	12	
97	RC	1315	1340	6.14	5	5	12	
98	CO	1315	1340	5.82	5	5	12	
107	NB	1315	1340	6.51	5	5	12	
108	LW	1340	1405	5.38	4	5	12	
118	DA	1340	1405	6.21	4	5	12	
119	RC	1340	1405	8.47	4	5	12	
129	CO	1340	1405	7.48	4	5	12	
130	NB	1340	1405	9.22	4	5	12	
138	LW	1405	1430	5.67	5	5	13	
139	DA	1405	1430	6.24	5	5	13	
147	RC	1405	1430	6.17	5	5	13	
148	CO	1405	1430	6.38	5	5	13	
155	NB	1405	1430	5.62	5	5	13	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leishwood, Calvin Ortiz, Dwight Anderson, Nick Banks, R Lucleaw

Cal. Gas Exp. Date: 6-9-22

Date: 2-14-22 Instrument Used: TVA1000 Grid Spacing: 25

Temperature: 65 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
156	LW	1430	1455	5.81	5	7	13	
164	DA	1430	1455	7.28	5	7	13	
165	RL	1430	1455	5.40	5	7	13	
172	CO	1430	1455	6.95	5	7	13	
173	NB	1430	1455	5.46	5	7	13	
179	LW	1455	1520	7.21	5	6	12	
180	DA	1455	1520	6.45	5	6	12	
187	RL	1455	1520	6.89	5	6	12	
188	CO	1455	1520	5.47	5	6	12	
193	NB	1455	1520	6.39	5	6	12	
194	LW	1520	1545	6.06	5	6	13	
199	DA	1520	1545	5.47	5	6	13	
200	RL	1520	1545	6.13	5	6	13	
203	CO	1520	1545	5.18	5	6	13	
207	NB	1520	1545	6.24	5	6	13	
208	LW	1545	1610	6.32	5	7	12	
83	DA	1545	1610	5.57	5	7	12	
84	RL	1545	1610	5.89	5	7	12	
95	CO	1545	1610	6.13	5	7	12	
96	NB	1545	1610	5.74	5	7	12	
105	LW	1610	1635	6.80	4	6	12	
106	DA	1610	1635	6.14	4	6	12	
116	RL	1610	1635	5.97	4	6	12	
117	CO	1610	1635	6.49	4	6	12	
127	NB	1610	1635	5.09	4	6	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leishwade ____________ ____________
____________ ____________ ____________
____________ ____________ Cal. Gas Exp. Date: ______

Date: 2-14-22 Instrument Used: ____________ Grid Spacing: ____________

Temperature: ________ Precip: ________ Upwind BG: ________ Downwind BG: ________

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
45								Active-Area 3
50								
54								
55								
59								
60								
66								
67								
73								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Calvin Ortiz, Nick Bankson, Rick Lewis

Cal. Gas Exp. Date: 6-9-22

Date: 2-15-22 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 42 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
128	LW	0550	0615	6.24	1	1	14	
136	NB	0550	0615	5.98	1	1	14	
137	RL	0550	0615	6.19	1	1	14	
145	CO	0550	0615	5.38	1	1	14	
146	LW	0615	0640	5.96	1	1	16	
153	NB	0615	0640	5.77	1	1	16	
154	RL	0615	0640	6.39	1	1	16	
161	CO	0615	0640	5.28	1	1	16	
162	LW	0640	0705	5.46	2	2	15	
163	NB	0640	0705	6.17	2	2	15	
170	RL	0640	0705	5.58	2	2	15	
171	CO	0640	0715	7.22	1	1	16	
176	LW	0705	0730	6.31	1	1	16	
177	NB	0705	0730	7.45	1	1	16	
178	RL	0705	0730	6.10	1	1	16	
184	CO	0700	0730	5.38	1	1	16	
185	LW	0730	0755	5.13	2	2	1	
186	NB	0730	0755	5.77	2	2	1	
190	RL	0730	0755	5.46	2	2	1	
191	CO	0730	0755	5.12	2	2	1	
192	LW	0755	0820	6.85	1	1	2	
196	NB	0755	0820	4.21	1	1	2	
197	RL	0755	0820	5.13	1	1	2	
198	CO	0755	0820	5.67	1	1	2	
201	LW	0820	0845	4.55	1	1	1	
205	NB	0820	0845	4.30	1	1	1	
202	RL	0820	0845	5.27	1	1	1	
206	CO	0820	0845	5.75	1	1	1	

Attach Calibration Sheet
Attach site map showing grid ID

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Attachment C

Component Leak Monitoring Event Records

Table C.1
AB-32 Component Leak Monitoring
Summary of Component Leaks Greater than 500 ppmv

2022 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Location	Initial Monitoring			Corrective Action		10-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

Table C.2
BAAQMD Component Leak Monitoring
Summary of Component Leaks Greater than 1,000 ppmv

2022 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Location	Initial Monitoring			Corrective Action		7-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

LANDFILL NAME: REDWOOD
QUARTERLY LFG COMPONENT LEAK MONITORING

INSTRUMENT FID
MAKE: Thermo Environr
MODEL: TVA 1000
S/N: 1036346773

DATE OF SAMPLING: 1-25-22
TECHNICIAN: LEISHNAOR

LOCATION OF LEAK	LEAK CONCENTRATION (ppmv)	DATE OF DISCOVERY	TECHNICIAN	ACTION TAKEN TO REPAIR LEAK	DATE OF REPAIR	DATE OF ANY REQUIRED RE-MONITORING	RE-MONITORED CONCENTRATION (ppmv)
NO EXCEEDANCES							

In the event that an exceedance is detected, please intiate corrective action and re-monitor the exceedance location within 7 days of the initial exceedance.

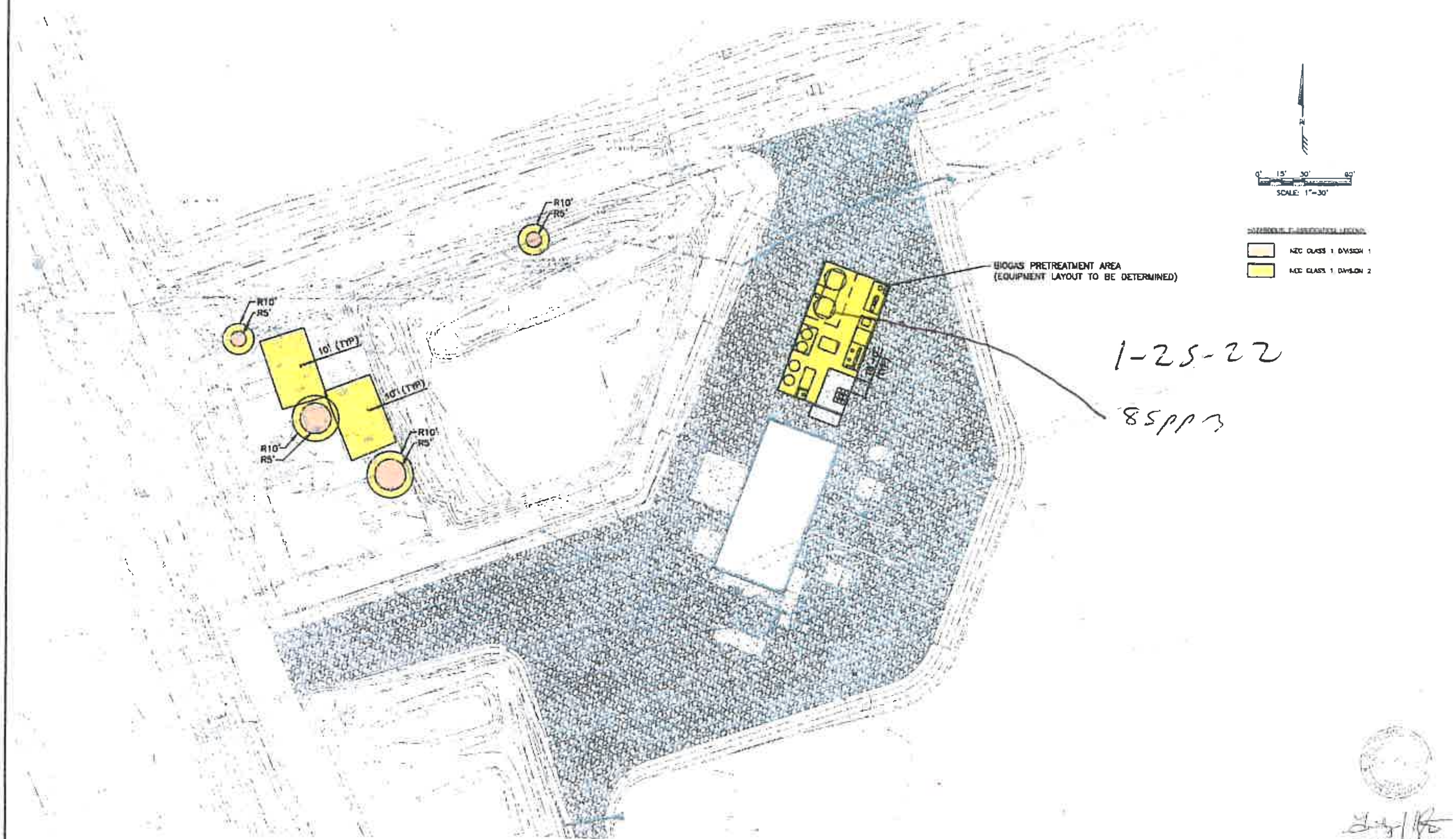
NOTE: Leaks over 500 ppmv methane are exceedances at any component containing landfill gas, pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B).

NOTE: Leaks over 1,000 ppmv methane are exceedances at any component containing landfill gas, pursuant to BAAQMD Regulation 8-34-301.2.

REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948

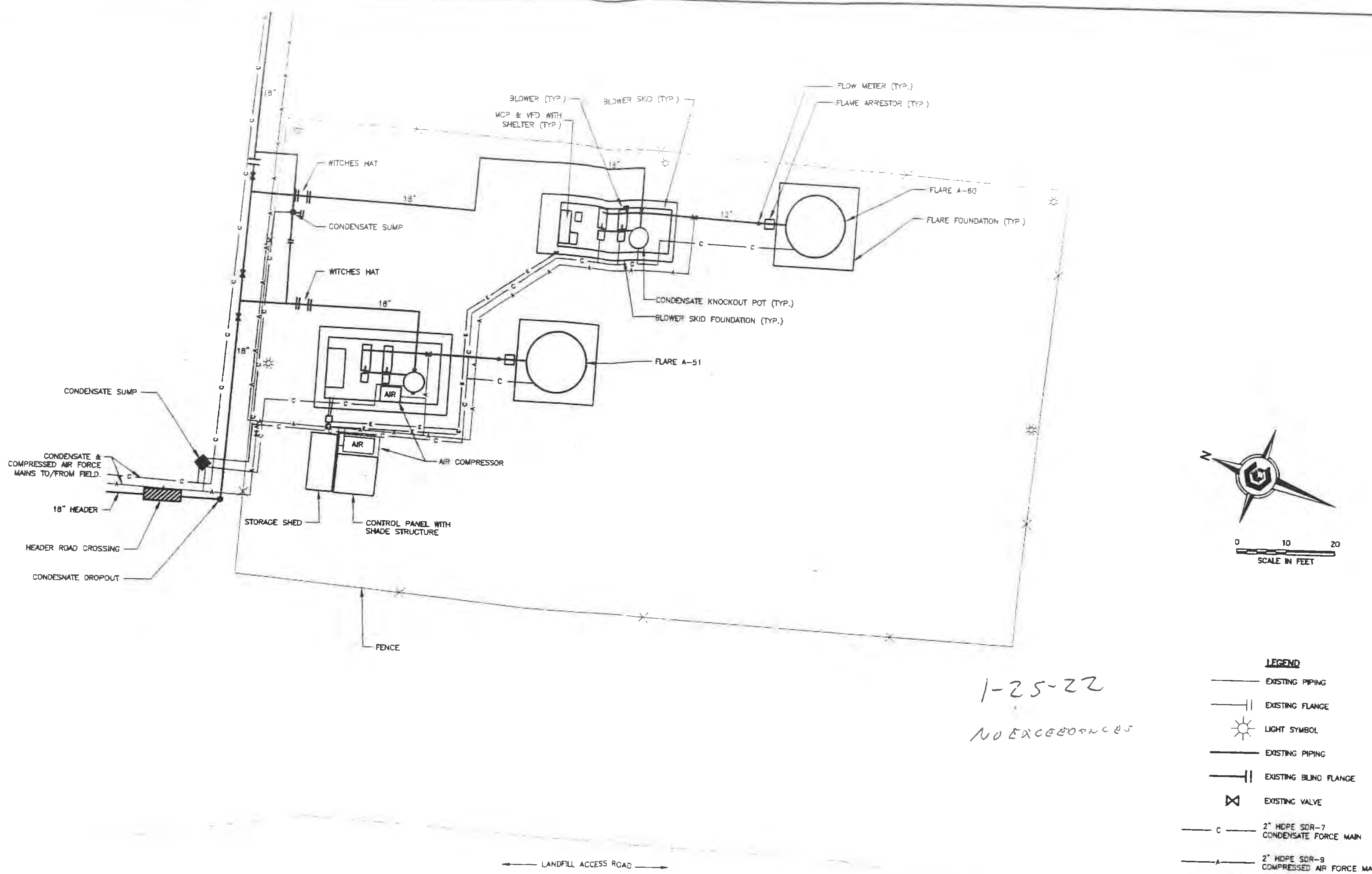


REV	DATE	BY	DESCRIPTION
	3-1-16	RAA	ISSUED FOR CONSTRUCTION
	10-26-15	RAA	BUILDING PERMIT APPLICATION SET
	10-2-15	RAA	95% DESIGN RESUBMITTAL
	8-7-15	RAA	ISSUED FOR GAS TREATMENT SKID BID
	6-12-15	RAA	95% DESIGN SUBMITTAL
	5-6-15	RAA	50% DESIGN SUBMITTAL

SCALE:	AS SHOWN
DATE:	5-5-15
DRAWN:	JFD
CHECKED:	RFC
APPROVED:	RAA

ACEng
www.ac-engineering.com

CLIENT	DESCRIPTION	PROJECT NO: 1003.005.001
WASTE MANAGEMENT RENEWABLE ENERGY LANDFILL TO GAS ENERGY PROJECT REDWOOD LANDFILL, NOVATO, CA	PROPOSED CONDITIONS AND HAZARDOUS AREA CLASSIFICATIONS	SHEET: G-5



1-25-22

NO EXCEEDANCES

DRAFT

WASTE MANAGEMENT

PAUL J. STOUT P.E.

P.E. No.

Date

REV. | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY

DATE OF ISSUE

DRAWN BY

DESIGNED BY

CHECKED BY

APPROVED BY

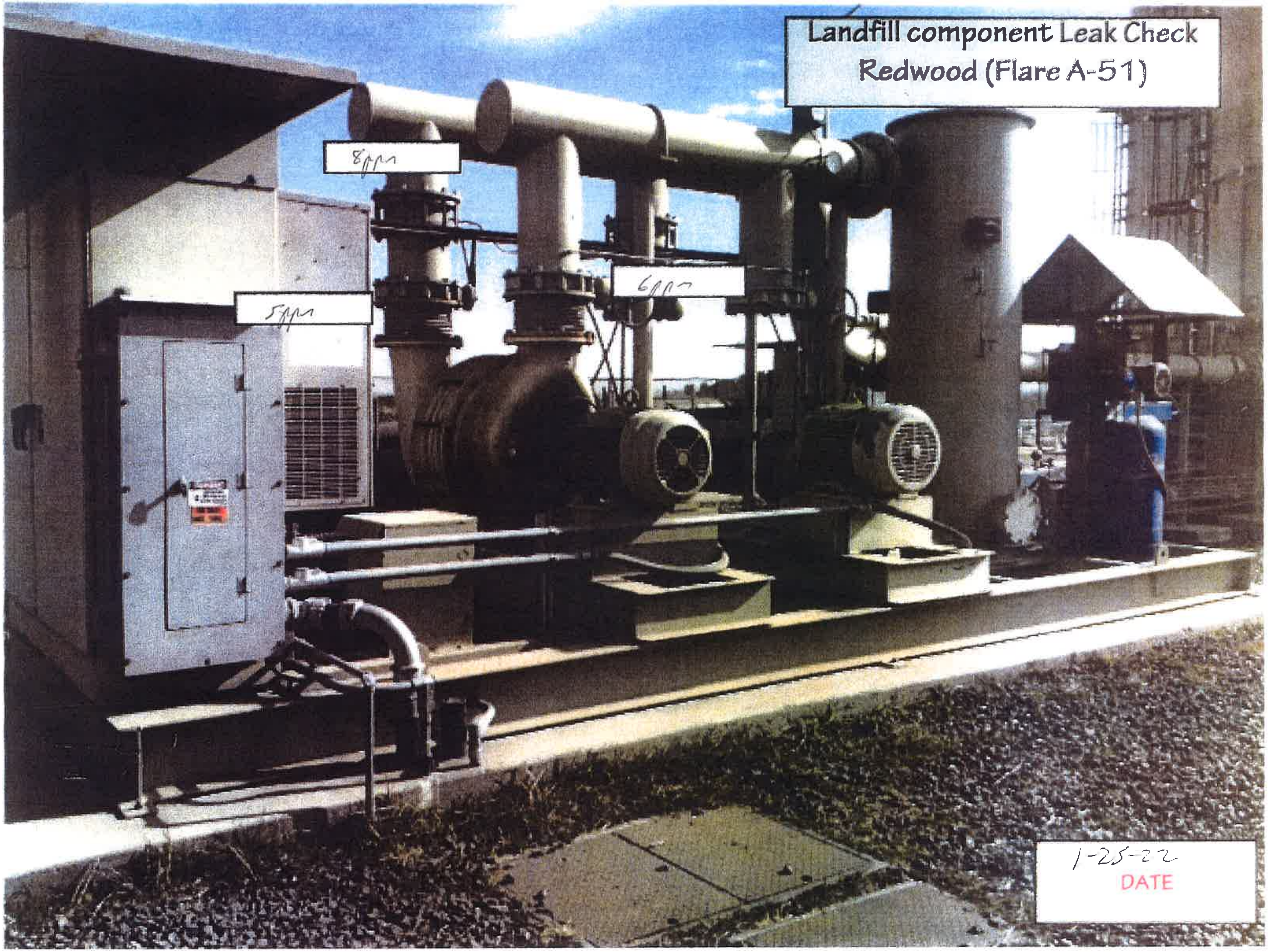
CORNERSTONE Environmental Group LLC

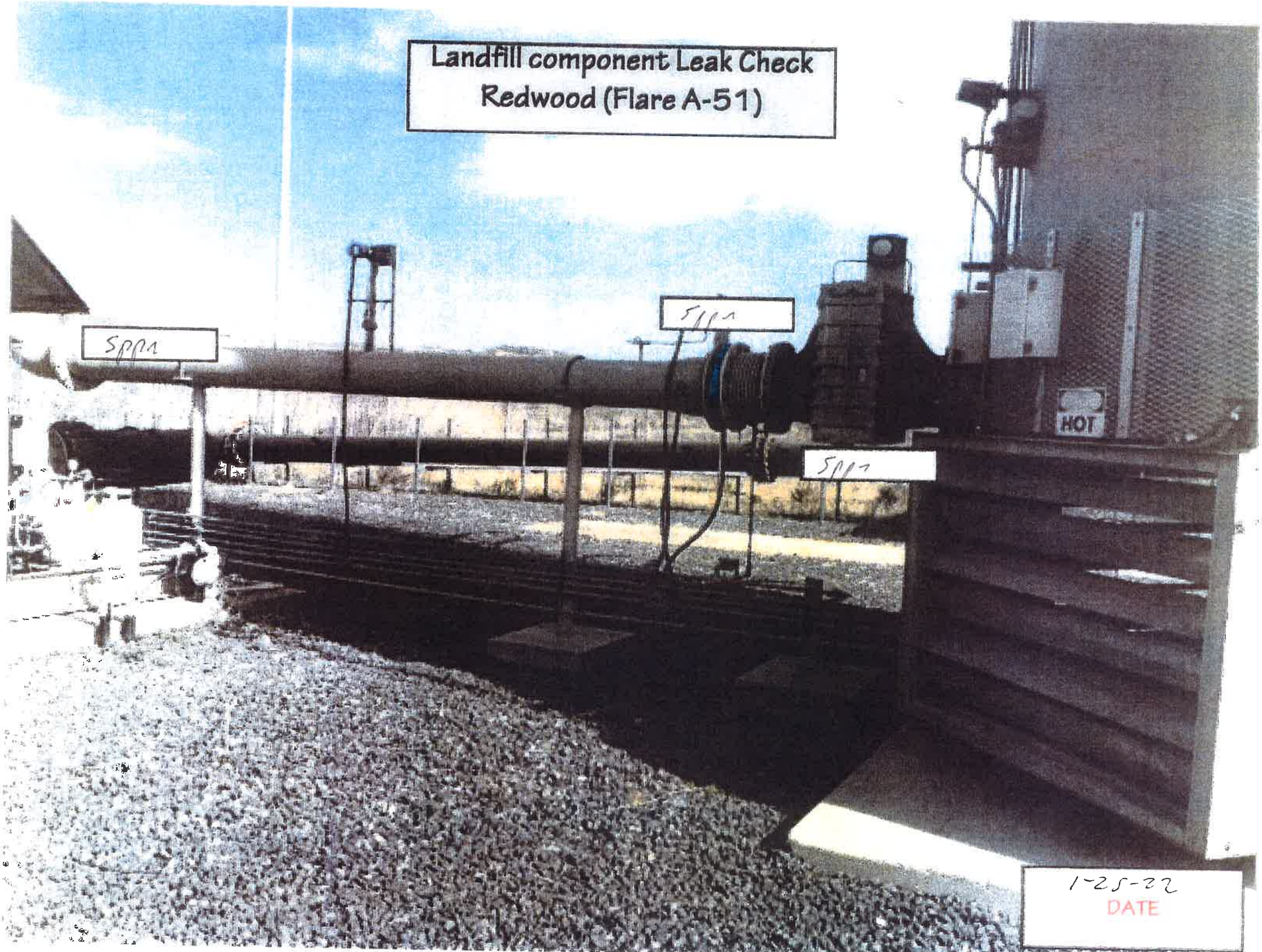
WASTE MANAGEMENT OF CALIFORNIA, INC.
REDWOOD LANDFILL, INC.
NOVATO, MARIN COUNTY, CALIFORNIA

LFG FLARE AND GCCS AS-BUILT
FACILITY SITE PLAN

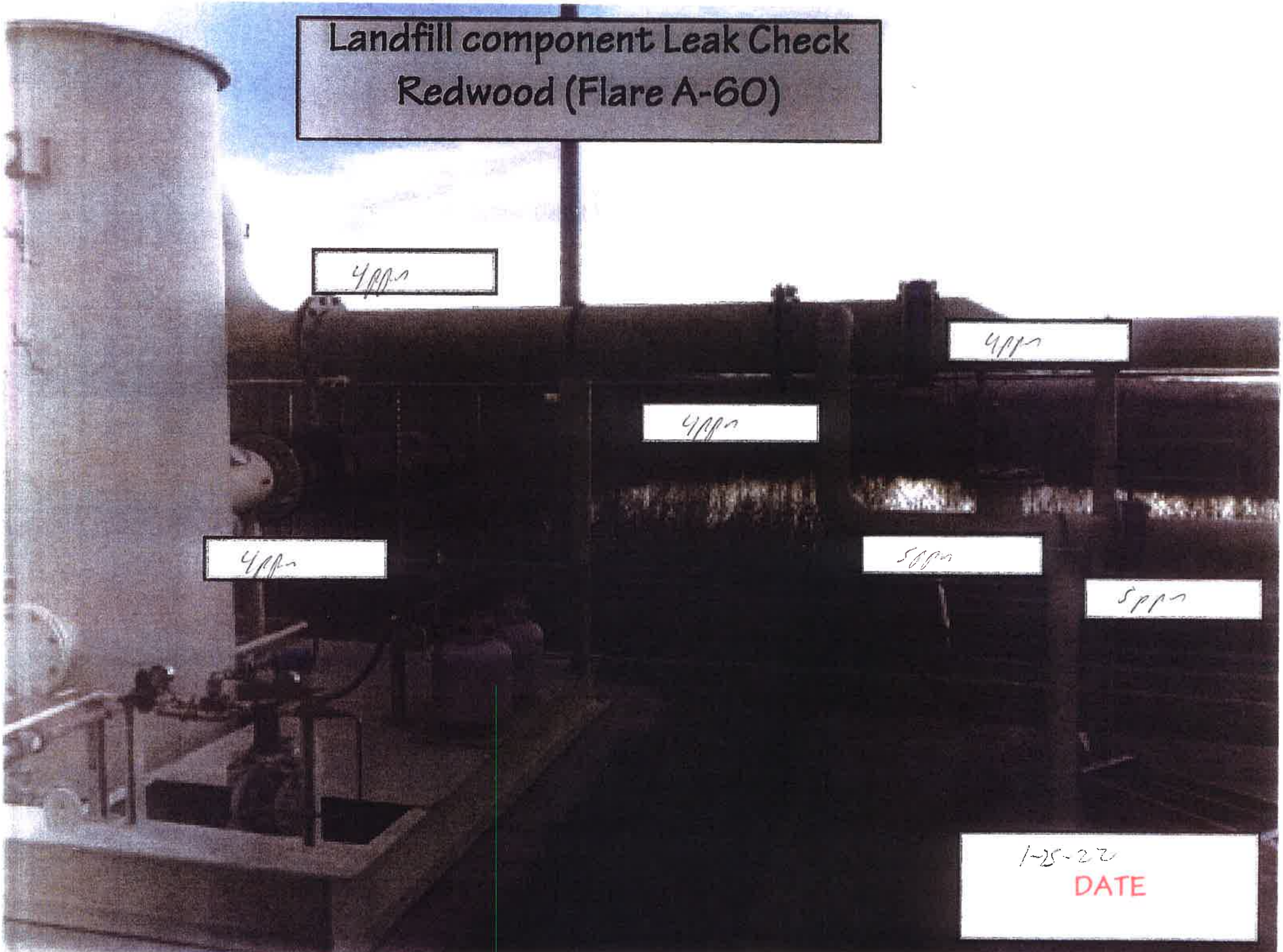
SHEET NO.
1

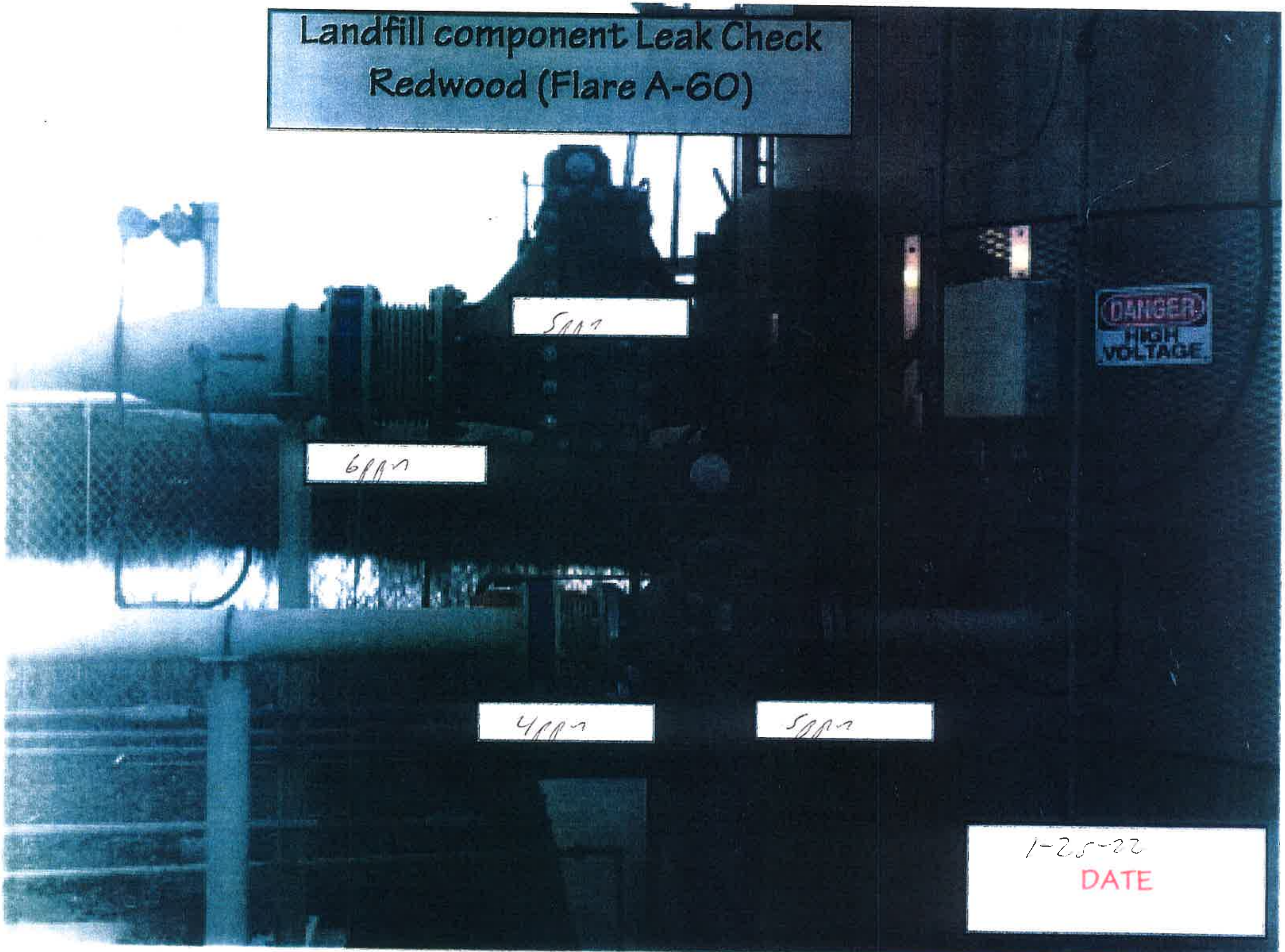
PROJECT NO.


Landfill component Leak Check
Redwood (Flare A-51)
8ppm
6ppm
5ppm
1-25-22
DATE


Landfill component Leak Check
Redwood (Flare A-51)
5ppm
5ppm
5ppm
HOT
1-25-22
DATE


Landfill component Leak Check
Redwood (Flare A-60)
7ppm
4ppm
8ppm
1-25-22
DATE


Landfill component Leak Check
Redwood (Flare A-60)
4ppm
4ppm
4ppm
4ppm
5ppm
5ppm
1-25-22
DATE


Landfill component Leak Check
Redwood (Flare A-60)
5ppm
6ppm
DANGER
HIGH VOLTAGE
4ppm
5ppm
1-25-22
DATE

Attachment D

Weather Station Data

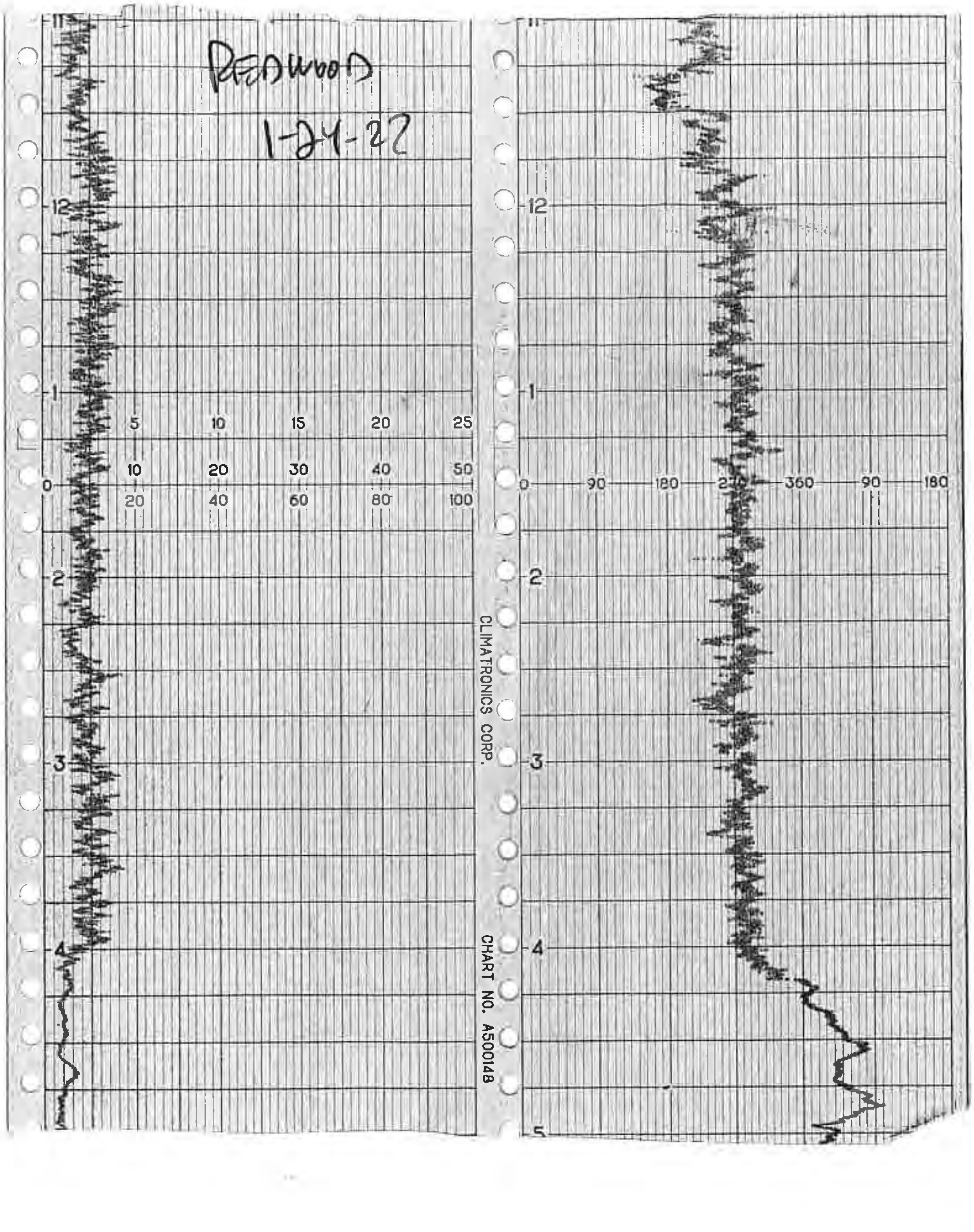
RES Environmental Inc.

16-POINT WIND DIRECTION INDEX

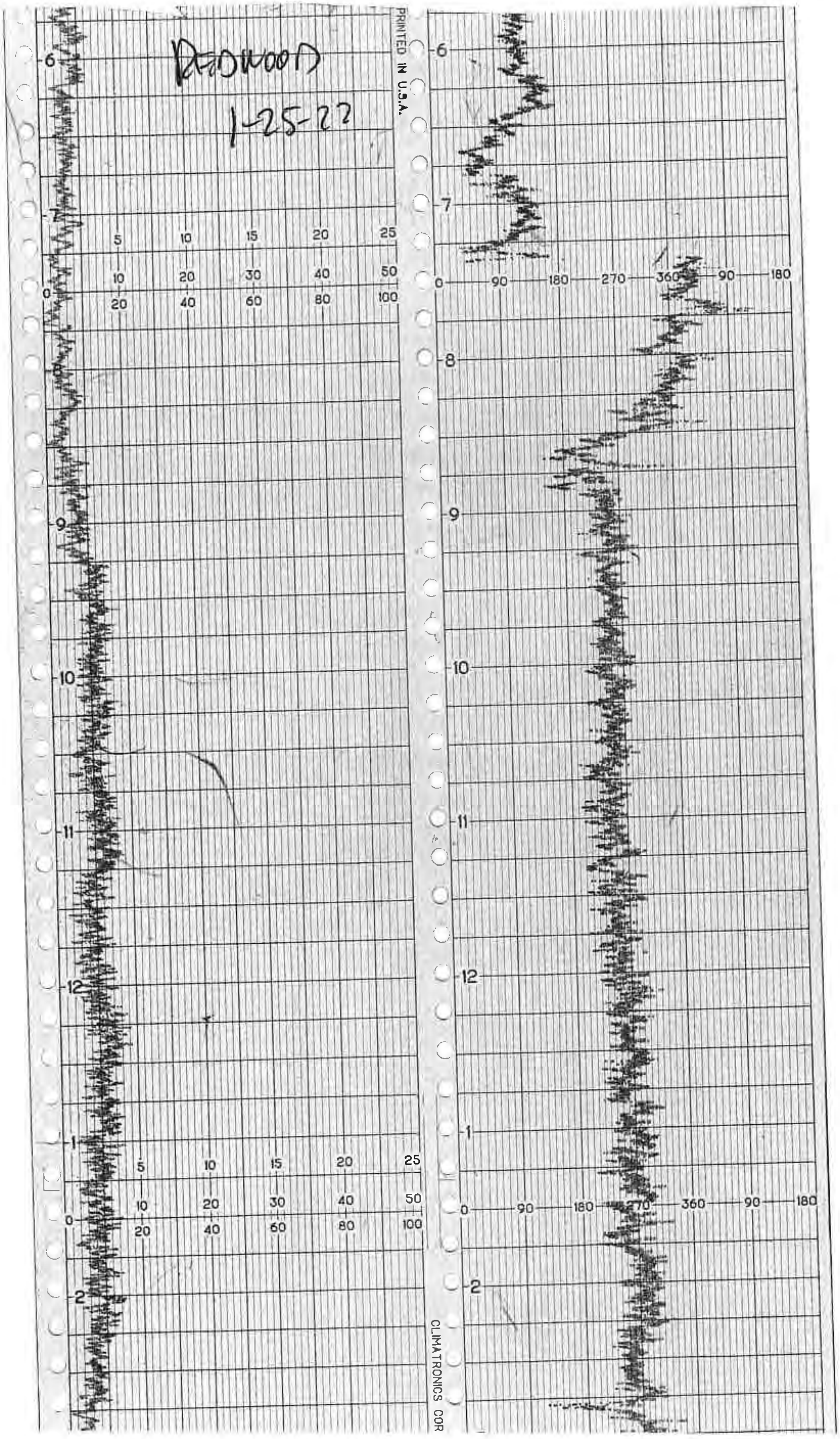
NO	DIRECTION	DEGREES FROM	DEGREES CENTER	DEGREES TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (SSE)	146.3	157.5	168.8
8	SOUTH (S)	168.8	180.0	191.3
9	SOUTH-SOUTHWEST (SSW)	191.3	202.5	213.8
10	SOUTHWEST (SW)	213.8	225.0	236.3
11	WEST-SOUTHWEST (WSW)	236.3	247.5	258.8
12	WEST (W)	258.8	270.0	281.3
13	WEST-NORTHWEST (WNW)	281.3	292.5	303.8
14	NORTHWEST (NW)	303.8	315.0	326.3
15	NORTH-NORTHWEST (NNW)	326.3	337.5	348.8

865 Via Lata ■ Colton, California 92324 ■ (909) 422-1001 Fax (909) 422-0707

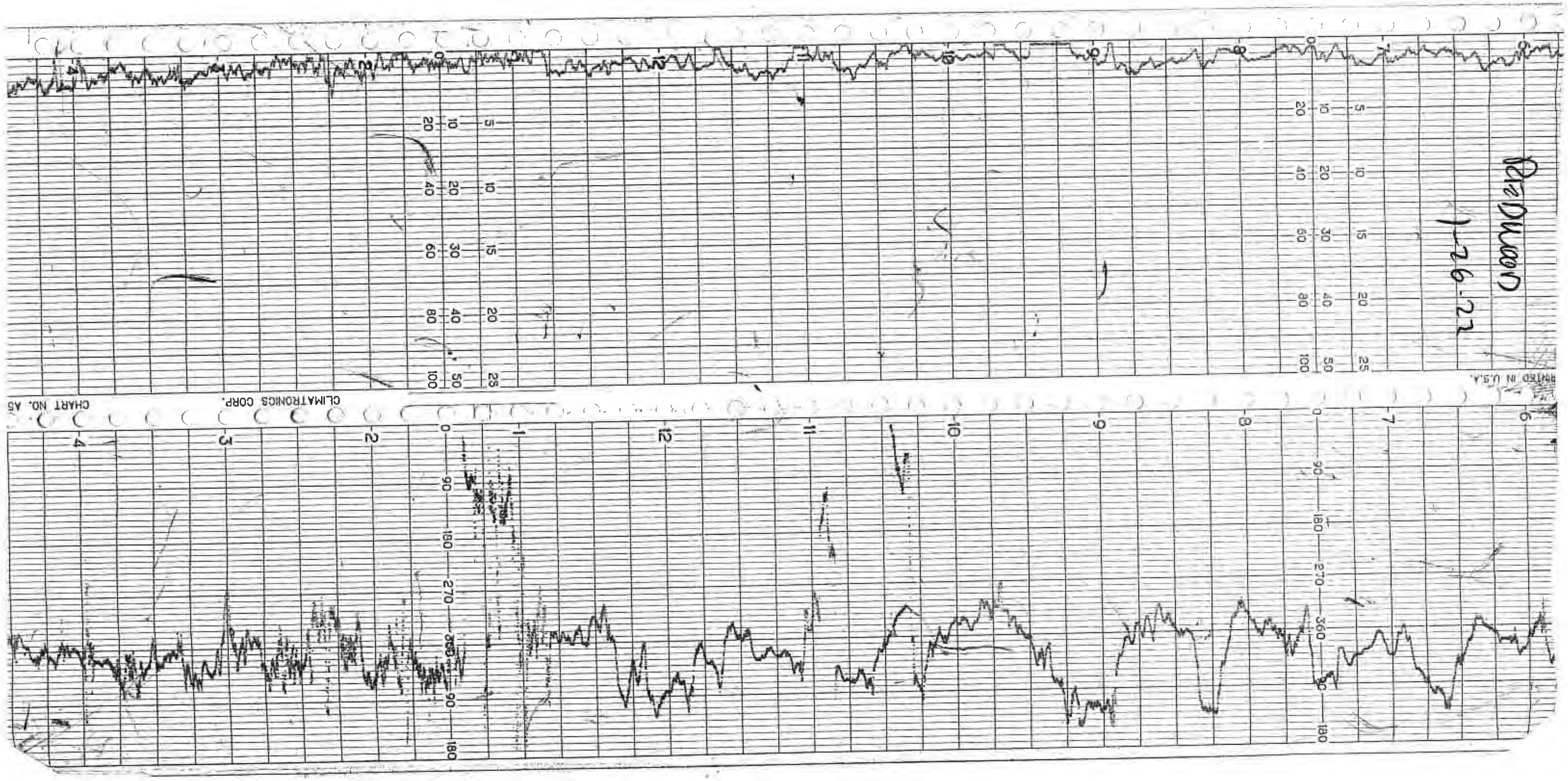
WIND SPEED & DIRECTION CHART ROLL



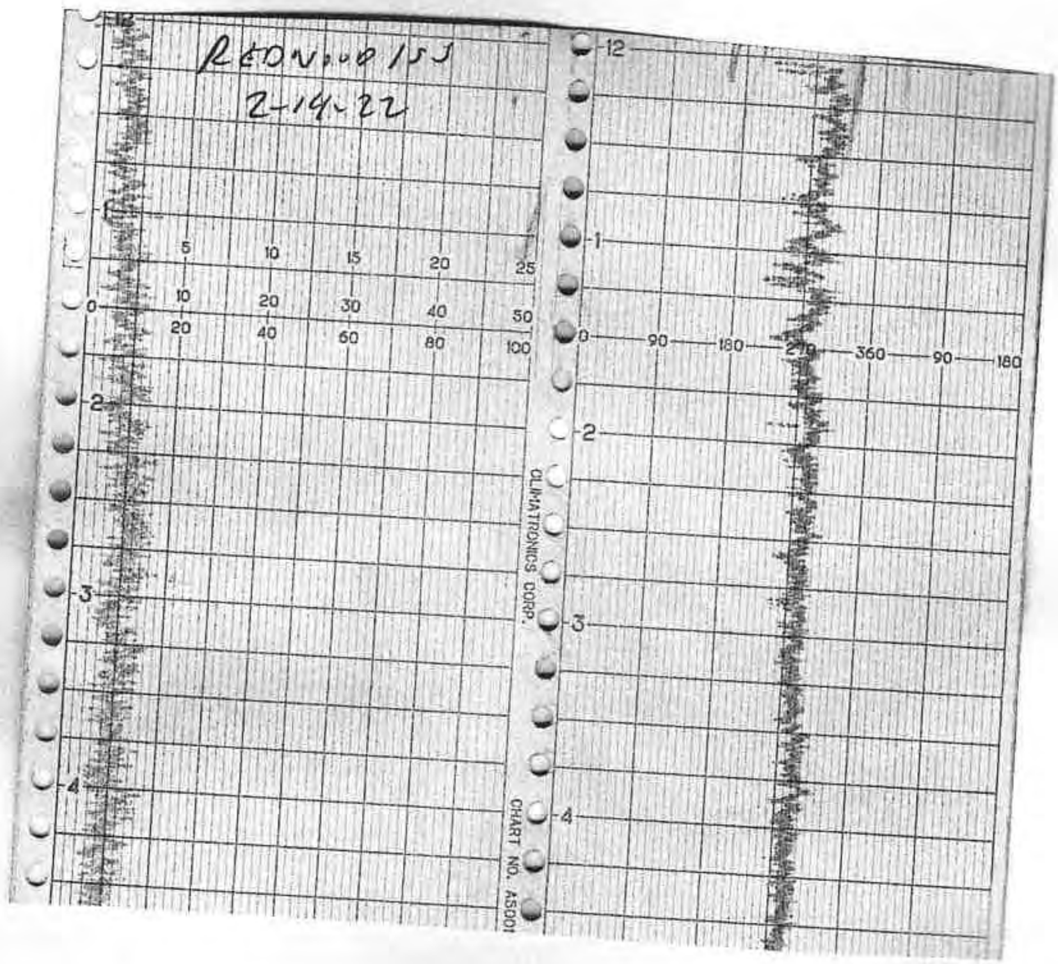
WIND SPEED & DIRECTION CHART ROLL



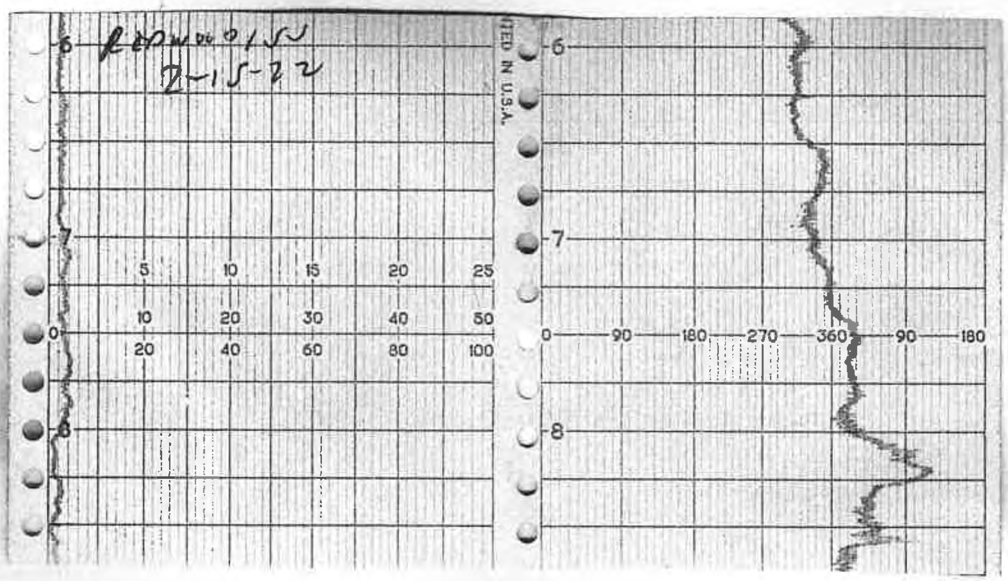
WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 1/26/2022

Expiration Date (3 months): 4/26/2022

Time: 11:40 AM ________ PM

Instrument Make: Photovac Model: MicroFID S/N: CZMF340

Measurement #1:

Stabilized Reading Using Calibration Gas: 500 ppm
90% of the Stabilized Reading: 450 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 6 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 500 ppm
90% of the Stabilized Reading: 450 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 6 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 499 ppm
90% of the Stabilized Reading: 449 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 6 seconds (c)

Calculate Response Time:

$\frac{(a) + (b) + (c)}{3}$ = 6 seconds (must be less than 30 seconds)

Performed By: Mo

CALIBRATION PRECISION TEST RECORD

Date: 1/26/2022

Expiration Date (3 months): 4/26/2022

Time: ______ AM 12:00 PM

Instrument Make: Photovac Model: MicroFID S/N: CZMF340

Measurement #1:

Meter Reading for Zero Air: 0.2 ppm (a)

Meter Reading for Calibration Gas: 499 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0.3 ppm (c)

Meter Reading for Calibration Gas: 499 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0.3 ppm (e)

Meter Reading for Calibration Gas: 499 ppm (f)

Calculate Precision:

$$\frac{\{|(500)-(b)| + |(500)-(d)| + |(500)-(f)|\}}{3} \times \frac{1}{500} \times 100$$

0.2 % (must be < than 10%)

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood

Date: 1/26/2022

Time: 11:30 AM _______ PM

Instrument Make: Photovac Model: MicroFID S/N: CZ MF 340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 499 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) \div (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood   Date: 2/02/2022

Time: ______ AM 1:40 PM

Instrument Make: Photovac Model: MicroFID S/N: CZ MF 340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 497 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) \div (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Date: 2/03/2022

Time: 11:15 AM ______ PM

Instrument Make: Photovac Model: MicroFID S/N: CZ MF 340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 501 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0 ppm

Performed By: Mo

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood   Date: 2/23/2022

Time: 7:10 AM ______ PM

Instrument Make: Photovac   Model: MicroFID   S/N: CZ MF 340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 497 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0 ppm (b)

Calculate Background Value:

$\frac{(a) \div (b)}{2}$ Background = 0 ppm

Performed By: Mo

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE Altom

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE 1-25-22 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	507 ppm	457 ppm	5
#2	500 ppm	450 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 **ppm**

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.18 ppm	507 ppm	7
#2	0.11 ppm	500 ppm	0
#3	0.08 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By: Leishwood Date/Time 1-25-22 0550

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: R. EDWOOD INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE 1-25-22 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	497 ppm	447 ppm	6
#2	506 ppm	456 ppm	5
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.15 ppm	497 ppm	3
#2	0.13 ppm	506 ppm	4
#3	0.10 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By: Ruel C Lemos Date/Time 1-25-22 - 0550

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 1-25-22 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	490 ppm	440 ppm	5
#2	501 ppm	451 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.17 ppm	490 ppm	10
#2	0.11 ppm	501 ppm	1
#3	0.05 ppm	510 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.73 #DIV/0! Must be less than 10%

Performed By Dwight Andrson Date/Time: 1-25-22 - 0550

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo
MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102742775
MONITORING DATE: 1-25-22 TIME 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	489 ppm	439 ppm	6
#2	504 ppm	454 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time $\frac{(1+2+3)}{3}$			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.10 ppm	489 ppm	11
#2	0.08 ppm	504 ppm	4
#3	0.25 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		1.0 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 1-25-22-0550

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-26-22 TIME 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	495 ppm	445 ppm	6
#2	501 ppm	451 ppm	6
#3	510 ppm	460 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.109 ppm	495 ppm	5
#2	0.07 ppm	511 ppm	1
#3	0.04 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.40 #DIV/0! Must be less than 10%

Performed By: [illegible signature] Date/Time: 1-26-22 0550

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE 1-26-22 TIME 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	490 ppm	440 ppm	5
#2	502 ppm	452 ppm	5
#3	505 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.24 ppm	490 ppm	10
#2	0.10 ppm	502 ppm	2
#3	0.05 ppm	5.05 ppm	5
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		6.80 #DIV/0! Must be less than 10%

Performed By: Rick Lewis Date/Time 1-26-22-0550

SCS Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 1-26-22 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	503 ppm	453 ppm	4
#2	500 ppm	450 ppm	4
#3	500 ppm	450 ppm	4
Calculate Response Time $\frac{(1+2+3)}{3}$			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	503 ppm	3
#2	0.09 ppm	500 ppm	0
#3	0.06 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 1-26-22-0550

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 1-26-22 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	495 ppm	445 ppm	5
#2	500 ppm	450 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.17 ppm	495 ppm	5
#2	0.11 ppm	500 ppm	0
#3	0.07 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.33 #DIV/0! Must be less than 10%

Performed By: Nick Benis Date/Time: 1-26-22-0550

KES

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Elpwood INSTRUMENT MAKE FlHun

MODEL tvA1000 EQUIPMENT # 10 SERIAL # 1636346773

MONITORING DATE 1-24-22 TIME 1200

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.14 ppm	23 ppm	2
#2	0.09 ppm	25 ppm	0
#3	0.07 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By Lou Lwaor Date/Time 1-24-22-1200

RES

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT # 11 SERIAL # 1036346774

MONITORING DATE 1-24-22 TIME 1200

Calibration Procedure:

1 Allow instrument to zero itself while introducing air
2 Introduce calibration gas into the probe Stabilized reading = 25 ppm
3 Adjust meter settings to read 25 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	25 ppm	225 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time $\frac{(1+2+3)}{3}$			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.17 ppm	24 ppm	1
#2	0.15 ppm	25 ppm	0
#3	0.10 ppm	25 ppm	0
Calculate Precision $\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$			1.3 #DIV/0! Must be less than 10%

Performed By Rick Jones Date/Time 1-24-22 1200

RES

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INTEGRATED

LANDFILL NAME Rodwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT # 12 SERIAL # 10362467941

MONITORING DATE 1-24-22 TIME 1200

Calibration Procedure

1 Allow instrument to zero itself while introducing air

2 Introduce calibration gas into the probe Stabilized reading = 2.5 ppm

3 Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	23 ppm	2
#2	0.08 ppm	24 ppm	1
#3	0.05 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		4.0 #DIV/0! Must be less than 10%

Performed By Dwight Anderson Date/Time 1-24-22 - 1200

RES

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT # 13 SERIAL # 1102746775

MONITORING DATE 1-24-22 TIME 1200

Calibration Procedure.

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6. #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	24 ppm	1
#2	0.09 ppm	24 ppm	1
#3	0.07 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		2.6 #DIV/0! Must be less than 10%

Performed By Nick Brake Date/Time 1-24-22 - 1200

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT #: 10 SERIAL # 1026346273

MONITORING DATE 1-26-22 TIME 0820

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	25 ppm	22.5 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.13 ppm	24 ppm	1
#2	0.10 ppm	25 ppm	0
#3	0.07 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By Laughman Date/Time 1-26-22-0820

RES Environmental

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL: TVA 1000 EQUIPMENT # 11 SERIAL # 1036346774

MONITORING DATE 1-26-22 TIME 0820

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.17 ppm	23 ppm	2
#2	0.14 ppm	24 ppm	1
#3	0.11 ppm	25 ppm	0
Calculate Precision	([STD-B1] + [STD-B2] + [STD-B3]) / 3 X 1/25 X 100/1		4.0 #DIV/0! Must be less than 10%

Performed By Rick Lemos Date/Time 1-26-22-0820

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE FHmw

MODEL TVA 1000 EQUIPMENT #: 12 SERIAL # 1036246741

MONITORING DATE 1-26-22 TIME 0820

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	24 ppm	1
#2	0.09 ppm	24 ppm	1
#3	0.05 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		2.6 #DIV/0! Must be less than 10%

Performed By Dwight Awbrain Date/Time 1-26-22 0820

RES Environmental

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT #: 13 SERIAL # 1102746775

MONITORING DATE 1-26-22 TIME 0820

Calibration Procedure:

1 Allow instrument to zero itself while introducing air

2 Introduce calibration gas into the probe Stabilized reading = 25 ppm

3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.4 ppm	2.6 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	25 ppm	22.5 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.15 ppm	24 ppm	1
#2	0.10 ppm	25 ppm	0
#3	0.08 ppm	25 ppm	0
Calculate Precision	([STD-B1] + [STD-B2] + [STD-B3]) / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By Nick Banks Date/Time 1-26-22-0820

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL # 1036346773

MONITORING DATE: 2-14-22 TIME 1155

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time $\frac{(1+2+3)}{3}$			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.13 ppm	24 ppm	1
#2	0.07 ppm	25 ppm	0
#3	0.05 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By Lowkwood Date/Time: 2-14-22 – 1155

RIES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Denwood INSTRUMENT MAKE Fltem

MODEL fun 1000 EQUIPMENT # 11 SERIAL # 1036346774

MONITORING DATE 2-14-22 TIME 1155

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	4
#2	25 ppm	22.5 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.16 ppm	23 ppm	2
#2	0.11 ppm	25 ppm	0
#3	0.07 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		2.6 #DIV/0! Must be less than 10%

Performed By Rudolph Date/Time 2-14-22 1155

RES
Environmental

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT # 12 SERIAL # 1032624741

MONITORING DATE 2-14-22 TIME 1155

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	4
#2	24 ppm	21.6 ppm	4
#3	25 ppm	22.5 ppm	4
	Calculate Response Time (1+2+3) / 3		4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.14 ppm	23 ppm	2
#2	0.11 ppm	24 ppm	1
#3	0.09 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		4.0 #DIV/0! Must be less than 10%

Performed By Dwight Anderson Date/Time 2-14-22 1155

RRS
Environmental

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT # 13 SERIAL # 1102746775

MONITORING DATE 2-14-22 TIME 1155

Calibration Procedure.

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.10 ppm	24 ppm	1
#2	0.07 ppm	25 ppm	0
#3	0.09 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By Calvin Ortiz Date/Time 2-14-22 1155

RES
Environmental

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT # 16 SERIAL # 1102746776

MONITORING DATE 2-14-22 TIME 1155

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	24 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.14 ppm	24 ppm	1
#2	0.11 ppm	25 ppm	0
#3	0.08 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By Nick Banks Date/Time 2-14-22 1155

RES
Environmental

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT # 10 SERIAL # 1036346773

MONITORING DATE 2-15-22 TIME 0550

Calibration Procedure:

1 Allow instrument to zero itself while introducing air
2 Introduce calibration gas into the probe Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.18 ppm	24 ppm	1
#2	0.13 ppm	25 ppm	0
#3	0.10 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By Zach Wagner Date/Time 2-15-22 -0550

RES
Environmental, Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT # 11 SERIAL # 1136346774

MONITORING DATE 2-15-22 TIME 0550

Calibration Procedure

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	4
#2	25 ppm	22.5 ppm	4
#3	25 ppm	22.5 ppm	4
Calculate Response Time (1+2+3) / 3			4 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.45 ppm	24 ppm	1
#2	0.06 ppm	25 ppm	0
#3	0.04 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By Rick Torres Date/Time 2-15-22 - 0550

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo
MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741
MONITORING DATE: 2-15-22 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.17 ppm	24 ppm	1
#2	0.13 ppm	24 ppm	1
#3	0.10 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		2.6 #DIV/0! Must be less than 10%

Performed By: Calvin Ortiz Date/Time: 2-15-22 - 0550

RES Environmental

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL # 1102746775

MONITORING DATE: 2-15-22 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.8 ppm	2.5 ppm

Background Value = 2.5 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	23 ppm	2
#2	0.09 ppm	25 ppm	0
#3	0.03 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		2.6 #DIV/0! Must be less than 10%

Performed By Nick Daniss Date/Time 2-15-22 - 0550

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site: ______

Purpose: ______

Operator: M. Robbins

Date: 1-7-22 Time: 0900

Model # TVA 1000

Serial # #10 1036346713

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100%
Reading following ignition	2.1 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500 90% of Calibration Gas, ppm: 450
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 6 2. 6 3. 5
Date of last factory calibration	1-7-22	Average 5.6
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH_4 gas.

Comments: ______

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site: ______________________

Purpose: ______________________

Operator: Jim Albertus

Date: 1-7-22 Time: 0915

Model # TVA 1000

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	**CALIBRATION CHECK**
Reading following ignition	2.3 ppm	Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100
Leak test	Pass / Fail / NA	**RESPONSE TIME**
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	1-7-22	Time required to attain 90% of Cal Gas ppm: 1. 5 2. 5 3. 6 Average 5.3
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH_4 gas.

Comments: ______________________

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [signature]

Date: 1-7-22 Time: 0930

Model # TVA 1000

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	2.3 ppm	Calibration Gas (ppm): 500; Actual (ppm): 500; % Accuracy: 100
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	1-7-22	Time required to attain 90% of Cal Gas ppm: 1. 6; 2. 6; 3. 4; Average 5.3
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N; Instrument calibrated to CH4 gas.

Comments: ______

465

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ____________________

Purpose: ____________________

Operator: [signature]

Date: 1-7-22 Time: 0945

Model # TVA 1000

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION		
		CALIBRATION CHECK		
		Calibration Gas (ppm)	Actual (ppm)	% Accuracy
Battery test	Pass / Fail	500	500	100
Reading following ignition	1.6 ppm	RESPONSE TIME		
Leak test	Pass / Fail / NA	Calibration Gas, ppm	500	
Clean system check (check valve chatter)	Pass / Fail / NA	90% of Calibration Gas, ppm	450	
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm		
		1.	4	
		2.	4	
Date of last factory calibration	1-7-22	3.	5	
		Average	4.3	
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds?	Y	N
		Instrument calibrated to CH_4 gas.		

Comments: ____________________

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: R Roberts

Date: 1-7-22 Time: 1030

Model # TVA 1000

Serial # #16 1102746776

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100
Reading following ignition	2.4 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm 500 90% of Calibration Gas, ppm 450
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 5 2. 5 3. 5
Date of last factory calibration	1-7-22	Average 5.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH_4 gas.

Comments: ______

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #10

SERIAL NUMBER: 1056346773

TECHNICIAN: Jim Roberts DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	101	+/- 25
500	500	501	+/- 125
10000	10000	10,006	+/- 2500
< 1	ZERO GAS	0.42	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 11

SERIAL NUMBER: 1036346774

TECHNICIAN: Mu Alberts DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,006	+/- 2500
< 1	ZERO GAS	0.38	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #12

SERIAL NUMBER: 1036246741

TECHNICIAN: [illegible] DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,003	+/- 2500
< 1	ZERO GAS	0.71	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #13

SERIAL NUMBER: 1102746775

TECHNICIAN: [illegible]

DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	102	+/- 25
500	500	500	+/- 125
10000	10000	10,111	+/- 2500
< 1	ZERO GAS	0.63	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #16

SERIAL NUMBER: 1102746776

TECHNICIAN: [illegible] DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	504	+/- 125
10000	10000	10,100	+/- 2500
< 1	ZERO GAS	0.64	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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INTERMOUNTAIN SPECIALTY GASES

520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Air - Zero		
THC	< 2 PPM	
Oxygen	20.9%	± 2%
Nitrogen	Balance	

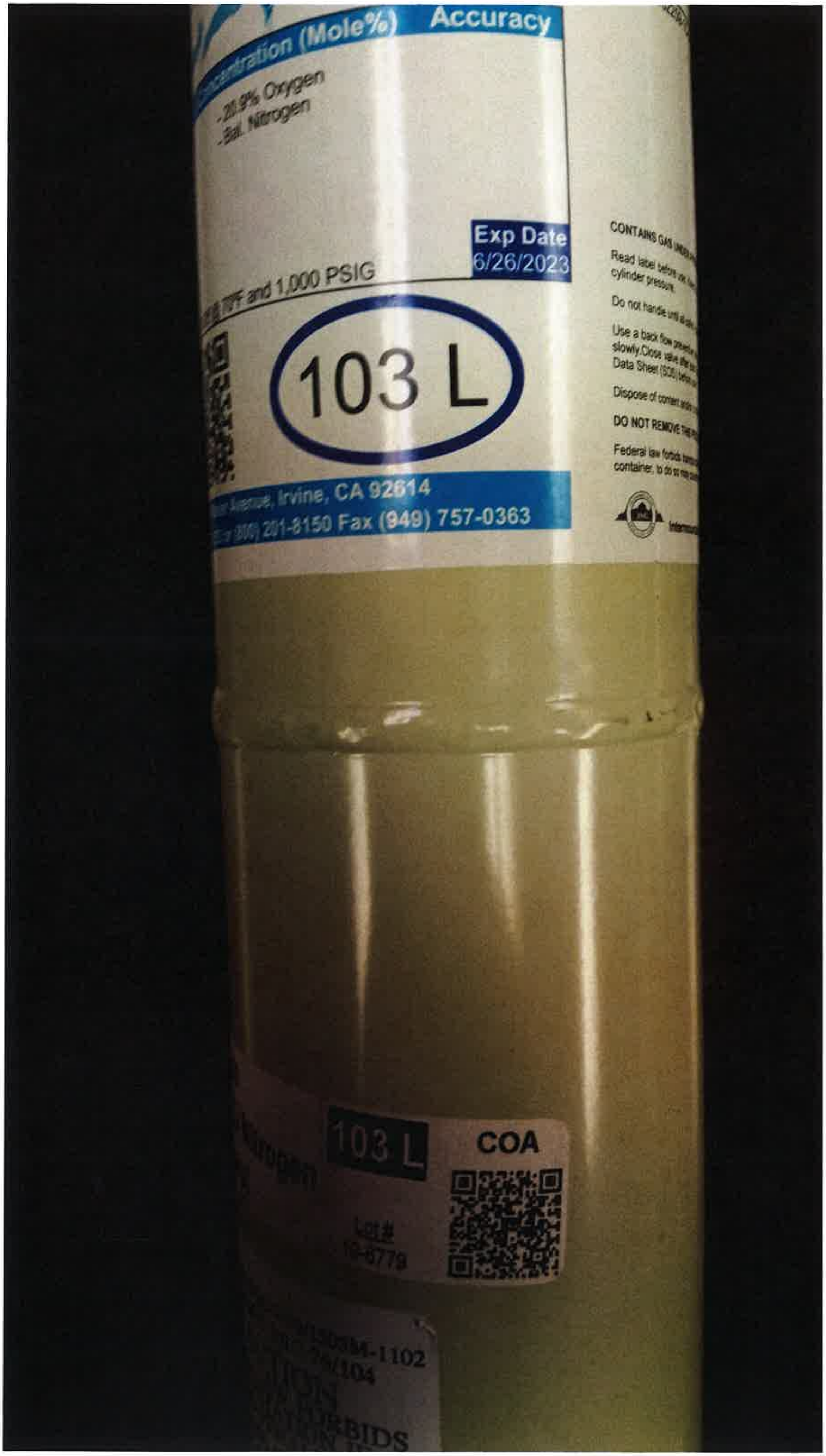
Lot # 19-6779

Mfg. Date:	4/3/2019
Parent Cylinder ID Number:	001739, 02268

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
This mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 4/3/2019



Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
6/26/2023
70°F and 1,000 PSIG
103 L
Irvine, CA 92614
Fax (949) 757-0363
CONTAINS GAS
Read label before use
cylinder pressure.
Do not handle until all
Dispose of content
DO NOT REMOVE
Federal law forbids
container
103 L
COA
Lot#

INTERMOUNTAIN SPECIALTY GASES

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800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

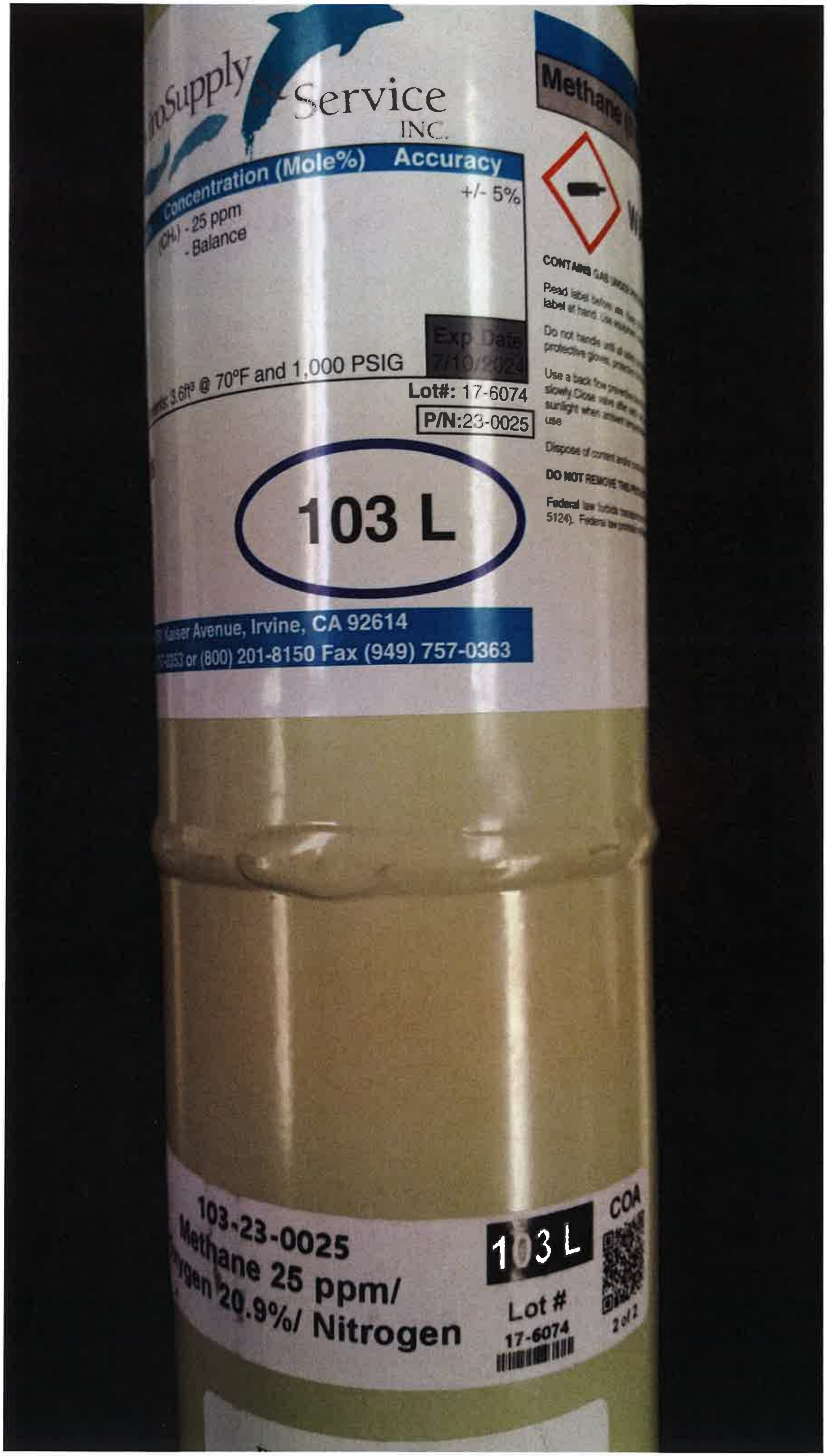
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017



Service
INC.
Concentration (Mole%)
Accuracy
+/- 5%
- Balance
Methane
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
Methane 25 ppm/
20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
2 of 2

INTERMOUNTAIN SPECIALTY GASES

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CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

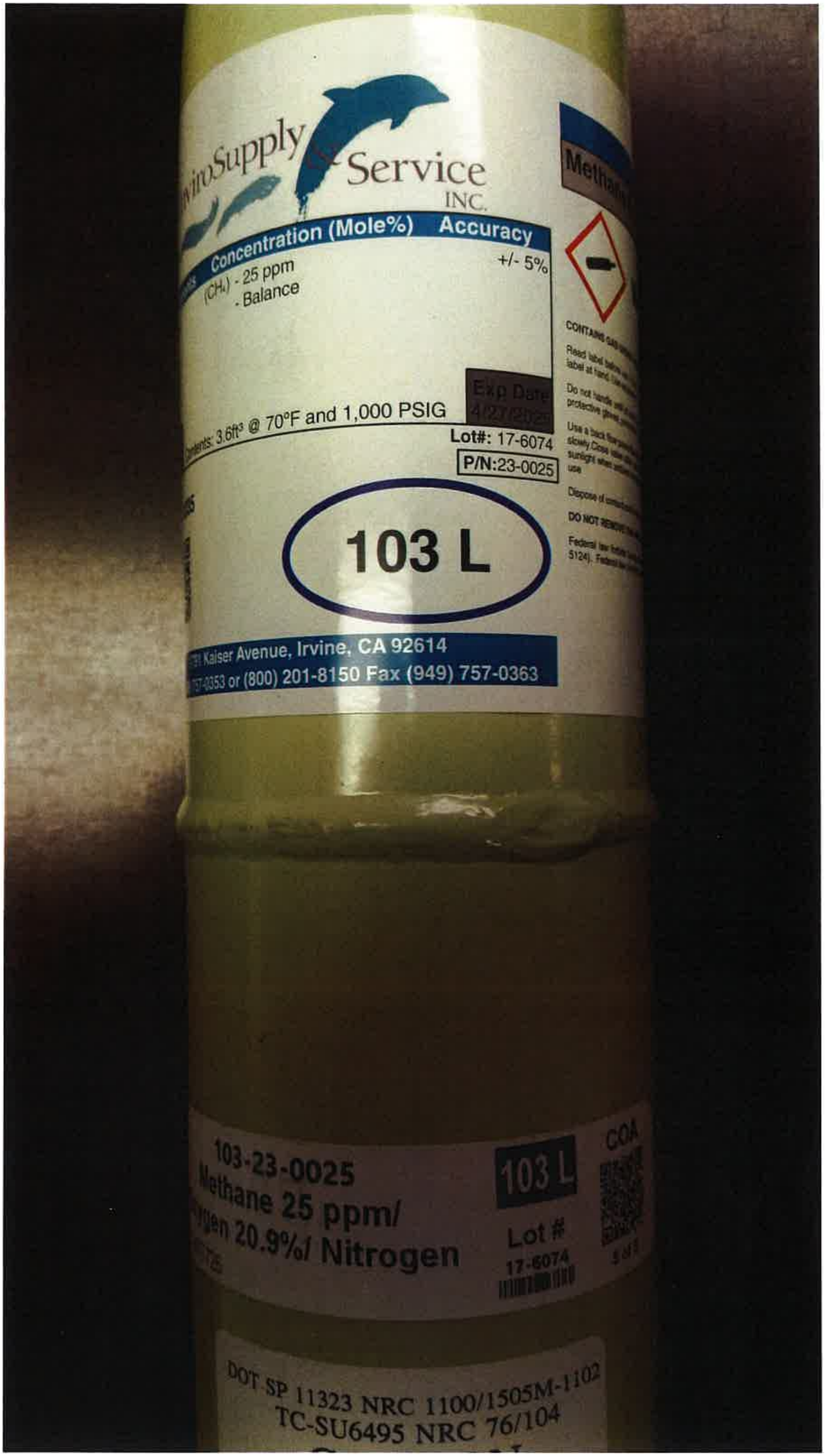
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017



Service
INC.
Concentration (Mole%)
Accuracy
(CH_4) - 25 ppm
- Balance
+/- 5%
Contents: 3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
103 L
COA
Lot #
17-6074
DOT-SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

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"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	20-7497
Mfg. Date:	7/10/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	TWC001763

Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Title: Quality Assurance Manager
Certificate Date: 7/10/2020

Service
INC.
Methane
Accuracy
+/- 2%
(Mole%)
500 ppm
Balance
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Irvine, CA 92614
201-8150 Fax (949) 757-0363
CONTAINS GAS UNDER
Read label before use.
label at hand.
Do not handle until all safety
protective gloves,
Use a back flow preventive
sunlight when ambient
use
Dispose of content and/or
DO NOT REMOVE THIS PRODUCT
Federal law forbids
5124). Federal law prohibits
ppm/
Nitrogen
103 L
Lot #
20-7497
COA
4 of 4

INTERMOUNTAIN SPECIALTY GASES

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800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	500 ppm	± 2%
Air	Balance	

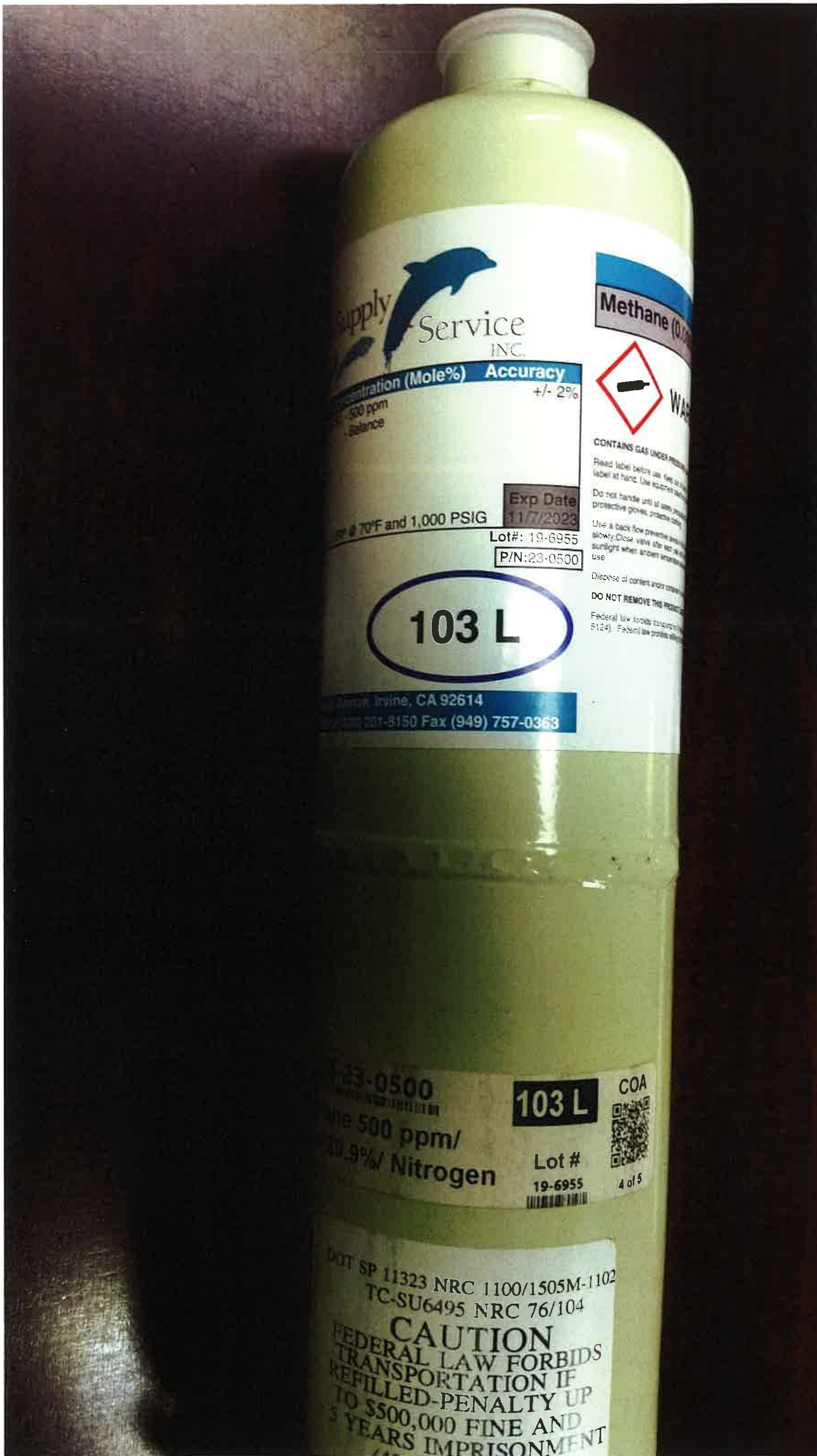
Lot # 19-6955

Mfg. Date:	7/24/2019
Parent Cylinder ID Number:	001763

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 7/24/2019


Supply
Service
INC.
Accuracy
+/- 2%
Exp Date
11/7/2023
70°F and 1,000 PSIG
Lot#: 19-6955
P/N:23-0500
103 L
Irvine, CA 92614
Fax (949) 757-0363
Methane
CONTAINS GAS UNDER
23-0500
103 L
COA
500 ppm/
Nitrogen
Lot #
19-6955
4 of 5
DOT SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104
CAUTION
LAW FORBIDS
TRANSPORTATION IF
FILLED-PENALTY UP
TO $500,000 FINE AND
YEARS IMPRISONMENT

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520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

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"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	18-6641
Mfg. Date:	12/18/2018
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	001763

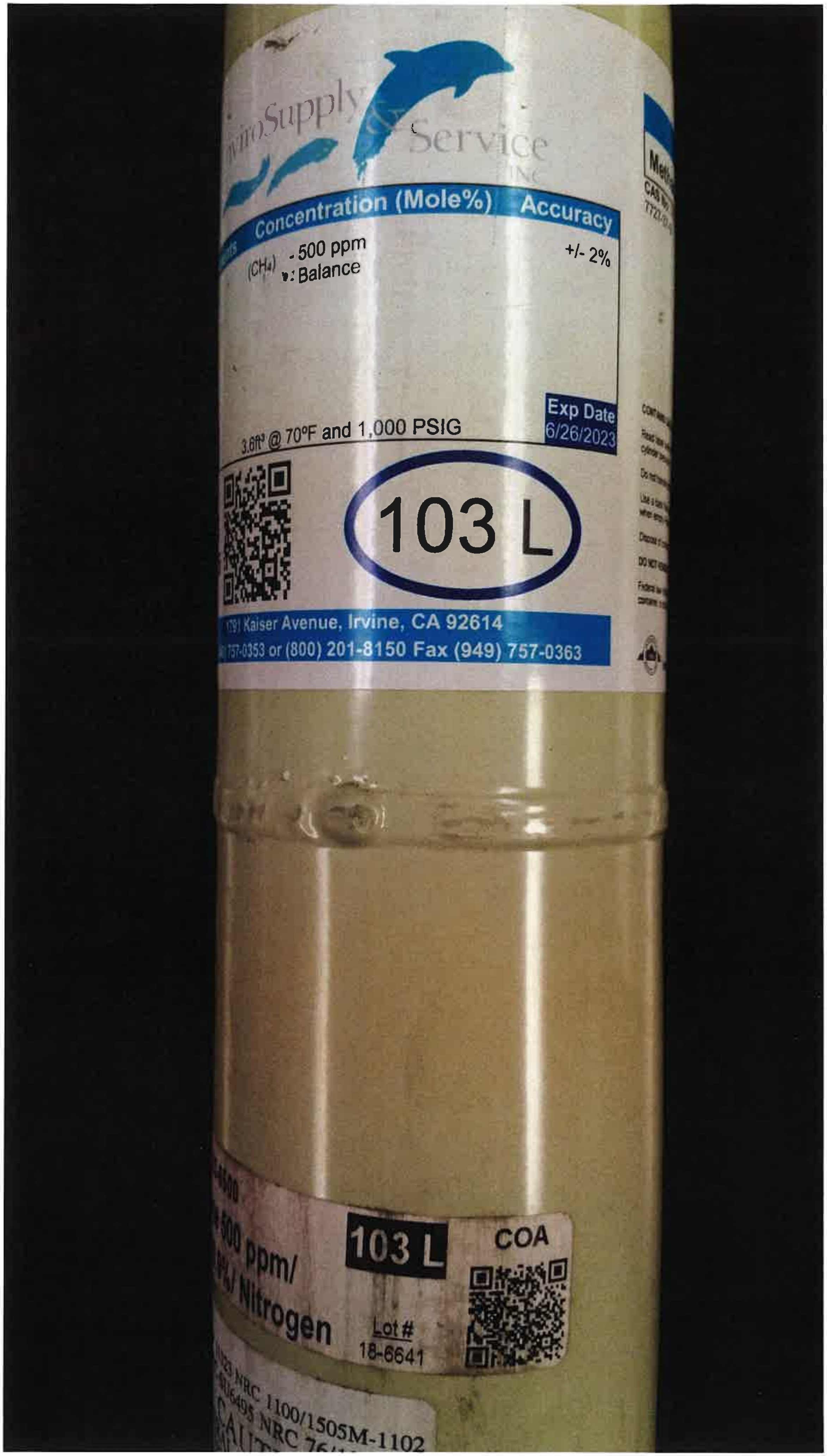
Method of Preparation:

Gravimetric/Pressure Transfilled

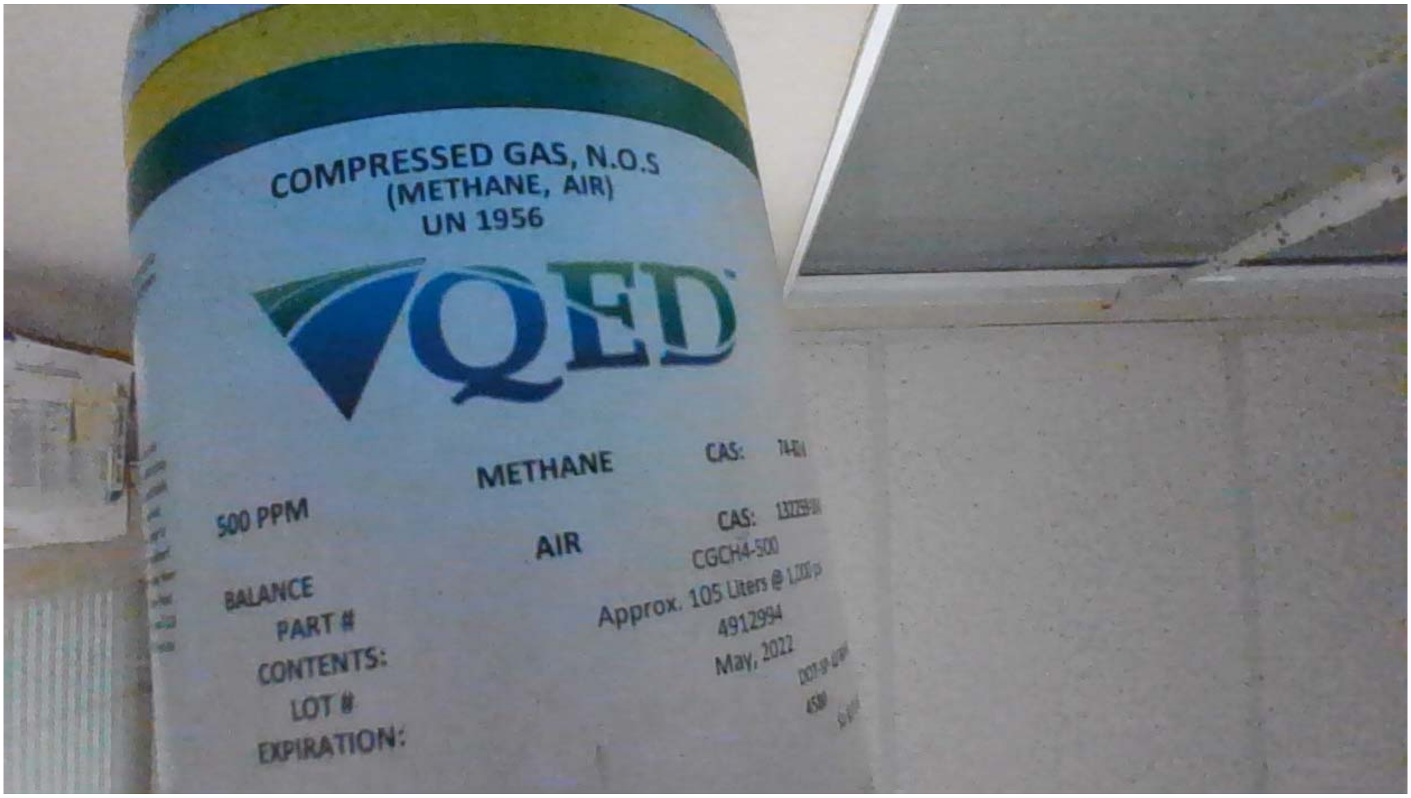
Method of Analysis:

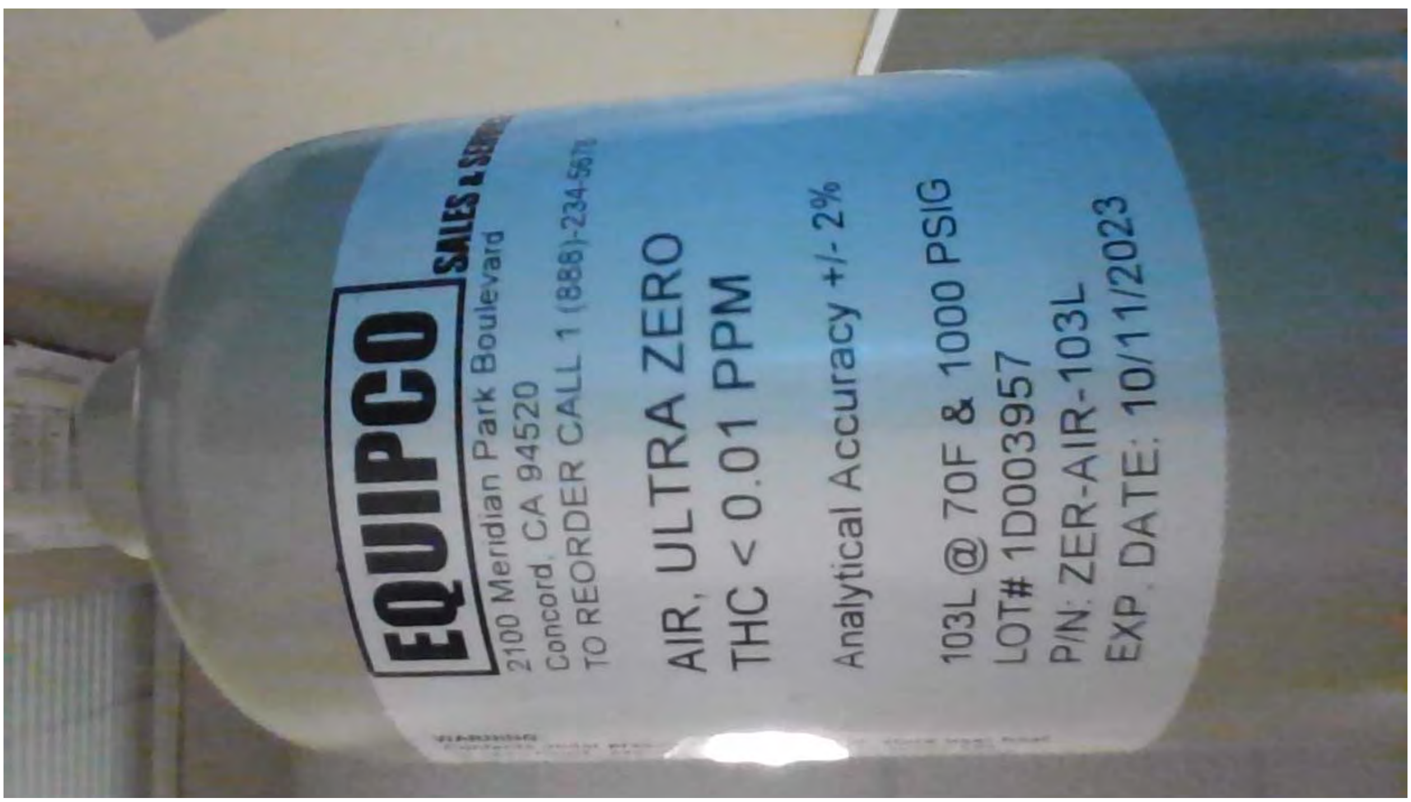
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Title: Quality Assurance Manager
Certificate Date: 12/18/2018



viroSupply & Service
INC
Concentration (Mole%)
Accuracy
(CH4) - 500 ppm
Balance
+/- 2%
Exp Date
6/26/2023
3.6ft³ @ 70ºF and 1,000 PSIG
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
500 ppm/
Nitrogen
103 L
COA
Lot #
18-6641
NRC 1100/1505M-1102


COMPRESSED GAS, N.O.S
(METHANE, AIR)
UN 1956
QED
METHANE
500 PPM
AIR
BALANCE
PART #
CGCH4-500
CONTENTS:
LOT #
4912994
EXPIRATION:
May, 2022


EQUIPCO
2100 Meridian Park Boulevard
Concord, CA 94520
TO REORDER CALL 1 (888)-234-5678
AIR, ULTRA ZERO
THC < 0.01 PPM
Analytical Accuracy +/- 2%
103L @ 70F & 1000 PSIG
LOT# 1D003957
P/N: ZER-AIR-103L
EXP. DATE: 10/11/2023

WASTE MANAGEMENT
172 98th Avenue
Oakland, CA 94603
(510) 430-8509

March 31, 2022

Ms. Alisha McCutcheon
Redwood Landfill, Inc.
8590 Redwood Highway
Novato, California 94948

Re: March 2022 Surface Emissions Monitoring Report for Redwood Landfill, Inc.

Dear Ms. McCutcheon:

This monitoring report for "**Redwood Landfill, Inc. (RLI)**" contains the results of the March 2022 Surface Emissions Monitoring (SEM). Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES).

APPLICABLE REQUIREMENTS

The monitoring discussed in this report was conducted in accordance with the following requirements:

Surface Emission Monitoring (SEM)

- New Source Performance Standard (NSPS), Title 40 of the Code of Federal Regulations (CFR) §60.755 (c) and (d), 40 CFR 60, Appendix A Method 21, promulgated by the United States Environmental Protection Agency (USEPA).
- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) and Section 607 (Landfill Surface Inspection procedures).

PROCEDURES

General

Per NSPS and 8-34 rules, the entire surface of the landfill was monitored following a serpentine path with a 100' spacing. Active portions of the Landfill, slope areas, and as requested in the approved ACO, areas containing only asbestos-containing waste, inert waste and/or non-decomposable waste which are excluded for safety as allowed by the NSPS and 8-34.

Field personnel walked the surface of the landfill using the gridlines normally used for monitoring required by AB32 (see Attachment A map). These grids typically have dimensions of 500' x 100'. A consistent 100' spacing was achieved by walking on the 500' long borderline shared by two grids. Additionally, in accordance with the provisions of 40 CFR 60.753(d) and

60.755(c)(1-3), the entire perimeter of the landfill surface was monitored. During the event, special attention was given to monitoring unusual cover conditions (stressed vegetation, cracks, seeps, etc.) and any areas with unusual odors.

Instantaneous Surface Emissions Monitoring

The Instantaneous SEM was conducted using a Toxic Vapor Analyzer (TVA) 1000 flame ionization detector (FID), which was calibrated to 500 parts per million by volume (ppm_v) methane, which meets or exceeds all guidelines set forth in the NSPS and 8-34. The FID was calibrated prior to use in accordance with the United States Environmental Protection Agency (USEPA) Method 21 requirements.

RES personnel walked the surface of the landfill with the wand tip held at 2 inches from the landfill surface. While sampling the grid; the technicians also checked any surface impoundments (wells or otherwise) for leaks. Technicians also checked any surface cracks, seeps, or other areas that show evidence of surface emissions (odors or distressed vegetation). Active and sloped areas excluded for safety were documented on the map included in Attachment A.

All instantaneous surface monitoring was performed in accordance with the applicable requirements referenced in this report. Any detections of methane above 500 ppm_v (exceedances) for instantaneous were recorded, flagged, and marked on an SEM Map, which, wherever required, is included in the Appendices of this report. Applicable corrective action and re-monitoring timelines are listed below:

- Corrective actions must be initiated within 5 days of the initial exceedance and re-monitoring shall be conducted within 10 days of the initial exceedance.
    - If the re-monitoring event shows the exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance.
    - If the 1-month re-monitoring event shows the location is still corrected, all re-monitoring requirements have been completed.
- If either the first 10-day or 1-month re-monitoring events show a second exceedance, additional corrective actions shall be completed, and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance. If the 1-month re-monitoring event shows the area is still corrected, monitoring requirements have been completed.

If any location shows three exceedances, an additional well shall be installed within 120 days of the initial exceedance.

MARCH 2022 SEM RESULTS

The Instantaneous surface monitoring was performed on March 14, 2022, in accordance with the NSPS and BAAQMD 8-34. Results and data from the monitoring are presented in Attachment A.

Initial Monitoring Event Exceedances of 500 ppm_v

There were no exceedances of 500 ppm_v as methane detected on March 14, 2022. No re-monitoring was required.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

Wind speeds during initial monitoring were monitored using a portable weather station. The station has a strip chart that records the wind speed and direction. The chart data is scanned and included in Attachment B.

EQUIPMENT CALIBRATION

The portable analyzers were calibrated to meet the instrument specifications requirements of U.S. EPA Method 21. The calibration gas used was methane, diluted to a nominal concentration of 25 ppm_v in air for integrated sample analyses and 500 ppm_v in air for instantaneous monitoring to comply with the requirements.

All analyzers were calibrated prior to use with required response time and precision related instrument checks. Calibration records include the following: Response time test record; Response factor determination for methane; Calibration Precision test records; and Daily Instrument Calibration and Background test records for each gas meter that was used during the monitoring event. The calibration log records are included in Attachment C.

All monitoring was completed in accordance with the applicable regulatory requirements or approved alternatives. If you have any questions regarding this report, please do not hesitate to contact me at (510) 613-2852.

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

- SEM Map
- Monitoring Logs and Exceedances

Attachment B – Weather Station Data

- Strip Chart Data

Attachment C – Calibration Records

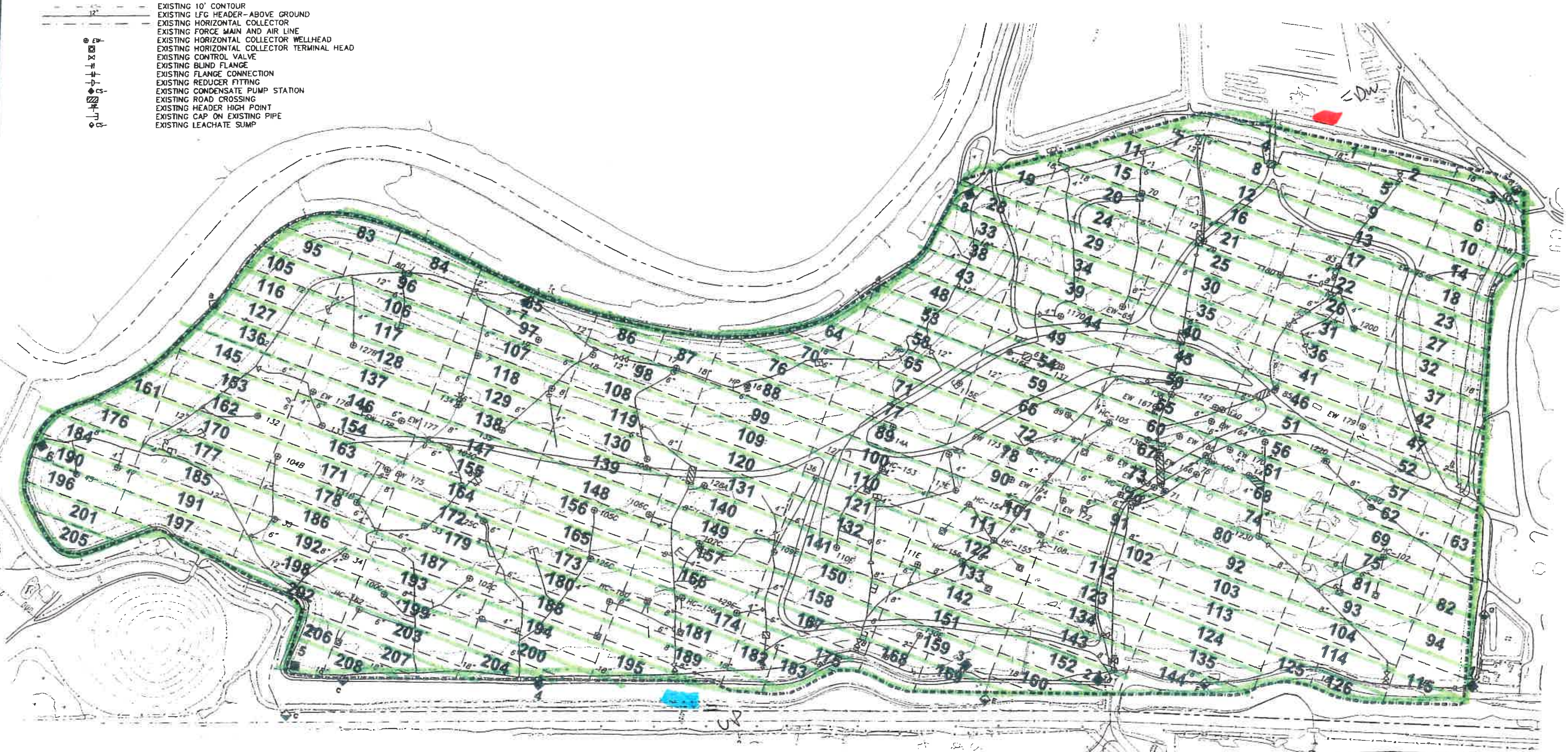
- Instrument and Gas Calibration Records

Attachment A

Surface Emission Monitoring Event Records

LEGEND

- EXISTING 10' CONTOUR
- EXISTING LFG HEADER-ABOVE GROUND
- EXISTING HORIZONTAL COLLECTOR
- EXISTING FORCE MAIN AND AIR LINE
- EXISTING HORIZONTAL COLLECTOR WELLHEAD
- EXISTING HORIZONTAL COLLECTOR TERMINAL HEAD
- EXISTING CONTROL VALVE
- EXISTING BLIND FLANGE
- EXISTING FLANGE CONNECTION
- EXISTING REDUCER FITTING
- EXISTING CONDENSATE PUMP STATION
- EXISTING ROAD CROSSING
- EXISTING HEADER HIGH POINT
- EXISTING CAP ON EXISTING PIPE
- EXISTING LEACHATE SUMP



= DW

= UPWind

NSPS SWEEP

3-14-22

GRAPHIC SCALE

200 100 0 200 400 600

SCALE: 1"=200'

NOTES:

1. EXISTING TOPOGRAPHY BASED ON AERIAL SURVEY BY MILLER CREEK AERIAL MAPPING DATED FEBRUARY 19, 2014. FEATURES, CONTOURS, AND ELEVATIONS OF THIS BASE MAP ARE APPROXIMATE INDICATIONS OF CURRENT AND FUTURE CONDITIONS.
2. EXISTING GCCS COMPONENTS (INSTALLED PRIOR TO THE 2015 GCCS IMPROVEMENTS) ARE PER THE LOCATIONS ESTABLISHED AT THE END OF THE 2014 IMPROVMENTS BY OTHERS.
3. ALL 2014 GCCS COMPONENTS INSTALLED AS PART OF THE 2014 GCCS IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS.
4. SURVEY DATA BASED ON FIELD SURVEY PERFORMED ON OCTOBER 29, 2015, BY F3 & ASSOCIATES, INC.

F3 & Associates, Inc.
LAND SURVEYING - 3D INDUSTRIAL LASER SCANNING
701 E. H ST. BENICIA, CA 94510
PHONE(707)748-4300 FAX(707)361-0295
www.F3-Inc.com

MARIN COUNTY

REDWOOD LANDFILL
AS-BUILT GCCS PLAN
2015 GCCS IMPROVEMENTS
CALIFORNIA

NOVATO

DESIGN BY:	N/A
DRAWN BY:	STAFF
DATE:	NOV 2015
SCALE:	1"=200'
PAGE 1 OF 1	
JOB NUMBER: 15341	

Instantaneous Landfill Surface Emissions Monitoring
Exceedance and Monitoring Logs (NSPS/BAAQMD 8-34)

2022 Month: March
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			Corrective Action		1st 10-day Follow-Up			1st 30-day Follow-Up			Comments
Flag Number	Monitoring Date	Reading ppm	Repair Date	Action Taken	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
No Exceedances on March 14, 2022											

Attachment B

Weather Station Data

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Environmental Inc.

16-POINT WIND DIRECTION INDEX

NO	DIRECTION	DEGREES FROM	DEGREES CENTER	DEGREES TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (SSE)	146.3	157.5	168.8
8	SOUTH (S)	168.8	180.0	191.3
9	SOUTH-SOUTHWEST (SSW)	191.3	202.5	213.8
10	SOUTHWEST (SW)	213.8	225.0	236.3
11	WEST-SOUTHWEST (WSW)	236.3	247.5	258.8
12	WEST (W)	258.8	270.0	281.3
13	WEST-NORTHWEST (WNW)	281.3	292.5	303.8
14	NORTHWEST (NW)	303.8	315.0	326.3
15	NORTH-NORTHWEST (NNW)	326.3	337.5	348.8

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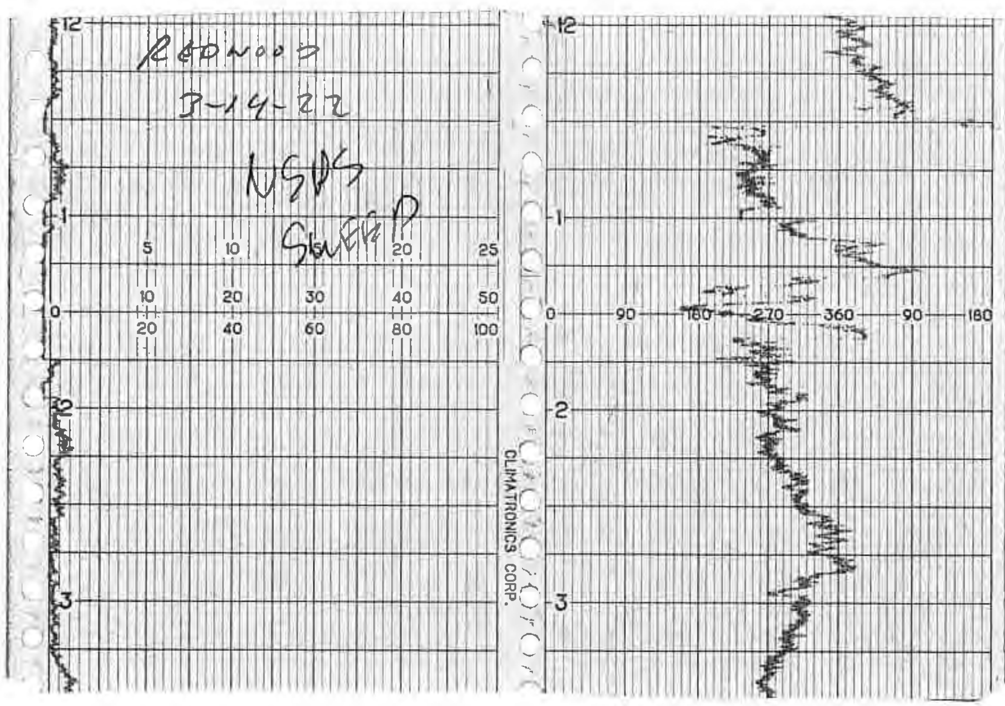
WIND SPEED & DIRECTION CHART ROLL



Attachment C

Calibration Records

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 3-14-22 TIME: 1200

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	491 ppm	441 ppm	6
#2	500 ppm	450 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.12 ppm	491 ppm	9
#2	0.09 ppm	500 ppm	0
#3	0.06 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.60 #DIV/0! Must be less than 10%

Performed By: Leigh Wade Date/Time: 3-14-22-1200

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1031346779

MONITORING DATE: 3-14-22 TIME: 1200

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	510 ppm	460 ppm	7
#2	497 ppm	447 ppm	7
#3	500 ppm	450 ppm	7
Calculate Response Time $\frac{(1+2+3)}{3}$			7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.08 ppm	510 ppm	10
#2	0.07 ppm	497 ppm	3
#3	0.04 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.86 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 3-14-22 - 1200

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT #: 12 SERIAL # 1036246741

MONITORING DATE: 3-14-22 TIME 1200

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	495 ppm	445 ppm	5
#2	500 ppm	450 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	495 ppm	5
#2	0.09 ppm	500 ppm	0
#3	0.06 ppm	506 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.33 #DIV/0! Must be less than 10%

Performed By: Rick [illegible] Date/Time 3-14-22 1200

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE: thermo
MODEL: TVA1000 EQUIPMENT #: 13 SERIAL # 1102746775
MONITORING DATE: 3-14-22 TIME 1200

Calibration Procedure:

1. Allow instrument to zero itself while introducing air
2. Introduce calibration gas into the probe Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	489 ppm	439 ppm	6
#2	502 ppm	452 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 **ppm**

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.08 ppm	489 ppm	11
#2	0.05 ppm	502 ppm	2
#3	0.04 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.86 #DIV/0! Must be less than 10%

Performed By Dwight Anderson Date/Time 3-14-22-1200

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE THERMO

MODEL TVA 1000 EQUIPMENT #: 16 SERIAL #: 1102746776

MONITORING DATE: 3-14-22 TIME: 1200

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	492 ppm	442 ppm	6
#2	506 ppm	456 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	492 ppm	8
#2	0.07 ppm	506 ppm	6
#3	0.04 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.93 #DIV/0! Must be less than 10%

Performed By: Calvin Ortiz Date/Time: 3-14-22 1200

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site: ____________________

Purpose: ____________________

Operator: [illegible signature]

Date: 3-4-22 Time: 0900

Model # TVA 1000

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	2.3 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	1-7-22	Time required to attain 90% of Cal Gas ppm: 1. 6 2. 6 3. 5 Average 5.6
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH_4 gas.

Comments: ____________________

465

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: M [illegible]

Date: 3-4-22 Time: 0915

Model # TVA 1000

Serial # #11 1036346779

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	**CALIBRATION CHECK** Calibration Gas (ppm): 500 Actual (ppm): 500 % Accuracy: 100
Reading following ignition	2.0 ppm	
Leak test	Pass / Fail / NA	**RESPONSE TIME**
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450 Time required to attain 90% of Cal Gas ppm 1. 5 2. 4
Date of last factory calibration	1-7-22	3. 6
Factory calibration record w/instrument within 3 months	Pass / Fail	Average 5.0 Equal to or less than 30 seconds? Y N Instrument calibrated to CH_4 gas.

Comments: ______

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [signature] MBF75

Date: 3-4-22 Time: 0930

Model # TVA 1000

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION		
		CALIBRATION CHECK		
		Calibration Gas (ppm)	Actual (ppm)	% Accuracy
Battery test	Pass / Fail	500	500	100
Reading following ignition	2.1 ppm	RESPONSE TIME		
Leak test	Pass / Fail / NA	Calibration Gas, ppm	500	
Clean system check (check valve chatter)	Pass / Fail / NA	90% of Calibration Gas, ppm	450	
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm		
		1.	5	
		2.	5	
Date of last factory calibration	1-7-22	3.	6	
Factory calibration record w/instrument within 3 months	Pass / Fail	Average	5.3	
		Equal to or less than 30 seconds?	Y	N
		Instrument calibrated to	CH4	gas.

Comments: ______

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site: ______

Purpose: ______

Operator: Jim Abeyts

Date: 3-4-22 Time: 0945

Model # TVA 1000

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK Calibration Gas (ppm): 500 · Actual (ppm): 500 · % Accuracy: 100
Reading following ignition	2.1 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500 90% of Calibration Gas, ppm: 450
H2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 6 2. 6 3. 6
Date of last factory calibration	1-7-22	Average 6.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH4 gas.

Comments: ______

465

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [signature] MOFFATS

Date: 3-4-22 Time: 1030

Model # TVA 1000

Serial # #16 110274676

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	**CALIBRATION CHECK** Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100
Reading following ignition	2.3 ppm	
Leak test	Pass / Fail / NA	**RESPONSE TIME**
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm 500 90% of Calibration Gas, ppm 450
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 5 2. 5
Date of last factory calibration	1-7-22	3. 5 Average 5.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH_4 gas.

Comments: ______

465

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #10

SERIAL NUMBER: 1056346773

TECHNICIAN: [illegible] DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	101	+/- 25
500	500	501	+/- 125
10000	10000	10,006	+/- 2500
< 1	ZERO GAS	0.42	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 11

SERIAL NUMBER: 1036346774

TECHNICIAN: [illegible] DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,006	+/- 2500
< 1	ZERO GAS	0.38	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #12

SERIAL NUMBER: 1036246741

TECHNICIAN: [illegible] DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,003	+/- 2500
< 1	ZERO GAS	0.71	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #13

SERIAL NUMBER: 1102746775

TECHNICIAN: [illegible]

DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	102	+/- 25
500	500	500	+/- 125
10000	10000	10,111	+/- 2500
< 1	ZERO GAS	0.63	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #16

SERIAL NUMBER: 1102746776

TECHNICIAN: [signature] DATE: 1-7-22

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	504	+/- 125
10000	10000	10,100	+/- 2500
< 1	ZERO GAS	0.64	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

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CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Air - Zero		
THC	< 2 PPM	
Oxygen	20.9%	± 2%
Nitrogen	Balance	

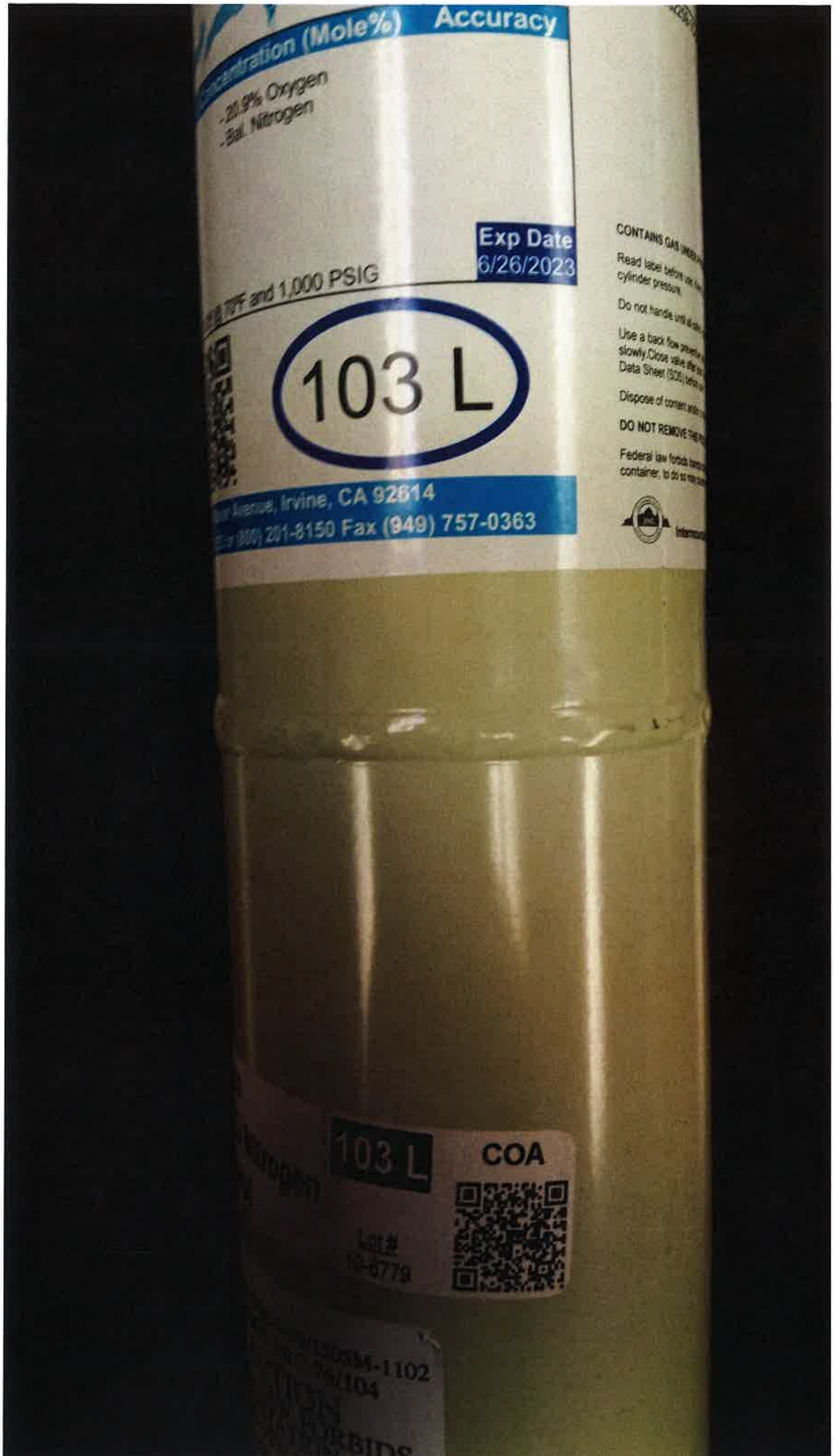
Lot # 19-6779

Mfg. Date:	4/3/2019
Parent Cylinder ID Number:	001739, 02268

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
This mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 4/3/2019



Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
70°F and 1,000 PSIG
Exp Date
6/26/2023
103 L
Irvine, CA 92614
Fax (949) 757-0363
CONTAINS GAS
Read label before
cylinder pressure
Do not handle until
Use a back flow
Dispose of content
DO NOT REMOVE
Federal law forbids
container
103 L
COA
Lot#

INTERMOUNTAIN SPECIALTY GASES

520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

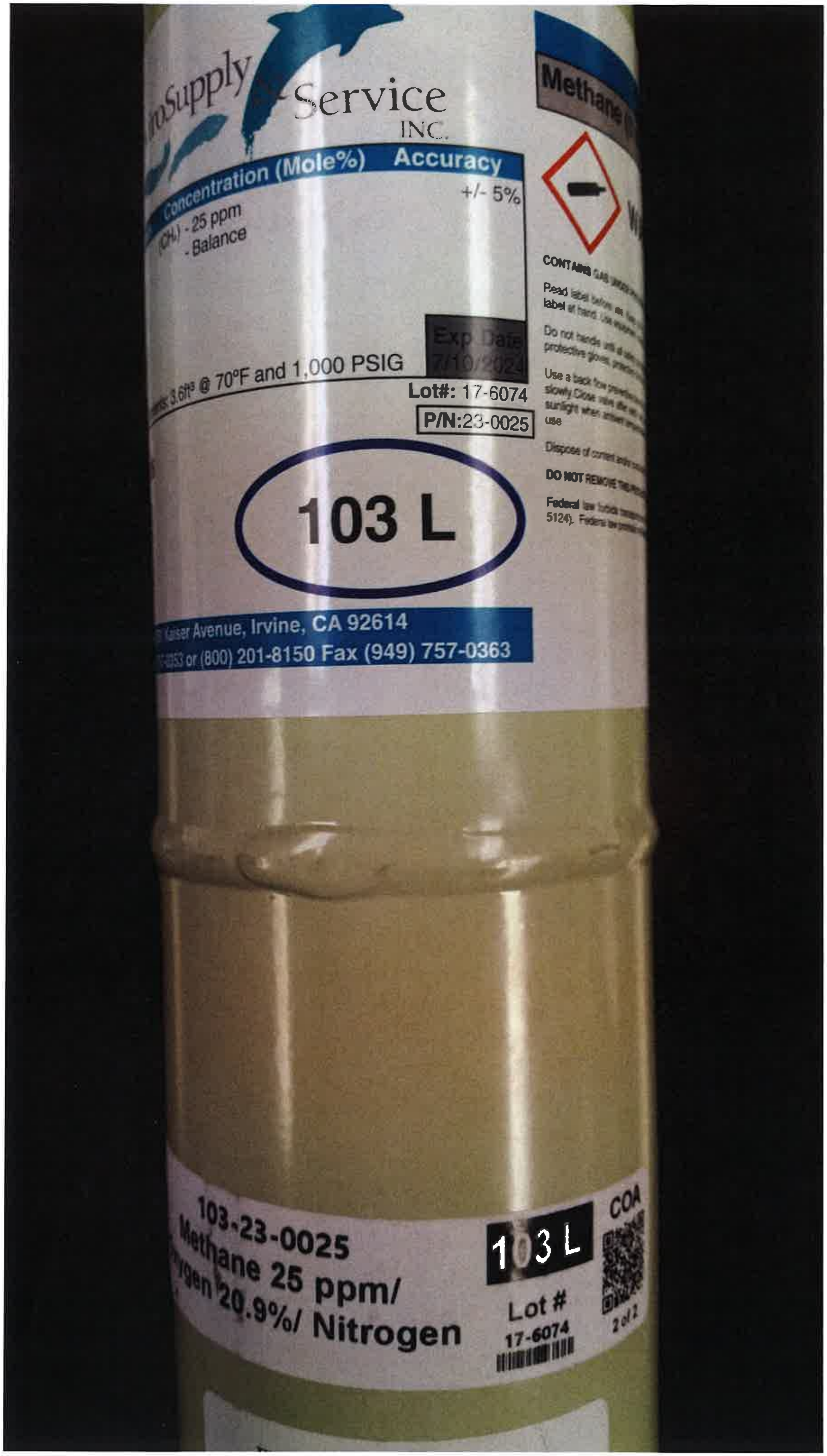
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017



Service
INC.
Concentration (Mole%)
Accuracy
+/- 5%
(CH_4) - 25 ppm
- Balance
Exp Date
7/10/2024
3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
Methane
Read label before use
Do not handle until all safety precautions
Use a back flow preventer
Dispose of content and/or container
DO NOT REMOVE THIS PRODUCT LABEL
103-23-0025
Methane 25 ppm/
20.9%/ Nitrogen
103 L
COA
Lot #
17-6074
2 of 2

INTERMOUNTAIN SPECIALTY GASES

520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

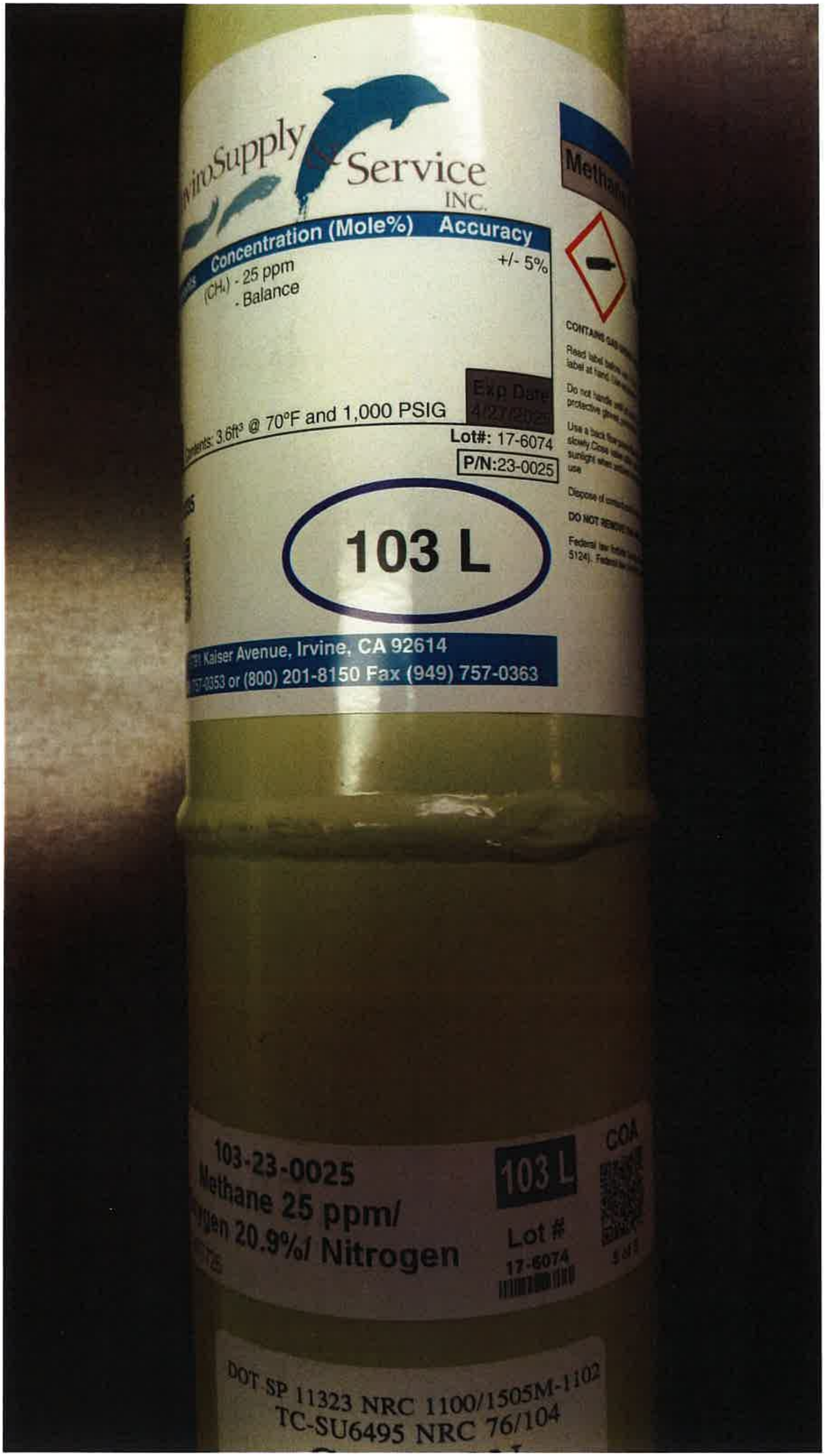
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017



viroSupply & Service INC.
Concentration (Mole%) Accuracy
(CH4) - 25 ppm +/- 5%
- Balance
Exp Date 4/27/2025
Contents: 3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
Methane
103-23-0025
Methane 25 ppm/
gen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
DOT-SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN SPECIALTY GASES
"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	20-7497
Mfg. Date:	7/10/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	TWC001763

Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Title: Quality Assurance Manager
Certificate Date: 7/10/2020


Supply
Service
INC.
Methane
(Mole%)
Accuracy
+/- 2%
Balance
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Irvine, CA 92614
201-8150 Fax (949) 757-0363
CONTAINS GAS UNDER
Read label before use.
label at hand.
Do not handle until all safety
protective gloves,
Use a back flow preventive
sunlight when ambient
use
Dispose of content and/or
DO NOT REMOVE THIS PRODUCT
Federal law forbids
5124). Federal law prohibits
ppm/
Nitrogen
103 L
Lot #
20-7497
COA
4 of 4

INTERMOUNTAIN SPECIALTY GASES

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800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	500 ppm	± 2%
Air	Balance	

Lot #	19-6955

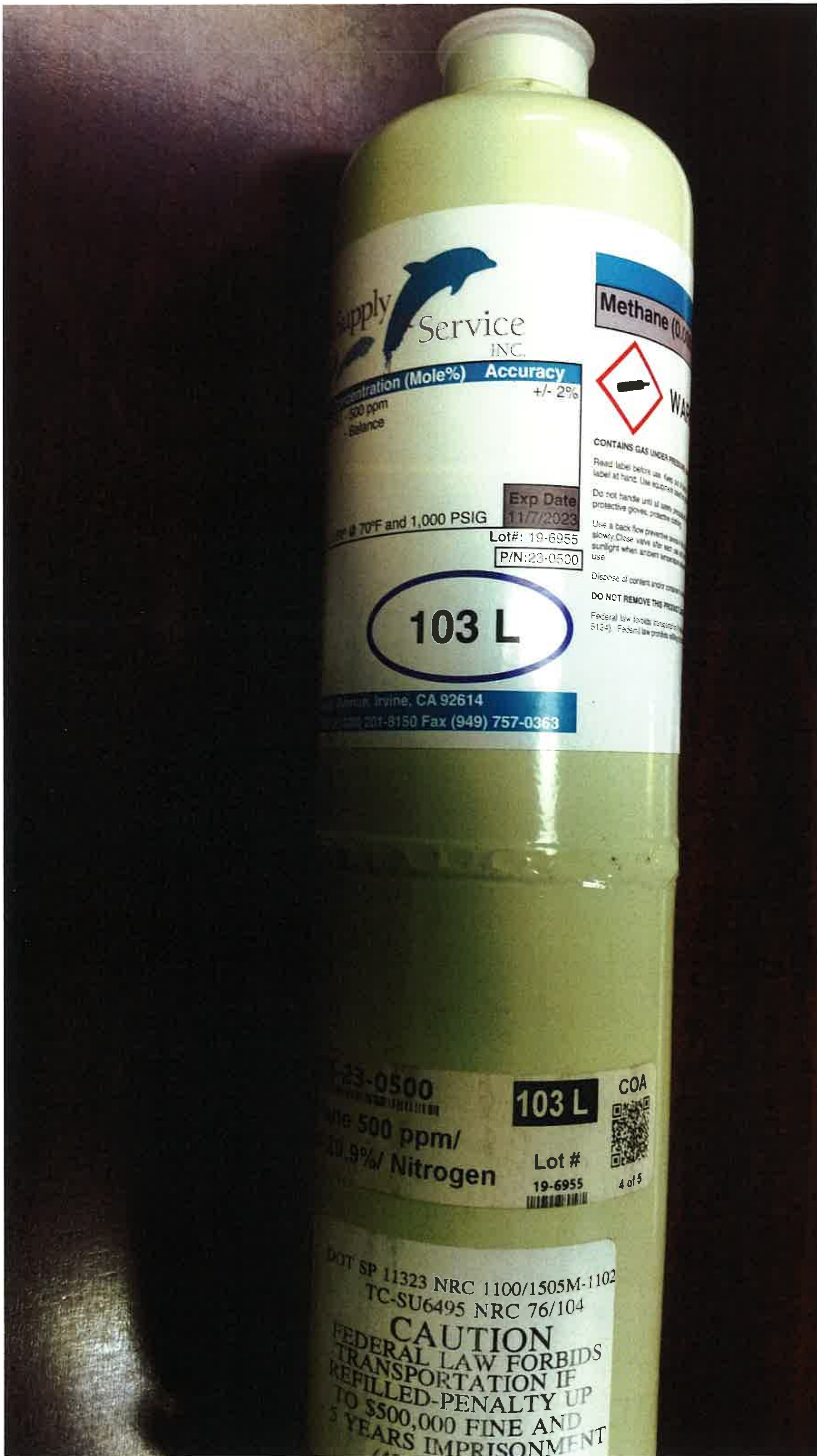
Mfg. Date: 7/24/2019

Parent Cylinder ID Number: 001763

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 7/24/2019



Service
INC.
Accuracy
+/- 2%
Methane
Exp Date
11/7/2023
70°F and 1,000 PSIG
Lot#: 19-6955
P/N:23-0500
103 L
Irvine, CA 92614
Fax (949) 757-0363
CONTAINS GAS UNDER
DO NOT REMOVE THIS
23-0500
103 L
COA
500 ppm/
Nitrogen
Lot #
19-6955
4 of 5
DOT SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104
CAUTION
FEDERAL LAW FORBIDS
TRANSPORTATION IF
REFILLED-PENALTY UP
TO $500,000 FINE AND
5 YEARS IMPRISONMENT

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN
SPECIALTY GASES
"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	18-6641
Mfg. Date:	12/18/2018
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	001763

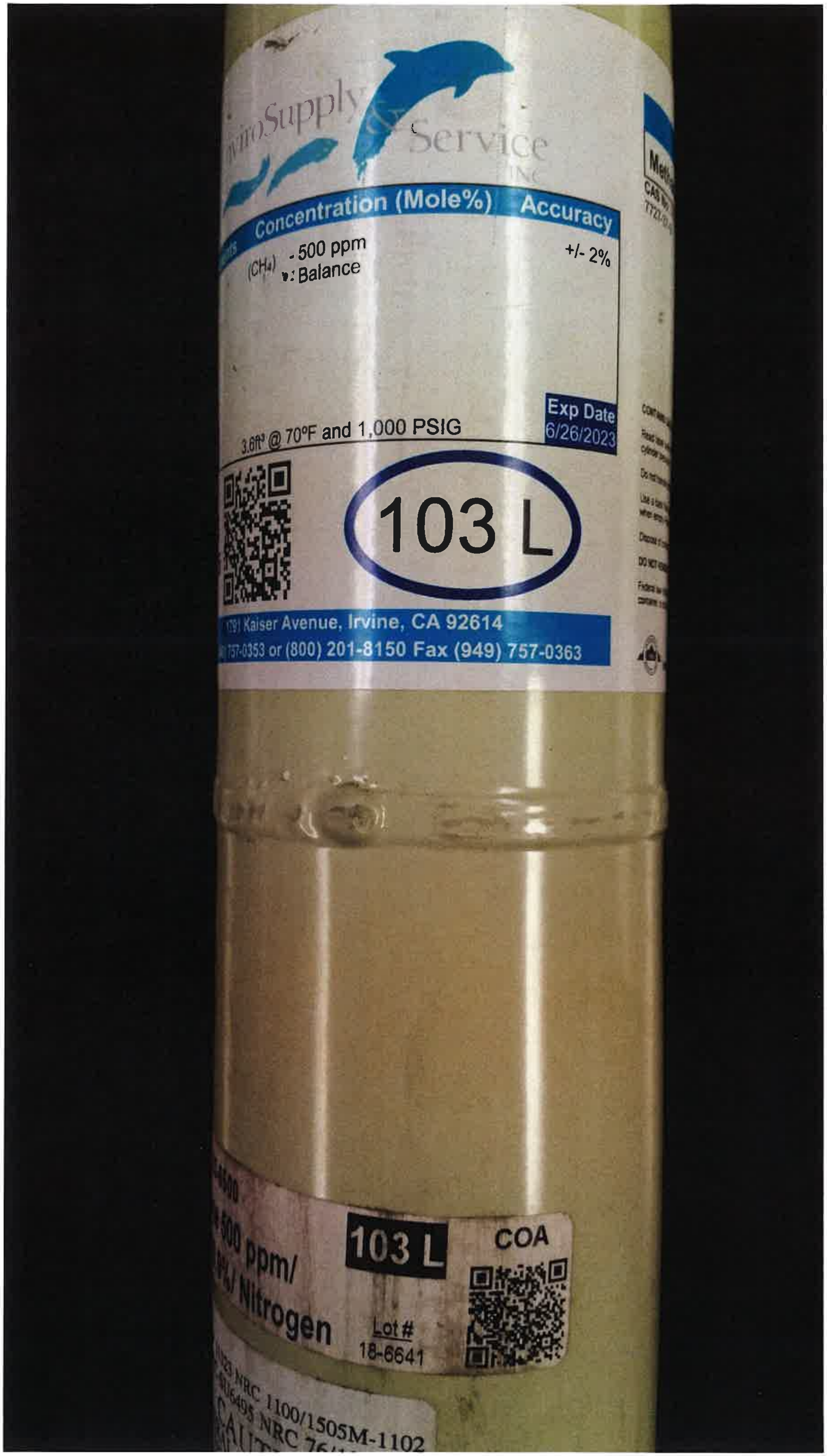
Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Title: Quality Assurance Manager
Certificate Date: 12/18/2018



Concentration (Mole%)
Accuracy
(CH4) - 500 ppm
Balance
+/- 2%
Exp Date
6/26/2023
3.6ft³ @ 70ºF and 1,000 PSIG
103 L
1791 Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
500 ppm/
Nitrogen
103 L
COA
Lot #
18-6641
NRC 1100/1505M-1102

APPENDIX I

WELLFIELD MONITORING LOGS

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 2, 4, 5, 10, 11, 12, 15, 16, 26, and 29, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	11/15/21 17:31	42.9	36.1	0	21	-1.5	102	-1.1	103
RLHC0156	11/10/21 15:15	65.6	34.3	0	0.1	-49.3	75	-49	76
RLI00003	11/10/21 15:39	39.8	39.2	0	21	-2.4	73	-2.4	74
RLI00008	11/5/21 11:44	59.4	32.3	1.8	6.5	-42.7	77	-39.6	77
RLI00016	11/15/21 15:51	63.1	29.3	1	6.6	-25.5	66	-47.2	67
RLI00017	11/15/21 15:30	51.5	28.7	3.5	16.3	-38.9	66	-40.8	66
RLI00018	11/15/21 15:11	44	26	3.7	26.3	-30.5	68	-30.4	69
RLI00019	11/15/21 12:43	57.6	31.1	2.6	8.7	-35.1	55	-36.1	56
RLI00034	11/16/21 15:19	61.1	38.4	0	0.5	-22	81	-23.6	81
RLI00035	11/16/21 14:49	58.2	37.2	0	4.6	-31.3	77	-33.8	77
RLI00045	11/29/21 12:09	44	32.1	0	23.9	-2.6	79	-2.6	79
RLI00047	11/16/21 15:07	52.5	34.2	0	13.3	-1	83	-1	83
RLI00065	11/11/21 17:29	49.9	39.9	0	10.2	-7.4	106	-7.4	106
RLI00083	11/11/21 13:16	62.6	37.3	0	0.1	-3	92	-3	92
RLI00095	11/12/21 10:46	40.8	34.7	0	24.5	-2.6	95	-2.2	96
RLI00132	11/5/21 12:25	53.9	36.4	0	9.7	-39.3	99	-40.9	99
RLI00134	11/4/21 11:58	51.9	40.9	0	7.2	-13.3	118	-13.7	118
RLI00135	11/4/21 14:22	44.9	38.9	0	16.2	1.2	98	-0.2	110
RLI00137	11/11/21 17:45	65.1	34.8	0	0.1	1.7	83	-3.2	83
RLI00140	11/29/21 10:13	59.4	26.4	2.4	11.8	-49.6	64	-49.9	64
RLI00141	11/11/21 13:07	50.3	31.5	1.2	17	-12.9	90	-12.9	91
RLI00142	11/5/21 16:38	64.6	32.9	0	2.5	-49.6	74	-50.1	74
RLI00220	11/29/21 10:01	48	36.4	0	15.6	-0.2	49	-0.1	49
RLI0100C	11/16/21 14:29	57.5	34.4	1	7.1	-43.7	79	-44	79
RLI0102C	11/10/21 16:26	61.9	38	0	0.1	-45.8	92	-45.8	92
RLI0103C	11/4/21 11:51	58	40.3	0	1.7	-38.7	105	-38.7	106
RLI0105C	11/4/21 13:52	32.5	40.1	2	25.4	-46.6	99	-46.6	99
RLI0106C	11/4/21 14:03	41.6	45.3	0.1	13	-18.7	116	-16.8	117
RLI0107C	11/4/21 14:08	46.6	49.3	0	4.1	-47.9	111	-47.7	111
RLI0114A	11/5/21 11:23	44.6	26.1	4.8	24.5	-34.3	75	-34.4	74
RLI0115E	11/5/21 10:50	55.8	36.6	0.1	7.5	-46.7	98	-47.1	99
RLI0116E	11/12/21 11:55	60.3	34.3	0.5	4.9	-49.4	77	-50.2	78
RLI0117D	11/11/21 14:11	50	29.5	3.4	17.1	-14.7	87	-14.5	88
RLI0124G	11/5/21 15:34	46.1	33.3	0	20.6	-5.9	88	-5.6	88
RLI0126C	11/10/21 16:17	63.5	29.6	1.7	5.2	-44.6	87	-45	88
RLI0127B	11/5/21 12:08	51.4	35.8	0	12.8	-23.5	105	-23.9	105
RLI0129E	11/10/21 15:29	64.2	31.5	0.5	3.8	-7.5	78	-9.6	79
RLI0130E	11/11/21 11:22	63.9	32.3	0	3.8	-4.5	81	-5.1	82
RLIHC101	11/5/21 15:55	53.4	37.3	0	9.3	-44.2	100	-44	101
RLIHC102	11/5/21 15:51	53.5	38	0	8.5	-14.2	98	-15.3	98
RLIHC107	11/11/21 11:52	29.6	43.8	0.7	25.9	-9.1	84	-9.2	84
RLLC0176	11/4/21 12:34	35.3	41.2	0	23.5	-0.2	118	-0.1	118
RLLC0177	11/4/21 12:14	53.9	39.9	0	6.2	-32.3	107	-32.5	107
RLLC0179	11/11/21 13:44	37	27	0	36	-40.3	75	-40	75
RLLC0180	11/4/21 11:31	48	39.1	0	12.9	-31.6	107	-32.1	107
RLLC0181	11/4/21 11:19	60.7	39.2	0	0.1	-2.3	105	-2.6	106
RLLC0183	11/5/21 12:03	63.4	36.5	0	0.1	-1.6	66	-3.5	76
RLLC0184	11/5/21 11:52	56.2	36.8	0	7	-4.9	99	-5	99
RLLC0185	11/29/21 12:40	9.8	25.2	1.5	63.5	-0.1	121	-0.1	123
RLLC0186	11/4/21 13:21	50.6	37.9	0	11.5	-24.5	101	-24.6	101
RLLC0187	11/4/21 13:28	50.9	36.2	0	12.9	-46.6	104	-47.2	104
RLLC0188	11/4/21 13:34	44.6	38.1	0	17.3	-22.3	106	-21.2	106
RLLC0189	11/4/21 14:35	39.8	39.3	0	20.9	-7	114	-6.1	114
RLLC0190	11/4/21 11:42	10.7	43.6	0	45.7	-0.4	90	-0.4	93
RLLC0191	11/5/21 15:43	50.1	32.8	0	17.1	-0.7	93	-0.7	92
RLLC0193	11/5/21 11:04	25	32.8	0	42.2	-20.7	108	-15.4	108

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 2, 4, 5, 10, 11, 12, 15, 16, 26, and 29, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	11/15/21 17:31	42.9	36.1	0	21	-1.5	102	-1.1	103
RLHC0156	11/10/21 15:15	65.6	34.3	0	0.1	-49.3	75	-49	76
RLLC0198	11/29/21 11:46	48.6	33	0.1	18.3	-5	104	-4.8	104
RLLC0199	11/26/21 14:31	42.6	34.3	0	23.1	-8.2	114	-7.6	114
RLLC0200	11/26/21 14:45	31	26.1	0	42.9	-5.2	103	-2.9	102
RLLC0201	11/26/21 14:24	30.7	28.2	0	41.1	-0.9	108	-0.1	107
RLLC0202	11/29/21 11:27	59.7	37.2	0	3.1	-3.4	95	-3.6	96
RLLC0203	11/29/21 11:22	61.8	37.5	0	0.7	-15.6	99	-18.4	99
RLLC0204	11/29/21 11:17	57.1	37.3	0	5.6	0.4	103	-0.6	104
RLLC0205	11/10/21 15:57	32.5	30.9	0	36.6	1.1	95	-0.1	96
RLLC0206	11/10/21 16:11	48	36.6	0	15.4	-2.5	84	-2.4	84
RLLC0209	11/10/21 16:05	53.8	34.8	0	11.4	1	91	-0.1	98
RLLC0210	11/10/21 15:51	32.6	30.5	0	36.9	1	100	-0.1	104
RLLC0212	11/11/21 12:47	54.8	37.4	0	7.8	-18.1	98	-18.3	98
RLLC0214	11/11/21 12:06	42.8	37.5	0	19.7	-6.4	97	-6	98
RLLC0215	11/11/21 12:26	52.7	39.1	0	8.2	-44.8	95	-45.4	96
RLLC0217	11/5/21 16:17	52.8	36.1	0	11.1	-6.3	95	-6.3	95
RLLC0219	11/5/21 11:10	24.6	33.8	0.3	41.3	-2.6	110	-1.4	110
RLLC0221	11/29/21 11:33	55.8	35.4	0	8.8	-9.7	99	-9.7	100
RLLC0222	11/11/21 11:57	45.6	41.5	0	12.9	-20.8	106	-18.5	106
RLLC0223	11/15/21 17:43	47.9	36.3	0	15.8	-2.5	108	-1.7	108
RLLC0224	11/10/21 14:46	49	36.7	0	14.3	-1.9	107	-1.5	107
RLLC0225	11/26/21 14:18	36.4	29.6	0	34	-0.3	83	-0.2	83
RLLC0226	11/11/21 12:43	58.7	37.2	0	4.1	-29.1	96	-29.9	96
RLLC0227	11/12/21 10:54	53.5	34	0	12.5	-0.4	87	-0.4	87
RLLC0228	11/29/21 11:38	36.4	28.4	0	35.2	-2	98	-1.6	98
RLLC0229	11/26/21 14:39	18.9	23.1	0	58	-1.7	102	-1.1	102
RLLC0230	11/11/21 11:44	45.7	41.9	0	12.4	-3.5	112	-2.9	112
RLLC0231	11/5/21 11:28	33.1	32.4	0	34.5	-8.8	96	-6.3	96
RLLC0232	11/5/21 11:36	56.4	38.4	0	5.2	-2.8	98	-3	98
RLLC0233	11/12/21 12:14	25.2	29.1	0	45.7	-0.2	105	-0.1	105
RLLC0234	11/29/21 10:38	59.2	40.7	0	0.1	-3.6	114	-4.2	114
RLLC0235	11/29/21 10:49	39.6	33.7	0	26.7	-1.5	109	-1.3	109
RLLC0236	11/29/21 10:55	51	37.3	0	11.7	-0.7	100	-0.7	100
RLLC0237	11/11/21 17:48	50.2	37.5	0	12.3	-6.6	100	-6.6	100
RLLC0238	11/29/21 10:24	46.2	36.2	0	17.6	-0.4	109	-0.5	109
RLLC0239	11/12/21 11:28	34.7	31.4	0	33.9	-0.9	95	-0.6	95
RLLC0240	11/12/21 11:08	24.3	27.9	0	47.8	-0.5	101	-0.1	101
RLLC0241	11/11/21 17:22	51.5	38.6	0	9.9	-10.8	106	-10.8	107
RLLC0242	11/11/21 17:18	50.7	41.1	0	8.2	-7.4	109	-7.5	110
RLLC0243	11/5/21 16:01	24.6	32.3	0	43.1	-1.4	110	-0.1	110
RLLC0244	11/5/21 16:06	30.9	34.6	0	34.5	-0.3	107	-0.1	107
RLLC0245	11/5/21 16:11	25.2	32.7	0	42.1	-0.2	106	-0.1	106
RLLC0246	11/11/21 12:32	51.6	35	0	13.4	-48.8	97	-49.2	98
RLLC0247	11/10/21 14:57	39.5	36.8	0	23.7	-0.1	98	-0.1	99
RLLC0248	11/10/21 15:01	52	39.8	0	8.2	-0.6	105	-0.6	106
RLLC0249	11/4/21 12:54	45.7	38.1	0	16.2	-0.1	112	-0.1	112
RLLC0250	11/4/21 12:44	47.3	42	0	10.7	-0.2	111	-0.2	111
RLLC0251	11/29/21 12:29	39.7	40.3	0	20	-0.1	110	-0.1	110
RLLC0252	11/11/21 16:53	51.7	41.9	0	6.4	-0.6	102	-0.5	102
RLLC0253	11/11/21 17:03	50.8	42.9	0	6.3	-0.9	102	-0.9	102
RLLC0254	11/11/21 17:11	47.3	41.8	0	10.9	-0.1	105	-0.1	105
RLLC0255	11/5/21 16:26	47.8	39.5	0	12.7	-3	107	-2.8	107
RLLC0256	11/5/21 16:32	48.2	42.2	0	9.6	-0.6	103	-0.6	103
RLLC0257	11/2/21 12:53	46.6	36.8	0	16.6	-0.2	72	-0.1	73
RLLC0258	11/2/21 12:47	40.5	34.5	0	25	-2	76	-1.3	76

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 2, 4, 5, 10, 11, 12, 15, 16, 26, and 29, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	11/15/21 17:31	42.9	36.1	0	21	-1.5	102	-1.1	103
RLHC0156	11/10/21 15:15	65.6	34.3	0	0.1	-49.3	75	-49	76
RLLC0259	11/2/21 12:40	44.9	38.1	0	17	-3.2	82	-2.6	82
RLLC0260	11/2/21 13:06	39	35.6	0	25.4	-2.6	102	-2.1	102
RLLC0261	11/2/21 13:12	45.1	37	0	17.9	-1.8	104	-1.5	105
RLLC0262	11/2/21 13:28	40.9	34	0	25.1	-0.8	89	-0.6	89
RLLC0263	11/2/21 13:44	32.3	39.7	0	28	-0.3	109	-0.1	109
RLLC0263	11/4/21 13:39	32.5	39.8	0	27.7	-0.1	108	-0.1	109
RLLC0264	11/2/21 13:52	40.5	43.5	0	16	-2.8	109	-2.3	110
RLLC0264	11/4/21 13:45	39.7	42.9	0.1	17.3	-2.2	109	-1.8	110
RLLC0265	11/2/21 11:21	28.5	35.6	0	35.9	-0.6	96	-0.1	97
RLLC0266	11/2/21 11:17	34.4	42.3	0	23.3	-12.5	98	-11.5	99
RLLC0267	11/2/21 11:11	23.8	40	0	36.2	-0.3	95	-0.1	95
RLLC0268	11/2/21 11:05	36.8	45.8	0	17.4	-6.6	96	-5.9	97
RLLC0269	11/2/21 10:59	33.1	45	0	21.9	-0.6	103	-0.2	104
RLLC0270	11/2/21 10:54	35.7	40.1	0	24.2	-1.8	104	-1.1	104
RLLC0271	11/2/21 10:19	56.5	39.4	0	4.1	-10.7	102	-10.9	102
RLLC0272	11/2/21 10:31	65.5	34.4	0	0.1	-29.6	67	-48.9	79
RLLC0273	11/2/21 11:32	43.1	37.6	0	19.3	-10.3	111	-9.3	112
RLLC0273	11/5/21 10:55	40.8	36.6	0	22.6	-9.3	112	-8.7	112
RLLC0274	11/2/21 14:04	37.5	40.1	0	22.4	-0.2	117	-0.1	118
RLLC0274	11/4/21 13:57	37.4	40.2	0	22.4	-0.1	117	-0.1	117

There are 130 total collectors; 123 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 3, 6, 7, 8, 9, 10, 16, 22, and 23, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	12/10/21 9:06	35.5	51.8	0	12.7	-0.9	101	-0.8	101
RLHC0156	12/7/21 11:58	56.1	32.6	0	11.3	-49.6	83	-48.5	85
RLI00003	12/6/21 14:31	50.1	38.9	0	11	-2	57	-2	57
RLI00008	12/23/21 11:58	58.5	32.3	1.6	7.6	-39.6	65	-39.5	64
RLI00016	12/10/21 13:04	32.6	27.1	0	40.3	-46.3	72	-43.5	70
RLI00017	12/10/21 12:57	50.7	33.6	0.2	15.5	-24.4	73	-23.7	74
RLI00018	12/10/21 12:54	54.8	31.6	1.7	11.9	-35.2	67	-35.6	67
RLI00019	12/10/21 12:42	64.7	34.8	0.3	0.2	-15.5	56	-15.9	57
RLI00034	12/6/21 14:18	60	39.9	0	0.1	-32.5	80	-33.1	80
RLI00035	12/6/21 14:08	60.3	38.6	0	1.1	-31.6	76	-30.9	76
RLI00045	12/6/21 13:56	44.6	32.6	0	22.8	-1.6	72	-1.5	72
RLI00047	12/6/21 14:00	47.1	34	0	18.9	-1.3	79	-1.3	79
RLI00065	12/9/21 13:57	52.4	40.1	0	7.5	-9.1	106	-9.5	107
RLI00083	12/10/21 16:22	62.5	37.4	0	0.1	-3.9	90	-3.9	90
RLI00095	12/10/21 16:29	38.6	33.7	0	27.7	-1.8	95	-1.4	96
RLI00132	12/3/21 13:26	54.4	36.7	0	8.9	-34.7	98	-33.7	98
RLI00134	12/3/21 12:37	53	41.7	0	5.3	-11.1	117	-13	117
RLI00135	12/8/21 14:14	35.5	38.6	0	25.9	-0.5	113	-0.2	113
RLI00137	12/9/21 16:32	65.2	34.7	0	0.1	-1.3	84	-2.3	88
RLI00140	12/3/21 10:54	63.3	27	2.1	7.6	-49.5	53	-49.2	53
RLI00141	12/7/21 13:36	47.6	31.5	1.4	19.5	-14.2	90	-13.5	90
RLI00142	12/3/21 10:58	66.2	33.2	0	0.6	-48.2	79	-48.4	80
RLI00220	12/22/21 12:57	50	37.6	0.1	12.3	-0.1	48	-0.1	48
RLI0100C	12/23/21 12:30	55.8	36	1	7.2	-36.6	76	-36.7	76
RLI0102C	12/6/21 11:48	61.2	38.7	0	0.1	-46.4	91	-46.8	91
RLI0103C	12/8/21 13:16	58.7	41.2	0	0.1	-36.9	105	-37	106
RLI0105C	12/16/21 12:46	23.6	27.6	4.8	44	-46.1	116	-12	113
RLI0106C	12/8/21 12:14	39.2	41.3	1.5	18	-17.6	113	-14.9	114
RLI0107C	12/6/21 12:55	50.2	48	0	1.8	-43.5	111	-43.5	112
RLI0114A	12/3/21 11:51	58.4	33.3	1.1	7.2	-11.3	62	-11.2	63
RLI0115E	12/3/21 11:17	52	35.9	0.2	11.9	-44.9	98	-46	97
RLI0116E	12/10/21 12:28	49.4	31.2	3.2	16.2	-47.2	64	-43.5	63
RLI0117D	12/23/21 11:42	49.2	30.5	4.2	16.1	-45.6	68	-33.1	68
RLI0124G	12/10/21 15:27	41.5	30	2	26.5	-5.3	88	-4.5	88
RLI0126C	12/6/21 12:19	66.5	30.9	0.9	1.7	-44.4	78	-44.7	80
RLI0127B	12/3/21 13:00	54.8	37.6	0	7.6	-22.4	105	-22.1	105
RLI0129E	12/7/21 11:39	66.8	32.6	0.4	0.2	-10.7	75	-13.2	76
RLI0130E	12/7/21 11:50	61.6	33.1	0	5.3	-5.8	79	-5.9	79
RLIHC101	12/10/21 15:47	53.5	36.9	0	9.6	-44.2	102	-44.3	102
RLIHC102	12/10/21 15:41	53	36.6	0	10.4	-17.9	99	-17.7	99
RLIHC107	12/9/21 11:28	49.3	41.9	0	8.8	-17.5	106	-17.7	107
RLLC0176	12/3/21 13:15	36.4	37.5	0	26.1	0.9	114	-0.2	120
RLLC0177	12/8/21 13:35	49.5	38.6	0.3	11.6	-28.7	108	-29.3	108
RLLC0179	12/10/21 16:11	29.7	27.3	0	43	-7.7	85	-7.7	86
RLLC0180	12/8/21 14:29	47.8	39	0	13.2	-25.6	107	-25.6	108
RLLC0181	12/8/21 14:35	60.7	39.2	0	0.1	-1.8	105	-2.2	106
RLLC0183	12/3/21 12:56	27.1	29.5	0	43.4	-4.2	86	-2.7	81
RLLC0184	12/3/21 12:45	59.2	38.2	0	2.6	-5.1	99	-5.3	99
RLLC0185	12/8/21 13:40	28.7	31.7	1.3	38.3	-4.2	124	-2.4	125
RLLC0186	12/8/21 13:11	47.3	39.4	0	13.3	-22.1	100	-21.7	101
RLLC0187	12/6/21 11:28	53.4	37.4	0	9.2	-47.3	104	-47.3	104
RLLC0188	12/8/21 13:01	47.9	40.2	0	11.9	-21	106	-20.6	107
RLLC0189	12/8/21 12:47	36.6	37.3	0.6	25.5	-3.4	117	-2.6	117
RLLC0190	12/8/21 14:21	28.7	40.5	0.1	30.7	0.4	65	-0.1	77
RLLC0191	12/10/21 15:32	37.5	29.9	0	32.6	-0.9	93	-0.7	94
RLLC0193	12/3/21 11:35	29.4	31	0	39.6	-9.5	107	-7.2	107

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 3, 6, 7, 8, 9, 10, 16, 22, and 23, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	12/10/21 9:06	35.5	51.8	0	12.7	-0.9	101	-0.8	101
RLHC0156	12/7/21 11:58	56.1	32.6	0	11.3	-49.6	83	-48.5	85
RLLC0198	12/10/21 9:51	51.4	34.5	0.1	14	-4.7	98	-4.5	98
RLLC0199	12/10/21 9:45	52.3	37	0	10.7	-6.3	112	-6.3	113
RLLC0200	12/10/21 9:40	48.5	31.4	0	20.1	-0.1	86	-0.1	88
RLLC0201	12/10/21 10:14	44.5	32.4	0	23.1	-0.2	105	-0.2	105
RLLC0202	12/10/21 9:13	60.4	37.3	0	2.3	-3	91	-3.3	89
RLLC0203	12/6/21 13:08	61.1	38.8	0	0.1	-17.5	96	-13.7	96
RLLC0204	12/6/21 13:02	53.2	37.3	0	9.5	0	102	-0.2	103
RLLC0205	12/6/21 13:18	15.4	26.1	0	58.5	-0.2	101	-0.1	102
RLLC0206	12/6/21 12:25	44.2	37.9	0	17.9	-2.8	86	-2.7	85
RLLC0209	12/6/21 12:30	32.8	33.8	0	33.4	-0.2	99	-0.1	99
RLLC0210	12/6/21 13:13	19.1	25.8	0	55.1	-0.1	106	-0.1	106
RLLC0212	12/7/21 13:09	58	38.5	0	3.5	-20.4	98	-20.9	99
RLLC0214	12/9/21 10:44	46.2	36.6	0	17.2	-7.8	97	-6.7	97
RLLC0215	12/9/21 11:34	56.5	38.6	0	4.9	-47.2	94	-46.5	94
RLLC0217	12/22/21 13:05	50.8	35.7	0	13.5	-6	93	-5.9	93
RLLC0219	12/3/21 11:44	35.6	36.5	0	27.9	0.4	104	-0.2	108
RLLC0221	12/10/21 9:21	54	35.3	0	10.7	-10	34	-9.9	98
RLLC0222	12/10/21 9:26	38.5	29.5	0	32	-1	87	-0.8	87
RLLC0223	12/7/21 12:39	51	37.3	0.1	11.6	-1.3	107	-1.2	108
RLLC0224	12/7/21 12:44	55.5	38.1	0	6.4	-1.9	107	-2.1	107
RLLC0225	12/10/21 10:22	59.2	32.3	0	8.5	-0.1	67	-0.2	78
RLLC0226	12/7/21 13:04	60	37.6	0	2.4	-36.2	94	-36.9	94
RLLC0227	12/10/21 16:34	50.4	33.2	0	16.4	-0.3	86	-0.2	86
RLLC0228	12/22/21 13:39	49.5	30.8	0	19.7	-1	77	-0.6	76
RLLC0229	12/10/21 9:34	31.1	27.4	0	41.5	-0.1	94	-0.1	96
RLLC0230	12/9/21 12:06	49.9	41.8	0	8.3	-2.8	112	-2.9	87
RLLC0231	12/3/21 12:13	37.9	33.8	0	28.3	-5.8	96	-5.1	97
RLLC0232	12/3/21 12:22	55.3	38.5	0	6.2	-2.2	96	-2.3	96
RLLC0233	12/10/21 11:54	27.8	28.4	0	43.8	-0.2	105	-0.1	106
RLLC0234	12/9/21 13:40	59.5	39.7	0	0.8	-3.9	114	-5.4	115
RLLC0235	12/9/21 14:11	40.3	34.1	0	25.6	-1.3	109	-0.5	109
RLLC0236	12/9/21 14:04	51.2	37.6	0	11.2	-0.7	100	-0.6	100
RLLC0237	12/9/21 16:37	51.5	36.6	0	11.9	-6.7	97	-6.7	97
RLLC0238	12/9/21 14:39	46.7	36.5	0	16.8	-0.5	109	-0.4	109
RLLC0239	12/22/21 13:23	41.1	34	0	24.9	-0.1	94	-0.1	95
RLLC0240	12/10/21 12:01	28.8	28.8	0	42.4	-0.1	101	-0.1	101
RLLC0241	12/9/21 13:52	53.5	38.9	0	7.6	-12.9	107	-13.1	107
RLLC0242	12/9/21 13:47	52.7	41.3	0	6	-8.5	110	-9	110
RLLC0243	12/10/21 16:02	28.9	32.5	0	38.6	0	113	-0.1	113
RLLC0244	12/10/21 15:58	35.5	34.2	0	30.3	-0.1	109	-0.1	109
RLLC0245	12/10/21 15:54	35.3	34.1	0	30.6	-0.1	107	-0.1	107
RLLC0246	12/9/21 11:00	52.7	35.3	0	12	-49.4	94	-49.3	94
RLLC0247	12/7/21 12:19	45.7	38.9	0	15.4	-0.2	98	-0.1	99
RLLC0248	12/7/21 12:24	57	41	0	2	-0.7	105	-0.8	106
RLLC0249	12/8/21 13:30	37.8	36.2	0	26	-0.1	111	-0.1	111
RLLC0250	12/8/21 13:53	45.9	39.7	0.3	14.1	-0.2	111	-0.2	112
RLLC0251	12/8/21 14:00	38	38.9	0	23.1	-0.1	109	-0.1	110
RLLC0252	12/9/21 13:31	56.2	43.5	0	0.3	-0.8	102	-1.2	102
RLLC0253	12/9/21 13:24	53.2	43.4	0	3.4	-1.2	103	-1.5	103
RLLC0254	12/9/21 13:15	49.3	42.5	0	8.2	-0.3	105	-0.3	105
RLLC0255	12/9/21 14:44	50.3	39.1	0	10.6	-2.8	107	-2.9	108
RLLC0256	12/9/21 14:51	54.9	42.3	0	2.8	-0.4	104	-0.5	104
RLLC0257	12/6/21 14:40	54.5	39.9	0	5.6	0	58	-6.5	62
RLLC0258	12/6/21 14:44	48	38.9	0	13.1	-1.2	64	-1.2	64

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 3, 6, 7, 8, 9, 10, 16, 22, and 23, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	12/10/21 9:06	35.5	51.8	0	12.7	-0.9	101	-0.8	101
RLHC0156	12/7/21 11:58	56.1	32.6	0	11.3	-49.6	83	-48.5	85
RLLC0259	12/6/21 14:49	53.8	41.7	0	4.5	-2.6	80	-2.8	80
RLLC0260	12/6/21 12:05	43.1	37.9	0	19	-1.8	101	-1.4	101
RLLC0261	12/6/21 11:59	54.3	40.3	0	5.4	-1.3	103	-1.4	104
RLLC0262	12/6/21 11:33	48	34.9	0	17.1	-0.2	86	-0.3	86
RLLC0263	12/9/21 10:23	37.8	44.9	0	17.3	-0.3	108	-0.2	109
RLLC0264	12/8/21 12:41	39.7	41.9	0.2	18.2	-2	111	-1.4	111
RLLC0265	12/9/21 11:04	34.6	35.2	0	30.2	-0.1	97	-0.1	97
RLLC0266	12/9/21 10:53	34.7	40.2	0	25.1	-11.9	97	-9.7	98
RLLC0267	12/9/21 10:49	29.9	40.2	0	29.9	-0.1	94	-0.1	94
RLLC0268	12/9/21 10:35	36.9	43.6	0	19.5	-6	96	-5.3	97
RLLC0269	12/10/21 11:20	25.8	34.3	4.2	35.7	-0.1	104	-0.1	105
RLLC0270	12/9/21 11:44	33.7	36.5	0	29.8	-0.9	105	-0.4	105
RLLC0270	12/10/21 11:16	31.5	34.6	0	33.9	-0.5	105	-0.2	105
RLLC0271	12/10/21 16:16	50.6	37.5	0	11.9	-10.5	101	-10.5	101
RLLC0272	12/3/21 11:03	50.8	33.8	0	15.4	-47.7	78	-47.9	78
RLLC0273	12/3/21 11:24	40	35	0	25	-8.8	112	-8.2	112
RLLC0274	12/8/21 12:25	34.9	38.2	0	26.9	-0.3	117	-0.1	117

There are 130 total collectors; 123 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 3, 4, 5, 6, 7, 13, 20, 21, 24, 25, 27, and 28, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/3/22 15:50	46.7	51.4	0	1.9	-2	100	-2.1	100
RLHC0156	1/7/22 15:38	19.1	18.4	4	58.5	-4.6	103	-0.5	102
RLI00003	1/7/22 16:25	55.6	38.7	0.1	5.6	0.4	63	-1	64
RLI00008	1/24/22 17:32	39.1	24.1	4.9	31.9	-20.6	72	-19.3	71
RLI00016	1/5/22 17:19	60.4	30.5	0.1	9	-47.9	64	-48.2	65
RLI00017	1/5/22 17:13	64.2	35.7	0	0.1	-23.1	71	-25.9	72
RLI00018	1/5/22 17:05	63.2	33.1	0.7	3	-32.8	63	-35.3	64
RLI00019	1/5/22 16:56	64.6	35.2	0	0.2	-30.9	59	-31	58
RLI00034	1/24/22 18:25	61	38.9	0	0.1	-14.7	79	-13.8	79
RLI00035	1/24/22 18:18	61.1	37.8	0	1.1	-22.7	76	-21.5	76
RLI00045	1/24/22 18:08	50.3	32.3	0	17.4	-2.2	77	-2.1	77
RLI00047	1/24/22 18:12	56.6	34.3	0	9.1	-1.9	79	-2	80
RLI00065	1/3/22 14:35	58.3	41.4	0	0.3	-40.9	103	-41.7	103
RLI00083	1/5/22 15:20	62.4	37.5	0	0.1	-4.4	85	-4.4	85
RLI00095	1/3/22 13:54	40.9	33.2	0	25.9	-3.6	94	-3.1	94
RLI00132	1/24/22 17:56	57.9	36	0	6.1	-24.4	96	-26.4	97
RLI00134	1/20/22 15:46	58.3	41.4	0	0.3	-3.1	114	-4.3	114
RLI00135	1/20/22 15:34	48.5	42	0	9.5	-0.1	110	-0.3	112
RLI00137	1/28/22 15:02	65	34.9	0	0.1	-5.6	80	-7.9	83
RLI00140	1/4/22 15:14	61.5	26	2.6	9.9	-50.9	57	-51	57
RLI00141	1/25/22 12:35	57.9	33.9	0.7	7.5	-11.7	88	-11.4	88
RLI00142	1/4/22 15:06	65.5	30.9	0.8	2.8	-50.7	72	-50.5	73
RLI00220	1/25/22 11:26	54.4	38.8	0.2	6.6	-0.6	46	-0.6	46
RLI0100C	1/27/22 15:57	60.4	37.5	0.3	1.8	-22.5	77	-22.5	76
RLI0102C	1/7/22 16:42	62.1	37.8	0	0.1	-44.2	90	-43.9	90
RLI0102C	1/27/22 15:50	62.3	37.6	0	0.1	-37.8	91	-38	91
RLI0103C	1/20/22 15:41	59.3	40.6	0	0.1	-15.2	103	-16.8	103
RLI0105C	1/21/22 15:42	49.7	46.8	0	3.5	-2.7	98	-6.1	95
RLI0106C	1/21/22 15:56	49.6	45.2	0	5.2	-13.8	112	-13.8	112
RLI0107C	1/5/22 13:06	34	47	0.7	18.3	-47.5	62	-46.8	63
RLI0107C	1/6/22 14:29	51.3	48.6	0	0.1	-48.2	109	-48.2	109
RLI0114A	1/25/22 16:58	67.2	32.7	0	0.1	2.4	84	0.5	84
RLI0115E	1/3/22 16:16	57.6	35.9	0.2	6.3	-43.9	90	-46.1	90
RLI0116E	1/25/22 15:28	35.7	24.5	4.2	35.6	-31.2	65	-33.4	66
RLI0117D	1/3/22 16:02	49.8	26.3	4.8	19.1	-21.4	61	-21.5	59
RLI0124G	1/3/22 14:05	51.8	35	0	13.2	-6.6	83	-6.5	84
RLI0126C	1/6/22 13:51	61.2	22.8	2.7	13.3	-46.7	73	-45	72
RLI0127B	1/24/22 17:45	54.7	35	0.3	10	-14.9	103	-14.9	103
RLI0128A	1/21/22 16:21	53.3	43	0	3.7	-5.3	113	-5.6	113
RLI0129E	1/7/22 15:44	66.6	31.3	0.4	1.7	-13.9	73	-15.4	74
RLI0130E	1/7/22 15:19	67	32.1	0	0.9	-12.4	76	-12.7	77
RLIHC101	1/25/22 12:00	60.6	38.6	0	0.8	-34.7	101	-32.3	100
RLIHC102	1/28/22 13:29	61	38.9	0	0.1	-14.6	98	-15.8	99
RLIHC107	1/25/22 15:53	37.5	46.3	1.1	15.1	-35.8	78	-37.7	79
RLLC0176	1/20/22 16:22	42.8	32.5	3.8	20.9	-0.9	105	-0.8	103
RLLC0177	1/20/22 16:04	59.2	39.8	0	1	-19.3	106	-20.6	106
RLLC0179	1/25/22 11:47	53.5	18.9	0	27.6	-10.9	47	-8.5	50
RLLC0180	1/20/22 14:19	55.9	39.8	0	4.3	-19.3	106	-21.7	106
RLLC0181	1/20/22 14:25	61.3	38.6	0	0.1	-0.3	104	-0.7	104
RLLC0183	1/24/22 17:49	44.8	30.4	0	24.8	-1.8	81	-1.8	80
RLLC0184	1/24/22 17:38	62.2	37.5	0	0.3	-3.6	98	-3.8	98
RLLC0185	1/20/22 16:10	47.9	41.2	0	10.9	-0.2	110	-0.1	116
RLLC0186	1/21/22 14:54	58.3	40.6	0	1.1	-15.6	99	-15.7	99
RLLC0187	1/21/22 14:59	61	38.3	0	0.7	-34.2	102	-33.9	102
RLLC0188	1/21/22 15:04	56.4	41.3	0	2.3	-17.7	105	-18.2	105
RLLC0189	1/21/22 15:10	53.3	43	0	3.7	-1.6	113	-1.6	113

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Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/3/22 15:50	46.7	51.4	0	1.9	-2	100	-2.1	100
RLHC0156	1/7/22 15:38	19.1	18.4	4	58.5	-4.6	103	-0.5	102
RLLC0190	1/20/22 14:45	41.3	51.1	0	7.6	-0.4	101	-0.2	107
RLLC0191	1/25/22 11:52	54	34.1	0	11.9	-1.5	89	-1.5	89
RLLC0193	1/25/22 16:26	63.1	36.8	0	0.1	-0.3	83	-0.4	81
RLLC0194	1/21/22 16:08	60.1	39.8	0	0.1	-5.1	100	-6.3	101
RLLC0198	1/6/22 15:31	60.2	34	1.8	4	-7.6	53	-7.6	53
RLLC0199	1/6/22 15:36	60.3	39.6	0	0.1	-29.6	105	-32.9	106
RLLC0200	1/6/22 15:47	49.2	32.3	0	18.5	-2.4	86	-2.5	86
RLLC0201	1/6/22 15:53	46.4	32.7	0	20.9	-15	93	-13.7	94
RLLC0202	1/6/22 14:45	56	35.6	0	8.4	-20.3	90	-20.6	90
RLLC0203	1/6/22 14:40	58.6	41.3	0	0.1	-19.7	91	-23	92
RLLC0204	1/6/22 14:36	55.1	36.6	0	8.3	-1.2	100	-1.4	101
RLLC0205	1/6/22 14:19	22.6	30.2	0	47.2	-1.3	110	-1	110
RLLC0206	1/6/22 14:02	48	37.6	0	14.4	-5.4	95	-5.3	95
RLLC0209	1/6/22 14:09	39.5	33.9	0	26.6	-1.6	97	-1.5	97
RLLC0210	1/6/22 14:24	21.5	25.9	0	52.6	-1.8	109	-1.1	109
RLLC0212	1/25/22 12:25	59.7	40.2	0	0.1	-22.7	98	-26.9	98
RLLC0214	1/5/22 13:23	45.6	38	0	16.4	-5.1	98	-4	98
RLLC0215	1/5/22 13:16	57.8	38.1	0	4.1	-44.5	93	-44.5	93
RLLC0217	1/3/22 14:26	53.7	35.7	0	10.6	-8.2	92	-8.2	92
RLLC0219	1/25/22 16:38	60.9	29.9	1.5	7.7	0.1	74	1	74
RLLC0221	1/6/22 14:59	61.5	35.8	0	2.7	-26.6	93	-27.4	94
RLLC0222	1/5/22 13:10	50.3	41	0	8.7	-20.1	105	-19.8	105
RLLC0223	1/3/22 15:39	55.2	38.4	0	6.4	-4	104	-4.5	105
RLLC0224	1/6/22 15:59	55.9	38.3	0	5.8	-3.4	104	-3.6	104
RLLC0225	1/6/22 16:28	50.2	32.9	0	16.9	-0.2	76	-0.2	76
RLLC0226	1/25/22 12:19	61	38.9	0	0.1	-23.6	91	-27.4	91
RLLC0227	1/25/22 11:33	54.6	33.9	0	11.5	-3.3	81	-3.2	81
RLLC0228	1/6/22 15:08	59.2	33	0	7.8	-2	77	-2.1	78
RLLC0229	1/6/22 15:42	34.2	27.5	0	38.3	-3.4	97	-2.5	96
RLLC0230	1/5/22 13:01	50.3	40.8	0	8.9	-4.4	111	-4.4	111
RLLC0231	1/24/22 17:15	48.5	35	0.2	16.3	-4.5	94	-4.2	94
RLLC0232	1/24/22 17:21	58.5	38.1	0	3.4	-2.5	93	-2.7	93
RLLC0233	1/25/22 14:59	40.7	32.7	0	26.6	-1.2	104	-0.9	104
RLLC0234	1/5/22 15:33	60.1	39.8	0	0.1	-11.3	111	-12.5	112
RLLC0235	1/5/22 15:39	48.3	36.1	0	15.6	-1.9	109	-1.7	109
RLLC0236	1/5/22 16:21	58	38.6	0	3.4	-2	100	-2	100
RLLC0237	1/27/22 15:17	59.4	38.8	0	1.8	-6.3	94	-6.5	95
RLLC0238	1/25/22 14:37	53.7	42.3	0	4	-1.6	109	-1.6	109
RLLC0239	1/25/22 15:09	46.8	35.3	0	17.9	-1.1	94	-0.9	94
RLLC0240	1/25/22 15:03	39.3	31.9	0	28.8	-1	99	-0.8	100
RLLC0241	1/27/22 15:10	60.1	39.8	0	0.1	-14	105	-14.1	105
RLLC0242	1/25/22 14:06	58.4	41.5	0	0.1	-7.7	109	-8.6	109
RLLC0243	1/25/22 12:10	40.6	36.9	0	22.5	-2.1	114	-1.9	114
RLLC0244	1/25/22 12:05	52.5	39	0	8.5	-1.6	109	-1.5	110
RLLC0245	1/3/22 14:17	44.7	37.7	0	17.6	-1.3	105	-1.2	105
RLLC0246	1/5/22 13:44	56.7	35.4	0	7.9	-48.2	92	-48.4	92
RLLC0247	1/3/22 15:28	51.4	39.2	0	9.4	-1.6	96	-1.5	96
RLLC0248	1/25/22 15:47	59.3	40.6	0	0.1	-1	104	-1.1	104
RLLC0249	1/21/22 14:49	57.4	41	0	1.6	-1.1	110	-1.2	110
RLLC0250	1/20/22 16:28	57.5	42.1	0	0.4	0.7	110	-0.7	110
RLLC0251	1/20/22 16:17	55.9	42.4	0	1.7	-0.4	108	-0.5	109
RLLC0252	1/25/22 14:20	56.8	43.1	0	0.1	-2.3	101	-2.6	102
RLLC0253	1/3/22 14:48	53.7	43	0	3.3	-3	78	-3.3	74
RLLC0254	1/25/22 14:28	57	42.9	0	0.1	-1.3	104	-1.4	104

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Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/3/22 15:50	46.7	51.4	0	1.9	-2	100	-2.1	100
RLHC0156	1/7/22 15:38	19.1	18.4	4	58.5	-4.6	103	-0.5	102
RLLC0255	1/25/22 13:59	54.2	45.7	0	0.1	-2.9	106	-3.1	106
RLLC0256	1/25/22 13:55	54.6	45.3	0	0.1	-2.1	103	-2.5	103
RLLC0257	1/7/22 16:31	55.8	39.4	0	4.8	-5.5	67	-6.1	67
RLLC0258	1/7/22 15:59	49.7	38	0	12.3	1.2	65	-0.1	65
RLLC0259	1/7/22 16:04	55.5	38.7	0	5.8	-0.5	79	-0.8	80
RLLC0260	1/6/22 13:28	51.1	38	0	10.9	-2.7	99	-2.7	99
RLLC0261	1/6/22 13:23	57.8	40.1	0	2.1	-3	101	-3.2	101
RLLC0262	1/7/22 16:54	54.2	35.6	0	10.2	2.8	85	-0.2	87
RLLC0263	1/21/22 14:43	49.4	46	0	4.6	-1.1	108	-1.1	108
RLLC0264	1/27/22 15:27	51.8	44.6	0	3.6	-2.1	111	-2.2	111
RLLC0265	1/5/22 13:51	36.6	60	0	3.4	-1.3	96	-1.4	96
RLLC0266	1/5/22 13:39	42.8	42.6	0	14.6	-10.3	97	-9.1	97
RLLC0267	1/5/22 13:34	33.9	39.9	0	26.2	-1.4	94	-1.2	94
RLLC0268	1/5/22 13:29	42.6	42.9	0	14.5	-5.7	97	-5.2	97
RLLC0269	1/5/22 13:56	37	45.1	0	17.9	-1.6	103	-1.4	104
RLLC0270	1/5/22 14:01	36.5	58.4	0	5.1	-1.4	103	-1.4	103
RLLC0271	1/5/22 15:15	56.1	37.4	0	6.5	-12.1	100	-12.1	100
RLLC0272	1/13/22 16:37	0	0.2	20.4	79.4	-23.1	68	-23.6	68
RLLC0272	1/13/22 16:39	0	0.1	20.4	79.5	-22.9	68	-22.9	68
RLLC0273	1/3/22 16:29	46.5	34.3	0	19.2	-9.9	110	-9.3	110
RLLC0274	1/21/22 15:48	49.6	42.6	0	7.8	-0.6	114	-0.6	115

There are 130 total collectors; 123 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

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Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	2/3/22 14:34	52.8	44.7	0	2.5	-2.3	100	-2.4	100
RLHC0153	2/9/22 16:04	50.5	43.6	0	5.9	-1.9	100	-1.9	100
RLHC0156	2/9/22 15:22	35.3	23.9	2.2	38.6	-0.8	101	-0.5	101
RLI00003	2/8/22 17:20	56.3	38.7	0	5	-2.5	76	-2.7	76
RLI00008	2/8/22 13:48	54.3	30.7	1.8	13.2	-28.6	74	-28.6	74
RLI00016	2/3/22 16:34	41.5	26.5	0.1	31.9	-45.4	71	-43.4	71
RLI00017	2/3/22 15:32	59.5	34.3	0.3	5.9	-22.2	74	-23.2	74
RLI00018	2/3/22 15:26	51.6	29.1	2.9	16.4	-30.6	70	-30.9	70
RLI00019	2/3/22 15:16	51.7	32.6	0.6	15.1	-33.2	59	-33.2	59
RLI00034	2/8/22 17:03	59.4	38.4	0	2.2	-22	80	-22.5	80
RLI00035	2/8/22 16:36	58.9	37.4	0	3.7	-33.3	77	-33.6	77
RLI00045	2/8/22 16:44	42	30.5	0	27.5	-3.1	78	-3	79
RLI00047	2/8/22 16:50	43.8	31.9	0	24.3	-3.4	81	-3.4	81
RLI00065	2/7/22 13:36	58.5	41	0	0.5	-38.7	104	-40.4	105
RLI00083	2/4/22 13:14	62.4	37.5	0	0.1	-4.1	86	-4.1	86
RLI00095	2/4/22 13:06	45.9	33.1	0	21	-2.7	95	-2.5	95
RLI00132	2/8/22 16:23	57.8	35.6	0	6.6	-34.1	97	-34.2	97
RLI00134	2/8/22 13:25	53.7	40	0	6.3	-15.4	115	-15.7	115
RLI00135	2/10/22 15:41	35.4	37	0	27.6	-4.1	114	-3	114
RLI00137	2/17/22 14:12	58.9	31.9	1.9	7.3	-23.1	85	-21.7	85
RLI00140	2/21/22 12:57	30.9	69	0	0.1	-21.7	64	-24	65
RLI00141	2/9/22 18:40	61.2	34.4	0	4.4	-10.8	89	-11.1	89
RLI00142	2/21/22 13:01	56.2	43.7	0	0.1	-34.8	72	-35.6	73
RLI00220	2/4/22 12:54	51.1	37.7	0.5	10.7	-1.2	49	-1.2	50
RLI0100C	2/8/22 17:11	60.4	37.5	0	2.1	-28	82	-27.9	82
RLI0102C	2/9/22 14:02	61.8	38.1	0	0.1	-46.2	91	-46.3	91
RLI0103C	2/10/22 15:33	58.4	40.4	0	1.2	-30.3	104	-34.5	104
RLI0105C	2/10/22 14:50	36.9	37.4	1.2	24.5	-11.9	94	-10.7	96
RLI0106C	2/10/22 14:41	42.7	42.4	0.8	14.1	-18.8	112	-17.6	112
RLI0107C	2/10/22 11:53	45.4	40.3	1.6	12.7	-45.5	110	-45	110
RLI0114A	2/8/22 14:34	67.2	32.7	0	0.1	0.9	85	0.7	86
RLI0114A	2/8/22 14:51	67.4	32.5	0	0.1	0.6	85	0.8	85
RLI0115E	2/8/22 12:52	61.4	35.8	0.4	2.4	-47	91	-46	93
RLI0116E	2/15/22 13:50	63.4	36.3	0.1	0.2	-29.7	61	-30.7	62
RLI0117D	2/7/22 15:51	45.2	27.9	4.9	22	-17.8	77	-17.8	77
RLI0124G	2/4/22 13:51	60.8	37.2	0	2	-17.4	86	-18.5	87
RLI0126C	2/9/22 14:50	55.9	22.9	3.5	17.7	-39.2	95	-36.7	95
RLI0127B	2/8/22 14:10	55.8	35.5	0	8.7	-21.4	104	-21.5	104
RLI0128A	2/10/22 14:34	42.5	42.1	0	15.4	-6.8	113	-6.5	113
RLI0129E	2/9/22 15:15	67	30.9	0.2	1.9	-21.4	74	-23.4	75
RLI0130E	2/9/22 15:30	62.2	32	0	5.8	-10.2	78	-10.3	78
RLIHC101	2/4/22 14:13	59.4	37.6	0	3	-43.7	101	-43.3	101
RLIHC102	2/4/22 14:08	59.9	38.8	0	1.3	-25.1	99	-26	99
RLIHC107	2/15/22 13:15	35.3	45	1.2	18.5	-47.9	63	-47.8	63
RLLC0176	2/8/22 16:16	41.3	32.9	0	25.8	-2.2	107	-2.1	107
RLLC0177	2/10/22 16:01	50.1	38.1	0.3	11.5	-29.6	107	-29.7	107
RLLC0179	2/4/22 13:37	43.6	26.1	3	27.3	-52.4	58	-52.4	61
RLLC0180	2/14/22 14:21	54.7	40.1	0	5.2	-22.3	106	-21.5	107
RLLC0181	2/14/22 14:16	61.4	38.5	0	0.1	-5.8	104	-6.2	105
RLLC0183	2/8/22 14:15	38.2	29.1	0	32.7	-4.6	72	-4.6	72
RLLC0184	2/9/22 13:33	61.8	37.8	0	0.4	-8	98	-8.2	98
RLLC0185	2/8/22 13:21	27.1	27.4	2.7	42.8	-5.1	122	-3	123
RLLC0186	2/14/22 14:38	53.8	40.7	0	5.5	-19	100	-19.2	100
RLLC0187	2/9/22 13:43	58.7	38.3	0	3	-47.5	103	-47.6	104
RLLC0188	2/14/22 14:45	56	41.4	0	2.6	-22.7	105	-23	106
RLLC0189	2/14/22 15:02	48.6	40.7	0	10.7	-1.8	114	-1.8	114

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Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	2/3/22 14:34	52.8	44.7	0	2.5	-2.3	100	-2.4	100
RLHC0153	2/9/22 16:04	50.5	43.6	0	5.9	-1.9	100	-1.9	100
RLLC0190	2/10/22 15:16	43.6	43.4	0	13	-1.4	111	-1.2	111
RLLC0191	2/4/22 13:45	56.3	33.9	0	9.8	-1.6	91	-1.5	91
RLLC0193	2/3/22 14:57	63.4	36.5	0	0.1	-2.6	103	-2.9	102
RLLC0194	2/10/22 14:28	56.6	43.3	0	0.1	-8.5	100	-8.8	101
RLLC0198	2/17/22 16:29	38.7	32.2	0	29.1	-0.2	82	-0.2	82
RLLC0199	2/10/22 12:44	57.9	37.7	0	4.4	-12.4	110	-13.4	110
RLLC0200	2/10/22 12:54	45	30.7	0	24.3	-1.1	88	-1	88
RLLC0201	2/10/22 12:59	45.1	33.2	0	21.7	-1.1	101	-1.1	102
RLLC0202	2/10/22 12:20	59.1	36.2	0	4.7	-8.5	87	-9.3	89
RLLC0203	2/10/22 12:14	56.7	36.4	0	6.9	-28.1	94	-30.1	95
RLLC0204	2/10/22 12:10	52.1	36	0	11.9	-1.3	102	-1.3	102
RLLC0205	2/10/22 12:00	22.4	28.7	0	48.9	-0.8	109	-0.4	109
RLLC0206	2/9/22 14:25	49.3	37.1	0.3	13.3	-4	71	-3.9	70
RLLC0209	2/9/22 14:19	45	35.1	0	19.9	-0.9	98	-0.9	98
RLLC0210	2/10/22 12:06	22.1	26.1	0	51.8	-0.7	108	-0.4	108
RLLC0212	2/4/22 14:40	60.9	39	0	0.1	-32.3	97	-36.8	97
RLLC0214	2/4/22 14:52	55.4	40.6	0	4	-4.6	99	-4.7	99
RLLC0215	2/15/22 13:27	62	37.9	0	0.1	-46.7	92	-47.5	92
RLLC0217	2/4/22 15:28	56.4	35.5	0	8.1	-8.2	93	-8.4	93
RLLC0219	2/8/22 14:41	67.4	32.5	0	0.1	0.5	76	1.1	76
RLLC0219	2/8/22 14:56	67.5	32.4	0	0.1	0.6	75	0.7	75
RLLC0221	2/10/22 12:25	53.7	34.2	0	12.1	-14.8	97	-14.9	97
RLLC0222	2/15/22 13:21	55.6	41.9	0	2.5	-20.6	106	-20.5	106
RLLC0223	2/9/22 15:49	56.7	38.3	0	5	-3.5	105	-3.6	105
RLLC0224	2/9/22 15:53	56.3	37.8	0	5.9	-2.7	103	-2.8	103
RLLC0225	2/10/22 13:05	51.2	32.8	0	16	-1.1	84	-1	84
RLLC0226	2/4/22 14:47	62.3	37.6	0	0.1	-38.9	90	-45.4	91
RLLC0227	2/4/22 13:00	56.3	33.7	0	10	-3.7	82	-3.9	83
RLLC0228	2/10/22 12:31	59.3	34.3	0	6.4	-1.1	84	-1.1	85
RLLC0229	2/10/22 12:49	39.9	30.8	0	29.3	-0.7	95	-0.6	94
RLLC0230	2/15/22 13:10	55.2	42.3	0	2.5	-4.9	112	-5.2	112
RLLC0231	2/8/22 13:05	52.6	36.2	0	11.2	-4.2	94	-4.2	94
RLLC0232	2/8/22 13:10	53.4	36.9	0	9.7	-3.5	94	-3.5	95
RLLC0233	2/7/22 16:02	40.5	32.9	0	26.6	-0.9	104	-0.7	104
RLLC0234	2/7/22 13:22	53	36.6	0	10.4	-11.4	112	-11.4	112
RLLC0235	2/7/22 13:52	45.1	35.1	0	19.8	-2	109	-2	109
RLLC0236	2/7/22 13:58	55.7	38.5	0	5.8	-1.9	100	-2	100
RLLC0237	2/4/22 16:22	60	38.6	0	1.4	-6.6	92	-8.3	92
RLLC0238	2/8/22 12:39	52	41.2	0	6.8	-1.9	109	-1.9	109
RLLC0239	2/7/22 16:13	41	33.8	0	25.2	-1	94	-1	94
RLLC0240	2/7/22 16:08	40.7	32.5	0	26.8	-0.8	100	-0.6	100
RLLC0241	2/7/22 13:29	57.3	39.4	0	3.3	-15.4	105	-15.9	105
RLLC0242	2/7/22 13:41	56.3	40.9	0	2.8	-9.7	109	-10.5	109
RLLC0243	2/4/22 14:28	40.1	36.3	0	23.6	-1.4	114	-1.3	114
RLLC0244	2/4/22 14:24	52.7	38.8	0	8.5	-1.5	110	-1.5	110
RLLC0245	2/4/22 14:20	53	40.3	0	6.7	-1	107	-1.1	107
RLLC0246	2/4/22 15:13	63.8	36.1	0	0.1	-49.7	85	-49.9	85
RLLC0247	2/9/22 15:36	55.7	39.6	0	4.7	-1	97	-1	97
RLLC0248	2/9/22 15:41	59.1	40.8	0	0.1	-1.3	104	-1.6	104
RLLC0249	2/14/22 14:29	43.3	37.4	0	19.3	-1.3	110	-1.2	110
RLLC0250	2/10/22 16:12	32.3	31.2	1.5	35	-6.3	109	-4	109
RLLC0251	2/10/22 16:06	30.3	32.5	0	37.2	-6.7	109	-4.2	110
RLLC0252	2/7/22 13:15	56.8	43.1	0	0.1	-2.8	102	-3.1	102
RLLC0253	2/7/22 13:08	56.7	43.2	0	0.1	-3.4	103	-3.5	103

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 3, 4, 7, 8, 9, 10, 14, 15, 17, and 21, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	2/3/22 14:34	52.8	44.7	0	2.5	-2.3	100	-2.4	100
RLHC0153	2/9/22 16:04	50.5	43.6	0	5.9	-1.9	100	-1.9	100
RLLC0254	2/7/22 13:04	55.3	42.8	0	1.9	-1.7	104	-1.8	104
RLLC0255	2/4/22 15:41	56.8	43.1	0	0.1	-2.9	106	-3.4	106
RLLC0256	2/4/22 15:37	54.8	45.1	0	0.1	-2.5	103	-2.9	104
RLLC0257	2/9/22 14:57	55.6	38.5	0	5.9	-9.2	68	-9.3	68
RLLC0258	2/9/22 15:02	52.5	37.5	0	10	-3.1	69	-3.1	69
RLLC0259	2/9/22 15:06	57.8	39	0	3.2	-4.2	81	-4.4	81
RLLC0260	2/9/22 14:08	50.8	38.2	0	11	-2.3	100	-2.3	100
RLLC0261	2/9/22 14:13	55.3	38.8	0.1	5.8	-2.8	102	-2.9	102
RLLC0262	2/9/22 13:48	46.1	34	0	19.9	-3.3	87	-3	87
RLLC0263	2/14/22 14:51	51.2	45.5	0	3.3	-1.2	109	-1.3	109
RLLC0264	2/14/22 15:08	51.5	44.6	0	3.9	-2.4	111	-2.5	111
RLLC0265	2/4/22 15:08	49.9	50	0	0.1	-1.2	96	-1.4	96
RLLC0266	2/4/22 15:04	52.1	45.2	0	2.7	-8.9	98	-9.1	98
RLLC0267	2/4/22 14:57	44.9	43.5	0	11.6	-0.8	94	-0.7	94
RLLC0268	2/4/22 15:00	50.3	44.6	0	5.1	-4.7	97	-4.7	98
RLLC0269	2/9/22 19:05	42.9	45.3	0.1	11.7	-0.5	104	-0.4	104
RLLC0270	2/9/22 18:56	49.4	49.2	0	1.4	-0.9	105	-1	105
RLLC0271	2/4/22 13:20	58.4	37.1	0	4.5	-14.7	100	-14.7	100
RLLC0272	2/21/22 12:51	33.9	65.2	0.8	0.1	-34.3	55	-36.1	55
RLLC0273	2/8/22 12:58	56.4	36.4	0	7.2	-8.7	111	-8.8	111
RLLC0274	2/10/22 14:54	45	41.2	0	13.8	-0.7	115	-0.6	115

There are 130 total collectors; 123 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 4, 8, 9, 10, 11, and 22, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/9/22 16:09	49.5	41.1	0	9.4	-2.2	100	-2.1	100
RLHC0156	3/9/22 15:28	67	32.9	0	0.1	-0.3	92	-1	94
RLI00003	3/9/22 14:37	67.3	31.1	0.3	1.3	-16.1	72	-27.1	74
RLI00008	3/8/22 15:56	45.1	26.3	4	24.6	-27.8	79	-27.8	80
RLI00016	3/8/22 15:30	51.4	27.5	0.4	20.7	-3.7	81	-3.7	81
RLI00017	3/8/22 15:22	45.2	29.9	0.4	24.5	-15.3	78	-13.6	79
RLI00018	3/8/22 15:16	33	25.3	1.9	39.8	-26	81	-25.7	82
RLI00019	3/8/22 15:04	56.5	31.3	1.7	10.5	-27.7	76	-27.7	76
RLI00034	3/9/22 14:12	59.2	37.8	0.3	2.7	-18.2	80	-18.2	80
RLI00035	3/9/22 13:54	57.5	37.3	0	5.2	-33.3	77	-35.3	77
RLI00045	3/9/22 13:36	39.1	30.2	0	30.7	-3.2	76	-3.1	76
RLI00047	3/9/22 13:45	43.2	31.5	0	25.3	-2.9	80	-2.9	80
RLI00065	3/4/22 13:01	58	41.9	0	0.1	-42.6	100	-45.2	101
RLI00083	3/4/22 12:06	62.4	37.4	0	0.2	-0.6	86	-0.7	86
RLI00095	3/4/22 11:37	46.1	32.9	0	21	-2.2	95	-2.1	95
RLI00132	3/8/22 16:51	53.6	34.2	0.6	11.6	-31.7	98	-30.8	99
RLI00134	3/8/22 16:07	50.2	37.8	0.1	11.9	-14.4	114	-14.3	115
RLI00135	3/10/22 14:18	32.8	34.7	0	32.5	-3.7	115	-2	115
RLI00137	3/8/22 13:28	54.6	29.6	2.9	12.9	-7.1	86	-4.9	85
RLI00140	3/4/22 13:31	37	62.9	0	0.1	-21.5	75	-26.3	76
RLI00142	3/4/22 13:35	53.3	46.6	0	0.1	-36.3	78	-37.7	78
RLI00220	3/4/22 11:30	49.8	37.5	0.3	12.4	-2.7	55	-2.6	54
RLI0100C	3/9/22 14:29	57.9	35.6	0.9	5.6	-23.1	76	-24.7	76
RLI0102C	3/11/22 11:58	57.4	34.6	1.7	6.3	-39.9	92	-45.3	92
RLI0103C	3/10/22 14:28	50	35.6	2	12.4	-35.7	104	-35	104
RLI0105C	3/10/22 13:46	35.1	36.1	1.5	27.3	-12.8	86	-10.5	87
RLI0106C	3/10/22 13:33	35.4	35.6	3.4	25.6	-18	112	-13.9	113
RLI0107C	3/9/22 16:31	44.8	38.8	0.7	15.7	-46.9	111	-45.9	112
RLI0114A	3/22/22 13:06	66.6	33.3	0	0.1	-0.4	93	-0.1	93
RLI0115E	3/8/22 14:08	51.6	30.9	2.4	15.1	-44.9	92	-40.8	92
RLI0116E	3/8/22 13:53	61.2	34.7	0.6	3.5	-23	74	-26.4	75
RLI0117D	3/4/22 13:19	46.8	29.9	4.3	19	-17.2	69	-17.2	69
RLI0124G	3/4/22 14:03	62.1	37.8	0	0.1	-21.3	86	-21.8	87
RLI0126C	3/8/22 17:18	45.4	23	4.9	26.7	-43.2	94	-42.8	93
RLI0127B	3/8/22 16:29	51.6	34.6	0	13.8	-21.7	105	-21.6	105
RLI0128A	3/10/22 13:27	37	37.8	0.6	24.6	-8.3	113	-8	114
RLI0129E	3/9/22 15:08	67.1	30.9	0.3	1.7	-22.2	76	-27.3	76
RLI0130E	3/9/22 15:35	54.2	30.9	0	14.9	-8	77	-7.9	77
RLIHC101	3/4/22 14:59	60	38	0	2	-43.7	102	-43.6	102
RLIHC102	3/4/22 14:54	56.4	38	0	5.6	-26	100	-26.2	100
RLIHC107	3/4/22 17:13	30.6	40.3	2.4	26.7	-48.2	66	-47.9	66
RLLC0176	3/8/22 16:41	48.8	35.2	0.3	15.7	-24.8	104	-23.9	102
RLLC0177	3/10/22 14:58	39.9	30.8	3.8	25.5	-31.1	107	-30.5	108
RLLC0179	3/4/22 11:52	42	29	0	29	-26.1	79	-14.1	79
RLLC0180	3/10/22 14:05	48.2	37.2	0.4	14.2	-21.8	107	-21.5	107
RLLC0181	3/10/22 13:53	58.6	36.9	0.1	4.4	-6.8	105	-7.2	105
RLLC0183	3/8/22 16:23	30.3	29	0	40.7	-4.2	87	-3.7	87
RLLC0184	3/8/22 16:10	53.1	35.6	0	11.3	-8.2	98	-8.2	99
RLLC0185	3/8/22 16:16	25.7	31.6	0	42.7	-1.7	113	-1.2	116
RLLC0186	3/10/22 15:27	47	36.8	0.6	15.6	-17.9	100	-16.6	101
RLLC0187	3/8/22 16:59	50.4	35.6	0	14	-46.6	105	-46.3	105
RLLC0188	3/10/22 15:33	47.9	37.6	0.8	13.7	-23.3	106	-22.5	106
RLLC0189	3/10/22 15:46	44.2	37.7	0.1	18	-1.4	115	-1.2	115
RLLC0190	3/10/22 14:12	32.1	39.1	0	28.8	-0.6	111	-0.5	111
RLLC0191	3/4/22 13:59	56.2	35	0.2	8.6	-0.7	90	-0.7	91
RLLC0193	3/8/22 15:39	60.8	37.5	0	1.7	-0.1	86	-0.1	86

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 4, 8, 9, 10, 11, and 22, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/9/22 16:09	49.5	41.1	0	9.4	-2.2	100	-2.1	100
RLHC0156	3/9/22 15:28	67	32.9	0	0.1	-0.3	92	-1	94
RLLC0194	3/10/22 13:22	52.8	41.4	0.4	5.4	-8.4	101	-8.7	101
RLLC0198	3/10/22 12:12	61.4	36.3	0.6	1.7	-12.2	81	-15.6	83
RLLC0199	3/10/22 12:18	51	35.6	0.5	12.9	-9.4	112	-9.4	112
RLLC0200	3/10/22 12:29	43.1	30	0.1	26.8	-0.7	86	-0.7	86
RLLC0201	3/10/22 12:34	43.2	31.8	0	25	-0.9	102	-0.8	102
RLLC0202	3/10/22 11:51	37.5	28.4	1.6	32.5	-10.7	91	-9.6	90
RLLC0203	3/10/22 11:44	37.1	27.7	3	32.2	-28.7	94	-11.6	92
RLLC0204	3/10/22 11:38	45.1	33.1	0.8	21	-1.5	103	-1.5	103
RLLC0205	3/10/22 11:26	22.3	26.7	1	50	-0.4	109	-0.2	108
RLLC0206	3/8/22 17:24	43.3	34.4	0.7	21.6	-3.4	82	-3.3	81
RLLC0209	3/8/22 17:27	37.8	32.5	0	29.7	-0.4	99	-0.3	99
RLLC0210	3/10/22 11:31	22.8	25.8	0.8	50.6	-0.4	107	-0.2	106
RLLC0212	3/4/22 15:56	57.5	38.4	0	4.1	-39	97	-39.9	97
RLLC0214	3/4/22 16:01	51.3	39.5	0	9.2	-5.7	99	-5.7	99
RLLC0215	3/4/22 17:26	62.2	37.6	0	0.2	-45.8	92	-48.4	93
RLLC0217	3/4/22 13:53	60.9	36.8	0	2.3	-7.7	94	-8.5	94
RLLC0219	3/22/22 12:57	66.5	33.4	0	0.1	-0.2	87	-0.1	88
RLLC0221	3/10/22 12:00	39.1	29.1	1.2	30.6	-14.2	98	-14.2	98
RLLC0222	3/4/22 17:18	53.9	42	0	4.1	-20.7	106	-20.6	107
RLLC0223	3/9/22 15:58	51.2	36.9	0	11.9	-3.6	105	-3.6	105
RLLC0224	3/9/22 16:02	51.4	36.5	0	12.1	-2.8	103	-2.8	103
RLLC0225	3/10/22 12:39	49.5	31.2	0.3	19	-0.7	83	-0.8	83
RLLC0226	3/4/22 15:51	62	37.1	0	0.9	-50	89	-49.8	89
RLLC0227	3/4/22 11:43	55.9	34.3	0	9.8	-3.4	81	-3.5	81
RLLC0228	3/10/22 12:06	55.6	33.7	0.1	10.6	-0.8	84	-0.7	84
RLLC0229	3/10/22 12:23	41.3	30.8	0.1	27.8	-0.4	88	-0.3	89
RLLC0230	3/4/22 17:08	52.7	41.8	0.2	5.3	-4.2	112	-4.2	112
RLLC0231	3/8/22 15:43	52.3	36	0	11.7	-3	94	-3	94
RLLC0232	3/8/22 15:48	48	34.2	0.1	17.7	-2.2	94	-1.7	94
RLLC0233	3/4/22 17:35	38.7	33.6	0	27.7	-0.9	104	-0.7	104
RLLC0234	3/4/22 12:19	59.2	40.7	0	0.1	-12.1	113	-13.2	114
RLLC0235	3/4/22 13:07	40.9	34.1	0	25	-2.3	110	-1.9	110
RLLC0236	3/4/22 13:11	52.2	38.1	0	9.7	-2.1	100	-2.2	100
RLLC0237	3/8/22 13:36	49.7	35.4	0.6	14.3	-8.8	93	-7.9	93
RLLC0238	3/10/22 16:40	47.1	37.1	0.5	15.3	-1.7	109	-1.6	109
RLLC0239	3/4/22 17:45	36.7	32.2	0	31.1	-1.1	93	-0.7	93
RLLC0240	3/4/22 17:40	38.6	32.5	0	28.9	-0.8	99	-0.5	99
RLLC0241	3/4/22 12:55	53.5	39	0	7.5	-15.8	104	-15.9	104
RLLC0242	3/4/22 12:48	52	40.4	0	7.6	-10.3	109	-10.2	110
RLLC0243	3/4/22 15:14	38.9	37.6	0	23.5	-4.3	115	-3.9	116
RLLC0244	3/4/22 15:10	38	35.1	0	26.9	-1.6	112	-1.3	112
RLLC0245	3/4/22 15:07	38.7	35.6	0	25.7	-1.2	108	-1	108
RLLC0247	3/9/22 15:43	49.7	38.1	0	12.2	-1.2	97	-1.1	97
RLLC0248	3/9/22 15:50	59.1	40.4	0	0.5	-1.9	104	-2	104
RLLC0249	3/10/22 15:20	43.4	36.5	0.1	20	-0.9	110	-0.7	111
RLLC0250	3/10/22 15:13	32.7	30	1.9	35.4	-3.8	111	-2.5	111
RLLC0251	3/10/22 15:06	30.5	30	1.7	37.8	-4	109	-2.1	110
RLLC0252	3/4/22 12:26	52.6	42.2	0	5.2	-3.4	103	-3.4	103
RLLC0253	3/4/22 12:34	53.8	42.7	0	3.5	-3.8	103	-4.1	103
RLLC0254	3/4/22 12:38	50.8	41.6	0	7.6	-2	104	-2	105
RLLC0255	3/4/22 13:43	56.5	43.4	0	0.1	-4	106	-4.4	107
RLLC0256	3/4/22 13:48	54.9	45	0	0.1	-3.4	104	-3.8	104
RLLC0257	3/9/22 14:52	39.3	30.2	3.3	27.2	-9.4	68	-6.1	68
RLLC0258	3/9/22 14:57	47.3	34.9	0	17.8	-2.6	69	-2.3	69

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 4, 8, 9, 10, 11, and 22, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/9/22 16:09	49.5	41.1	0	9.4	-2.2	100	-2.1	100
RLHC0156	3/9/22 15:28	67	32.9	0	0.1	-0.3	92	-1	94
RLLC0259	3/9/22 15:01	53.6	37.8	0	8.6	-4.4	81	-4.8	82
RLLC0260	3/8/22 17:37	44.6	36.5	0	18.9	-1.4	99	-1.1	99
RLLC0261	3/8/22 17:33	50.1	36.9	0	13	-2.3	103	-2	103
RLLC0262	3/8/22 17:03	42.3	31.8	0	25.9	-1.1	88	-0.8	89
RLLC0263	3/10/22 15:38	47.5	42.9	0	9.6	-1.3	109	-1.2	109
RLLC0264	3/10/22 13:59	46.1	42.7	0.1	11.1	-2.5	111	-2.3	112
RLLC0266	3/4/22 16:14	51.1	45.3	0	3.6	-8.6	98	-8.8	99
RLLC0267	3/4/22 16:06	43	42.8	0	14.2	-0.8	95	-0.7	95
RLLC0268	3/4/22 16:09	49.3	45.2	0	5.5	-4.9	98	-4.9	99
RLLC0269	3/4/22 17:30	45.4	47.3	0	7.3	-0.7	104	-0.9	104
RLLC0270	3/4/22 16:19	52.9	47	0	0.1	-1.2	105	-1.5	105
RLLC0271	3/4/22 11:59	54.7	36.8	0	8.5	-14.8	100	-14.8	100
RLLC0272	3/4/22 13:27	18.9	40.9	2.6	37.6	-30.1	58	-29.8	58
RLLC0273	3/8/22 14:12	52.3	35.6	0	12.1	-8.3	110	-8.3	111
RLLC0274	3/10/22 13:39	43.2	40.2	0	16.6	-0.8	115	-0.7	115

There are 130 total collectors; 123 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 1, 4, 5, 7, 8, and 12, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/5/22 16:32	46.8	40.1	0	13.1	-1.9	100	-1.7	100
RLHC0156	4/7/22 10:53	27.9	21.9	3.1	47.1	-0.5	101	-0.2	99
RLI00003	4/7/22 10:19	50.9	34.7	0.8	13.6	-22.5	73	-20.2	73
RLI00008	4/5/22 12:02	53.9	31.6	1.7	12.8	-28.1	68	-27.1	68
RLI00016	4/5/22 11:19	24.6	23.9	0.1	51.4	-35.9	69	-35.7	69
RLI00017	4/5/22 11:09	32.4	25.5	2.9	39.2	-22.1	69	-12.6	68
RLI00018	4/5/22 11:01	31.9	27.5	0.6	40	-28	69	-25.3	68
RLI00019	4/5/22 10:52	64	35.5	0.4	0.1	-23.8	56	-24.3	56
RLI00034	4/7/22 10:00	47.7	32.4	3.7	16.2	-18.4	80	-18	80
RLI00035	4/7/22 9:53	46.6	32.8	2.1	18.5	-33.1	76	-33.9	76
RLI00045	4/7/22 9:40	32.3	27.9	0.8	39	-3	73	-2.9	73
RLI00047	4/7/22 9:45	34.3	29.7	0.7	35.3	-3.6	79	-3.3	79
RLI00065	4/4/22 12:08	52.1	38.6	0	9.3	-42.5	104	-43.8	104
RLI00083	4/1/22 14:27	60.4	35.2	0.4	4	-7.7	90	-8.1	90
RLI00095	4/1/22 14:36	45.1	31.2	0	23.7	-1.4	96	-1.2	96
RLI00132	4/5/22 12:39	58.7	36.5	0	4.8	-35.4	96	-41.5	97
RLI00134	4/5/22 12:08	52.7	39.1	0	8.2	-17.4	114	-17.2	115
RLI00135	4/8/22 10:57	36.9	36.6	0	26.5	-2.2	113	-2	113
RLI00137	4/1/22 13:22	58	30.5	1.8	9.7	-15.8	88	-14.2	88
RLI00140	4/1/22 14:57	44.8	52.1	0	3.1	-21.6	91	-24	91
RLI00142	4/7/22 13:30	55.6	40.5	0.3	3.6	-35.7	88	-36.5	89
RLI00220	4/4/22 11:09	49	36.8	0.6	13.6	-2.8	60	-2.4	59
RLI0100C	4/7/22 14:19	46.5	28.2	2.9	22.4	-3.3	87	-3	87
RLI0102C	4/5/22 13:01	62.2	37.5	0	0.3	-46.5	92	-47.8	92
RLI0103C	4/8/22 11:04	58.9	41	0	0.1	-32.7	105	-34.1	105
RLI0105C	4/8/22 10:31	48.3	45.8	0.2	5.7	-9.3	80	-9.5	80
RLI0106C	4/8/22 10:19	41.7	40.9	1.5	15.9	-14.2	112	-13.6	112
RLI0107C	4/5/22 16:13	41	36.1	0.9	22	-47.1	111	-47	112
RLI0114A	4/4/22 14:15	66.9	32.4	0.2	0.5	-13.9	80	-15.9	80
RLI0115E	4/1/22 12:53	49.1	29.3	3	18.6	-45.4	79	-44.6	77
RLI0116E	4/8/22 13:35	61.6	36.7	0	1.7	-27.8	80	-30.4	81
RLI0117D	4/1/22 13:13	43.6	27.5	4.8	24.1	-25.5	79	-22	78
RLI0124G	4/1/22 13:41	61.8	36.9	0	1.3	-20.6	89	-21.6	89
RLI0126C	4/5/22 15:49	63.3	29	0.9	6.8	-45.7	94	-45.7	93
RLI0127B	4/5/22 12:21	49.2	34.6	0.2	16	-25.1	105	-24.7	105
RLI0128A	4/8/22 10:13	38.7	40	0	21.3	-10.1	114	-9.9	114
RLI0129E	4/7/22 10:45	46.7	27.8	2.5	23	-49.1	76	-42.9	76
RLI0130E	4/7/22 10:59	49.6	30.4	0.1	19.9	-6.7	77	-6.6	77
RLIHC101	4/1/22 13:52	60.3	37.1	0	2.6	-43.4	102	-43.8	102
RLIHC102	4/1/22 13:48	54.9	36.7	0.1	8.3	-27	102	-27.4	102
RLIHC107	4/4/22 13:10	28.9	39.2	0.7	31.2	-47.8	74	-46	73
RLLC0176	4/5/22 12:31	53	37	0	10	-34.4	87	-33.3	85
RLLC0177	4/8/22 11:18	53.9	39.5	0	6.6	-35.2	108	-35.4	108
RLLC0179	4/1/22 14:11	48	28	1	23	-1.7	83	-1.5	83
RLLC0180	4/8/22 10:46	53.1	39.3	0	7.6	-19.8	107	-20.9	108
RLLC0181	4/8/22 10:38	61.3	38.3	0	0.4	-7.6	105	-7.9	105
RLLC0183	4/5/22 12:26	29.4	29.2	0	41.4	-4.7	80	-4.3	79
RLLC0184	4/5/22 12:13	52.4	36.3	0	11.3	-13.6	98	-13.6	98
RLLC0185	4/8/22 14:14	27.7	31.4	0	40.9	-0.4	103	-0.3	102
RLLC0186	4/8/22 11:51	51.8	38.9	0	9.3	-17.3	102	-17.3	102
RLLC0187	4/5/22 12:48	51.5	35.8	0	12.7	-48.4	104	-48.4	104
RLLC0188	4/8/22 12:00	53.2	39.9	0	6.9	-25	106	-24.8	106
RLLC0189	4/8/22 12:07	45.1	38.9	0	16	-0.4	114	-0.4	115
RLLC0190	4/8/22 10:52	34	39.9	0	26.1	-0.5	110	-0.4	110
RLLC0191	4/1/22 13:35	62.5	37.2	0	0.3	-0.1	89	-0.2	88
RLLC0193	4/1/22 12:42	60.8	39	0	0.2	-19.6	103	-20.8	105

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 1, 4, 5, 7, 8, and 12, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/5/22 16:32	46.8	40.1	0	13.1	-1.9	100	-1.7	100
RLHC0156	4/7/22 10:53	27.9	21.9	3.1	47.1	-0.5	101	-0.2	99
RLLC0194	4/8/22 10:07	55.3	43.2	0	1.5	-9	101	-9.6	101
RLLC0195	4/12/22 15:53	52.4	47.5	0	0.1	-42.6	95	-42.5	95
RLLC0196	4/12/22 15:47	63.1	36.8	0	0.1	-48.3	98	-48.3	99
RLLC0198	4/7/22 11:52	61.9	38	0	0.1	-6	102	-7	103
RLLC0199	4/7/22 11:56	50.6	35.9	0	13.5	-6.8	112	-6.7	112
RLLC0200	4/7/22 12:05	41.1	30	0	28.9	-0.4	90	-0.3	90
RLLC0201	4/7/22 11:23	41.7	32.3	0	26	-0.7	101	-0.6	101
RLLC0202	4/7/22 11:37	41.2	31	0	27.8	-8.7	92	-7.8	91
RLLC0203	4/5/22 16:18	47.8	32.2	0	20	-15.8	95	-11.5	94
RLLC0204	4/5/22 16:22	46.7	34	0	19.3	-1	103	-0.8	103
RLLC0205	4/8/22 13:57	29.1	29.3	0	41.6	0.2	107	-0.1	108
RLLC0206	4/5/22 16:00	44	33.7	1	21.3	-3.1	80	-2.9	79
RLLC0209	4/5/22 16:07	41.5	32.9	0	25.6	-0.3	97	-0.2	98
RLLC0210	4/8/22 13:52	26.6	27.5	0	45.9	0	107	-0.1	108
RLLC0212	4/4/22 13:41	52.5	37	0	10.5	-40.4	96	-40.3	97
RLLC0214	4/4/22 13:36	49	37.5	0	13.5	-9.3	99	-9	99
RLLC0215	4/4/22 13:24	60.1	37.2	0	2.7	-46.5	94	-47	95
RLLC0217	4/1/22 14:47	62	36	0	2	-8.9	94	-10.9	94
RLLC0219	4/1/22 12:24	53.5	34.6	1.9	10	-1.8	102	-1.4	102
RLLC0221	4/7/22 11:43	39.4	30.2	0	30.4	-13.2	98	-13.1	98
RLLC0222	4/8/22 13:42	50	39.2	0	10.8	-22.2	107	-22.2	108
RLLC0223	4/7/22 11:15	47.8	36.3	0	15.9	-3.8	104	-3.6	105
RLLC0224	4/7/22 11:18	46.8	35.6	0	17.6	-3.4	103	-3.1	104
RLLC0225	4/7/22 11:27	47.8	31.8	0	20.4	-0.5	85	-0.5	85
RLLC0226	4/4/22 13:46	55	35.6	0	9.4	-49.4	89	-49	90
RLLC0227	4/1/22 14:41	54.7	32.9	0	12.4	-1.9	83	-1.9	83
RLLC0228	4/7/22 11:47	45.5	32.4	0	22.1	-0.5	86	-0.4	86
RLLC0229	4/7/22 12:00	35.4	29.7	0	34.9	-0.1	94	-0.1	94
RLLC0230	4/4/22 12:56	49.8	40.6	0	9.6	-4.3	112	-4.3	112
RLLC0231	4/5/22 11:39	52.5	37.1	0	10.4	-3.1	94	-3.1	94
RLLC0232	4/4/22 13:04	49.8	40.2	0	10	-22.3	107	-22.4	107
RLLC0232	4/5/22 11:48	47.1	34.9	0	18	-2.3	92	-2.2	92
RLLC0233	4/4/22 12:47	36.1	32.5	0	31.4	-1.1	105	-0.9	105
RLLC0234	4/4/22 11:52	55.7	38.4	0	5.9	-13.7	113	-14	113
RLLC0235	4/4/22 12:13	41.6	33.8	0	24.6	-1.5	109	-1.3	109
RLLC0236	4/4/22 12:27	44.8	35.2	0	20	-2.2	100	-2	100
RLLC0237	4/1/22 13:27	50.6	36	0	13.4	-8.4	92	-8.4	92
RLLC0238	4/8/22 12:21	49.1	38.3	0	12.6	-1.7	107	-1.6	108
RLLC0239	4/4/22 12:37	33.6	31.1	0	35.3	-0.7	93	-0.5	92
RLLC0240	4/4/22 12:44	34.6	31.3	0	34.1	-1.1	99	-0.6	99
RLLC0241	4/4/22 12:02	45.5	35.5	0	19	-16.3	104	-15.2	104
RLLC0242	4/4/22 11:57	45.1	37.5	0	17.4	-10.2	109	-9.5	109
RLLC0243	4/1/22 14:05	37.3	53.6	0	9.1	-1.4	116	-1.4	117
RLLC0244	4/1/22 14:02	37.1	33.4	0	29.5	-1	112	-0.8	112
RLLC0245	4/1/22 13:59	37.1	34.1	0	28.8	-0.6	108	-0.5	108
RLLC0247	4/7/22 11:05	46.9	37.5	0	15.6	-1.4	97	-1.3	98
RLLC0248	4/7/22 11:09	57	40.3	0	2.7	-2.2	104	-2.4	104
RLLC0249	4/8/22 11:46	46	38.2	0	15.8	-1.2	112	-1.3	112
RLLC0250	4/8/22 11:29	38.9	33.9	0.9	26.3	-2.4	111	-2.1	112
RLLC0251	4/8/22 11:23	36.9	33.7	1	28.4	-2.2	109	-1.4	109
RLLC0252	4/4/22 11:33	45.7	39.4	0	14.9	-3.7	103	-3.4	103
RLLC0253	4/4/22 11:29	49.3	40.7	0	10	-4.4	104	-4.3	104
RLLC0254	4/4/22 11:26	45.2	38.8	0	16	-2.2	104	-1.9	105
RLLC0255	4/1/22 15:12	53.3	40.5	0	6.2	-4.2	106	-4.3	106

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 1, 4, 5, 7, 8, and 12, 2022

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/5/22 16:32	46.8	40.1	0	13.1	-1.9	100	-1.7	100
RLHC0156	4/7/22 10:53	27.9	21.9	3.1	47.1	-0.5	101	-0.2	99
RLLC0256	4/1/22 15:08	56.2	42.2	0	1.6	-3.4	104	-3.8	104
RLLC0257	4/7/22 14:09	39.2	29.9	2.7	28.2	-0.1	83	-0.2	85
RLLC0258	4/7/22 10:35	48.3	34.3	0.1	17.3	-1.7	69	-1.3	69
RLLC0259	4/7/22 10:39	49.8	37.9	0	12.3	-5.1	82	-5	82
RLLC0260	4/5/22 15:36	45.2	35.8	0	19	-0.9	98	-0.7	98
RLLC0261	4/5/22 15:42	50.6	36.4	0	13	-2.2	102	-2.1	102
RLLC0262	4/5/22 12:53	48.3	33.9	0	17.8	-0.5	87	-0.4	87
RLLC0263	4/8/22 11:56	50.4	43.4	0	6.2	-1.4	110	-1.4	110
RLLC0264	4/8/22 12:12	47.1	43.5	0	9.4	-2.3	111	-2.2	112
RLLC0266	4/4/22 13:55	53.5	43.7	0	2.8	-8.6	98	-8.8	98
RLLC0267	4/4/22 13:59	44	43.6	0	12.4	-4.6	96	-4.5	96
RLLC0268	4/4/22 14:03	49.2	43.4	0	7.4	-5.3	100	-5.3	100
RLLC0269	4/4/22 13:20	42.6	44.2	0	13.2	-0.7	104	-0.6	105
RLLC0270	4/4/22 13:29	55.1	44.4	0	0.5	-1.7	106	-2	106
RLLC0271	4/1/22 14:16	51.6	34.1	0.1	14.2	-13.6	98	-13.6	99
RLLC0272	4/1/22 14:53	46.9	47.6	0.3	5.2	-40.8	78	-42.1	78
RLLC0273	4/1/22 12:57	53.6	35.9	0	10.5	-8.6	110	-8.6	110
RLLC0274	4/8/22 10:25	47.1	42.6	0	10.3	-0.9	115	-0.8	116

There are 130 total collectors; 123 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

APPENDIX J

WELLFIELD DEVIATION LOGS

REDWOOD LANDFILL, INC
WELLFIELD DEVIATIONS AND 15-DAY REMONITORING REPORT

MONITORING PERFORMED BY: S. Johnson, E. Kane, and R. Reed
UPDATED DATE: 05/25/22
FLOW SENSING DEVICE: Landtec GEM

Well ID	Time	CH_4 (%)	CO_2 (%)	O_2 (%)	Balance Gas (%)	Initial Static Pressure (" w.c.)	Initial Temperature (°F)	Adjusted Static Pressure (" w.c.)	Adjusted Temperature (°F)	Comments	Duration of Exceedance (Days)
No well exceedances in November 2021											
RLLC0176	12/3/21 13:15	36.4	37.5	0	26.1	0.9	114	-0.2	120	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0176 was monitored on 12/3/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 12/3/2021											
RLLC0190	12/8/21 14:21	28.7	40.5	0.1	30.7	0.4	65	-0.1	77	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0190 was monitored on 12/8/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 12/8/2021											
RLLC0204	12/6/21 13:02	53.2	37.3	0	9.5	0	102	-0.2	103	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0204 was monitored on 12/6/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 12/6/2021											
RLLC0219	12/3/21 11:44	35.6	36.5	0	27.9	0.4	104	-0.2	108	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0219 was monitored on 12/3/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 12/3/2021											
RLLC0243	12/10/21 16:02	28.9	32.5	0	38.6	0	113	-0.1	113	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0243 was monitored on 12/10/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 12/10/2021											
RLLC0257	12/6/21 14:40	54.5	39.9	0	5.6	0	58	-6.5	62	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0257 was monitored on 12/6/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 12/6/2021											
RLI00003	1/7/22 16:25	55.6	38.7	0.1	5.6	0.4	63	-1	64	NSPS/EG CAI;Inc. Flow/Vac.	
RLI00003 was monitored on 1/7/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 1/7/2022											
RLI0114A	1/25/22 16:58	67.2	32.7	0	0.1	2.4	84	0.5	84	NSPS/EG CAI	
RLI0114A	2/8/22 14:34	67.2	32.7	0	0.1	0.9	85	0.7	86	NSPS/EG CAI;Fully Open	
RLI0114A	2/8/22 14:51	67.4	32.5	0	0.1	0.6	85	0.8	85	NSPS/EG CAI;Fully Open	
RLI0114A	3/22/22 13:06	66.6	33.3	0	0.1	-0.4	93	-0.1	93	Fully Open;Surging	
RLI0114A was monitored on 1/25/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 3/22/2022											56
RLLC0219	1/25/22 16:38	60.9	29.9	1.5	7.7	0.1	74	1	74	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0219	2/8/22 14:41	67.4	32.5	0	0.1	0.5	76	1.1	76	NSPS/EG CAI;Fully Open	
RLLC0219	2/8/22 14:56	67.5	32.4	0	0.1	0.6	75	0.7	75	NSPS/EG CAI;Fully Open	
RLLC0219	3/22/22 12:57	66.5	33.4	0	0.1	-0.2	87	-0.1	88	Inc. Flow/Vac.;Surging	
RLLC0219 was monitored on 1/25/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. Corrective actions were initiated. The well was re-monitored and cleared on 3/22/2022											56
RLLC0250	1/20/22 16:28	57.5	42.1	0	0.4	0.7	110	-0.7	110	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0250 was monitored on 1/20/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 1/20/2022											
RLLC0258	1/7/22 15:59	49.7	38	0	12.3	1.2	65	-0.1	65	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0258 was monitored on 1/7/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 1/7/2022											
RLLC0262	1/7/22 16:54	54.2	35.6	0	10.2	2.8	85	-0.2	87	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0262 was monitored on 1/7/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 1/7/2022											
RLLC0272	1/13/22 16:37	0	0.2	20.4	79.4	-23.1	68	-23.6	68	NSPS/EG CAI;Barely Open;Inc. Flow/Vac.	
RLLC0272	1/13/22 16:39	0	0.1	20.4	79.5	-22.9	68	-22.9	68	NSPS/EG CAI;Surging;No Adj. Made	
RLLC0272	2/21/22 12:51	33.9	65.2	0.8	0.1	-34.3	55	-36.1	55	Inc. Flow/Vac.	
RLLC0272 was monitored on 1/13/2022 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 2/21/2022											39
RLLC0205	4/8/22 13:57	29.1	29.3	0	41.6	0.2	107	-0.1	108	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0205 was monitored on 4/8/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 4/8/2022											
RLLC0210	4/8/22 13:52	26.6	27.5	0	45.9	0	107	-0.1	108	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0210 was monitored on 4/8/2022 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 4/8/2022											

APPENDIX K

MONTHLY LANDFILL GAS FLOW RATES

REDWOOD LANDFILL, INC.
Novato, CA

Yearly LFG for A-51 Flare, A-60 Flare, S-64 Engine (#1), and S-65 Engine (#2)

Month	A-51 Flare Total Flow Corrected to HHV of 500 BTU/scf (scf)	A-60 Flare Total Flow Corrected to HHV of 500 BTU/scf (scf)	S-64 Engine Total Flow Corrected to HHV of 500 BTU/scf (scf)	S-65 Engine Total Flow Corrected to HHV of 500 BTU/scf (scf)	Combined A-51, A-60, S64, and S65 Corrected to HHV of 500 BTU/scf (scf)	Consecutive 12-Month Corrected Total for A-51 Flare (scf)	Consecutive 12-Month Corrected Total for A-60 Flare (scf)	Consecutive 12-Month Corrected Total for S-64 Engine (#1) (scf)	Consecutive 12-Month Corrected Total for S-65 Engine (#2) (scf)	Combined A-51, A-60, S-64, and S-65 Corrected 12-Month Throughput[1]
May-21	0	47,999,481	29,309,296	19,385,842	96,694,619	1,269,313	593,580,528	306,614,994	272,786,602	1,174,251,437
Jun-21	0	57,919,925	25,700,587	8,214,252	91,834,765	1,269,313	582,747,357	321,496,661	260,769,984	1,166,283,314
Jul-21	0	58,325,851	25,674,340	9,739,904	93,740,095	613,086	583,244,958	332,202,720	249,308,649	1,165,369,412
Aug-21	0	37,334,739	29,855,010	25,400,709	92,590,458	613,086	570,852,280	341,165,197	250,560,480	1,163,191,043
Sep-21	0	39,702,650	15,697,846	20,235,411	75,635,908	613,086	539,364,508	337,118,307	262,624,126	1,139,720,027
Oct-21	0	52,922,660	12,754,548	17,299,316	82,976,524	285,068	534,084,550	319,099,692	265,077,474	1,118,546,782
Nov-21	0	41,362,143	28,922,035	24,634,000	94,918,178	285,068	535,193,175	317,686,919	261,918,050	1,115,083,211
Dec-21	0	41,748,581	28,551,365	24,694,229	94,994,175	247,258	538,433,925	314,909,725	257,102,607	1,110,693,515
Jan-22	700,094	39,823,831	23,884,153	21,661,585	86,069,663	700,094	539,211,642	307,463,624	249,589,020	1,096,964,380
Feb-22	0	42,776,336	23,195,157	21,660,346	87,631,838	700,094	543,710,811	303,403,546	247,005,461	1,094,819,913
Mar-22	0	42,401,306	27,333,535	23,048,036	92,782,878	700,094	541,085,126	301,408,635	242,166,625	1,085,360,480
Apr-22	0	38,621,353	27,058,796	21,285,927	86,966,076	700,094	540,938,858	297,936,668	237,259,558	1,076,835,177

Notes:

[1]Pursuant to Title V Permit Condition Number 19867 Part 20, as modified in renewal application dated September 22, 2016 to match BAAQMD Permit To Operate, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 and A-60 Landfill Gas Flares shall each not exceed 4,320,000 scf during any one day, and the combined throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 and A-60 Flares shall not exceed 2,625 million scf during any consecutive 12-month period.

HHV= higher heating value
BTU = British Thermal Units
scf= standard cubic feet

MONTHLY LFG Input to Flare (A-51)
WM - REDWOOD LANDFILL, Novato, CA

A-51 (Flare)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMscf)[2]	SO2 Emissions (tons)[2]
November-21	721.00	721.00	0.00	0		0	0	0	0	0.068	0.00	117.55	0.00
December-21	744.00	744.00	0.00	0		0	0	0	0	0.068	0.00	117.55	0.00
January-22	744.00	730.93	13.07	882	50.0	691,570	700,094	345,555	350	0.068	0.01	108.71	0.04
February-22	672.00	672.00	0.00	0		0	0	0	0	0.068	0.00	108.71	0.00
March-22	743.00	743.00	0.00	0		0	0	0	0	0.083	0.00	108.71	0.00
April-22	720.00	720.00	0.00	0		0	0	0	0	0.083	0.00	TBD	TBD
TOTAL/ AVG:	**4,344.00**	**4,330.93**	**13.07**	**882**	**50.0**	**691,570**	**700,094**	**345,555**	**350.05**	**--**	**--**	**--**	**--**

NOTES:

The A-51 Flare commenced operation on June 21, 2005.

[1]CH_4 content and CO emission factor was determined from the January 14, 2021 (March 10, 2021 - March 10, 2022) and January 12, 2022 (March 11, 2022 - present) source tests.

[2]SO_2 emission factors are calculated on a quarterly basis and are derived from the average of all weekly samples and the quarterly lab sample (flare inlets only). SO2 Emissions are updated at the end of each quarter when the quarterly average emission factor is calculated.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Nov-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
11/1/2021	0.00	50.0	0	0	0	1,013	0	0
11/2/2021	0.00	50.0	0	0	0	1,013	0	0
11/3/2021	0.00	50.0	0	0	0	1,013	0	0
11/4/2021	0.00	50.0	0	0	0	1,013	0	0
11/5/2021	0.00	50.0	0	0	0	1,013	0	0
11/6/2021	0.00	50.0	0	0	0	1,013	0	0
11/7/2021	0.00	50.0	0	0	0	1,013	0	0
11/8/2021	0.00	50.0	0	0	0	1,013	0	0
11/9/2021	0.00	50.0	0	0	0	1,013	0	0
11/10/2021	0.00	50.0	0	0	0	1,013	0	0
11/11/2021	0.00	50.0	0	0	0	1,013	0	0
11/12/2021	0.00	50.0	0	0	0	1,013	0	0
11/13/2021	0.00	50.0	0	0	0	1,013	0	0
11/14/2021	0.00	50.0	0	0	0	1,013	0	0
11/15/2021	0.00	50.0	0	0	0	1,013	0	0
11/16/2021	0.00	50.0	0	0	0	1,013	0	0
11/17/2021	0.00	50.0	0	0	0	1,013	0	0
11/18/2021	0.00	50.0	0	0	0	1,013	0	0
11/19/2021	0.00	50.0	0	0	0	1,013	0	0
11/20/2021	0.00	50.0	0	0	0	1,013	0	0
11/21/2021	0.00	50.0	0	0	0	1,013	0	0
11/22/2021	0.00	50.0	0	0	0	1,013	0	0
11/23/2021	0.00	50.0	0	0	0	1,013	0	0
11/24/2021	0.00	50.0	0	0	0	1,013	0	0
11/25/2021	0.00	50.0	0	0	0	1,013	0	0
11/26/2021	0.00	50.0	0	0	0	1,013	0	0
11/27/2021	0.00	50.0	0	0	0	1,013	0	0
11/28/2021	0.00	50.0	0	0	0	1,013	0	0
11/29/2021	0.00	50.0	0	0	0	1,013	0	0
11/30/2021	0.00	50.0	0	0	0	1,013	0	0
Totals/ Average:	**0.00**	**#DIV/0!**	**#DIV/0!**	**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:
The A-51 Flare commenced operation on June 21, 2005.
*CH_4 content was determined from the January 22, 2020 (March 16, 2020 - March 9, 2021) and January 14, 2021 (March 10, 2021 - present) source tests.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.
scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Dec-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
12/1/2021	0.00	50.0	0	0	0	1,013	0	0
12/2/2021	0.00	50.0	0	0	0	1,013	0	0
12/3/2021	0.00	50.0	0	0	0	1,013	0	0
12/4/2021	0.00	50.0	0	0	0	1,013	0	0
12/5/2021	0.00	50.0	0	0	0	1,013	0	0
12/6/2021	0.00	50.0	0	0	0	1,013	0	0
12/7/2021	0.00	50.0	0	0	0	1,013	0	0
12/8/2021	0.00	50.0	0	0	0	1,013	0	0
12/9/2021	0.00	50.0	0	0	0	1,013	0	0
12/10/2021	0.00	50.0	0	0	0	1,013	0	0
12/11/2021	0.00	50.0	0	0	0	1,013	0	0
12/12/2021	0.00	50.0	0	0	0	1,013	0	0
12/13/2021	0.00	50.0	0	0	0	1,013	0	0
12/14/2021	0.00	50.0	0	0	0	1,013	0	0
12/15/2021	0.00	50.0	0	0	0	1,013	0	0
12/16/2021	0.00	50.0	0	0	0	1,013	0	0
12/17/2021	0.00	50.0	0	0	0	1,013	0	0
12/18/2021	0.00	50.0	0	0	0	1,013	0	0
12/19/2021	0.00	50.0	0	0	0	1,013	0	0
12/20/2021	0.00	50.0	0	0	0	1,013	0	0
12/21/2021	0.00	50.0	0	0	0	1,013	0	0
12/22/2021	0.00	50.0	0	0	0	1,013	0	0
12/23/2021	0.00	50.0	0	0	0	1,013	0	0
12/24/2021	0.00	50.0	0	0	0	1,013	0	0
12/25/2021	0.00	50.0	0	0	0	1,013	0	0
12/26/2021	0.00	50.0	0	0	0	1,013	0	0
12/27/2021	0.00	50.0	0	0	0	1,013	0	0
12/28/2021	0.00	50.0	0	0	0	1,013	0	0
12/29/2021	0.00	50.0	0	0	0	1,013	0	0
12/30/2021	0.00	50.0	0	0	0	1,013	0	0
12/31/2021	0.00	50.0	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 22, 2020 (March 16, 2020 - March 9, 2021) and January 14, 2021 (March 10, 2021 - present) source tests.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Jan-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
1/1/2022	0.00	50.0	0	0	0	1,013	0	0
1/2/2022	0.00	50.0	0	0	0	1,013	0	0
1/3/2022	0.00	50.0	0	0	0	1,013	0	0
1/4/2022	0.03	50.0	917	1,833	916	1,013	1	1,856
1/5/2022	0.00	50.0	0	0	0	1,013	0	0
1/6/2022	0.00	50.0	0	0	0	1,013	0	0
1/7/2022	0.00	50.0	0	0	0	1,013	0	0
1/8/2022	0.00	50.0	0	0	0	1,013	0	0
1/9/2022	0.00	50.0	0	0	0	1,013	0	0
1/10/2022	0.00	50.0	0	0	0	1,013	0	0
1/11/2022	4.33	50.0	1,114	289,597	144,702	1,013	147	293,166
1/12/2022	8.70	50.0	767	400,140	199,937	1,013	203	405,072
1/13/2022	0.00	50.0	0	0	0	1,013	0	0
1/14/2022	0.00	50.0	0	0	0	1,013	0	0
1/15/2022	0.00	50.0	0	0	0	1,013	0	0
1/16/2022	0.00	50.0	0	0	0	1,013	0	0
1/17/2022	0.00	50.0	0	0	0	1,013	0	0
1/18/2022	0.00	50.0	0	0	0	1,013	0	0
1/19/2022	0.00	50.0	0	0	0	1,013	0	0
1/20/2022	0.00	50.0	0	0	0	1,013	0	0
1/21/2022	0.00	50.0	0	0	0	1,013	0	0
1/22/2022	0.00	50.0	0	0	0	1,013	0	0
1/23/2022	0.00	50.0	0	0	0	1,013	0	0
1/24/2022	0.00	50.0	0	0	0	1,013	0	0
1/25/2022	0.00	50.0	0	0	0	1,013	0	0
1/26/2022	0.00	50.0	0	0	0	1,013	0	0
1/27/2022	0.00	50.0	0	0	0	1,013	0	0
1/28/2022	0.00	50.0	0	0	0	1,013	0	0
1/29/2022	0.00	50.0	0	0	0	1,013	0	0
1/30/2022	0.00	50.0	0	0	0	1,013	0	0
1/31/2022	0.00	50.0	0	0	0	1,013	0	0
Totals/ Average:	**13.07**	**50.0**	**882**	**691,570.0**	**345,555**	**1,013**	**350**	**700,094**
						Maximum:	**203**	**405,072**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 22, 2020 (March 16, 2020 - March 9, 2021) and January 14, 2021 (March 10, 2021 - present) source tests.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Feb-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
2/1/2022	0.00	50.0	0	0	0	1,013	0	0
2/2/2022	0.00	50.0	0	0	0	1,013	0	0
2/3/2022	0.00	50.0	0	0	0	1,013	0	0
2/4/2022	0.00	50.0	0	0	0	1,013	0	0
2/5/2022	0.00	50.0	0	0	0	1,013	0	0
2/6/2022	0.00	50.0	0	0	0	1,013	0	0
2/7/2022	0.00	50.0	0	0	0	1,013	0	0
2/8/2022	0.00	50.0	0	0	0	1,013	0	0
2/9/2022	0.00	50.0	0	0	0	1,013	0	0
2/10/2022	0.00	50.0	0	0	0	1,013	0	0
2/11/2022	0.00	50.0	0	0	0	1,013	0	0
2/12/2022	0.00	50.0	0	0	0	1,013	0	0
2/13/2022	0.00	50.0	0	0	0	1,013	0	0
2/14/2022	0.00	50.0	0	0	0	1,013	0	0
2/15/2022	0.00	50.0	0	0	0	1,013	0	0
2/16/2022	0.00	50.0	0	0	0	1,013	0	0
2/17/2022	0.00	50.0	0	0	0	1,013	0	0
2/18/2022	0.00	50.0	0	0	0	1,013	0	0
2/19/2022	0.00	50.0	0	0	0	1,013	0	0
2/20/2022	0.00	50.0	0	0	0	1,013	0	0
2/21/2022	0.00	50.0	0	0	0	1,013	0	0
2/22/2022	0.00	50.0	0	0	0	1,013	0	0
2/23/2022	0.00	50.0	0	0	0	1,013	0	0
2/24/2022	0.00	50.0	0	0	0	1,013	0	0
2/25/2022	0.00	50.0	0	0	0	1,013	0	0
2/26/2022	0.00	50.0	0	0	0	1,013	0	0
2/27/2022	0.00	50.0	0	0	0	1,013	0	0
2/28/2022	0.00	50.0	0	0	0	1,013	0	0
Totals/ Average:	**0.00**		**0**	**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:
The A-51 Flare commenced operation on June 21, 2005.
*CH_4 content was determined from the January 22, 2020 (March 16, 2020 - March 9, 2021) and January 14, 2021 (March 10, 2021 - present) source tests.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.
scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Mar-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
3/1/2022	0.00	50.0	0	0	0	1,013	0	0
3/2/2022	0.00	50.0	0	0	0	1,013	0	0
3/3/2022	0.00	50.0	0	0	0	1,013	0	0
3/4/2022	0.00	50.0	0	0	0	1,013	0	0
3/5/2022	0.00	50.0	0	0	0	1,013	0	0
3/6/2022	0.00	50.0	0	0	0	1,013	0	0
3/7/2022	0.00	50.0	0	0	0	1,013	0	0
3/8/2022	0.00	50.0	0	0	0	1,013	0	0
3/9/2022	0.00	50.0	0	0	0	1,013	0	0
3/10/2022	0.00	50.0	0	0	0	1,013	0	0
3/11/2022	0.00	47.8	0	0	0	1,013	0	0
3/12/2022	0.00	47.8	0	0	0	1,013	0	0
3/13/2022	0.00	47.8	0	0	0	1,013	0	0
3/14/2022	0.00	47.8	0	0	0	1,013	0	0
3/15/2022	0.00	47.8	0	0	0	1,013	0	0
3/16/2022	0.00	47.8	0	0	0	1,013	0	0
3/17/2022	0.00	47.8	0	0	0	1,013	0	0
3/18/2022	0.00	47.8	0	0	0	1,013	0	0
3/19/2022	0.00	47.8	0	0	0	1,013	0	0
3/20/2022	0.00	47.8	0	0	0	1,013	0	0
3/21/2022	0.00	47.8	0	0	0	1,013	0	0
3/22/2022	0.00	47.8	0	0	0	1,013	0	0
3/23/2022	0.00	47.8	0	0	0	1,013	0	0
3/24/2022	0.00	47.8	0	0	0	1,013	0	0
3/25/2022	0.00	47.8	0	0	0	1,013	0	0
3/26/2022	0.00	47.8	0	0	0	1,013	0	0
3/27/2022	0.00	47.8	0	0	0	1,013	0	0
3/28/2022	0.00	47.8	0	0	0	1,013	0	0
3/29/2022	0.00	47.8	0	0	0	1,013	0	0
3/30/2022	0.00	47.8	0	0	0	1,013	0	0
3/31/2022	0.00	47.8	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:
The A-51 Flare commenced operation on June 21, 2005.
*CH_4 content was determined from the January 14, 2021 (March 10, 2021 - March 10, 2022) and January 12, 2022 (March 11, 2022 - present) source tests.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.
scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Apr-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
4/1/2022	0.00	47.8	0	0	0	1,013	0	0
4/2/2022	0.00	47.8	0	0	0	1,013	0	0
4/3/2022	0.00	47.8	0	0	0	1,013	0	0
4/4/2022	0.00	47.8	0	0	0	1,013	0	0
4/5/2022	0.00	47.8	0	0	0	1,013	0	0
4/6/2022	0.00	47.8	0	0	0	1,013	0	0
4/7/2022	0.00	47.8	0	0	0	1,013	0	0
4/8/2022	0.00	47.8	0	0	0	1,013	0	0
4/9/2022	0.00	47.8	0	0	0	1,013	0	0
4/10/2022	0.00	47.8	0	0	0	1,013	0	0
4/11/2022	0.00	47.8	0	0	0	1,013	0	0
4/12/2022	0.00	47.8	0	0	0	1,013	0	0
4/13/2022	0.00	47.8	0	0	0	1,013	0	0
4/14/2022	0.00	47.8	0	0	0	1,013	0	0
4/15/2022	0.00	47.8	0	0	0	1,013	0	0
4/16/2022	0.00	47.8	0	0	0	1,013	0	0
4/17/2022	0.00	47.8	0	0	0	1,013	0	0
4/18/2022	0.00	47.8	0	0	0	1,013	0	0
4/19/2022	0.00	47.8	0	0	0	1,013	0	0
4/20/2022	0.00	47.8	0	0	0	1,013	0	0
4/21/2022	0.00	47.8	0	0	0	1,013	0	0
4/22/2022	0.00	47.8	0	0	0	1,013	0	0
4/23/2022	0.00	47.8	0	0	0	1,013	0	0
4/24/2022	0.00	47.8	0	0	0	1,013	0	0
4/25/2022	0.00	47.8	0	0	0	1,013	0	0
4/26/2022	0.00	47.8	0	0	0	1,013	0	0
4/27/2022	0.00	47.8	0	0	0	1,013	0	0
4/28/2022	0.00	47.8	0	0	0	1,013	0	0
4/29/2022	0.00	47.8	0	0	0	1,013	0	0
4/30/2022	0.00	47.8	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:
The A-51 Flare commenced operation on June 21, 2005.
*CH_4 content was determined from the January 14, 2021 (March 10, 2021 - March 10, 2022) and January 12, 2022 (March 11, 2022 - present) source tests.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.
scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

MONTHLY LFG Input to Flare (A-60)
WM - REDWOOD LANDFILL, Novato, CA

A-60 (Flare)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMBtu)[2]	SO2 Emissions (tons)[2]
November-21	721.00	1.17	719.83	1,034	45.7	44,640,706	41,362,143	20,415,668	20,681	0.096	0.99	117.55	2.62
December-21	744.00	0.13	743.87	1,010	45.7	45,057,775	41,748,581	20,606,407	20,874	0.096	1.00	117.55	2.65
January-22	744.00	29.73	714.27	1,003	45.7	42,980,460	39,823,831	19,656,383	19,912	0.096	0.96	108.71	2.34
February-22	672.00	0.10	671.90	1,145	45.7	46,166,994	42,776,336	21,113,690	21,388	0.096	1.03	108.71	2.51
March-22	743.00	2.60	740.40	1,030	45.7	45,762,238	42,401,306	20,928,582	21,201	0.096	1.02	108.71	2.49
April-22	720.00	0.33	719.67	965	45.7	41,682,667	38,621,353	19,062,859	19,311	0.096	0.93	TBD	TBD
TOTAL/ AVG:	**4,344.00**	**34.07**	**4,309.93**	**1,030**	**45.7**	**266,290,840**	**246,733,551**	**121,783,589**	**123,366.78**	**--**	**--**	**--**	**--**

NOTES:

The A-60 Flare commenced operation on April 1, 2009.

[1] CH_4 content and CO emission factor was determined from the July 22 & 23, 2020 (9/15/20 - 9/9/21) and July 13, 2021 (9/10/21 - current) source tests.

[2] SO_2 emission factors are calculated on a quarterly basis and are derived from the average of all weekly samples and the quarterly lab sample (flare inlets only). SO2 Emissions are updated at the end of each quarter when the quarterly average emission factor is calculated.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Nov-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
11/1/2021	24.00	45.7	1,014	1,460,793	668,069	1,013	677	1,353,507
11/2/2021	24.00	45.7	942	1,356,027	620,156	1,013	628	1,256,436
11/3/2021	24.00	45.7	933	1,344,052	614,679	1,013	623	1,245,340
11/4/2021	24.00	45.7	924	1,329,871	608,194	1,013	616	1,232,201
11/5/2021	24.00	45.7	936	1,348,445	616,688	1,013	625	1,249,411
11/6/2021	24.00	45.7	930	1,339,060	612,396	1,013	620	1,240,715
11/7/2021	25.00	45.7	932	1,398,426	639,546	1,013	648	1,295,721
11/8/2021	24.00	45.7	933	1,343,221	614,299	1,013	622	1,244,570
11/9/2021	24.00	45.7	924	1,330,072	608,286	1,013	616	1,232,387
11/10/2021	24.00	45.7	959	1,381,395	631,758	1,013	640	1,279,941
11/11/2021	24.00	45.7	1,126	1,621,112	741,388	1,013	751	1,502,052
11/12/2021	24.00	45.7	1,291	1,858,580	849,990	1,013	861	1,722,080
11/13/2021	24.00	45.7	1,023	1,472,407	673,380	1,013	682	1,364,269
11/14/2021	24.00	45.7	1,022	1,470,983	672,729	1,013	681	1,362,949
11/15/2021	22.83	45.7	1,226	1,680,026	768,331	1,013	778	1,556,639
11/16/2021	24.00	45.7	1,141	1,643,411	751,586	1,013	761	1,522,713
11/17/2021	24.00	45.7	1,098	1,581,310	723,185	1,013	733	1,465,173
11/18/2021	24.00	45.7	1,086	1,564,390	715,447	1,013	725	1,449,496
11/19/2021	24.00	45.7	1,082	1,557,718	712,396	1,013	722	1,443,314
11/20/2021	24.00	45.7	1,072	1,543,924	706,087	1,013	715	1,430,533
11/21/2021	24.00	45.7	1,073	1,545,137	706,642	1,013	716	1,431,657
11/22/2021	24.00	45.7	1,147	1,651,678	755,367	1,013	765	1,530,373
11/23/2021	24.00	45.7	1,059	1,525,239	697,542	1,013	707	1,413,220
11/24/2021	24.00	45.7	1,050	1,511,382	691,205	1,013	700	1,400,381
11/25/2021	24.00	45.7	1,023	1,473,034	673,667	1,013	682	1,364,849
11/26/2021	24.00	45.7	1,014	1,460,036	667,723	1,013	676	1,352,806
11/27/2021	24.00	45.7	993	1,430,469	654,201	1,013	663	1,325,411
11/28/2021	24.00	45.7	988	1,423,074	650,819	1,013	659	1,318,559
11/29/2021	24.00	45.7	992	1,428,332	653,223	1,013	662	1,323,431
11/30/2021	24.00	45.7	1,088	1,567,102	716,687	1,013	726	1,452,009
Totals/ Average:	**719.83**	**45.7**	**1,034**	**44,640,706.0**	**20,415,668**	**1,013**	**20,681**	**41,362,143**
						Maximum:	**861**	**1,722,080**

Notes:
The A-60 Flare commenced operation on April 1, 2009.
*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 - 9/9/21) and July 13, 2021 (9/10/21 - current) source test.
Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.
scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Dec-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
12/1/2021	24.00	45.7	1,091	1,571,714	718,797	1,013	728	1,456,282
12/2/2021	24.00	45.7	1,068	1,538,462	703,589	1,013	713	1,425,472
12/3/2021	24.00	45.7	1,053	1,516,534	693,561	1,013	703	1,405,155
12/4/2021	24.00	45.7	1,004	1,445,527	661,087	1,013	670	1,339,363
12/5/2021	24.00	45.7	1,006	1,448,057	662,244	1,013	671	1,341,707
12/6/2021	24.00	45.7	1,020	1,469,082	671,860	1,013	681	1,361,188
12/7/2021	24.00	45.7	994	1,430,688	654,301	1,013	663	1,325,613
12/8/2021	24.00	45.7	988	1,423,077	650,820	1,013	659	1,318,561
12/9/2021	24.00	45.7	970	1,396,869	638,834	1,013	647	1,294,278
12/10/2021	24.00	45.7	965	1,390,006	635,696	1,013	644	1,287,919
12/11/2021	24.00	45.7	972	1,399,855	640,200	1,013	649	1,297,045
12/12/2021	24.00	45.7	963	1,387,278	634,448	1,013	643	1,285,392
12/13/2021	24.00	45.7	965	1,389,517	635,472	1,013	644	1,287,466
12/14/2021	24.00	45.7	961	1,383,539	632,738	1,013	641	1,281,927
12/15/2021	23.87	45.7	1,202	1,720,774	786,967	1,013	797	1,594,395
12/16/2021	24.00	45.7	967	1,392,945	637,040	1,013	645	1,290,642
12/17/2021	24.00	45.7	977	1,406,482	643,231	1,013	652	1,303,185
12/18/2021	24.00	45.7	990	1,425,713	652,026	1,013	661	1,321,004
12/19/2021	24.00	45.7	991	1,426,465	652,370	1,013	661	1,321,701
12/20/2021	24.00	45.7	988	1,423,159	650,858	1,013	659	1,318,637
12/21/2021	24.00	45.7	1,008	1,450,819	663,507	1,013	672	1,344,266
12/22/2021	24.00	45.7	1,014	1,460,677	668,016	1,013	677	1,353,400
12/23/2021	24.00	45.7	1,022	1,471,045	672,757	1,013	682	1,363,007
12/24/2021	24.00	45.7	1,011	1,455,740	665,758	1,013	674	1,348,826
12/25/2021	24.00	45.7	1,019	1,466,973	670,895	1,013	680	1,359,234
12/26/2021	24.00	45.7	1,013	1,458,704	667,113	1,013	676	1,351,572
12/27/2021	24.00	45.7	1,018	1,466,441	670,652	1,013	679	1,358,741
12/28/2021	24.00	45.7	1,019	1,467,635	671,198	1,013	680	1,359,847
12/29/2021	24.00	45.7	1,008	1,451,405	663,775	1,013	672	1,344,809
12/30/2021	24.00	45.7	1,016	1,463,133	669,139	1,013	678	1,355,676
12/31/2021	24.00	45.7	1,014	1,459,460	667,459	1,013	676	1,352,272
Totals/ Average:	**743.87**	**45.7**	**1,010**	**45,057,775.0**	**20,606,407**	**1,013**	**20,874**	**41,748,581**
						Maximum:	**797**	**1,594,395**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 - 9/9/21) and July 13, 2021 (9/10/21 - current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Jan-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
1/1/2022	24.00	45.7	1,018	1,465,924	670,415	1,013	679	1,358,262
1/2/2022	24.00	45.7	1,026	1,477,822	675,857	1,013	685	1,369,286
1/3/2022	24.00	45.7	1,017	1,464,517	669,772	1,013	678	1,356,958
1/4/2022	23.70	45.7	1,114	1,583,683	724,270	1,013	734	1,467,372
1/5/2022	24.00	45.7	1,601	2,305,875	1,054,553	1,013	1,068	2,136,524
1/6/2022	24.00	45.7	1,265	1,821,184	832,888	1,013	844	1,687,430
1/7/2022	24.00	45.7	944	1,358,976	621,505	1,013	630	1,259,168
1/8/2022	24.00	45.7	943	1,357,778	620,957	1,013	629	1,258,058
1/9/2022	24.00	45.7	1,119	1,611,342	736,920	1,013	746	1,493,000
1/10/2022	16.63	45.7	1,574	1,570,615	718,294	1,013	728	1,455,264
1/11/2022	11.23	45.7	1,076	725,054	331,591	1,013	336	671,804
1/12/2022	15.13	45.7	908	824,367	377,010	1,013	382	763,823
1/13/2022	23.57	45.7	903	1,277,215	584,113	1,013	592	1,183,412
1/14/2022	24.00	45.7	916	1,318,493	602,990	1,013	611	1,221,658
1/15/2022	24.00	45.7	911	1,311,779	599,920	1,013	608	1,215,438
1/16/2022	24.00	45.7	917	1,320,410	603,867	1,013	612	1,223,435
1/17/2022	24.00	45.7	902	1,298,448	593,823	1,013	602	1,203,086
1/18/2022	24.00	45.7	897	1,291,865	590,812	1,013	598	1,196,986
1/19/2022	24.00	45.7	904	1,302,334	595,600	1,013	603	1,206,686
1/20/2022	24.00	45.7	917	1,320,751	604,023	1,013	612	1,223,751
1/21/2022	24.00	45.7	939	1,352,580	618,579	1,013	627	1,253,242
1/22/2022	24.00	45.7	949	1,366,989	625,169	1,013	633	1,266,593
1/23/2022	24.00	45.7	937	1,349,834	617,324	1,013	625	1,250,698
1/24/2022	24.00	45.7	932	1,341,428	613,479	1,013	621	1,242,909
1/25/2022	24.00	45.7	936	1,348,167	616,561	1,013	625	1,249,153
1/26/2022	24.00	45.7	950	1,368,652	625,930	1,013	634	1,268,134
1/27/2022	24.00	45.7	950	1,368,478	625,850	1,013	634	1,267,972
1/28/2022	24.00	45.7	950	1,368,636	625,922	1,013	634	1,268,119
1/29/2022	24.00	45.7	950	1,368,110	625,682	1,013	634	1,267,631
1/30/2022	24.00	45.7	951	1,369,562	626,346	1,013	634	1,268,977
1/31/2022	24.00	45.7	951	1,369,592	626,360	1,013	635	1,269,005
Totals/ Average:	**714.27**	**45.7**	**1,003**	**42,980,460.0**	**19,656,383**	**1,013**	**19,912**	**39,823,831**
						Maximum:	**1,068**	**2,136,524**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 - 9/9/21) and July 13, 2021 (9/10/21 - current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Feb-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
2/1/2022	24.00	45.7	950	1,368,501	625,861	1,013	634	1,267,994
2/2/2022	24.00	45.7	1,137	1,637,931	749,080	1,013	759	1,517,636
2/3/2022	24.00	45.7	1,165	1,678,129	767,464	1,013	777	1,554,882
2/4/2022	24.00	45.7	1,156	1,665,178	761,541	1,013	771	1,542,882
2/5/2022	24.00	45.7	1,156	1,665,225	761,562	1,013	771	1,542,925
2/6/2022	24.00	45.7	1,195	1,721,008	787,074	1,013	797	1,594,611
2/7/2022	24.00	45.7	1,149	1,654,003	756,430	1,013	766	1,532,527
2/8/2022	24.00	45.7	1,291	1,858,481	849,945	1,013	861	1,721,988
2/9/2022	24.00	45.7	1,499	2,158,160	986,998	1,013	1,000	1,999,658
2/10/2022	23.90	45.7	1,511	2,167,473	991,257	1,013	1,004	2,008,287
2/11/2022	24.00	45.7	1,751	2,521,593	1,153,208	1,013	1,168	2,336,399
2/12/2022	24.00	45.7	1,454	2,093,105	957,246	1,013	970	1,939,380
2/13/2022	24.00	45.7	1,054	1,517,129	693,833	1,013	703	1,405,706
2/14/2022	24.00	45.7	1,047	1,507,310	689,343	1,013	698	1,396,608
2/15/2022	24.00	45.7	1,158	1,667,978	762,821	1,013	773	1,545,476
2/16/2022	24.00	45.7	1,042	1,500,313	686,143	1,013	695	1,390,125
2/17/2022	24.00	45.7	1,287	1,852,894	847,390	1,013	858	1,716,811
2/18/2022	24.00	45.7	1,038	1,494,882	683,659	1,013	693	1,385,093
2/19/2022	24.00	45.7	1,016	1,462,782	668,978	1,013	678	1,355,350
2/20/2022	24.00	45.7	1,007	1,450,758	663,480	1,013	672	1,344,209
2/21/2022	24.00	45.7	1,051	1,513,130	692,004	1,013	701	1,402,001
2/22/2022	24.00	45.7	997	1,436,064	656,759	1,013	665	1,330,595
2/23/2022	24.00	45.7	993	1,429,726	653,861	1,013	662	1,324,722
2/24/2022	24.00	45.7	999	1,437,907	657,602	1,013	666	1,332,302
2/25/2022	24.00	45.7	999	1,438,649	657,942	1,013	666	1,332,990
2/26/2022	24.00	45.7	995	1,433,503	655,588	1,013	664	1,328,222
2/27/2022	24.00	45.7	994	1,430,700	654,306	1,013	663	1,325,625
2/28/2022	24.00	45.7	975	1,404,482	642,316	1,013	651	1,301,332
Totals/ Average:	**671.90**	**45.7**	**1,145**	**46,166,994.0**	**21,113,690**	**1,013**	**21,388**	**42,776,336**
						Maximum:	**1,168**	**2,336,399**

Notes:
The A-60 Flare commenced operation on April 1, 2009.
*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 - 9/9/21) and July 13, 2021 (9/10/21 - current) source test.
Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.
scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Mar-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
3/1/2022	24.00	45.7	959	1,380,844	631,506	1,013	640	1,279,430
3/2/2022	24.00	45.7	956	1,377,125	629,805	1,013	638	1,275,984
3/3/2022	24.00	45.7	952	1,370,903	626,959	1,013	635	1,270,219
3/4/2022	24.00	45.7	1,026	1,477,434	675,679	1,013	684	1,368,926
3/5/2022	24.00	45.7	929	1,337,986	611,905	1,013	620	1,239,720
3/6/2022	24.00	45.7	1,277	1,838,311	840,720	1,013	852	1,703,299
3/7/2022	23.90	45.7	1,143	1,639,641	749,862	1,013	760	1,519,220
3/8/2022	24.00	45.7	1,530	2,203,711	1,007,830	1,013	1,021	2,041,863
3/9/2022	24.00	45.7	1,332	1,918,711	877,490	1,013	889	1,777,794
3/10/2022	24.00	45.7	1,010	1,454,018	664,970	1,013	674	1,347,230
3/11/2022	24.00	45.7	898	1,293,297	591,467	1,013	599	1,198,313
3/12/2022	22.33	45.7	983	1,317,516	602,544	1,013	610	1,220,753
3/13/2022	23.00	45.7	1,194	1,647,890	753,634	1,013	763	1,526,863
3/14/2022	24.00	45.7	1,017	1,463,946	669,511	1,013	678	1,356,429
3/15/2022	24.00	45.7	897	1,291,098	590,462	1,013	598	1,196,275
3/16/2022	24.00	45.7	967	1,392,892	637,015	1,013	645	1,290,593
3/17/2022	24.00	45.7	889	1,279,766	585,279	1,013	593	1,185,776
3/18/2022	23.87	45.7	1,022	1,462,967	669,063	1,013	678	1,355,522
3/19/2022	24.00	45.7	900	1,295,450	592,452	1,013	600	1,200,308
3/20/2022	24.00	45.7	884	1,273,627	582,472	1,013	590	1,180,088
3/21/2022	24.00	45.7	896	1,290,945	590,392	1,013	598	1,196,134
3/22/2022	24.00	45.7	1,440	2,073,914	948,469	1,013	961	1,921,599
3/23/2022	23.30	45.7	1,186	1,658,441	758,460	1,013	768	1,536,640
3/24/2022	24.00	45.7	1,126	1,621,522	741,576	1,013	751	1,502,432
3/25/2022	24.00	45.7	995	1,432,120	654,956	1,013	663	1,326,940
3/26/2022	24.00	45.7	944	1,359,257	621,633	1,013	630	1,259,429
3/27/2022	24.00	45.7	933	1,343,862	614,592	1,013	623	1,245,164
3/28/2022	24.00	45.7	919	1,323,724	605,383	1,013	613	1,226,505
3/29/2022	24.00	45.7	914	1,316,258	601,968	1,013	610	1,219,588
3/30/2022	24.00	45.7	926	1,333,181	609,708	1,013	618	1,235,268
3/31/2022	24.00	45.7	897	1,291,881	590,820	1,013	599	1,197,001
Totals/ Average:	**740.40**	**45.7**	**1,030**	**45,762,238.0**	**20,928,582**	**1,013**	**21,201**	**42,401,306**
						Maximum:	**1,021**	**2,041,863**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 - 9/9/21) and July 13, 2021 (9/10/21 - current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Apr-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
4/1/2022	24.00	45.7	913	1,314,132	600,996	1,013	609	1,217,618
4/2/2022	24.00	45.7	921	1,326,393	606,603	1,013	614	1,228,978
4/3/2022	24.00	45.7	918	1,321,917	604,556	1,013	612	1,224,831
4/4/2022	24.00	45.7	892	1,284,582	587,482	1,013	595	1,190,238
4/5/2022	24.00	45.7	885	1,274,829	583,021	1,013	591	1,181,201
4/6/2022	24.00	45.7	1,068	1,538,617	703,660	1,013	713	1,425,616
4/7/2022	24.00	45.7	1,153	1,660,460	759,383	1,013	769	1,538,510
4/8/2022	24.00	45.7	888	1,278,684	584,784	1,013	592	1,184,773
4/9/2022	24.00	45.7	898	1,293,280	591,460	1,013	599	1,198,297
4/10/2022	24.00	45.7	891	1,283,635	587,049	1,013	595	1,189,361
4/11/2022	24.00	45.7	884	1,273,525	582,425	1,013	590	1,179,993
4/12/2022	24.00	45.7	848	1,221,625	558,689	1,013	566	1,131,905
4/13/2022	23.67	45.7	824	1,170,144	535,145	1,013	542	1,084,205
4/14/2022	24.00	45.7	849	1,222,253	558,977	1,013	566	1,132,487
4/15/2022	24.00	45.7	841	1,210,988	553,825	1,013	561	1,122,049
4/16/2022	24.00	45.7	822	1,183,247	541,138	1,013	548	1,096,345
4/17/2022	24.00	45.7	1,088	1,566,501	716,413	1,013	726	1,451,452
4/18/2022	24.00	45.7	1,314	1,891,903	865,230	1,013	876	1,752,955
4/19/2022	24.00	45.7	1,456	2,096,961	959,009	1,013	971	1,942,953
4/20/2022	24.00	45.7	1,334	1,920,819	878,454	1,013	890	1,779,748
4/21/2022	24.00	45.7	1,039	1,496,783	684,528	1,013	693	1,386,854
4/22/2022	24.00	45.7	841	1,211,413	554,019	1,013	561	1,122,443
4/23/2022	24.00	45.7	1,236	1,779,196	813,685	1,013	824	1,648,526
4/24/2022	24.00	45.7	1,014	1,460,825	668,083	1,013	677	1,353,537
4/25/2022	24.00	45.7	927	1,335,005	610,542	1,013	618	1,236,958
4/26/2022	24.00	45.7	853	1,228,171	561,683	1,013	569	1,137,970
4/27/2022	24.00	45.7	844	1,215,137	555,722	1,013	563	1,125,893
4/28/2022	24.00	45.7	838	1,206,287	551,675	1,013	559	1,117,693
4/29/2022	24.00	45.7	839	1,207,877	552,402	1,013	560	1,119,166
4/30/2022	24.00	45.7	839	1,207,478	552,220	1,013	559	1,118,797
Totals/ Average:	**719.67**	**45.7**	**965**	**41,682,667.0**	**19,062,859**	**1,013**	**19,311**	**38,621,353**
						Maximum:	**971**	**1,942,953**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 - 9/9/21) and July 13, 2021 (9/10/21 - current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

MONTHLY LFG Input to Landfill Gas Engine (S-64)

WM - REDWOOD LANDFILL, Novato, CA

S-64 (Engine #1)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMBtu)[2]	SO2 Emissions (tons)[2]
November-21	721.00	15.33	705.67	695	48.5	29,433,890	28,922,035	14,275,437	14,461	0.017	0.12	0.02	2.67E-04
December-21	744.00	8.75	735.25	659	48.5	29,056,660	28,551,365	14,092,480	14,276	0.017	0.12	0.02	2.63E-04
January-22	744.00	79.82	664.18	610	48.5	24,306,849	23,884,153	11,788,822	11,942	0.017	0.10	0.02	2.20E-04
February-22	672.00	74.17	597.83	658	48.5	23,605,659	23,195,157	11,448,745	11,598	0.017	0.10	0.02	2.14E-04
March-22	743.00	55.00	688.00	674	48.5	27,817,278	27,333,535	13,491,380	13,667	0.017	0.12	0.02	2.52E-04
April-22	720.00	22.50	697.50	658	48.5	27,537,676	27,058,796	13,355,773	13,529	0.017	0.11	0.02	2.49E-04
TOTAL/ AVG:	**4,344.00**	**255.57**	**4,088.43**	**659**	**48.5**	**161,758,013**	**158,945,041**	**78,452,636**	**79,473**	**--**	**--**	**--**	**--**

NOTES:

The S-64 Engine (#1) commenced operation on April 27, 2017.

[1] CH_4, CO, and SO_2 content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Nov-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
11/01/2021	24.00	48.5	704	1,014,184	491,879	1,013	498	996,548
11/02/2021	24.00	48.5	752	1,082,616	525,069	1,013	532	1,063,790
11/03/2021	24.00	48.5	752	1,082,293	524,912	1,013	532	1,063,472
11/04/2021	24.00	48.5	756	1,088,298	527,825	1,013	535	1,069,373
11/05/2021	24.00	48.5	754	1,085,050	526,249	1,013	533	1,066,181
11/06/2021	24.00	48.5	721	1,081,375	524,467	1,013	531	1,062,570
11/07/2021	25.00	48.5	752	1,082,163	524,849	1,013	532	1,063,344
11/08/2021	24.00	48.5	749	1,078,794	523,215	1,013	530	1,060,034
11/09/2021	24.00	48.5	758	1,091,796	529,521	1,013	536	1,072,809
11/10/2021	24.00	48.5	759	1,092,762	529,990	1,013	537	1,073,759
11/11/2021	22.67	48.5	710	1,022,487	495,906	1,013	502	1,004,706
11/12/2021	15.50	48.5	450	648,219	314,386	1,013	318	636,947
11/13/2021	24.00	48.5	688	991,065	480,667	1,013	487	973,831
11/14/2021	24.00	48.5	687	988,691	479,515	1,013	486	971,498
11/15/2021	24.00	48.5	629	905,496	439,165	1,013	445	889,749
11/16/2021	24.00	48.5	622	896,213	434,663	1,013	440	880,628
11/17/2021	24.00	48.5	644	927,161	449,673	1,013	456	911,038
11/18/2021	24.00	48.5	651	936,851	454,373	1,013	460	920,559
11/19/2021	24.00	48.5	655	943,609	457,650	1,013	464	927,199
11/20/2021	24.00	48.5	658	948,026	459,793	1,013	466	931,540
11/21/2021	24.00	48.5	659	948,615	460,078	1,013	466	932,119
11/22/2021	20.75	48.5	560	806,945	391,368	1,013	396	792,912
11/23/2021	24.00	48.5	653	939,941	455,871	1,013	462	923,595
11/24/2021	24.00	48.5	664	956,390	463,849	1,013	470	939,758
11/25/2021	24.00	48.5	685	985,710	478,070	1,013	484	968,569
11/26/2021	24.00	48.5	683	983,467	476,982	1,013	483	966,365
11/27/2021	24.00	48.5	683	983,438	476,967	1,013	483	966,336
11/28/2021	24.00	48.5	686	987,317	478,849	1,013	485	970,148
11/29/2021	24.00	48.5	687	989,027	479,678	1,013	486	971,828
11/30/2021	21.75	48.5	601	865,890	419,957	1,013	425	850,832
Totals/ Average:	**705.67**	**48.5**	**695**	**29,433,890.4**	**14,275,437**	**1,013**	**14,461**	**28,922,035**
						Maximum:	**537**	**1,073,759**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Dec-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
12/01/2021	21.33	48.5	569	819,309	397,365	1,013	403	805,061
12/02/2021	24.00	48.5	604	870,339	422,114	1,013	428	855,203
12/03/2021	23.50	48.5	624	898,876	435,955	1,013	442	883,244
12/04/2021	24.00	48.5	687	989,163	479,744	1,013	486	971,962
12/05/2021	24.00	48.5	688	990,923	480,598	1,013	487	973,691
12/06/2021	23.33	48.5	661	952,500	461,962	1,013	468	935,936
12/07/2021	24.00	48.5	684	984,546	477,505	1,013	484	967,425
12/08/2021	24.00	48.5	683	983,868	477,176	1,013	483	966,759
12/09/2021	24.00	48.5	684	984,444	477,455	1,013	484	967,325
12/10/2021	24.00	48.5	689	991,812	481,029	1,013	487	974,564
12/11/2021	24.00	48.5	687	988,602	479,472	1,013	486	971,411
12/12/2021	24.00	48.5	680	979,155	474,890	1,013	481	962,128
12/13/2021	24.00	48.5	673	969,056	469,992	1,013	476	952,204
12/14/2021	24.00	48.5	675	972,355	471,592	1,013	478	955,446
12/15/2021	19.08	48.5	523	752,707	365,063	1,013	370	739,618
12/16/2021	24.00	48.5	667	960,336	465,763	1,013	472	943,636
12/17/2021	24.00	48.5	670	964,246	467,659	1,013	474	947,477
12/18/2021	24.00	48.5	666	958,912	465,072	1,013	471	942,236
12/19/2021	24.00	48.5	661	952,190	461,812	1,013	468	935,632
12/20/2021	24.00	48.5	661	951,224	461,344	1,013	467	934,682
12/21/2021	24.00	48.5	657	945,412	458,525	1,013	464	928,971
12/22/2021	24.00	48.5	651	938,076	454,967	1,013	461	921,763
12/23/2021	24.00	48.5	644	927,903	450,033	1,013	456	911,766
12/24/2021	24.00	48.5	643	925,873	449,049	1,013	455	909,773
12/25/2021	24.00	48.5	640	921,761	447,054	1,013	453	905,732
12/26/2021	24.00	48.5	644	927,409	449,793	1,013	456	911,281
12/27/2021	24.00	48.5	636	915,758	444,143	1,013	450	899,833
12/28/2021	24.00	48.5	634	912,525	442,575	1,013	448	896,657
12/29/2021	24.00	48.5	632	910,062	441,380	1,013	447	894,236
12/30/2021	24.00	48.5	632	910,554	441,619	1,013	447	894,720
12/31/2021	24.00	48.5	630	906,762	439,780	1,013	445	890,993
Totals/ Average:	**735.25**	**48.5**	**659**	**29,056,660.3**	**14,092,480**	**1,013**	**14,276**	**28,551,365**
						Maximum:	**487**	**974,564**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Jan-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
1/01/2022	24.00	48.5	634	912,311	442,471	1,013	448	896,446
1/02/2022	24.00	48.5	634	912,520	442,572	1,013	448	896,652
1/03/2022	24.00	48.5	629	906,053	439,436	1,013	445	890,296
1/04/2022	20.33	48.5	533	767,508	372,241	1,013	377	754,161
1/05/2022	0.00							
1/06/2022	12.33	48.5	302	434,272	210,622	1,013	213	426,720
1/07/2022	24.00	48.5	622	895,170	434,158	1,013	440	879,603
1/08/2022	24.00	48.5	624	898,646	435,844	1,013	442	883,019
1/09/2022	21.25	48.5	550	791,875	384,059	1,013	389	778,104
1/10/2022	15.83	48.5	559	586,622	284,512	1,013	288	576,420
1/11/2022	16.25	48.5	409	589,370	285,844	1,013	290	579,121
1/12/2022	24.00	48.5	605	871,235	422,549	1,013	428	856,085
1/13/2022	24.00	48.5	593	853,815	414,100	1,013	419	838,967
1/14/2022	24.00	48.5	619	891,161	432,213	1,013	438	875,663
1/15/2022	14.92	48.5	644	589,278	285,800	1,013	290	579,030
1/16/2022	23.25	48.5	574	827,122	401,154	1,013	406	812,739
1/17/2022	24.00	48.5	599	863,265	418,683	1,013	424	848,253
1/18/2022	24.00	48.5	600	864,352	419,211	1,013	425	849,321
1/19/2022	24.00	48.5	600	864,450	419,258	1,013	425	849,418
1/20/2022	24.00	48.5	602	866,691	420,345	1,013	426	851,620
1/21/2022	23.17	48.5	572	823,304	399,303	1,013	404	808,987
1/22/2022	24.00	48.5	597	859,597	416,905	1,013	422	844,649
1/23/2022	24.00	48.5	604	869,691	421,800	1,013	427	854,567
1/24/2022	24.00	48.5	605	871,903	422,873	1,013	428	856,740
1/25/2022	24.00	48.5	607	873,444	423,620	1,013	429	858,255
1/26/2022	20.42	48.5	510	734,016	355,998	1,013	361	721,251
1/27/2022	24.00	48.5	613	882,895	428,204	1,013	434	867,542
1/28/2022	21.25	48.5	540	777,427	377,052	1,013	382	763,907
1/29/2022	23.33	48.5	601	865,729	419,879	1,013	425	850,674
1/30/2022	20.08	48.5	506	728,617	353,379	1,013	358	715,946
1/31/2022	23.77	48.5	580	834,509	404,737	1,013	410	819,996
Totals/ Average:	**664.18**	**48.5**	**610**	**24,306,849.4**	**11,788,822**	**1,013**	**11,942**	**23,884,153**
						Maximum:	**448**	**896,652**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Feb-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
2/01/2022	21.33	48.5	536	771,922	374,382	1,013	379	758,498
2/02/2022	19.50	48.5	519	747,385	362,482	1,013	367	734,388
2/03/2022	24.00	48.5	674	969,844	470,375	1,013	476	952,979
2/04/2022	24.00	48.5	682	982,228	476,380	1,013	483	965,147
2/05/2022	24.00	48.5	685	986,212	478,313	1,013	485	969,061
2/06/2022	24.00	48.5	686	988,303	479,327	1,013	486	971,117
2/07/2022	23.08	48.5	618	890,567	431,925	1,013	438	875,080
2/08/2022	21.08	48.5	558	803,045	389,477	1,013	395	789,080
2/09/2022	18.42	48.5	470	677,320	328,500	1,013	333	665,542
2/10/2022	13.42	48.5	268	386,105	187,261	1,013	190	379,391
2/11/2022	0.17	48.5	0	0	0	1,013	0	0
2/12/2022	8.92	48.5	242	348,846	169,190	1,013	171	342,779
2/13/2022	24.00	48.5	670	964,314	467,692	1,013	474	947,544
2/14/2022	24.00	48.5	666	958,822	465,029	1,013	471	942,148
2/15/2022	20.83	48.5	566	815,698	395,614	1,013	401	801,513
2/16/2022	24.00	48.5	663	955,175	463,260	1,013	469	938,565
2/17/2022	19.33	48.5	525	756,589	366,946	1,013	372	743,432
2/18/2022	24.00	48.5	661	951,924	461,683	1,013	468	935,370
2/19/2022	24.00	48.5	671	965,921	468,472	1,013	475	949,124
2/20/2022	24.00	48.5	669	963,587	467,340	1,013	473	946,830
2/21/2022	23.75	48.5	612	881,192	427,378	1,013	433	865,868
2/22/2022	24.00	48.5	669	963,189	467,147	1,013	473	946,439
2/23/2022	24.00	48.5	675	971,558	471,206	1,013	477	954,663
2/24/2022	24.00	48.5	679	978,192	474,423	1,013	481	961,182
2/25/2022	24.00	48.5	679	978,329	474,489	1,013	481	961,316
2/26/2022	24.00	48.5	683	983,445	476,971	1,013	483	966,343
2/27/2022	24.00	48.5	683	982,875	476,694	1,013	483	965,783
2/28/2022	24.00	48.5	683	983,071	476,790	1,013	483	965,976
Totals/ Average:	**597.83**	**48.5**	**658**	**23,605,659.0**	**11,448,745**	**1,013**	**11,598**	**23,195,157**
						Maximum:	**486**	**971,117**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Mar-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
3/01/2022	24.00	48.5	682	982,342	476,436	1,013	483	965,259
3/02/2022	24.00	48.5	680	979,522	475,068	1,013	481	962,488
3/03/2022	24.00	48.5	678	976,657	473,679	1,013	480	959,673
3/04/2022	24.00	48.5	677	974,452	472,609	1,013	479	957,506
3/05/2022	24.00	48.5	680	978,992	474,811	1,013	481	961,967
3/06/2022	12.50	48.5	303	436,111	211,514	1,013	214	428,527
3/07/2022	24.00	48.5	676	973,671	472,230	1,013	478	956,739
3/08/2022	14.25	48.5	387	557,344	270,312	1,013	274	547,652
3/09/2022	8.75	48.5	253	363,784	176,435	1,013	179	357,457
3/10/2022	21.00	48.5	580	834,524	404,744	1,013	410	820,011
3/11/2022	24.00	48.5	673	968,905	469,919	1,013	476	952,056
3/12/2022	24.00	48.5	673	968,531	469,737	1,013	476	951,688
3/13/2022	23.00	48.5	673	928,358	450,254	1,013	456	912,214
3/14/2022	20.25	48.5	559	804,887	390,370	1,013	395	790,890
3/15/2022	24.00	48.5	681	980,334	475,462	1,013	482	963,286
3/16/2022	21.50	48.5	597	859,968	417,084	1,013	423	845,013
3/17/2022	24.00	48.5	678	976,414	473,561	1,013	480	959,434
3/18/2022	24.00	48.5	642	923,839	448,062	1,013	454	907,774
3/19/2022	24.00	48.5	676	973,090	471,949	1,013	478	956,168
3/20/2022	24.00	48.5	681	980,348	475,469	1,013	482	963,299
3/21/2022	24.00	48.5	679	977,691	474,180	1,013	480	960,689
3/22/2022	24.00	48.5	655	943,163	457,434	1,013	463	926,762
3/23/2022	24.00	48.5	669	963,935	467,508	1,013	474	947,172
3/24/2022	15.50	48.5	439	632,854	306,934	1,013	311	621,849
3/25/2022	23.25	48.5	646	929,909	451,006	1,013	457	913,738
3/26/2022	24.00	48.5	682	981,559	476,056	1,013	482	964,489
3/27/2022	24.00	48.5	683	983,251	476,877	1,013	483	966,152
3/28/2022	24.00	48.5	687	988,658	479,499	1,013	486	971,465
3/29/2022	24.00	48.5	692	996,881	483,487	1,013	490	979,545
3/30/2022	24.00	48.5	694	999,778	484,893	1,013	491	982,392
3/31/2022	24.00	48.5	693	997,528	483,801	1,013	490	980,181
Totals/ Average:	**688.00**	**48.5**	**674**	**27,817,277.7**	**13,491,380**	**1,013**	**13,667**	**27,333,535**
						Maximum:	**491**	**982,392**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Apr-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
4/01/2022	24.00	48.5	698	1,005,000	487,425	1,013	494	987,523
4/02/2022	24.00	48.5	701	1,009,391	489,555	1,013	496	991,837
4/03/2022	24.00	48.5	700	1,007,632	488,702	1,013	495	990,109
4/04/2022	24.00	48.5	699	1,005,953	487,887	1,013	494	988,460
4/05/2022	24.00	48.5	691	995,286	482,714	1,013	489	977,978
4/06/2022	16.75	48.5	471	677,975	328,818	1,013	333	666,185
4/07/2022	13.50	48.5	377	542,978	263,344	1,013	267	533,535
4/08/2022	24.00	48.5	668	961,432	466,294	1,013	472	944,712
4/09/2022	24.00	48.5	648	933,342	452,671	1,013	459	917,111
4/10/2022	24.00	48.5	651	936,834	454,365	1,013	460	920,543
4/11/2022	24.00	48.5	651	937,255	454,568	1,013	460	920,956
4/12/2022	24.00	48.5	651	937,059	454,474	1,013	460	920,764
4/13/2022	24.00	48.5	650	935,569	453,751	1,013	460	919,300
4/14/2022	24.00	48.5	647	932,032	452,036	1,013	458	915,824
4/15/2022	24.00	48.5	649	934,310	453,140	1,013	459	918,062
4/16/2022	24.00	48.5	652	938,271	455,062	1,013	461	921,955
4/17/2022	24.00	48.5	650	935,703	453,816	1,013	460	919,432
4/18/2022	24.00	48.5	643	925,969	449,095	1,013	455	909,866
4/19/2022	24.00	48.5	642	924,312	448,291	1,013	454	908,238
4/20/2022	24.00	48.5	644	926,881	449,537	1,013	455	910,762
4/21/2022	24.00	48.5	648	933,071	452,539	1,013	458	916,844
4/22/2022	24.00	48.5	654	941,110	456,439	1,013	462	924,745
4/23/2022	19.25	48.5	509	733,161	355,583	1,013	360	720,411
4/24/2022	24.00	48.5	620	893,215	433,209	1,013	439	877,682
4/25/2022	24.00	48.5	651	937,641	454,756	1,013	461	921,335
4/26/2022	24.00	48.5	649	934,390	453,179	1,013	459	918,141
4/27/2022	24.00	48.5	651	936,817	454,356	1,013	460	920,526
4/28/2022	24.00	48.5	656	944,710	458,184	1,013	464	928,281
4/29/2022	24.00	48.5	654	941,248	456,505	1,013	462	924,880
4/30/2022	24.00	48.5	652	939,130	455,478	1,013	461	922,798
Totals/ Average:	**697.50**	**48.5**	**658**	**27,537,675.9**	**13,355,773**	**1,013**	**13,529**	**27,058,796**
						Maximum:	**496**	**991,837**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

MONTHLY LFG Input to Landfill Gas Engine (S-65)

WM - REDWOOD LANDFILL, Novato, CA

S-65 (Engine #2)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMBtu)[2]	SO2 Emissions (tons)[2]
November-21	721.00	14.50	706.50	650	44.1	27,550,475	24,634,000	12,158,934	12,317	0.018	0.11	0.0189	2.61E-04
December-21	744.00	4.92	739.08	623	44.1	27,617,834	24,694,229	12,188,662	12,347	0.018	0.11	0.0189	2.61E-04
January-22	744.00	59.15	684.85	590	44.1	24,226,149	21,661,585	10,691,799	10,831	0.018	0.10	0.0189	2.29E-04
February-22	672.00	26.83	645.17	626	44.1	24,224,763	21,660,346	10,691,187	10,830	0.018	0.10	0.0189	2.29E-04
March-22	743.00	67.00	676.00	636	44.1	25,776,746	23,048,036	11,376,129	11,524	0.018	0.11	0.0189	2.44E-04
April-22	720.00	96.25	623.75	636	44.1	23,806,017	21,285,927	10,506,381	10,643	0.018	0.10	0.0189	2.25E-04
TOTAL/ AVG:	**4,344.00**	**268.65**	**4,075.35**	**627**	**44.1**	**153,201,984**	**136,984,123**	**67,613,091**	**68,492**	**--**	**--**	**--**	**--**

NOTES:

The S-65 Engine (#2) commenced operation on April 27, 2017.

[1] CH_4, CO, and SO_2 content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Nov-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
11/01/2021	24.00	44.1	661	951,136	419,768	1,013	425	850,449
11/02/2021	24.00	44.1	704	1,013,399	447,246	1,013	453	906,121
11/03/2021	23.75	44.1	692	995,763	439,463	1,013	445	890,352
11/04/2021	24.00	44.1	707	1,017,901	449,233	1,013	455	910,147
11/05/2021	24.00	44.1	704	1,014,468	447,718	1,013	454	907,077
11/06/2021	24.00	44.1	676	1,013,261	447,185	1,013	453	905,998
11/07/2021	25.00	44.1	705	1,014,796	447,863	1,013	454	907,370
11/08/2021	24.00	44.1	702	1,010,447	445,944	1,013	452	903,482
11/09/2021	24.00	44.1	710	1,022,580	451,299	1,013	457	914,331
11/10/2021	24.00	44.1	711	1,023,627	451,761	1,013	458	915,267
11/11/2021	19.00	44.1	553	796,725	351,621	1,013	356	712,384
11/12/2021	19.33	44.1	542	781,022	344,691	1,013	349	698,344
11/13/2021	24.00	44.1	650	936,125	413,143	1,013	419	837,028
11/14/2021	24.00	44.1	649	934,597	412,469	1,013	418	835,661
11/15/2021	19.92	44.1	468	674,003	297,460	1,013	301	602,654
11/16/2021	24.00	44.1	572	824,283	363,783	1,013	369	737,025
11/17/2021	24.00	44.1	595	856,823	378,144	1,013	383	766,120
11/18/2021	24.00	44.1	601	865,794	382,104	1,013	387	774,142
11/19/2021	24.00	44.1	603	868,524	383,308	1,013	388	776,583
11/20/2021	24.00	44.1	605	870,657	384,250	1,013	389	778,490
11/21/2021	24.00	44.1	604	869,546	383,759	1,013	389	777,496
11/22/2021	24.00	44.1	605	871,340	384,551	1,013	390	779,101
11/23/2021	24.00	44.1	619	891,101	393,272	1,013	398	796,770
11/24/2021	24.00	44.1	625	900,710	397,513	1,013	403	805,361
11/25/2021	24.00	44.1	645	929,271	410,118	1,013	415	830,899
11/26/2021	24.00	44.1	644	927,232	409,218	1,013	415	829,075
11/27/2021	24.00	44.1	644	927,385	409,285	1,013	415	829,212
11/28/2021	24.00	44.1	646	929,809	410,355	1,013	416	831,380
11/29/2021	24.00	44.1	647	931,499	411,101	1,013	416	832,892
11/30/2021	23.50	44.1	616	886,651	391,308	1,013	396	792,791
Totals/ Average:	**706.50**	**44.1**	**650**	**27,550,475.1**	**12,158,934**	**1,013**	**12,317**	**24,634,000**
						Maximum:	**458**	**915,267**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Dec-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
12/01/2021	24.00	44.1	639	919,503	405,807	1,013	411	822,165
12/02/2021	24.00	44.1	635	914,888	403,770	1,013	409	818,038
12/03/2021	24.00	44.1	639	920,837	406,396	1,013	412	823,358
12/04/2021	24.00	44.1	644	927,227	409,216	1,013	415	829,071
12/05/2021	24.00	44.1	645	929,428	410,187	1,013	416	831,040
12/06/2021	24.00	44.1	644	927,319	409,257	1,013	415	829,154
12/07/2021	24.00	44.1	643	925,812	408,592	1,013	414	827,806
12/08/2021	24.00	44.1	642	923,800	407,704	1,013	413	826,007
12/09/2021	24.00	44.1	641	923,528	407,583	1,013	413	825,764
12/10/2021	24.00	44.1	646	930,263	410,556	1,013	416	831,786
12/11/2021	24.00	44.1	644	927,658	409,406	1,013	415	829,457
12/12/2021	24.00	44.1	638	918,848	405,518	1,013	411	821,580
12/13/2021	24.00	44.1	631	908,429	400,920	1,013	406	812,263
12/14/2021	24.00	44.1	633	911,096	402,097	1,013	407	814,648
12/15/2021	19.08	44.1	487	701,673	309,671	1,013	314	627,394
12/16/2021	24.00	44.1	625	900,159	397,270	1,013	402	804,868
12/17/2021	24.00	44.1	629	905,239	399,512	1,013	405	809,411
12/18/2021	24.00	44.1	626	900,725	397,520	1,013	403	805,375
12/19/2021	24.00	44.1	621	893,915	394,514	1,013	400	799,286
12/20/2021	24.00	44.1	620	892,758	394,003	1,013	399	798,251
12/21/2021	24.00	44.1	615	885,885	390,970	1,013	396	792,105
12/22/2021	24.00	44.1	610	877,921	387,456	1,013	392	784,985
12/23/2021	24.00	44.1	603	868,887	383,469	1,013	388	776,908
12/24/2021	24.00	44.1	604	869,277	383,641	1,013	389	777,256
12/25/2021	24.00	44.1	601	865,014	381,759	1,013	387	773,444
12/26/2021	24.00	44.1	604	869,331	383,664	1,013	389	777,304
12/27/2021	24.00	44.1	596	858,822	379,027	1,013	384	767,908
12/28/2021	24.00	44.1	596	858,395	378,838	1,013	384	767,526
12/29/2021	24.00	44.1	593	854,622	377,173	1,013	382	764,152
12/30/2021	24.00	44.1	593	854,097	376,941	1,013	382	763,683
12/31/2021	24.00	44.1	592	852,477	376,226	1,013	381	762,234
Totals/ Average:	**739.08**	**44.1**	**623**	**27,617,834.3**	**12,188,662**	**1,013**	**12,347**	**24,694,229**
						Maximum:	**416**	**831,786**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Jan-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
1/01/2022	24.00	44.1	595	857,377	378,389	1,013	383	766,616
1/02/2022	24.00	44.1	594	855,829	377,705	1,013	383	765,231
1/03/2022	24.00	44.1	590	850,304	375,267	1,013	380	760,292
1/04/2022	24.00	44.1	595	856,478	377,992	1,013	383	765,812
1/05/2022	23.42	44.1	611	880,408	388,553	1,013	394	787,208
1/06/2022	24.00	44.1	649	935,220	412,743	1,013	418	836,218
1/07/2022	24.00	44.1	634	912,273	402,616	1,013	408	815,701
1/08/2022	24.00	44.1	637	917,343	404,854	1,013	410	820,234
1/09/2022	20.83	44.1	529	761,296	335,985	1,013	340	680,706
1/10/2022	16.42	44.1	551	578,452	255,290	1,013	259	517,217
1/11/2022	20.00	44.1	474	682,497	301,208	1,013	305	610,248
1/12/2022	17.42	44.1	406	584,771	258,079	1,013	261	522,868
1/13/2022	22.25	44.1	519	747,049	329,697	1,013	334	667,967
1/14/2022	14.50	44.1	341	491,204	216,785	1,013	220	439,206
1/15/2022	14.97	44.1	610	557,719	246,140	1,013	249	498,680
1/16/2022	23.70	44.1	547	787,775	347,671	1,013	352	704,382
1/17/2022	24.00	44.1	568	818,041	361,028	1,013	366	731,444
1/18/2022	24.00	44.1	569	819,230	361,553	1,013	366	732,507
1/19/2022	24.00	44.1	570	821,114	362,385	1,013	367	734,192
1/20/2022	24.00	44.1	571	822,849	363,150	1,013	368	735,743
1/21/2022	24.00	44.1	566	814,794	359,595	1,013	364	728,540
1/22/2022	24.00	44.1	567	816,363	360,288	1,013	365	729,944
1/23/2022	23.42	44.1	551	794,148	350,484	1,013	355	710,080
1/24/2022	24.00	44.1	567	815,761	360,022	1,013	365	729,405
1/25/2022	24.00	44.1	574	826,819	364,903	1,013	370	739,293
1/26/2022	24.00	44.1	591	851,489	375,790	1,013	381	761,351
1/27/2022	24.00	44.1	609	876,521	386,837	1,013	392	783,733
1/28/2022	23.83	44.1	607	873,778	385,627	1,013	391	781,281
1/29/2022	24.00	44.1	615	885,057	390,605	1,013	396	791,365
1/30/2022	19.92	44.1	488	702,672	310,112	1,013	314	628,287
1/31/2022	12.18	44.1	300	431,517	190,443	1,013	193	385,837
Totals/ Average:	**684.85**	**44.1**	**590**	**24,226,148.7**	**10,691,799**	**1,013**	**10,831**	**21,661,585**
						Maximum:	**418**	**836,218**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Feb-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
2/01/2022	20.92	44.1	523	753,017	332,331	1,013	337	673,304
2/02/2022	19.42	44.1	496	714,279	315,235	1,013	319	638,666
2/03/2022	23.08	44.1	583	838,812	370,195	1,013	375	750,016
2/04/2022	24.00	44.1	590	849,482	374,904	1,013	380	759,556
2/05/2022	24.00	44.1	591	851,622	375,849	1,013	381	761,470
2/06/2022	20.75	44.1	537	773,486	341,365	1,013	346	691,605
2/07/2022	24.00	44.1	652	938,223	414,069	1,013	419	838,903
2/08/2022	21.50	44.1	568	817,986	361,004	1,013	366	731,394
2/09/2022	18.92	44.1	449	646,890	285,494	1,013	289	578,411
2/10/2022	23.75	44.1	622	895,503	395,215	1,013	400	800,706
2/11/2022	21.92	44.1	589	848,675	374,548	1,013	379	758,835
2/12/2022	24.00	44.1	648	932,948	411,741	1,013	417	834,186
2/13/2022	24.00	44.1	630	907,437	400,482	1,013	406	811,377
2/14/2022	24.00	44.1	626	901,944	398,058	1,013	403	806,465
2/15/2022	23.33	44.1	596	858,338	378,813	1,013	384	767,475
2/16/2022	24.00	44.1	625	900,005	397,202	1,013	402	804,731
2/17/2022	19.58	44.1	514	739,636	326,426	1,013	331	661,338
2/18/2022	24.00	44.1	630	907,576	400,543	1,013	406	811,500
2/19/2022	24.00	44.1	629	905,335	399,554	1,013	405	809,497
2/20/2022	24.00	44.1	629	905,827	399,771	1,013	405	809,936
2/21/2022	24.00	44.1	633	911,788	402,402	1,013	408	815,267
2/22/2022	24.00	44.1	628	904,837	399,334	1,013	405	809,052
2/23/2022	24.00	44.1	634	912,767	402,834	1,013	408	816,142
2/24/2022	24.00	44.1	638	918,038	405,161	1,013	410	820,855
2/25/2022	24.00	44.1	638	918,176	405,221	1,013	410	820,978
2/26/2022	24.00	44.1	641	923,622	407,625	1,013	413	825,848
2/27/2022	24.00	44.1	642	923,947	407,768	1,013	413	826,138
2/28/2022	24.00	44.1	642	924,570	408,043	1,013	413	826,696
Totals/ Average:	**645.17**	**44.1**	**626**	**24,224,763.4**	**10,691,187**	**1,013**	**10,830**	**21,660,346**
						Maximum:	**419**	**838,903**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Mar-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
3/01/2022	24.00	44.1	642	924,628	408,069	1,013	413	826,748
3/02/2022	24.00	44.1	640	921,164	406,540	1,013	412	823,650
3/03/2022	24.00	44.1	637	917,642	404,986	1,013	410	820,501
3/04/2022	22.00	44.1	549	790,802	349,007	1,013	354	707,088
3/05/2022	24.00	44.1	642	924,807	408,148	1,013	413	826,907
3/06/2022	24.00	44.1	662	953,625	420,866	1,013	426	852,675
3/07/2022	18.25	44.1	457	657,933	290,367	1,013	294	588,284
3/08/2022	13.50	44.1	344	496,037	218,918	1,013	222	443,527
3/09/2022	24.00	44.1	660	950,562	419,514	1,013	425	849,936
3/10/2022	24.00	44.1	636	915,676	404,118	1,013	409	818,743
3/11/2022	24.00	44.1	636	915,321	403,961	1,013	409	818,426
3/12/2022	23.25	44.1	523	753,583	332,581	1,013	337	673,809
3/13/2022	13.00	44.1	352	485,070	214,077	1,013	217	433,721
3/14/2022	24.00	44.1	645	929,509	410,223	1,013	416	831,112
3/15/2022	24.00	44.1	642	924,095	407,834	1,013	413	826,271
3/16/2022	24.00	44.1	643	926,012	408,680	1,013	414	827,985
3/17/2022	24.00	44.1	639	920,090	406,066	1,013	411	822,690
3/18/2022	21.50	44.1	562	809,509	357,263	1,013	362	723,815
3/19/2022	24.00	44.1	638	918,546	405,385	1,013	411	821,310
3/20/2022	24.00	44.1	641	922,974	407,339	1,013	413	825,268
3/21/2022	24.00	44.1	632	909,674	401,469	1,013	407	813,377
3/22/2022	0.50	44.1	2	3,016	1,331	1,013	1	2,697
3/23/2022	12.50	44.1	327	471,324	208,011	1,013	211	421,430
3/24/2022	24.00	44.1	649	934,168	412,279	1,013	418	835,278
3/25/2022	23.50	44.1	622	896,150	395,501	1,013	401	801,284
3/26/2022	24.00	44.1	643	925,970	408,661	1,013	414	827,948
3/27/2022	24.00	44.1	643	925,712	408,547	1,013	414	827,717
3/28/2022	24.00	44.1	648	932,411	411,504	1,013	417	833,707
3/29/2022	24.00	44.1	652	938,723	414,289	1,013	420	839,350
3/30/2022	24.00	44.1	654	941,936	415,707	1,013	421	842,223
3/31/2022	24.00	44.1	653	940,075	414,886	1,013	420	840,559
Totals/ Average:	**676.00**	**44.1**	**636**	**25,776,745.8**	**11,376,129**	**1,013**	**11,524**	**23,048,036**
						Maximum:	**426**	**852,675**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Apr-22

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
4/01/2022	24.00	44.1	659	948,371	418,548	1,013	424	847,977
4/02/2022	24.00	44.1	662	952,973	420,578	1,013	426	852,092
4/03/2022	24.00	44.1	660	949,928	419,234	1,013	425	849,369
4/04/2022	24.00	44.1	657	946,698	417,809	1,013	423	846,481
4/05/2022	24.00	44.1	652	938,296	414,101	1,013	419	838,969
4/06/2022	24.00	44.1	669	963,378	425,171	1,013	431	861,396
4/07/2022	24.00	44.1	670	964,131	425,503	1,013	431	862,069
4/08/2022	24.00	44.1	644	927,257	409,229	1,013	415	829,099
4/09/2022	24.00	44.1	643	925,394	408,407	1,013	414	827,433
4/10/2022	24.00	44.1	646	929,925	410,407	1,013	416	831,484
4/11/2022	24.00	44.1	645	929,331	410,144	1,013	415	830,953
4/12/2022	24.00	44.1	646	930,294	410,569	1,013	416	831,814
4/13/2022	24.00	44.1	644	928,079	409,592	1,013	415	829,833
4/14/2022	24.00	44.1	642	924,302	407,925	1,013	413	826,456
4/15/2022	24.00	44.1	643	926,023	408,684	1,013	414	827,995
4/16/2022	24.00	44.1	646	930,649	410,726	1,013	416	832,131
4/17/2022	14.00	44.1	373	537,221	237,093	1,013	240	480,351
4/18/2022	6.00	44.1	147	210,964	93,106	1,013	94	188,632
4/19/2022	0.00							
4/20/2022	5.50	44.1	126	181,117	79,933	1,013	81	161,944
4/21/2022	17.00	44.1	422	607,749	268,220	1,013	272	543,413
4/22/2022	24.00	44.1	616	887,563	391,711	1,013	397	793,606
4/23/2022	13.75	44.1	349	502,165	221,622	1,013	225	449,007
4/24/2022	18.75	44.1	475	683,833	301,798	1,013	306	611,443
4/25/2022	20.75	44.1	533	767,420	338,688	1,013	343	686,181
4/26/2022	24.00	44.1	603	868,456	383,278	1,013	388	776,521
4/27/2022	24.00	44.1	613	882,385	389,425	1,013	394	788,976
4/28/2022	24.00	44.1	618	889,468	392,552	1,013	398	795,310
4/29/2022	24.00	44.1	616	887,366	391,624	1,013	397	793,430
4/30/2022	24.00	44.1	615	885,280	390,703	1,013	396	791,565
Totals/ Average:	**623.75**	**44.1**	**636**	**23,806,016.6**	**10,506,381**	**1,013**	**10,643**	**21,285,927**
						Maximum:	**431**	**862,069**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 21 & 22, 2020 (9/18/20 - 9/12/21) and July 14 & 15, 2021 (9/13/21 - current) source tests.

APPENDIX L

VOC SOILS LOGS

Redwood Landfill
Facility Number A1179
Title V Permit Condition Number 19867, Part 14

VOC Laden Soil

Month	VOC Emission Rate (lbs/month)	12-Month Rolling Total (lbs)
May-21	0.00	0.00
June-21	0.00	0.00
July-21	0.00	0.00
August-21	0.00	0.00
September-21	0.00	0.00
October-21	0.00	0.00
November-21	0.00	0.00
December-21	0.00	0.00
January-22	0.00	0.00
February-22	0.00	0.00
March-22	0.00	0.00
April-22	0.00	0.00
TOTALS:	**0.00**	

VOC Laden Soils is defined as soils containing concentrations of VOC less than 50 parts per million by weight (ppm_w).

APPENDIX M

H_2S TWICE WEEKLY AND QUARTERLY MONITORING

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 4 - 2021

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
10/4/21 9:05	704	714
10/6/21 12:40	669	679
10/11/21 10:25	702	713
10/13/21 10:05	856	869
10/18/21 10:50	788	800
10/20/21 17:15	756	767
10/25/21 9:20	722	733
10/27/21 8:50	751	762
11/1/21 9:40	822	835
11/3/21 12:35	710	720
11/8/21 8:30	726	737
11/10/21 11:50	757	769
11/12/21*	880	894
11/15/21 9:30	792	804
11/17/21 14:00	738	749
11/22/21 9:20	758	770
11/26/21 9:00	728	739
11/29/21 8:15	767	778
12/1/21 12:05	674	684
12/6/21 8:55	775	787
12/8/21 9:00	735	746
12/14/21 8:40	726	737
12/16/21 8:35	755	766
12/21/21 10:20	754	765
12/22/21 9:35	780	792
12/27/21 9:40	759	771
12/29/21 12:35	807	819
Quarterly Average:	755	767

ppm_v= parts per million by volume

TRS= total reduced sulfur

* Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 1 - 2022

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
1/3/22 9:20	775	787
1/5/22 8:15	834	846
1/12/22 12:45	747	759
1/14/22 9:00	746	757
1/18/22 13:30	796	808
1/20/22 8:20	799	811
1/24/22 11:05	696	706
1/26/22 9:45	765	776
1/31/22 9:40	714	724
2/2/22 9:55	723	734
2/7/22 9:20	713	723
2/9/22 9:05	800	812
2/14/22 9:25	741	752
2/16/22 12:25	714	724
2/21/22 13:30	740	751
2/23/22 7:40	763	775
2/28/22 8:20	656	666
3/2/22 11:55	653	663
3/4/22*	750	759
3/7/22 10:10	676	686
3/9/22 8:20	651	661
3/14/22 11:50	655	665
3/16/22 11:55	627	637
3/21/22 10:40	643	652
3/23/22 8:45	699	709
3/28/22 12:30	653	663
3/30/22 10:15	525	533
Quarterly Average:	713	724

ppm_v= parts per million by volume   TRS= total reduced sulfur   * Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 2 - 2022

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
4/4/22 13:35	596	605
4/6/22 8:15	629	639
4/11/22 13:35	545	553
4/13/22 10:45	564	572
4/15/22*	600	607
4/18/22 13:25	603	612
4/20/22 8:35	594	603
4/25/22 11:00	608	617
4/27/22 11:40	588	597
Quarterly Average:	TBD	TBD

H_2S= hydrogen sulfide

ppm_v= parts per million by volume

TRS= total reduced sulfur

* Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Rolling Quarterly Average Total Reduced Sulfur Content

Year	Quarter	Calculated TRS (ppm_v)	Rolling Quarterly Average Annual TRS (ppm_v)	Quarterly SO_2 Emission Factor (lb/MMscf)
2021	2	868	973	146.6
2021	3	520	912	87.8
2021	4	696	810	117.6
2022	1	643	682	108.7
2022	2*	TBD	TBD	TBD

*Quarterly results will be calculated at the end of the quarter.

H_2S = hydrogen sulfide

ppm_v = parts per million by volume

TRS = total reduced sulfur

TBD = To Be Determined.

Quarterly SO2 Emission Factor based on TRS concentrations to Flares A-51 and A-60 only.

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H_2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H_2S for this site according to the following equation: TRS=1.015*H_2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H_2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. On a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppm_v.

SO2 EF = Calculated TRS (ppmv) * 0.0283168 m3/scf * 1000 L/m3 * 1 mol/22.4 L * 64.06 g/mol * 1 lb/453.592 g * 273.15 K / 288.7 K

APPENDIX N

PERFORMANCE TEST REPORT

Redwood Landfill, Inc.

BAAQMD Facility # 1179

Annual Compliance Emissions Test Report #22008

Landfill Gas Flare A-51

Located at:
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, CA 94948

Prepared for:
SCS Engineers
3117 Fite Circle Suite 108
Sacramento, CA 95827
Attn: Maria Bowen
mbowen@scsengineers.com

For Submittal to:
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
Attn: Gloria Espena and Marco Hernandez
gespena@baaqmd.gov / mhernandez@baaqmd.gov
sourcetest@baaqmd.gov

Testing Performed on:
January 12th, 2022

Final Report Submitted on:
March 11th, 2022

Performed and Reported by:
Blue Sky Environmental, Inc.
624 San Gabriel Avenue
Albany, CA 94706
bluesky@blueskyenvironmental.com
Office (510) 525-1261 / Cell (510) 508-3469

REVIEW AND CERTIFICATION

Team Leader:

The work performed herein was conducted under my supervision, and I certify that:

a) the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program,

b) that the sampling and analytical procedures and data presented in the report are authentic and accurate,

c) that all testing details and conclusions are accurate and valid, and

d) that the production rate and/or heat input rate during the source test are reported accurately.

If this report is submitted for compliance purposes, it should only be reproduced in its entirety. If there are any questions concerning this report, please contact me at (810) 923-3181.

Jeramie Richardson

Project Manager

Blue Sky Environmental, Inc.

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SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc. was contracted by SCS Engineers to perform emissions testing for Waste Management of Alameda County, Inc. (WMAC) at the Redwood Landfill Inc. (RLI) in Novato, California. Testing was conducted to demonstrate that Landfill Gas Flare A-51 is operating in compliance with the Bay Area Air Quality Management District (BAAQMD) Permit to Operate for Facility 1179. Results of the test program are presented in this report. The source test information is summarized in Table 1-1. Test results derived from the source test are summarized in Table 1-2. Results for individual test runs are provided in Appendix A. The flare met all compliance emission criteria.

Table 1-1. Source Test Information

Test Location:	Redwood Landfill Inc. 8950 Redwood Highway, Novato, CA 94948
Source Contact:	Maria Bowen, SCS Engineers (619) 455-9518
Source Tested:	Flare A-51 – 90 MMBtu/hr industrial landfill gas flare
Source Test Date:	January 12th, 2022
Test Objective:	Determine compliance with conditions 19867 and 25634 of the Bay Area Air Quality Management District (BAAQMD) permit to operate for Facility #1179
Test Performed by:	Blue Sky Environmental, Inc 624 San Gabriel Avenue, Albany, CA 94706 Jeramie Richardson (810) 923-1198 jrichardson@blueskyenvironmental.com
Test Parameters:	<u>Landfill Gas Fuel Analysis</u> O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, sulfur, toxic air contaminants and volumetric flow rate <u>Flare Emissions</u> THC, CH_4, NMOC, NO_X, CO, O_2, SO_2, volumetric flow rate and temperature

Table 1-2. Compliance Summary

Emission Parameter	Average Results (Flare A-51)	Permit Limit	Compliance Status
NO_X, ppmvd @ 15% O_2	12.4	15	In Compliance
NO_X, lb/MMBtu	0.051	0.06	In Compliance
CO, ppmvd @ 15% O_2	33.7	82	In Compliance
CO, lb/MMBtu	0.0834	0.20	In Compliance
NMOC, ppmvd @ 3% O_2 as hexane (C_6H_{14})	0.30	360	In Compliance
NMOC, ppmvd @ 3% O_2 as CH_4	1.8	30*	In Compliance
NMOC Destruction Efficiency, %	99.314%	>98%*	In Compliance
CH_4 Destruction Efficiency, %	99.922%	>99%	In Compliance
THC Destruction Efficiency, %	99.915%	>98%	In Compliance
Total Reduced Sulfurs in Fuel, ppmv	1,034	410	Exceeds Limit[1]
SO_2, ppmvd	59.9	300	In Compliance
SO_2, lb/MMBtu	0.366	1.69	In Compliance

**>98% NMOC Destruction Efficiency or 30 ppmvd NMOC as CH_4 @ 3% O_2*

[1]On October 6, 2016, Redwood Landfill proposed a permit modification to increase the peak limit. This modification is still under review by BAAQMD. Per the November 2016 Compliance Agreement between Redwood Landfill and BAAQMD, enforcement actions are not expected if the Agreement is complied with.

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This annual source test was performed to demonstrate that landfill gas Flare A-51 is operating in compliance with conditions 19867 and 25634 of the Bay Area Air Quality Management District (BAAQMD) Title V permit to operate for Facility #1179.

2.2. Pollutants Tested

The following U.S. Environmental Protection Agency (EPA), Bay Area Air Quality Management District (BAAQMD) and ASTM International sampling and analytical methods were used:

EPA Method 1	Sample and Traverse Point Determination
EPA Method 3A	O_2 and CO_2, Stack Gas Molecular Weight
EPA Method 10	CO
EPA Method 7E	NO_X and NO_2 Converter Check
EPA Method 4	Moisture Calculation
EPA Method 19	Flow Rate Calculation, DSCFM
EPA Method 25C	Analysis of landfill gas for TNMOC
EPA Method ALT-097	THC, CH_4 and VOC Emissions
ASTM D-1945/3588	Fuel Analysis for BTU, F-Factors and Fixed Gases
ASTM D-5504	Sulfur Species, Hydrogen Sulfide (H_2S) and TRS
EPA Method TO-15	Toxic Organic Compounds
BAAQMD ST-19A	SO_2 calculated from TRS

2.3. Test Date(s)

Testing was conducted on January 12th, 2022.

2.4. Sampling and Observing Personnel

Testing was conducted by Jeramie Richardson and Wesley Alder, representing Blue Sky Environmental, Inc.

John Silva of SCS Engineers and Michael Chan of Waste Management were on-site to oversee flare operations and assist in coordinating testing and the collection of process data to verify the accuracy of digitally recorded data collected during testing.

BAAQMD was notified of the scheduled source test in a source test protocol submitted by SCS Engineers on behalf of Waste Management on December 14th, 2021. A Source Test Protocol acknowledgement (NST #7101) was received on December 15th, 2021; however, no agency observers from BAAQMD were present during the test program. A copy of the source test protocol and email correspondence are provided in Appendix I.

2.5. Source/Process Description

Redwood Landfill Inc. is a multi-material landfill with a gas collection system that is abated by two industrial landfill gas enclosed flares. Flare A-51 consists of a 90 MMBtu/hr multiple nozzle burner manufactured by Perennial Energy. The Flare shell is approximately 45 feet high and 136 inches in diameter.

2.6. Source Operating Conditions

The flare was operated on landfill gas under normal operating conditions during testing with no condensate injection. The average exhaust temperature at normal operating condition was 1,509 °F. The operating exhaust temperature, and flow records are provided in Appendix F.

The fuel volumetric flow rate was continuously measured and recorded by the LFG flow meter at 2-minute intervals and averaged 771 SCFM.

Landfill gas samples collected at the head of the flare had an average methane content of 47.8%. Oxygen content of the fuel samples ranges from 15.3% to 15.5%.

SECTION 3. SAMPLING AND ANALYSIS PROCEDURES

3.1. Port Location

Sampling was conducted at the 136-inch diameter (ID) exhaust stack through ports that were accessed with a 40-foot boom lift. The four-inch flange ports on the flare were located approximately 35 feet above grade, approximately four stack diameters downstream from the burners and one stack diameter upstream from the exhaust.

3.2. Point Description/Labeling – Ports/Stack

Blue Sky Environmental conducted an eight-point traverse at each port (90° apart) to check for the presence of cyclonic flow. O_2 stratification was greater than 10%; therefore, subsequent CEM sampling was conducted using all traverse points. The traverse points for the 136-inch diameter stack with 4-inch ports were 4.4, 14.3, 26.4, 43.9, 92.1, 109.6, 121.7 and 131.6 inches.

3.3. Sample Train Description

Sampling system diagrams are provided in Appendix H. Additional descriptive information is included in the following section.

3.4. Sampling Procedure Description

Three consecutive thirty-minute gaseous emissions tests were performed for oxides of nitrogen (NO_X), nitric oxide (NO), carbon monoxide (CO), carbon dioxide (CO_2), oxygen (O_2), methane (CH_4) and non-methane organic compounds (NMOC) at the flare exhaust stack. The sampling system was checked for leaks before the start of the testing, by plugging the sample probe and observing the sample rotameter flow drop to zero. Instrument linearity and system bias were checked. The system response time for each analyzer was recorded. The temperatures of the heated sample line between the probe and sample conditioner/condenser, and the condenser exhaust temperatures were maintained within limits during each test run.

Analyzer external calibrations were performed before and after each run using EPA protocol certified gas standards. Calibration gases were introduced to the sample manifold at the same flow rate as the sample. Any drift or bias was corrected using EPA Method 7E. A NOx analyzer converter efficiency check was performed before the first test run and achieved an efficiency greater than 90%.

Concurrent with the exhaust sampling, Blue Sky Environmental collected a total of three integrated samples of landfill gas for off-site analysis by Atmospheric Analysis & Consulting, Inc., in Ventura, California. The samples were collected in 6-liter SUMMA canisters and analyzed for NMOC, HHV, F-factor, fixed gases, sulfur species (including H_2S and TRS) and toxic air contaminants. The gas was controlled with a rotameter to collect a 30-minute integrated sample

The sampling and analysis methods are described below:

EPA Method 1 – Sample and Velocity Traverses for Stationary Sources

This method is used to determine the duct or stack area and appropriate traverse points that represent equal areas of the duct for sampling and velocity measurements.

EPA Method 3A – Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

This method is used to measure oxygen and carbon dioxide in stationary source emissions using a continuous instrumental analyzer to determine the molecular weight of the stack gas. A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. A small portion of the sample is passed through a fuel cell type paramagnetic oxygen analyzer which measures the electrical current generated by the oxidation reaction at the gas/fuel cell interface. Carbon dioxide is determined by passing the sample through a non-dispersive infrared analyzer (NDIR) tuned to a frequency at which carbon dioxide absorbs infrared radiation.

EPA Method 7E – Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)

This method is used to measure nitrogen oxides in stationary source emissions using a continuous instrumental analyzer. A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. Nitric oxide is determined by passing the sample through a chemiluminescent analyzer. The chemiluminescent process is based on the light given off when nitric oxide and ozone react. Nitrogen dioxide (NO_2) concentrations are determined by passing the sample through a catalyst which reduces the NO_2 to NO. The total oxides of nitrogen concentration (NO_2 + NO) is then determined by chemiluminescence.

Section 16.2.2 of the method is used to determine the NO_X analyzer NO_2 to NO conversion efficiency.

EPA Method 10 – Determination of Carbon Monoxide Emissions from Stationary Sources

This method is used to measure carbon monoxide in stationary source emissions using a continuous instrumental analyzer. A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. Carbon monoxide is determined by passing the sample through a non-dispersive infrared analyzer (NDIR) tuned to a frequency at which carbon monoxide absorbs infrared radiation.

EPA Methods 3A, 7E and 10 are all continuous monitoring techniques using instrumental analyzers. Sampling is performed by extracting exhaust flue gas from the stack, conditioning the sample, and analyzing it by continuous monitoring gas analyzers in a continuing emissions monitoring (CEM) test van. The sampling system consists of a stainless-steel sample probe, Teflon sample line, glass-fiber particulate filter, and glass moisture-knockout condensers in ice, followed by thermoelectric coolers (optional), Teflon sample transfer tubing, a diaphragm pump, and a stainless steel/Teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5 psi is provided to each analyzer to avoid pressure variable response differences. The entire sampling system is leak checked prior to and at the end of the sampling program.

The sampling and analytical system is checked for linearity with zero, mid (40-60%) and high span (80-100%) calibrations and is checked for system bias at the beginning and end of each run. System bias is determined by introducing calibration gas to the probe and pulling it through the entire sampling system. Individual test run calibrations use the calibration gas that most closely matches the stack gas effluent. All calibrations during testing are performed externally to incorporate any system bias that may exist. Sampling system bias, zero and calibration drift values are determined for each test. EPA Methods 3A, 7E and 10 all defer to EPA Method 7E for the calculations of effluent concentration, span, calibration gas, analyzer calibration error (linearity), sampling system bias, zero drift, calibration drift and response time.

EPA Method 4 – Determination of Moisture Content in Stack Gas

This method is used to determine the moisture content of stack gas. The sample is extracted and condensed in Greenburg-Smith impingers immersed in an ice bath and in a final impinger silica gel trap. The moisture is condensed in a solution of de-ionized water, or solutions of another type of sampling train if the moisture is being determined as part of another sampling method, such as EPA Method 5, SCAQMD Method 201.7 or BAAQMD ST-32. The moisture gain in the impinger solutions and silica gel is determined volumetrically and gravimetrically respectively.

QA/QC procedures require that a minimum of 21 cubic feet of sample is pulled using a leak tight pump. The sample volume is measured with a calibrated dry gas meter. The impingers are immersed in an ice bath to maintain a gas outlet temperature of less than 68°F. Pre-test leak checks are performed for each run using a minimum 15 inches of mercury vacuum. Post-test leak checks are performed at the highest sample vacuum or greater. The leak test is acceptable if the leak rate is less than 0.02 cubic feet per minute or 4% of the average sampling rate, whichever is less. If the final leak check exceeds the criteria, either the volume is corrected based on the leak rate or the run is voided and repeated.

EPA Method 19 – Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates

This method is used to determine stack gas volumetric flow rates using oxygen-based F-factors. F-factors are ratios of combustion gas volumes to heat inputs. The heating value of the fuel in Btu per cubic foot is determined from analysis of fuel gas samples using ASTM D-1946/1945 gas chromatography analytical procedures. The total cubic feet per hour of fuel multiplied times the Btu/cf provides million Btu per hour (MMBtu) heat input. The heat input in MMBtu/hr is multiplied by the F-factor (DSCF/MMBtu) and adjusted for the measured oxygen content of the source to determine volumetric flow rate. The flow rates are used to determine emission rates.

EPA Method 25C – Determination of Nonmethane Organic Compounds (NMOC) in Landfill Gas

This method is used to sample and measure NMOC in landfill gases. The method is written for evacuated tank sampling but is adaptable to Tedlar bag sampling procedures. The sampling equipment consists of a stainless steel or glass lined probe with a short stainless-steel or Teflon transfer line to a Tedlar bag housed in a sealed chamber. The chamber is evacuated by pump at a prescribed rate for the test duration and the Tedlar bag capacity, so the sample is integrated over the test period. The sample is injected into a GC column where the methane and CO_2 are flushed through and removed then the NMOC (ROC) fraction is oxidized to form CO_2 then reduced to methane and analyzed.

EPA Method ALT-097 Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer

This is an acceptable alternative to EPA Method 25A for the determination of total hydrocarbons, methane, and non-methane organic compounds in stationary source emissions. The test uses TECO 55C GC/FID methane/non-methane analyzer. Heated Teflon sample gas transfer lines are used to provide a continuous sample to the analyzer. Heated lines are used to avoid moisture or hydrocarbon condensation.

The sampling and analytical system is checked for linearity with zero, low (25-35%), mid (45-55%), and high (80-90%) span calibrations. All calibrations during testing are performed externally to incorporate any system bias that may exist. A system linearity check is performed prior to testing and during testing and calibration drift checks are performed after every run. All data is corrected according to EPA Method 25A.

EPA Compendium Method TO-15 – Determination of Toxic Organic Compounds in Ambient Air

This method is used to measure volatile organic compounds that are included in the hazardous air pollutants (HAPs) listed in Title III of the Clean Air Act Amendments of 1990 by GC/MS (gas chromatography/mass spectroscopy). Samples are collected in pre-evacuated 6-Liter SUMMA canisters with pre-set flow controllers set to integrate over the desired test duration. The SUMMA® passivated canisters allow holding times up to 14 days for the TO-15 Method list of volatile organics. The sample gas is drawn by the canister vacuum through a micro-filter, pre-set orifice flow controller and on/off valve into the canister. The canister vacuum is monitored with a vacuum gauge to verify sample collection. The flow controller consisted of capillary orifice tubing designed to sample for a pre-set duration of 0.75hrs.

ASTM D-1945 – Analysis of Natural Gas by Gas Chromatography

This method is used to measure fixed gases (such as oxygen, nitrogen, carbon monoxide, and carbon dioxide) and methane by gas chromatography (GC/TCD). Light hydrocarbons, including C1-C7, are analyzed by GC/FID.

ASTM D-3588 – Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels

This method uses the molar composition of gaseous fuel determined from Method ASTM D-1945 to calculate the heating value and F-factor.

ASTM D-5504 – Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence

This method is used for the determination of speciated volatile sulfur-containing compounds in high methane content gaseous fuels by gas chromatography. Sulfur compounds are processed using a flame ionization detector (GC/FID). The products are then analyzed with a sulfur chemiluminescence detector (GC/SCD). Samples may be collected in Tedlar bags and analyzed within 24 hours or in Silco SUMMA canisters and analyzed 7 days.

BAAQMD Source Test Procedure ST-19 – Sulfur Dioxide, Continuous Sampling

This method is used to quantify sulfur dioxide emissions and determine compliance with Regulations 9-1-302, 9-1-304 through 310, and 10-1-301.

3.5. Instrumentation and Analytical Procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO Model 42C	$NO/NO_2/NO_X$	Chemiluminescence
TECO Model 48C	CO	Gas Filter Correlation (GFC)/IR
TECO Model 55C	CH_4/NMOC/THC	Flame Ionization (FID)
Servomex Model 1440	CO_2	Infrared (IR)
Servomex Model 1440	O_2	Paramagnetic

3.6. System Performance Criteria

The analyzer data recording system consists of a Honeywell DPR300 strip chart recorder supported by a data acquisition system (DAS). The instrument response is recorded on strip charts and DAS. The averages are corrected for drift using BAAQMD and EPA Method 7E equations

Instrument Linearity	≤2% Full Scale
Instrument Bias	≤5% Full Scale
System Response Time	≤± 2 minutes
NO_X Converter Efficiency *(EPA Method 7E)*	≥ 90%
Instrument Zero Drift	≤± 3% Full Scale
Instrument Span Drift	≤± 3% Full Scale

3.7. Comments: Limitations and Data Qualifications

This source test was performed in accordance with the protocol submitted to BAAQMD. The total reduced sulfur content of the landfill gas exceeded the permit limit. On October 6, 2016, Redwood Landfill proposed a permit modification to increase the peak limit for this compound. This modification is still under review by BAAQMD. Per the November 2016 Compliance Agreement between Redwood Landfill and BAAQMD, enforcement actions are not expected if the Agreement is complied with.

The measured emissions from Flare A-51 met the permit-required limits for all compounds except isopropyl alcohol. It was suspected that these results were an anomaly; therefore, Blue Sky Environmental returned to the site on March 4, 2022 to collect three additional fuel samples for analysis by EPA Method TO-15. Laboratory reports for both tests are included in Appendix C.

Blue Sky Environmental has reviewed this report for accuracy and concluded that the test procedures were followed and accurately described and documented. The review included the following items:

Review of the general text
Review of calculations
Review of CEMS data
Review of supporting documentation

The services described in this report were performed in a manner consistent with the generally accepted professional testing principles and practices. No other warranty, expressed or implied, is made. These services were performed in a manner consistent with our agreement with our client. The report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions contained in this report pertain to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and operating parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations, subsequent to this, and do not warranty the accuracy of information supplied by others.

SECTION 4. APPENDICES

A
Tabulated Results

TABLE #1

Redwood Landfill
Flare A-51
1,509°F

Parameter	Run 1	Run 2	Run 3	Average Results	Permit Limits
Test Date	1/12/22	1/12/22	1/12/22		
Test Time	1250-1337	1354-1439	1455-1540		
Standard Temperature, °F	70	70	70		
Process Parameters:					
Flare Temperature, °F	1,508	1,510	1,509	1,509	>1,400
Fuel:					
Fuel Flow Rate, SCFM	762	761	792	771	
Fuel Heat Input, MMBtu/hr	21.2	21.6	22.3	21.7	
Total Reduced Sulfurs as H_2S, ppmv in Fuel	907	1,037	1,159	1,034	410
Stack Gas:					
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	13,068	13,487	13,379	13,311	
Oxygen (O_2), % volume dry	15.45	15.52	15.30	15.43	
Carbon Dioxide (CO_2), % volume dry	4.98	4.99	5.15	5.04	
Water Vapor (H_2O), % volume *(EPA Method 4)*	6.04	6.35	6.44	6.28	
NO/NO_2/NO_X Emissions:					
NO, ppmvd	7.5	6.2	6.0	6.6	
NO_2, ppmvd	3.9	5.2	5.8	5.0	
NO_2/NO Ratio	0.52	0.83	0.97	0.77	
NOx, ppmvd	11.4	11.4	11.8	11.5	
NOx, ppmvd @ 15% O_2	12.4	12.5	12.5	12.4	15
NOx, lb/hr	1.06	1.09	1.13	1.10	
NOx, lb/MMBtu	0.050	0.051	0.051	0.051	0.06
CO Emissions:					
CO, ppmvd	31.8	30.0	31.9	31.3	
CO, ppmvd @ 15% O_2	34.5	32.9	33.7	33.7	82
CO, lb/hr	1.81	1.76	1.86	1.81	
CO, lb/MMBtu	0.0855	0.0814	0.0833	0.0834	0.20
SO_2 Emissions:					
SO_2, ppmvd *(calculated)*	52.9	58.5	68.6	59.9	300
SO_2, ppmvd @ 15% O_2	57.3	64.1	72.3	64.6	
SO_2, ppmvd @ 3% O_2	173.8	194.6	219.5	195.9	
SO_2, lb/hr	6.87	7.85	9.13	7.95	
SO_2, lb/MMBtu	0.325	0.363	0.410	0.366	1.69
THC Emissions (reported as CH_4):					
THC, ppmv wet *(EPA Method ALT-097)*	24.18	22.09	20.11	22.13	
THC, ppmvd	25.74	23.59	21.49	23.61	
THC, lb/hr	0.835	0.790	0.714	0.779	
Methane (CH_4) Emissions:					
CH_4, ppmvd *(EPA Method ALT-097)*	23.53	21.55	19.63	21.57	
CH_4, lb/hr	0.763	0.722	0.652	0.712	
NMOC Emissions (reported as CH_4):					
NMOC, ppmvd *(EPA Method ALT-097)*	0.65	0.54	0.47	0.55	
NMOC, lb/hr	0.021	0.018	0.016	0.018	
NMOC, ppmvd as hexane (C_6H_{14}) @ 3% O_2	0.36	0.30	0.25	0.30	360
NMOC, ppmvd @ 3% O_2 as CH_4	2.1	1.8	1.5	1.8	30*
Inlet Hydrocarbons (reported as CH_4):					
Inlet NMOC, ppmvd *(EPA Method 25C)*	1,403	1,388	1,390	1,394	
Inlet NMOC, lb/hr	2.65	2.62	2.73	2.67	
NMOC Destruction Efficiency, %	99.206%	99.313%	99.423%	99.314%	>98%*
Inlet CH_4, % *(ASTM D-1945)*	472,000	483,000	478,000	477,667	
Inlet CH_4, lb/hr	892.5	912.2	939.7	915	
CH_4 Destruction Efficiency, %	99.914%	99.921%	99.931%	99.922%	>99%
Inlet THC (TOC), %	473,403	484,388	479,390	479,060	
Inlet THC (TOC), lb/hr	895.2	914.8	942.4	917.5	
THC (TOC) Destruction Efficiency, %	99.907%	99.914%	99.924%	99.915%	>98%

* NMOC permit limits are 30 ppmvd @ 3% O_2 or DE >98%

WHERE,

ppmvd = parts per million concentration by volume expressed on a dry gas basis
lb/hr = pound per hour emission rate
Tstd. = standard temperature (°R = °F+460)
MW = molecular weight
DSCFM = dry standard cubic feet per minute
NO_X = oxides of nitrogen, reported as NO_2 (MW = 46)
CO = carbon monoxide (MW = 28)
TOC = THC = total organic compounds as CH_4, including CH_4 (MW = 16)
THC = total hydrocarbons, reported as CH_4 (MW = 16)
NMOC = total non-methane organic compounds, reported as CH_4 (MW = 16)
SO_2 = Sulfur dioxide (MW = 64.1)

CALCULATIONS,

ppm @ 15% O_2 = ppm · 5.9 / (20.9 - %O_2)
ppm @ 3% O_2 = ppm · 17.9 / (20.9 - %O_2)
lb/hr = ppm · 8.223 E-05 · DSCFM · MW / Tstd. °R
lb/MMBtu = lb/hr / fuel heat input, MMBtu/hr
Destruction Efficiency (DE) = (inlet, lb/hr- outlet, lb/hr) / inlet, lb/hr
NMOC, ppm as CH_4 = THC - CH_4
NMOC, ppm as hexane = NMOC, ppm as CH_4 / 6
< Value = 2% of Analyzer Range

TABLE # 2

Landfill Gas Characterization

Redwood Landfill

Flare A-51

Parameter		Run 1	Run 2	Run 3	Average Results	Permit Limits
Sample ID		RLI LFG 1	RLI LFG 2	RLI LFG 3		
Sample Date		1/12/22	1/12/22	1/12/22		
Acrylonitrile	ppb	<162	<161	<177	<167	300
Benzene	ppb	1,120	1,080	1,080	1,093	1,500
Benzyl Chloride (Chloromethylbenzene)	ppb	<40.5	<40.4	<44.3	<41.7	500
Carbon Tetrachloride	ppb	<40.5	<40.4	<44.3	<41.7	200
Chlorobenzene	ppb	<40.5	<40.4	<44.3	<41.7	200
Chloroethane	ppb	<40.5	253	<44.3	<112.6	500
Chloroform	ppb	<40.5	<40.4	<44.3	<41.7	200
1,1 Dichloroethane (Ethylidene Dichloride)	ppb	<40.5	<40.4	<44.3	<41.7	500
1,1 Dichloroethene (Vinylidene Chloride)	ppb	<40.5	<40.4	<44.3	<41.7	500
1,2 Dichloroethane (Ethylene Dichloride)	ppb	444	437	463	448	200
1,4 Dichlorobenzene	ppb	180	166	193	179.7	1,000
Ethylbenzene	ppb	3,830	3,820	3,950	3,867	4,000
Ethlyene Dibromide (1,2 Dibromoethane)	ppb	<40.5	<40.4	<44.3	<41.7	200
Hexane	ppb	1430	1490	1520	1480	2,000
Isopropyl Alcohol (IPA)*	ppb	8,190	10,100	8,640	8,977	10,000
Methyl Alcohol (Methanol)	ppb	32,100	31,500	28,000	30,533	300,000
2-Butanone (Methyl Ethyl Ketone) (MEK)	ppb	8,440	8,140	7,000	7,860	15,000
Methylene Chloride	ppb	192	190	<88.6	<156.9	1,000
Methyl tert Butyl Ether (MTBE)	ppb	<40.5	<40.4	<44.3	<41.7	500
Perchloroethylene (Tetrachloroethane)	ppb	228	243	244	238	1,000
Styrene	ppb	275	274	286	278	500
Toluene	ppb	3,870	3,940	3,350	3,720	20,000
1,1,1 Trichlororethane	ppb	<40.5	<40.4	<44.3	<41.7	200
1,1,2,2 Tetrachloroethane	ppb	<40.5	<40.4	<44.3	<41.7	200
Trichloroethylene (Trichloroethane)	ppb	<40.5	<40.4	<44.3	<41.7	500
Vinyl Chloride	ppb	<40.5	<40.4	<44.3	<41.7	2,000
Xylenes	ppb	8,430	8,310	8,650	8,463	20,000
Carbon Disulfide	ppm	0.182	0.121	0.157	0.153	
Carbonyl Sulfide (COS/SO_2)	ppm	1.66	1.85	0.935	1.48	
Dimethyl Sulfide	ppm	0.993	1.094	0.931	1.006	
Ethyl Mercaptan	ppm	0.229	0.174	0.188	0.197	
Methyl Mercaptan	ppm	1.67	1.58	1.53	1.59	
Hydrogen Sulfide	ppm	899	1,029	1,152	1,027	
Total Reduced Sulfurs as H_2S	ppm	907	1,037	1,159	1,034	410

*The original analysis for IPA from January 12, 2022 can be found in the Appendix C. The second analysis for IPA show that the flare/site are in compliance with the permit thresholds and the additional samples occurred March 4, 2022

Redwood Landfill, Inc

BAAQMD Facility # A1179

Annual Compliance Emissions Test Report #21208
Landfill Gas Flare A-60(A) and Gas Treatment System S-71

Located at:
Redwood Landfill
8950 Redwood Highway
Novato, California 94948

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Testing Performed on:
July 12th - 13th, 2021

Final Report Submitted on:
September 10th, 2021

Performed and Reported by:
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REVIEW AND CERTIFICATION

Team Leader:

The work performed herein was conducted under my supervision, and I certify that:

a) the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program,

b) that the sampling and analytical procedures and data presented in the report are authentic and accurate,

c) that all testing details and conclusions are accurate and valid, and

d) that the production rate and/or heat input rate during the source test are reported accurately.

If this report is submitted for compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please contact me at (810) 923-3181.

Jeramie Richardson

Project Manager

Blue Sky Environmental, Inc.

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SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc was contracted by Waste Management to perform compliance emissions testing at Redwood Landfill, Inc. located in Novato, California. Testing was conducted to demonstrate that the facility's Landfill Gas Flare A-60 (A) and Willexa Gas Treatment and Desorption System (S-71) are operating in compliance with their associated Bay Area Air Quality Management District's (BAAQMD) air contaminant discharge permit. The source test information is summarized in Table 1.1. Test results derived from the source test are summarized in Tables 1.2 and 1.3. Results for individual test runs are included in Appendix A.

Table 1.1 Source Test Information

Test Location:	Redwood Landfill, Inc. 8950 Redwood Highway, Novato, California 94948
Source Contact:	Alisha McCutcheon (415) 892-2851
Source Tested:	Enclosed Landfill Gas Flare A-60 (A) and LFG Treatment & Desorption System (S-71)
Source Test Dates:	July 12th – 13th, 2021
Test Objective:	Determine compliance with Bay Area Air Quality Management District (BAAQMD) Title V Permit A1179, condition 19867 and condition 25635, part 13, and BAAQMD Regulation 8, Rule 34
Test Performed by:	Blue Sky Environmental, Inc 624 San Gabriel Avenue, Albany, CA 94706 Jeramie Richardson (810) 923 -3181 jrichardson@blueskyenvironmental.com
Test Parameters:	**Landfill Gas** O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, Sulfur & VOC Species, Volumetric Flow Rate, Landfill Gas **Flare Emissions** THC, CH_4, NMOC, NOx, CO, O_2, SO_2, Volumetric Flow Rate, Temperature

Table 1.2
Enclosed Landfill Gas Flare A-60 (A) Compliance Summary

Emission Parameter	Average Test Result	Permit Limit	Compliance Status
NOx, lb/MMBtu	0.048	0.06	In Compliance
NOx, ppm @ 15% O_2	11.7	15	In Compliance
CO, lb/MMBtu	0.096	0.20	In Compliance
CO, ppm @ 15% O_2	38.5	82	In Compliance
SO_2, ppm	1.00	300	In Compliance
SO_2, lb/MMBtu	0.0051	1.69	In Compliance
NMOC, ppm @ 3% O_2 as CH_4	3.6	30 or	In Compliance
NMOC Destruction Efficiency, %	97.460%	>98%	
CH_4 Destruction Efficiency %	99.973%	>99%	In Compliance

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This performance test was conducted to demonstrate compliance of Enclosed Landfill Gas Flare A-60 (A) with the emission limits specified in Bay Area Air Quality Management District (BAAQMD) Title V Permit A1179, Permit Condition 19867, Part 30 and Permit Condition 25636, Part 4. This testing also satisfies the compliance requirements of BAAQMD Regulation 8 Rule 34.

This report also includes results of fuel gas samples collected from the Willexa Waste Gas Treatment System S-71. There are no compliance limits associated with the results of this system.

2.2. Pollutants Tested

The following U.S. Environmental Protection Agency (EPA) and ASTM International sampling and analytical methods were used:

EPA Method 1	Sample and Velocity Traverses
EPA Method 3A	O_2, CO_2
EPA Method 10	CO
EPA Method 25A/ALT-097	THC/CH_4/NMOC
EPA Method 7E	NOx
EPA Method 6C	SO_2
EPA Method 4	Moisture
EPA Method 19	Flow Rate Calculation, DSCFM
EPA Method 25C	LFG Gas analysis for NMOC by GC
EPA Method TO-15	VOC Species
ASTM D-1945/3588	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS in fuel

2.3. Test Date(s)

Testing was conducted on the Willexa Waste Gas Treatment System S-71 on July 12th . Enclosed Landfill Gas Flare A60 (A) was tested on July 13th, 2021.

2.4. Sampling and Observing Personnel

Testing was performed by Jeramie Richardson, Guy Worthington and Wesley Alder representing Blue Sky Environmental, Inc.

Patrick Madison (WMRE Plant Manager) and Ben Traver (Operator) of Waste Management, and Jonathan Silva of SCS Engineers were present to operate and oversee flare operations and assist in coordinating testing and the collection of process data during testing.

BAAQMD was notified of the scheduled testing in a plan submitted by SCS Engineers on June 14th, 2021. A Source Test Protocol acknowledgement was requested and received by SCS Engineers (NST #6559 and #6560); however, no agency observers were on site during the test program. A copy of the source test protocol and agency correspondence are provided in Appendix I.

2.5. Source/Process Description

Redwood Landfill and Recycling Center is a multi-material landfill with gas collection system treated by a Willexa landfill gas treatment system-desorption process (S-71) and abated by a landfill gas enclosed flare (A-60). Flare A-60 is divided into two discreet zones, A and B. Zone A is the large zone, with 4 sampling ports that require unique (not perpendicular) traverses of 133-inches in length. The Willexa treatment system is designed to remove non-methane organics, sulfurs, siloxanes and chlorinated compounds from up to 1,875 SCFM of landfill gas prior to its use as a fuel in the facility's engines. The Willexa treatment system has four cycles, Depress Cycle #1, Regen Cycle, Depress Cycle #2 and Stabilization. The treated waste gas is vented at separate times through 1-inch and 12-inch diameter pipes to zone A of Flare A60.

2.6. Source Operating Conditions

The A60 (A) flare was operated on landfill gas fuel at an average of 1,575 °F during the test program. Process data collected by the facility (LFG and waste gas flow rate records) are provided in Appendix F. There was no condensate injection. LFG flow rate averaged 951 SCFM with an average methane content of 45.7%. The Willexa (S-71) was not purging to the flare during this test.

The Willexa treatment system has main four stages (cycles) consisting of multiple steps that are generally described below:

1 Depress Cycle #1 – 1" line, ~100 SCFM initially for a few minutes. This cycle removes the landfill gas from the vessel and sends it to the Flare and introduces O_2 before the regen cycle starts.

2. Regen Cycle – 12" line from Willexa to the Flare.
   a. Starts at 300 SCFM and ramps up to ~2000 SCFM ~25 minutes.
   b. Once at 2000 SCFM system then starts the heating cycle.
   c. Heats media for an extended time ~ 10-12 hours.
   d. Heat Off, while blower continues to cool down media to 170 degrees or for approximately 6 hours.
   e. Blower ramps down from ~2000 SCFM to 0 SCFM in a few minutes.
   f. Shuts down blower.
3. Depress Cycle #2 – O_2 Purge – 1" line, for ~ 30-45 minutes at ~60 SCFM.
4. Stabilization Cycle – Shuts off valve to flare to stabilize methane.

SECTION 3. SAMPLING AND ANALYSIS PROCEDURES

3.1. Port Location

The two unequal stack segments (A and B) in Flare A-60 flare present a unique sampling configuration, as the cross-section is neither round, square, rectangular, or oval. The A-60 (A) Flare sampling was conducted via adjacent flange ports, both with a 133 inch traverse path length. The 4-inch flange port was located 35 feet above grade, approximately four stack diameters downstream from the burners and one stack diameter upstream from the exhaust exit. The port was accessed by a 40-foot boom-lift.

3.2. Point Description/Labeling – Ports/Stack

Blue Sky Environmental conducted sampling at the mid-point of the Flare A60 (A) stack. The stack was traversed during all three runs. Sampling points for the 12-inch diameter stack were 4.3, 14.0, 25.8, 43.0, 90.0, 107.2, 119.0 and 128.7 inches.

The Willexa (S-71) stack was also traversed during all three runs. Sampling points for the 12-inch diameter stack were 0.5, 1.3, 2.3, 3.9, 8.1, 9.7, 10.7 and 11.6 inches.

3.3. Sample Train Description

Sampling system diagrams are provided in Appendix H. Additional descriptive information is included in the following section.

3.4. Sampling Procedure Description

Three 32-minute test runs were performed for oxides of nitrogen (NO_X), carbon monoxide (CO), carbon dioxide (CO_2), oxygen (O_2), methane (CH_4), and non-methane organic compounds (NMOC) at the flare exhaust.

The sampling system was checked for leaks before the start of the testing, by plugging the sample probe and observing the sample rotameter flow drop to zero. Instrument linearity and system bias were checked. The system response time for each analyzer was recorded. The temperatures of the heated sample line between the probe and sample conditioner/condenser, and the condenser exhaust temperatures were maintained within limits during each test run.

Analyzer external calibrations were performed before and after each run using EPA protocol certified gas standards. Calibration gases were introduced to the sample manifold at the same flow rate as the sample. A NOx analyzer converter efficiency check was performed before the first test run and achieved an efficiency greater than 90%.

Concurrent with the exhaust sampling, Blue Sky collected a total of ten integrated 6-liter summa canister samples. Three LFG samples were collected from the Flare A60-A exhaust and analyzed for M18. An additional three LFG samples were collected from the A-60-A Flare One sample of the Willexa 1" purge line was collected. Three samples of the Willexa 12-inch purge gas were sampled. The samples were collected using Teflon tubing connections that were filled and purged prior to sampling. All the samples were analyzed for NMOC, HHV, F-Factor, Fixed Gases and Sulfur Species (incl. H_2S and TRS) and VOC Compounds.

Waste gas testing occurred over an approximate 5 hour period on July 12th, 2021. Testing was performed during the period of highest concentrations of emissions from the Willexa treatment system. The first event is the LFG purge of the 1-inch line to the Flare. The second and third events were integrated samples taken a period spanning Steps 6,7,8 and 9. During this period the flows were recorded using an Shortridge AIRFOIL pitot fixed in the center of the duct approximately every 15 seconds, additional flows were performed using EPA Method 2 using a standard pitot tube.

The sampling and analysis methods are summarized below:

EPA Method 1 – Sample and Velocity Traverses for Stationary Sources
This method is used to determine the duct or stack area and appropriate traverse points that represent equal areas of the duct for sampling and velocity measurements.

EPA Method 3 – Gas Analysis for the Determination of Dry Molecular Weight
This method is used to determine the dry molecular weight of stack gas. Measurements of gas constituents % O_2 and % CO_2 were made by BAAQMD Methods ST-14 and ST-5.

EPA Method 3A – Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)
This method is used to measure oxygen and carbon dioxide in stationary source emissions using a continuous instrumental analyzer to determine the molecular weight of the stack gas.

EPA Method 7E – Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)
This method is used to measure nitrogen oxides in stationary source emissions using a continuous instrumental analyzer. Section 16.2.2 of the method is used to determine the NO_X analyzer NO_2 to NO conversion efficiency.

EPA Method 10 – Determination of Carbon Monoxide Emissions from Stationary Sources
This method is used to measure carbon monoxide from integrated or continuous gas samples extracted from a sampling point.

EPA Methods 3A, 7E and 10 are all continuous monitoring techniques using instrumental analyzers. Sampling is performed by extracting exhaust flue gas from the stack, conditioning the sample, and analyzing it by continuous monitoring gas analyzers in a continuing emissions monitoring (CEM) test van. The sampling system consists of a stainless steel sample probe, Teflon sample line, glass-fiber particulate filter, and glass moisture-knockout condensers in ice, followed by thermoelectric coolers (optional), Teflon sample transfer tubing, a diaphragm pump, and a stainless steel/Teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5 PSI is provided to each analyzer to avoid pressure variable response differences. The entire sampling system is leak checked prior to and at the end of the sampling program.

The sampling and analytical system is checked for linearity with zero, mid (40-60%) and high span (80-100%) calibrations and is checked for system bias at the beginning and end of each run. System bias is determined by introducing calibration gas to the probe and pulling it through the entire sampling system. Individual test run calibrations use the calibration gas that most closely matches the stack gas effluent. All calibrations during testing are performed externally to incorporate any system bias that may exist. Sampling system bias, zero and calibration drift values are determined for each test. EPA Methods 3A, 7E and 10 all defer to EPA Method 7E for the calculations of effluent concentration, span, calibration gas, analyzer calibration error (linearity), sampling system bias, zero drift, calibration drift and response time.

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of a Honeywell DPR3000 strip chart recorder supported by a Data Acquisition System (DAS).

System Performance Criteria

Instrument Linearity	≤ 2% Full Scale (checked)
Instrument Bias	≤ 5% Full Scale (checked)
System Response Time	≤± 2 minutes (checked)
NOx Converter Efficiency *(EPA Method 7E)*	≥ 90% (checked)

EPA Method ALT-097 Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer

This is an acceptable alternative to EPA Method 25A for the determination of total hydrocarbons, methane, and non-methane organic compounds in stationary source emissions. The test uses TECO 55C GC/FID methane/non-methane analyzer. Heated Teflon sample gas transfer lines are used to provide a continuous sample to the analyzer. Heated lines are used to avoid moisture or hydrocarbon condensation.

The sampling and analytical system is checked for linearity with zero, low (25-35%), mid (45-55%), and high (80-90%) span calibrations. All calibrations during testing are performed externally to incorporate any system bias that may exist. A system linearity check is performed prior to testing and during testing and calibration drift checks are performed after every run. All data is corrected according to EPA Method 25A.

EPA Method 4 – Determination of Moisture Content in Stack Gas

This method is used to determine the moisture content of stack gas. The sample is extracted and condensed in Greenburg-Smith impingers immersed in an ice bath and in a final impinger silica gel trap. The moisture is condensed in a solution of de-ionized water, or solutions of another type of sampling train if the moisture is being determined as part of another sampling method, such as EPA Method 5, SCAQMD Method 201.7 or BAAQMD ST-32. The moisture gain in the impinger solutions and silica gel is determined volumetrically and gravimetrically respectively. QA/QC procedures require that a minimum of 21 cubic feet of sample is pulled using a leak tight pump. The sample volume is measured with a calibrated dry gas meter. The impingers are immersed in an ice bath to maintain a gas outlet temperature of less than 68°F. Pre-test leak checks are performed for each run using a minimum 15 inches of mercury vacuum. Post-test leak checks are performed at the highest sample vacuum or greater. The leak test is acceptable if the leak rate is less than 0.02 cubic feet per minute or 4% of the average sampling rate, whichever is less. If the final leak check exceeds the criteria, either the volume is corrected based on the leak rate or the run is voided and repeated.

EPA Compendium Method TO-15 – Determination of Toxic Organic Compounds in Ambient Air

This method is used to measure volatile organic compounds that are included in the hazardous air pollutants (HAPs) listed in Title III of the Clean Air Act Amendments of 1990 by GC/MS (gas chromatography/mass spectroscopy). Samples are collected in pre-evacuated 6-Liter SUMMA canisters with pre-set flow controllers set to integrate over the desired test duration. The SUMMA® passivated canisters allow holding times up to 14 days for the TO-15 Method list of volatile organics. The sample gas is drawn by the canister vacuum through a micro-filter, pre-set orifice flow controller and on/off valve into the canister. The canister vacuum is monitored with a vacuum gauge to verify sample collection. The flow controller consisted of capillary orifice tubing designed to sample for a pre-set duration of 0.75hrs.

ASTM D1945 – Analysis of Natural Gas by Gas Chromatography

This method is used to measure fixed gases (such as oxygen, nitrogen, carbon monoxide, and carbon dioxide) and methane by gas chromatography (GC/TCD). Light hydrocarbons, including C1-C7, are analyzed by GC/FID.

ASTM D-5504 – Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence

This method is used for the determination of speciated volatile sulfur-containing compounds in high methane content gaseous fuels by gas chromatography. Sulfur compounds are processed using a flame ionization detector (GC/FID). The products are then analyzed with a sulfur chemiluminescence detector (GC/SCD). Samples may be collected in Tedlar bags and analyzed within 24 hours or in Silco SUMMA canisters and analyzed within 7 days.

EPA Method 19 – Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates

This method is used to determine stack gas volumetric flow rates using oxygen-based F-factors. F-factors are ratios of combustion gas volumes to heat inputs. The heating value of the fuel in Btu per cubic foot is determined from analysis of fuel gas samples using ASTM D1946/1945 gas chromatography analytical procedures. The total cubic feet per hour of fuel multiplied times the Btu/cf provides million Btu per hour (MMBtu) heat input. The heat input in MMBtu/hr is multiplied by the F-factor (DSCF/MMBtu) and adjusted for the measured oxygen content of the source to determine volumetric flow rate. The flow rates are used to determine emission rates.

Willexa Gas Samples			
07/12/21	LFG Gas Sample	Willexa Purge Gas Sample 12”	Willexa Purge Gas Sample 1”
Run 1-Step 1 **1333 - 1356**	-		1”-2
Run 2 **1357 - 1624**	-	12” - 1	-
Run 3 **1625 - 1805**	-	12” - 2	-
LFG Gas Samples			
07/13/21	-	-	-
Run 1 **1326 - 1413**	R1-LFG-A60	-	-
Run 2 **1443 - 1530**	R2-LFG-A60	-	-
Run 3 **1601 - 1646**	R3-LFG-A60	-	-

The inlet volumetric Flow Rate and Flare Temperature was continuously measured and recorded by the facility Yokogawa monitors.

3.5. Instrumentation and Analytical Procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO 43C	SO_2	Pulsed Fluorescence
TECO 42C	NO_x	Chemiluminescence
TECO 48C	CO	GFC/IR
TECO 55C	$THC/CH_4/NMOC$	FID
Servomex 1440	CO_2	IR
Servomex 1440	O_2	Paramagnetic

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of Omega 8 channel strip chart recorders, which can be supported by a Data Acquisition System (DAS).

The instrument response was recorded on strip charts and DAS and some data is manually reduced. The averages were corrected for drift using BAAQMD & EPA Method 7E equations.

3.6. Summary and Comments

This source test was performed in accordance with the protocol submitted to BAAQMD. No deviations from the protocol or anomalies were observed during testing.

Blue Sky Environmental has reviewed this report for accuracy and concluded that the test procedures were followed and accurately described and documented. The review included the following items:

Review of the general text
Review of calculations
Review of CEMS data
Review of supporting documentation

The services described in this report were performed in a manner consistent with the generally accepted professional testing principles and practices. No other warranty, expressed or implied, is made. These services were performed in a manner consistent with our agreement with our client. The report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk. Opinions contained in this report pertain to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and operating parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations, subsequent to this, and do not warranty the accuracy of information supplied by others.

SECTION 4. APPENDICES

A
Tabulated Results

TABLE #1

Redwood Landfill, Inc
Flare A-60 (A)

Parameter	Run 1	Run 2	Run 3	Average Results	Permit Limits
Test Date	7/13/21	7/13/21	7/13/21		
Test Time	1326 - 1413	1443 - 1530	1601 - 1646		
Standard Temperature, °F	70	70	70		
Process Parameters:					
Flare Temperature, °F	1,575	1,576	1,575	1,575	
Fuel Gas:					
LFG Fuel Flow Rate, SCFM	953	950	950	951	
Total Fuel Heat Input, MMBtu/hr	25.2	25.7	25.9	25.6	
Total Reduced Sulfur Compounds as H_2S, ppm	465	542	529	512	410
Inlet CH_4, ppm	449,000	460,000	463,000	457,333	
Inlet CH_4, lb/hr	1,062	1,084	1,091	1,079	
Inlet NMOC, ppm as CH_4 *(EPA Method 25C)*	748	701	705	718	
Inlet NMOC, lb/hr as CH_4	1.77	1.65	1.66	1.69	
Inlet THC, ppm as CH4	1,064	1,086	1,093	1,081	
Stack Gas:					
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	13,225	12,952	13,183	13,120	
Oxygen (O_2), % volume dry	14.5	14.2	14.3	14.3	
Carbon Dioxide (CO_2), % volume dry	5.8	6.1	6.1	6.0	
Moisture (H_2O), % volume dry	6.5	8.3	7.8	7.5	
NO_X Emissions (reported as NO_2):					
NOx, ppm	11.6	13.0	14.8	13.1	
NOx, ppm @ 15% O_2	10.6	11.4	13.1	11.7	15
NOx, lb/hr	1.10	1.20	1.39	1.23	
NOx, lb/MMBtu	0.044	0.047	0.054	0.048	0.06
NO, ppm	11.5	12.8	14.6	12.9	
NO_2, ppm	0.15	0.20	0.18	0.18	
CO Emissions:					
CO, ppm	48.9	39.8	40.1	42.9	
CO, ppm @ 15% O_2	44.8	35.0	35.6	38.5	82
CO, lb/hr	2.81	2.24	2.30	2.45	
CO, lb/MMBtu	0.112	0.087	0.089	0.096	0.20
Sulfur Dioxide (SO_2) Emissions:					
SO_2, ppm (calculated)	0.88	1.08	1.04	1.00	300
SO_2, lb/hr	0.12	0.14	0.14	0.13	
SO_2, lb/MMBtu	0.0046	0.0054	0.0053	0.0051	1.69
THC Emissions (reported as CH_4):					
THC, ppm *(EPA Method ALT 097)*	13.9	11.1	5.8	10.3	
THC, lb/hr	0.46	0.36	0.19	0.33	
THC Destruction Efficiency, %	99.957%	99.967%	99.983%	99.969%	
Methane (CH_4) Emissions:					
CH_4, ppm wet *(EPA Method ALT 097)*	11.7	9.0	4.2	8.3	
CH_4, ppm	12.5	9.8	4.5	8.9	
CH_4, lb/hr	0.41	0.32	0.15	0.29	
CH_4 Destruction Efficiency, %	99.961%	99.971%	99.986%	99.973%	> 99%
NMOC Emissions (reported as CH_4):					
NMOC, ppm wet *(EPA Method ALT 097)*	1.3	1.2	1.2	1.2	
NMOC, ppm	1.4	1.3	1.3	1.3	
NMOC, lb/hr as CH_4	0.047	0.041	0.042	0.043	
NMOC, ppm @ 3% O_2	4.0	3.4	3.4	3.6	30 or
NMOC Destruction Efficiency, %	97.356%	97.536%	97.488%	97.460%	>98%

WHERE,

ppm = parts per million concentration by volume expressed on a dry gas basis
lb/hr = pound per hour emission rate
Tstd. = standard temperature (°R = °F+460)
MW = molecular weight
DSCFM = dry standard cubic foot per minute
NO_X = oxides of nitrogen, reported as NO_2 (MW = 46)
CO = carbon monoxide (MW = 28)
THC = total hydrocarbons reported as methane (MW = 16)
NMOC = non-methane organic compounds, reported as methane
SO_2 = sulfur dioxide (MW = 64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm · 5.9 / (20.9 - %O_2)
PPM @ 3% O_2 = ppm · 17.9 / (20.9 - %O_2)
lb/hr = ppm · 8.223 E-05 · DSCFM · MW / Tstd. °R
lb/MMBtu = (lb/hr)/(MMBtu/hr)
lb/day = lb/hr · 24
Destruction Efficiency = (inlet lb/hr- outlet lb/hr) / inlet lb/hr
<Value = <2% of Analyzer Range
ppm dry = ppm wet · 100 / (100 - %H_20)
SO_2 emission ppm = H_2S in fuel * fuel flow rate / stack gas flow rate

TABLE #2

Redwood Landfill, Inc

Landfill Gas Characterization

Parameter		**Units**	**LFG-1**	**LFG 2**	**LFG 3**	**Permit Limits**
Test Date			7/13/21	7/13/21	7/13/21	
Average NMOC as Hexane		ppm	125	117	118	
EPA TO-15 Results:						
Acrylonitrile		ppb	<13.8	<26.6	<28.4	300
Benzene		ppb	106	471	456	1,500
Benzyl Chloride	Chloromethylbenzene	ppb	<121	<232	<248	500
Carbon Tetrachloride		ppb	<60.3	<116	<124	200
Chlorobenzene		ppb	<60.3	<116	<124	200
Chloroethane		ppb	146	<116	203	500
Chloroform		ppb	<60.3	<116	<124	200
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<60.3	<116	<124	500
1,1 Dichloroethene	Vinylidene Chloride	ppb	<60.3	<116	<124	500
1,2 Dichloroethane	Ethylene Dichloride	ppb	<60.3	<116	<124	200
1,4 Dichlorobenzene		ppb	<60.3	123	<124	1,000
Ethylbenzene		ppb	467	2,210	2,190	4,000
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<60.3	<116	<124	200
Hexane		ppb	132	583	533	2,000
Isopropyl Alcohol	IPA	ppb	525	2,610	2,450	10,000
Methyl Alcohol	Methanol	ppb	1,130	4,000	3,710	300,000
Methyl Ethyl Ketone	MEK	ppb	804	3,530	3,320	15,000
Methylene Chloride		ppb	<121	<232	<248	1,000
Methyl tert Butyl Ether	MTBE	ppb	<60.3	<116	<124	500
Perchloroethylene	Tetrachloroethylene	ppb	<60.3	<116	<124	1,000
Styrene		ppb	<60.3	<116	<124	500
Toluene		ppb	907	3,890	3,850	20,000
1,1,1 Trichlororethane		ppb	<60.3	<116	<124	200
1,1,2,2 Tetrachloroethane		ppb	<60.3	<116	<124	200
Trichloroethylene	Trichloroethene	ppb	<60.3	<116	<124	500
Vinyl Chloride		ppb	<60.3	<116	<124	2,000
Xylenes		ppb	874	4,060	3,970	20,000
ASTM D-5504 Results:						
Carbon Disulfide		ppm	<0.121	<0.116	<0.124	
Carbonyl Sulfide	COS	ppm	0.291	0.496	0.975	
Dimethyl Sulfide		ppm	0.359	0.301	0.359	
Ethyl Mercaptan		ppm	<0.121	0.177	0.141	
Methyl Mercaptan		ppm	0.780	0.819	0.835	
Hydrogen Sulfide		ppm	460	537	524	
Total Reduced Sulfur Compounds as H_2S		ppm	465	542	529	410

K
Willexa Purge Gas Characterization Results

K-1
Summary Tables

TABLE # 3

REDWOOD LANDFILL

7/12/21

S-71 Willexa Waste Gas Characterization (Permit Condition 30)

RUN			1"	12-1	12-2
SOURCE			1"	12"	12"
PROCESS STEP			1	6/7/8	9
Test Date			7/12/21	7/12/21	7/12/21
Test Time					
GAS FLOW VELOCITY, SFPM			2,385	2,075	2,198
GAS MOISTURE, % (WB/DB)			4.8	4.9	4.0
GAS FLOW RATE, SCFM			13	1,630	1,727
GAS FLOW RATE, DSCFM			12	1,550	1,657
O_2		%	0.7	21.2	21.2
N_2		%	13.6	76.1	78.7
CO_2		%	38.6	<3.2	<0.3
CH_4		%	47.1%	0.4%	0.0%
TRS as H2S		ppm	<0.150	0.210	<0.129
NMOC (as Carbon)		ppm	94	28	<7.7
NMOC (as Hexane)		ppm	16	5	<1.3
Acrylonitrile		ppb	<120.0	<56.6	<51.60
Benzene		ppb	<29.90	66.2	<12.90
Benzyl Chloride	Chloromethylbenzene	ppb	<59.80	<28.30	<25.80
Carbon Tetrachloride		ppb	<29.90	<14.10	<12.90
Chlorobenzene		ppb	<29.90	32.0	<12.90
Chloroethane		ppb	125	<28.30	<25.80
Chloroform		ppb	<29.90	<14.10	<12.90
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<29.90	<14.10	<12.90
1,1 Dichloroethene	Vinylidene Chloride	ppb	<29.90	<14.10	<12.90
1,2 Dichloroethane	Ethylene Dichloride	ppb	<29.90	<14.10	<12.90
1,4 Dichlorobenzene		ppb	<29.90	<14.10	<25.80
Ethylbenzene		ppb	159.0	709.0	<12.90
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<29.90	<14.10	<12.90
Hexane		ppb	<29.90	<14.10	<12.90
Isopropyl Alcohol	2-propanol(IPA)	ppb	<120.00	<56.60	<51.60
Methyl Alcohol	Methanol	ppb	2,810	3,410	1,610
Methyl Ethyl Ketone	MEK	ppb	<59.80	79.5	55.5
Methylene Chloride		ppb	<59.80	37.4	<25.80
Methyl tert Butyl Ether	MTBE	ppb	<29.90	<14.10	<12.90
Perchloroethylene (PCE)	Tetrachloroethylene	ppb	<29.90	14.7	<12.90
Styrene		ppb	<29.90	148.0	23.7
Toluene		ppb	221	1,520	63.7
1,1,1 Trichlororethane		ppb	<29.90	<14.10	<12.90
1,1,2,2 Tetrachloroethane		ppb	<29.90	<14.10	<12.90
Trichloroethylene (TCE)	Trichloroethene	ppb	<29.90	<14.10	<12.90
Vinyl Chloride		ppb	53.9	<14.10	<12.90
Xylenes		ppb	700.0	2463.0	423.0
Carbon Disulfide		ppm	<0.150	<0.141	<0.129
Carbonyl Sulfide		ppm	<0.150	<0.141	<0.129
Dimethyl Sulfide		ppm	<0.150	0.210	<0.129
Ethyl Mercaptan		ppm	<0.150	<0.141	<0.129
Methyl Mercaptan		ppm	<0.150	<0.141	<0.129
Hydrogen Sulfide		ppm	<0.150	<0.141	<0.129
TRS as H2S		ppm	<0.150	0.210	<0.129

TNMOC= (Ethane (C2) *2) + Propane (C3)*3) + (Isobutane (C4)*4) + Isopentane (C5)*5) + (Hexanes (C6)*6) + (C6*8)

Redwood Landfill, Inc.

BAAQMD Facility #1179

Annual Compliance Emissions Test Report #21209
Landfill Gas Engines-Source S-64 and S-65

Located at:
Redwood Landfill
8950 Redwood Highway
Novato, California 94948

Prepared for:
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Testing Performed on:
July 14th - 15th, 2021

Final Report Submitted on:
September 13th, 2021

Performed and Reported by:
Blue Sky Environmental, Inc.
624 San Gabriel Avenue
Albany, CA 94706
Office (510) 525 1261/Cell (510) 508 3469
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REVIEW AND CERTIFICATION

<u>Team Leader:</u>

The work performed herein was conducted under my supervision, and I certify that:

a) the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program,

b) that the sampling and analytical procedures and data presented in the report are authentic and accurate,

c) that all testing details and conclusions are accurate and valid, and

d) that the production rate and/or heat input rate during the source test are reported accurately.

If this report is submitted for compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please contact me at (925) 338 - 4875.

Chuck Arrivas, QSTI

Project Manager

Blue Sky Environmental, Inc.

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SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc. was contracted by SCS Engineers to perform annual emissions testing for Waste Management at Redwood Landfill, Inc. located in Novato, California. Testing was conducted to demonstrate that the facility's two 2,739 BHP landfill gas-fired lean-burn IC engines are operating in compliance with their associated Bay Area Air Quality Management District's (BAAQMD) air contaminant discharge permit. The source test information is summarized in Table 1.1. Test results derived from the source test are summarized in Tables 1.2 and 1.3. Results for individual test runs are included in Appendix A. The engines met all compliance emission criteria.

Table 1.1 Source Test Information

Test Location:	Redwood Landfill, Inc. 8950 Redwood Highway, Novato, California 94948
Source Contact:	Alisha McCutcheon (415) 892-2851
Source Tested:	Engine #1 (S-64) – 2,739 BHp Caterpillar model G3502C landfill gas-fired IC engine equipped with oxidation catalyst and SCR with urea injection (S/N LGS00188). Engine #2 (S-65) – 2,739 BHp Caterpillar model G3502C landfill gas-fired IC engine equipped with oxidation catalyst and SCR with urea injection (S/N LGS01189).
Source Test Date:	July 14th – 15th, 2021
Test Objective:	Determine compliance with Bay Area Air Quality Management District (BAAQMD) air contaminant discharge permit for Facility #1179, Condition 25635, Part 13, and 40 CFR 60 Subpart JJJJ
Test Performed by:	Blue Sky Environmental, Inc. 624 San Gabriel Avenue, Albany, California 94706 Chuck Arrivas (925) 338 - 4875 carrivas@blueskyenvironmental.com
Test Parameters:	**Landfill Gas** O_2, CO_2, BTU, THC, NMOC, HHV, F-Factor, Sulfur & Volumetric Flow Rate **Engine Emissions** THC, NMOC, CH_4, NO_X, CO, O_2, SO_2, PM_{10} (S-65), NH_3, Formaldehyde (S-65) & Volumetric Flow Rate.

Table 1.2
Engine #1 (S-64) Compliance Summary

Emission Parameter	Average Test Result	Permit Limit	Compliance Status
NO_X, g/BHp-hr	0.073	0.15	In Compliance
CO, g/BHp-hr	0.057	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.0067	9	In Compliance
SO_2, g/BHp-hr	<0.00013	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.65	10	In Compliance
CH_4, ppm @ 15% O_2	497.0	3,000	In Compliance
NMOC, ppm @ 15% O_2 as CH_4	3.53	32	In Compliance
NMOC, g/BHp-hr as CH_4	0.017	0.16	In Compliance
TRS in fuel, ppm as H_2S	<0.110	150	In Compliance

Table 1.3
Engine #2 (S-65) Compliance Summary

Emission Parameter	Average Test Result	Permit Limit	Compliance Status
NO_X, g/BHp-hr	0.053	0.15	In Compliance
CO, g/BHp-hr	0.056	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.0077	9	In Compliance
SO_2, g/BHp-hr	<0.00013	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.46	10	In Compliance
CH_4, ppm @ 15% O_2	388.5	3,000	In Compliance
NMOC, ppm @ 15% O_2 as CH_4	10.5	32	In Compliance
NMOC, g/BHp-hr as CH_4	0.043	0.16	In Compliance
Formaldehyde, lb/hr	0.0023	0.51	In Compliance
Total Particulate, as PM_{10}, g/BHp	0.011	0.10	In Compliance
TRS in fuel, ppm as H_2S	<0.114	150	In Compliance

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This annual test was performed to demonstrate compliance of Engine #1 (S-64) and Engine #2 (S-65) with the emission limits specified in Bay Area Air Quality Management District (BAAQMD) Permit to Operate (PTO) for Facility 1179, Permit Condition 25635, Part 13. This testing also satisfies compliance requirements of 40 CFR 60, Subpart JJJJ – New Source Performance Standards for Spark Ignition Internal Combustion Engines

2.2. Pollutants Tested

The following U.S. Environmental Protection Agency (EPA), Bay Area Air Quality Management District (BAAQMD), California Air Resources Board (CARB) and ASTM International sampling and analytical methods were used:

EPA Method 1	Sample and Velocity Traverses
EPA Method 2	Flow Rate Calculation, DSCFM
EPA Method 3A	O_2, CO_2
EPA Method 10	CO
EPA Method ALT-078	NMOC, CH_4
EPA Method 7E	NO_X
EPA Method 19	Flow Rate Calculation, DSCFM
EPA Method 25C	LFG Gas analysis for NMOC by GC
ASTM D-1945/3588	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS
CARB Method 430	Formaldehyde
BAAQMD ST-1B/1A	NH_3
EPA Method 5/202	Particulate Matter (PM_{10} as total PM)

2.3. Test Date(s)

Testing was conducted on July 14th – 15th, 2021.

2.4. Sampling and Observing Personnel

Testing was performed by Chuck Arrivas, Wesley Alder and Timothy Eandi representing Blue Sky Environmental, Inc.

Jon Silva of SCS Engineers and Michael Chan of Waste Management, were present to operate and oversee the Engine operations and assist in coordinating testing and the collection of process data during testing.

EPA and BAAQMD were notified of the scheduled testing in a plan submitted on June 11th, 2021. Source Test Protocol acknowledgements were received by Blue Sky Environmental (NST #6557 S-64 and NST #6558 S-65). No agency observers were on site during the test program. A copy of the source test protocol and BAAQMD acknowledgments are provided in Appendix I.

2.5. Source/Process Description

Redwood Landfill and Recycling Center generates clean renewable electricity from landfill gas produced from decomposing organic materials received at the site. The facility operates two identical 2,739 Bhp-hr Caterpillar G3502C, landfill gas engines equipped with oxidation catalysts and SCR with urea injection. Engine #1 (S-64) and Engine #2 (S-65) emissions vent through 30-inch diameter stacks (inner diameter approx. 28.5 inches).

2.6. Source Operating Conditions

The engines were operated on biogas fuel under normal conditions during the test program. Process data provided by the facility was recorded at 5-minute intervals. The operating kilowatt (kW) and fuel flow rate records are provided in Appendix F.

The average values are listed below.

Parameter	Engine #1 (S-64)	Engine #2 (S-65)
Generator Load, kW	1,870	1,874
Fuel Consumption Rate, SCFM	663	652

LFG samples collected at the header of Engine #1 (S-64) showed that the methane quality averaged 48.5% and the Oxygen content was 0.83%. LFG samples collected at the header of Engine #2 (S-65) showed that the Methane quality averaged 44.1% and the Oxygen content was 2.17%. Additional LFG data is provided in Appendix C.

Engine serial numbers and hours of operation at time of test

Engine #1 (S-64), SN: LGS00188, Hours of Operation: 33,710

Engine #2 (S-65), SN: LGS00189, Hours of Operation: 32,939

SECTION 3. SAMPLING AND ANALYSIS PROCEDURES

3.1. Port Location

Sampling was conducted at the 30-inch diameter exhaust stack of each engine through 4-inch ports that were accessible from ground-level. Sampling ports were located approximately four stack diameters downstream from the nearest disturbance and approximately 1 ½ stack diameters upstream of nearest disturbance or exhaust.

3.2. Point Description/Labeling – Ports/Stack

Blue Sky Environmental, Inc. conducted two perpendicular 12-point traverses of each stack to check for the presence of cyclonic flow. The traverse points for the 30-inch diameter stacks with 4-inch deep ports were 0.6, 1.9, 3.4, 5.1, 7.3, 10.3, 18.7, 21.8, 23.9, 25.6, 27.1 and 28.4 inches from the stack wall. Stratification was less than 10%; however, subsequent CEM and PM sampling was conducted using a full traverse across two axis of the stack. Ammonia and formaldehyde samples were collected from a point mid-stack.

3.3. Sample Train Descriptions

Sampling system diagrams are included in the Appendix G. Additional descriptive information is included in the following section.

3.4. Sampling Procedure Descriptions

Three consecutive 60-minute gaseous emissions tests were performed for oxides of nitrogen (NO_X), carbon monoxide (CO), carbon dioxide (CO_2), oxygen (O_2), ammonia (NH_3), methane (CH_4), and non-methane organic compounds (NMOC) at each engine exhaust stack.

The sampling system was checked for leaks before the start of the testing, by plugging the sample probe and observing the sample rotameter flow drop to zero. Instrument linearity and system bias were checked. The system response time for each analyzer was recorded. The temperatures of the heated sample line between the probe and sample conditioner/condenser, and the condenser exhaust temperatures were maintained within limits during each test run.

Analyzer external calibrations were performed before and after each run using EPA protocol certified gas standards. Calibration gases were introduced to the sample manifold at the same flow rate as the sample. A NOx analyzer converter efficiency check was performed before the first test run and achieved an efficiency greater than 90%.

Three 60-minute tests for particulate matter (PM) and three 30-minute test runs for formaldehyde were performed on Engine #2 (S-65).

Concurrent with the exhaust sampling, Blue Sky Environmental collected a total of six digester gas samples (three per engine) to determine the average Btu value by ASTM D-1945, and sulfur content by ASTM D-5504. The samples were collected in 6-liter SUMMA cannisters and analyzed by Atmospheric Analysis & Consulting, Inc (AAC) in Ventura, CA. Laboratory test results are provided in Appendix C.

The sampling and analysis methods are summarized below:

EPA Method 1 – Sample and Velocity Traverses for Stationary Sources
This method is used to determine the duct or stack area and appropriate traverse points that represent equal areas of the duct for sampling and velocity measurements.

CARB/EPA Method 2 – Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)
This method is used to determine the average velocity and the volumetric flow rate of stack gas using a standard S-type pitot tube and inclined manometer. Temperature is monitored using a K-type thermocouple and calibrated Omega temperature meter. The entire sampling system is leak checked prior to and at the end of the sampling program. Thermometer calibrations are performed using an Omega Model CL-601K simulator. Geometric calibrations of S-type pitot tubes are performed every 6 months or according to the guidelines outlined in California Air Resources Board (CARB) QA/QC Volume VI, Table 3.

EPA Method 3A – Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)
This method is used to measure oxygen and carbon dioxide in stationary source emissions using a continuous instrumental analyzer to determine the molecular weight of the stack gas.

EPA Method 7E – Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)
This method is used to measure nitrogen oxides in stationary source emissions using a continuous instrumental analyzer. Section 16.2.2 of the method is used to determine the NO_X analyzer NO_2 to NO conversion efficiency.

EPA Method 10 – Determination of Carbon Monoxide Emissions from Stationary Sources
This method is used to measure carbon monoxide from integrated or continuous gas samples extracted from a sampling point.

EPA Methods 3A, 7E and 10 are all continuous monitoring techniques using instrumental analyzers. Sampling is performed by extracting exhaust flue gas from the stack, conditioning the sample, and analyzing it by continuous monitoring gas analyzers in a continuing emissions monitoring (CEM) test van. The sampling system consists of a stainless steel sample probe, Teflon sample line, glass-fiber particulate filter, and glass moisture-knockout condensers in ice, followed by thermoelectric coolers (optional), Teflon sample transfer tubing, a diaphragm pump, and a stainless steel/Teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5 PSI is provided to each analyzer to avoid pressure variable response differences. The entire sampling system is leak checked prior to and at the end of the sampling program.

The sampling and analytical system is checked for linearity with zero, mid (40-60%) and high span (80-100%) calibrations and is checked for system bias at the beginning and end of each run. System bias is determined by introducing calibration gas to the probe and pulling it through the entire sampling system. Individual test run calibrations use the calibration gas that most closely matches the stack gas effluent. All calibrations during testing are performed externally to incorporate any system bias that may exist. Sampling system bias, zero and calibration drift values are determined for each test. EPA Methods 3A, 7E and 10 all defer to EPA Method 7E for the calculations of effluent concentration, span, calibration gas, analyzer calibration error (linearity), sampling system bias, zero drift, calibration drift and response time.

EPA Method 5 – Determination of Particulate Matter Emissions from Stationary Sources
This method is used to determine filterable particulate matter (PM) emissions from stationary sources. Particulate matter is withdrawn isokinetically from the source and collected on a glass fiber filter maintained at 248 ± 25°F. The sampling equipment consists of a stainless steel or glass nozzle, a heated probe, heated filter box and filter holder with glass fiber filter, followed by a Teflon line and umbilical to four Greenburg-Smith impingers, a pump and a meter control module. Filterable particulate is determined gravimetrically from the probe/nozzle acetone rinse and filter, following evaporation and desiccation of these fractions. The first two impingers contain 100ml of de-ionized water each, a third short-stem impinger is left empty and the fourth impinger contains silica gel desiccant to dry the gas before the pump and gas meter. Moisture is condensed in the solution of de-ionized water and absorbed in the silica gel. The moisture gain in the impinger solutions and silica gel is determined volumetrically and gravimetrically respectively.

QA/QC: consists of pitot leak checks performed by pressurizing each leg of the pitot separately to a pressure greater than 3" H2O. The leak check is passed when no movement in the manometer fluid occurs over 15 seconds. Sampling system leak checks are performed before and after each test run by capping the nozzle, then pulling a vacuum greater than 15 inches of mercury and observing the meter rate. The leak check is passed, when the leak rate is less than 0.02 CFM or 4% of the average sample rate, whichever is less. The final leak check is performed at a vacuum at least as high as the highest vacuum pulled during the run. The impingers are kept in ice to maintain the temperature of the gas exiting the last impinger to below 68°F. No silicone grease is used on the components of the sampling train. The dry gas meter, pitot, thermocouples, gauges, and nozzles are all calibrated according to the methods and with a frequency of between 6 to 12 months as specified in CARB QA/QC Volume VI, Table 3. Nozzles are calibrated in the field to within 0.001" diameter and are inspected for damage prior to each test. Acetone rinse blanks are collected using equipment, reagents, proportions, and techniques that are identical to the test samples.

EPA Method 202 – Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources
This method is used to measure condensable particulate matter (CPM) emissions from stationary sources after filterable particulate matter (PM) has been removed. The concentrations and emission rates of PM_{10} are measured using a combination of EPA Methods 5 and EPA Method 202. The CPM is collected in dry impingers followed by a nitrogen purge after filterable PM has been collected. Test runs are ≥60 minutes in duration to collect sufficient sample volume to provide detection limits low enough to determine compliance with the permit conditions.
The apparatus includes a Pyrex/quartz sampling nozzle and Pyrex/quartz probe liner attached to a glass filter holder with glass-fiber filter heated to 248 ± 25°F. The filter holder is mounted to the end of the probe liner, which is attached to a length of heated Teflon tubing to connect the filter holder to the impinger train. The impinger train is connected to the control box, which contains the sampling pump and dry gas meter. A nozzle size is chosen to allow isokinetic sampling (i.e., within 10%) at all the traverse points at the calculated sampling rate.

The filterable "front-half" PM_{10} is recovered from the sampling apparatus as described in EPA Method 5. The sample fractions include the rinses of the internal sections of the nozzle, probe liner, the front-half of the filter holder, and the filter. The sample fractions are analyzed gravimetrically to determine the concentration of filterable PM_{10}.

The "back-half" contents are recovered and analyzed for condensable PM_{10} as described in EPA Method 202. The probe extension, condenser and first impinger contents are rinsed with water into the second impinger. Water is added as necessary for the subsequent purge. The condenser and first impinger are reattached to the second impinger and the condenser, and the impingers and CPM filter are purged with nitrogen for one hour.

After the purge, the sample is recovered in three fractions: 1) the CPM filter, 2) the water contents and rinses of the condenser, impingers, and filter holder, and 3) the acetone/hexane rinses of the condenser, impingers, and filter holder. The sample containers are transported to an environmental testing laboratory for analysis.

CARB Method 430 – Determination of Formaldehyde and Acetaldehyde in Emissions from Stationary Sources

This method is used to determine emissions of aldehydes and ketone compounds from stationary sources. Gaseous emissions are drawn through a short 1/8 inch Teflon sample line and two midget impingers in series, each containing a 10 ml aqueous acidic solution of 2,4-dinitrophenyl-hydrazine (DNPH). Ice is used to cool the impingers during sampling. The sample is drawn at a rate of 0.1 to 0.5 liters per minute for 12 to 60 minutes. After organic solvent extraction, the samples are analyzed using reverse phase HPLC with an ultraviolet (UV) absorption detector operated at 360 nm. Each impinger is analyzed separately.

EPA Method 25A/ALT-078: Sampling for Total Hydrocarbons, Methane and Non-Methane Hydrocarbons. EPA Method 25A (FID/GC Method) employs a heated TECO 55C FID with GC column, heated Teflon sample gas transfer lines to provide a continuous sample to the heated FID/GC Hydrocarbon Analyzer. Heated lines are used to avoid moisture or hydrocarbon condensation. Methane is determined by the calibrated GC method in the TECO 55C NMHC/CH_4/THC Analyzer. Calibration gases are selected to fall within 25-35%, 45-55% and 80-90% of Range for Methane, Total Hydrocarbon and Non-Methane Hydrocarbons

EPA Method 25C – Determination of Nonmethane Organic Compounds (NMOC) in Landfill Gas

This method is used to sample and measure NMOC in landfill gases. Gases are collected in a pre-evacuated 6-Liter SUMMA canister with pre-set flow controller set to integrate over the desired test duration. The SUMMA® passivated canisters allow holding times up to 14 days. The sample gas is drawn by the canister vacuum through a micro-filter, pre-set orifice flow controller and on/off valve into the canister. The canister vacuum is monitored with a vacuum gauge to verify sample collection. The flow controller consists of capillary orifice tubing designed to sample for a pre-set duration of 0.5 hrs. The sample is injected into a GC column where the methane and CO_2 are flushed through and removed then the NMOC (ROC) fraction is oxidized to form CO_2 then reduced to methane and analyzed.

EPA Method 18 – Measurement of Gaseous Organic Compound Emissions by Gas Chromatography

This method is used to determine emissions of volatile organics by gas chromatograph/mass spectroscopy (GC/MS). Gaseous emissions are drawn through a Teflon sample transfer line to a Tedlar bag held in a rigid leak proof bag container. The sample is drawn into the bag by evacuating the container to stack gas pressure to allow sample flow without using a pump to avoid contamination. Negative pressure is adjusted to maintain an integrated sample flow for the collection time. The bag samples are taken to a laboratory and analyzed within 72 hours.

EPA Method 19 – Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates

This method is used to determine stack gas volumetric flow rates using oxygen-based F-factors. F-factors are ratios of combustion gas volumes to heat inputs. The heating value of the fuel in Btu per cubic foot is determined from analysis of fuel gas samples using ASTM D1946/1945 gas chromatography analytical procedures. The total cubic feet per hour of fuel multiplied times the Btu/cf provides million Btu per hour (MMBtu) heat input. The heat input in MMBtu/hr is multiplied by the F-factor (DSCF/MMBtu) and adjusted for the measured oxygen content of the source to determine volumetric flow rate. The flow rates are used to determine emission rates.

BAAQMD Source Test Procedure ST-1B – Ammonia Integrated Sampling
This method is used to quantify ammonia emissions and determine compliance with Regulation 7-303. The sample is extracted from the gas stream using a Teflon or stainless-steel probe and the ammonia is condensed/adsorbed in two Greenburg-Smith impingers containing 200ml of 0.1N HCl, followed by an empty knock-out impinger, and a fourth impinger containing 200g of pre-weighed silica gel. The moisture gained is determined volumetrically and gravimetrically. A minimum of 20 cubic feet of sample is pulled using a leak tight pump and sampling assembly and the volume is measured with a calibrated dry gas meter. Ammonia is analyzed according to BAAQMD Analytical Procedure Lab-1 with a Specific Ion Electrode, or Nessler's reagent and a spectrophotometer. Results are recorded on the field data sheet. The entire sampling system is leak checked prior to and at the end of each test run. All the sampling equipment is calibrated according to CARB schedules and this documentation is included in the final report. Reagent blanks are collected. Analytical QA/QC includes testing a reagent blank, laboratory blanks, and sample duplicates.

BAAQMD Method 1A – Determination of Ammonia in Effluents Collected in Acid Media using the Specific Ion Electrode
This method is used to determine the ammonia content in effluents absorbed in a dilute HCl solution according to BAAQMD Source Test Procedure ST-1B. A 49ml aliquot of sample is placed into a clean polypropylene beaker and made alkaline with the addition of an ammonia pH adjusting solution. This releases the ammonia for determination by the specific ion electrode method. The sample is placed on top of a magnetic stirrer and a clean Teflon coated magnetic stirring bar is added. The ammonia-specific ion electrode is placed into the sample and a concentration of ammonia (as N_2) is displayed on the meter.
An Orion 920A pH/Concentration/ISE meter with an Orion #95-11 ion-specific electrode is calibrated with 1mg/ml and 10mg/ml ammonia (NH_3) as nitrogen (N_2). The ammonia working standards are produced by diluting 100mg/ml ammonia as nitrogen with 0.1N HCl in 100:1 and 10:1 ratios, respectively. The standards are enhanced with a pH adjusting ionic strength adjuster to help the electrode read the nitrogen more effectively. Once the calibration is completed, the meter will calculate a standard curve for the electrode. The standard curve is acceptable between –54mv (millivolts) and –60mv.

ASTM D1945 – Analysis of Natural Gas by Gas Chromatography
This method is used to measure fixed gases (such as oxygen, nitrogen, carbon monoxide, and carbon dioxide) and methane by gas chromatography (GC/TCD). Light hydrocarbons, including C1-C7, are analyzed by GC/FID.

ASTM D-3588 – Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels
This method uses the molar composition of gaseous fuel determined from Method ASTM D-1945 to calculate the heating value and F-factor.

ASTM D-5504 – Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence

This method is used for the determination of speciated volatile sulfur-containing compounds in high methane content gaseous fuels by gas chromatography. Sulfur compounds are processed using a flame ionization detector (GC/FID). The products are then analyzed with a sulfur chemiluminescence detector (GC/SCD). Samples may be collected in Tedlar bags and analyzed within 24 hours or in Silco SUMMA canisters and analyzed within 7 days.

3.5. Instrumentation and Analytical Procedures

The following continuous emissions analyzers were used

Instrumentation	Parameter	Principle
TECO Model 42C	$NO_X/NO/NO_2$	Chemiluminescence
TECO Model 48C	CO	GFC/IR
Servomex Model 1440	CO_2	Infrared (IR)
Servomex Model 1440	O_2	Paramagnetic
TECO Model 43C	SO_2	Pulsed Fluorescence
TECO Model 55C	$THC/CH_4/NMOC$	Flame Ionization (FID)

3.6. System Performance Criteria

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of a Honeywell DPR 3000 chart recorder, supported by a Data Acquisition System (DAS). The instrument response is recorded on strip charts and DAS. The averages are corrected for drift and bias using EPA Method 7E equations. All system performance criteria were met.

Instrument Linearity	≤2% Full Scale
Instrument Bias	≤5% Full Scale
System Response Time	≤± 2 minutes
NO_X Converter Efficiency *(EPA Method 7E)*	≥ 90%
Instrument Zero Drift	≤± 3% Full Scale
Instrument Span Drift	≤± 3% Full Scale

3.7. Comments: Limitations and Data Qualifications

This source test was performed in accordance with the protocol submitted to BAAQMD. No deviations from the protocol or anomalies were observed during testing. The measured emissions comply with the permitted limits.

Blue Sky Environmental has reviewed this report for accuracy and concluded that the test procedures were followed and accurately described and documented. The review included the following items:

Review of the general text
Review of calculations
Review of CEMS data
Review of supporting documentation

The services described in this report were performed in a manner consistent with the generally accepted professional testing principles and practices. No other warranty, expressed or implied, is made. These services were performed in a manner consistent with our agreement with our client. The report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions contained in this report pertain to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and operating parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations, subsequent to this, and do not warranty the accuracy of information supplied by others.

SECTION 4. APPENDICES

A. Tabulated Results

B. Calculations

C. Laboratory Reports

D. Field Data Sheets

E. Process Information

F. Calibration Certificates and Quality Assurance Records

G. Sample Train Configuration and Stack Diagrams

H. Related Correspondence (Source Test Plan)

I. Bay Area Air Quality Management District (BAAQMD) PTO

A
Tabulated Results

TABLE #1

Redwood Landfill, Inc
Engine #1 (S-64)

Parameter	Run 1	Run 2	Run 3	Average Results	Permit Limits
Test Date	7/14/21	7/14/21	7/14/21	--	
Test Time	1059-1202	1226-1335	1355-1500	--	
Standard Temperature, °F	70	70	70	--	
Process Parameters:					
Generator, kW	1,870	1,867	1,873	1,870	
Engine, BHp	2,605	2,601	2,609	2,605	
Urea Injection Rate, gph	0.86	0.86	0.86	0.86	
Fuel Gas:					
Fuel Flow Rate, SCFM	664.2	662.7	661.0	662.6	
Fuel Gross Calorific Value, Btu/cf @ 60°F	485.0	504.3	484.0	491.1	
Fuel Fd-Factor, DSCF/MMBtu @ 60°F	9,489	9,442	9,468	9,467	
Inlet TNMOC, ppm *(EPA Method 25C)*	96.5	130	156	128	
Inlet NMOC, lb/hr as CH_4	0.2	0.2	0.3	0.2	
Inlet CH_4, ppm	479,000	498,000	478,000	485,000	
Inlet CH_4, lb/hr	789.8	819.2	784.3	797.8	
H_2S, ppm *(ASTM D5504)*	<0.103	<0.103	<0.124	<0.110	
TRS as H_2S, ppm *(ASTM D5504)*	<0.103	<0.103	<0.124	<0.110	150
Stack Gas:					
SCR Temperature, ˚F	825	825	825	825	
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	5,839	5,943	5,842	5,875	
Oxygen (O_2), % volume dry	10.0	9.8	10.1	9.9	
Carbon Dioxide (CO_2), % volume dry	9.2	9.4	9.5	9.4	
Moisture (H_2O), % volume dry	9.4	11.8	9.8	10.3	
NO_X Emissions (reported as NO_2):					
NO_X, ppm	9.3	10.2	10.3	10.0	
NO_X, ppm @ 15% O_2	5.0	5.4	5.6	5.4	
NOx, lb/hr	0.39	0.43	0.43	0.42	
NOx, g/BHp-hr	0.068	0.076	0.075	0.073	0.15
CO Emissions:					
CO, ppm	13.4	11.9	13.3	12.9	
CO, ppm @ 15% O_2	7.2	6.3	7.2	6.9	
CO, lb/hr	0.34	0.31	0.34	0.33	
CO, g/BHp-hr	0.059	0.053	0.059	0.057	1.8
SO_2 Emissions:					
SO_2, ppm *(calculated emission)*	<0.012	<0.011	<0.014	<0.012	
SO_2, ppm @ 15% O_2	<0.0063	<0.0061	<0.0076	<0.0067	9
SO_2, lb/hr	<0.00068	<0.00068	<0.00082	<0.00072	
SO_2, g/BHp-hr	<0.00012	<0.00012	<0.00014	<0.00013	0.18
Ammonia Emissions:					
Ammonia, ppm	1.2	1.3	1.1	1.2	
Ammonia, ppm @ 15% O_2	0.65	0.70	0.60	0.65	10
Methane (CH_4) Emissions:					
CH_4, ppm wet *(EPA Method ALT 078)*	633.0	823.4	1,023.9	826.8	
CH_4, ppm	698.7	933.7	1134.7	922.4	
CH_4, ppm @ 15% O_2	376.7	496.5	617.8	497.0	3,000
CH_4, lb/hr	10.13	13.78	16.46	13.5	
CH_4, g/BHp-hr	1.76	2.40	2.86	2.34	
NMOC Emissions (reported as CH_4):					
NMOC, ppm wet *(EPA Method ALT 078)*	4.80	7.42	5.42	5.88	
NMOC, ppm	5.30	8.42	6.00	6.57	
NMOC, ppm @ 15% O_2	2.86	4.48	3.27	3.53	32
NMOC, lb/hr	0.077	0.124	0.087	0.096	
NMOC, g/BHp-hr	0.013	0.022	0.015	0.017	0.16
THC Emissions (reported as CH_4):					
THC, ppm	704.0	942.1	1,140.7	929.0	
THC, lb/hr	10.2	13.9	16.5	13.5	
THC g/BHp-hr	1.78	2.42	2.88	2.36	
CH_4 Destruction Efficiency, %	>98.7%	>98.3%	>97.9%	>98.3%	
NMOC Destruction Efficiency, %	>51.7%	>41.9%	>66.0%	>53.2%	

WHERE:

ppm = parts per million concentration by volume expressed on a dry gas basis
lb/hr = pound per hour emission rate
lb/MMBtu = pound per million Btu
Tstd. = standard temperature (°R = °F+460)
MW = molecular weight
DSCFM = dry standard cubic foot per minute
NO_X = oxides of nitrogen, reported as NO_2 (MW = 46)
CO = carbon monoxide (MW = 28)
CH_4 = methane (MW = 16)
SO_2 = sulfur dioxide (MW = 64.1)
NMOC = non-methane organic compounds = POC

CALCULATIONS:

PPM @ 15% O_2 = ppm · 5.9 / (20.9 - %O_2)
lb/hr = ppm · 8.223 E-05 · DSCFM · MW / Tstd. °R
g/BHp-hr = lb/hr · 453.6/BHp-hr
Engine BHp = Engine kW · 1.3932 hp/kW
ppm dry = ppm wet · 100 / (100 - %H_20)

TABLE #2

Redwood Landfill, Inc
Engine #2 (S-65)

Parameter	Run 1	Run 2	Run 3	Average Results	Permit Limits
Test Date	7/15/21	7/15/21	7/15/21	--	
Test Time	0935-1048	1133-1247	1327-1436	--	
Standard Temperature, °F	70	70	70	--	
Process Parameters:					
Generator, kW	1,872	1,878	1,873	1,874	
Engine, BHp	2,608	2,616	2,609	2,611	
Urea Injection Rate, gph	1.2	1.2	1.2	1.2	
Fuel Gas:					
Fuel Flow Rate, SCFM	651.8	653.5	650.2	651.8	
Fuel Gross Calorific Value, Btu/cf @ 60°F	375.6	483.0	482.0	446.9	
Fuel Fd-Factor, DSCF/MMBtu @ 60°F	9,514	9,512	9,521	9,516	
Inlet TNMOC, ppm *(EPA Method 25C)*	63.2	76.2	62.9	67.4	
Inlet NMOC, lb/hr as CH_4	0.1	0.1	0.1	0.1	
Inlet CH_4, ppm	371,000	477,000	476,000	441,333	
Inlet CH_4, lb/hr	600.3	773.9	768.3	714.1	
H_2S, ppm *(ASTM D5504)*	<0.116	<0.112	<0.114	<0.114	
TRS as H_2S, ppm *(ASTM D5504)*	<0.116	<0.112	<0.114	<0.114	150
Stack Gas:					
SCR Temperature, °F	825	825	825	825	
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	4,683	5,787	6,008	5,493	
Oxygen (O_2), % volume dry	10.5	10.1	10.5	10.4	
Carbon Dioxide (CO_2), % volume dry	8.4	8.7	8.9	8.7	
Moisture (H_2O), % volume dry	10.0	10.4	10.1	10.1	
NO_X Emissions (reported as NO_2):					
NO_X, ppm	7.1	8.5	7.6	7.7	
NO_X, ppm @ 15% O_2	4.0	4.6	4.3	4.3	
NOx, lb/hr	0.24	0.35	0.33	0.31	
NOx, g/BHp-hr	0.041	0.061	0.057	0.053	0.15
CO Emissions:					
CO, ppm	13.0	15.3	12.1	13.5	
CO, ppm @ 15% O_2	7.4	8.3	6.9	7.5	
CO, lb/hr	0.26	0.38	0.32	0.32	
CO, g/BHp-hr	0.046	0.067	0.055	0.056	1.8
SO_2 Emissions:					
SO_2, ppm *(calculated emission)*	<0.016	<0.013	<0.012	<0.014	
SO_2, ppm @ 15% O_2	<0.0092	<0.0069	<0.0070	<0.0077	9
SO_2, lb/hr	<0.00075	<0.00073	<0.00074	<0.00074	
SO_2, g/BHp-hr	<0.00013	<0.00013	<0.00013	<0.00013	0.18
Ammonia Emissions:					
Ammonia, ppm	0.68	0.92	0.87	0.82	
Ammonia, ppm @ 15% O_2	0.39	0.50	0.49	0.46	10
Methane (CH_4) Emissions:					
CH_4, ppm wet *(EPA Method ALT 078)*	631.1	591.9	645.5	622.8	
CH_4, ppm	701.0	660.7	717.7	693.1	
CH_4, ppm @ 15% O_2	397.9	359.5	408.0	388.5	3,000
CH_4, lb/hr	8.15	9.49	10.70	9.4	
CH_4, g/BHp-hr	1.42	1.65	1.86	1.64	
NMOC Emissions (reported as CH_4):					
NMOC, ppm wet *(EPA Method ALT 078)*	20.6	17.0	12.7	16.8	
NMOC, ppm	22.9	19.0	14.1	18.7	
NMOC, ppm @ 15% O_2	13.0	10.3	8.0	10.5	32
NMOC, lb/hr	0.27	0.27	0.21	0.25	
NMOC, g/BHp-hr	0.046	0.047	0.037	0.043	0.16
THC Emissions (reported as CH_4):					
THC, ppm	723.9	679.7	731.9	711.8	
THC, lb/hr	8.42	9.76	10.92	9.70	
THC g/BHp-hr	1.46	1.69	1.90	1.68	
CH_4 Destruction Efficiency, %	98.6%	98.8%	98.6%	98.7%	
NMOC Destruction Efficiency, %	>60.0%	>57.8%	>67.8%	>61.9%	

WHERE:

ppm = parts per million concentration by volume expressed on a dry gas basis
lb/hr = pound per hour emission rate
lb/MMBtu = pound per million Btu
Tstd. = standard temperature (°R = °F+460)
MW = molecular weight
DSCFM = dry standard cubic foot per minute
NO_X = oxides of nitrogen, reported as NO_2 (MW = 46)
CO = carbon monoxide (MW = 28)
CH_4 = methane (MW = 16)
SO_2 = sulfur dioxide (MW = 64.1)
NMOC = non-methane organic compounds = POC

CALCULATIONS:

PPM @ 15% O_2 = ppm · 5.9 / (20.9 - %O_2)
lb/hr = ppm · 8.223 E-05 · DSCFM · MW / Tstd. °R
g/BHp-hr = lb/hr · 453.6/BHp-hr
Engine BHp = Engine kW · 1.3932 hp/kW
ppm dry = ppm wet · 100 / (100 - %H_2O)

Table #3

Total Particulate Results

Redwood Landfill, Inc
Engine #2 (S-65)

Parameter	Run #1	Run #2	Run #3	Average Results	Permit Limits
Test Date	07/15/21	07/15/21	07/15/21	--	
Test Time	0931-1046	1133-1246	1326-1434	--	
Engine kW	1,872	1,878	1,873	1,874	
Engine BHp	2,608	2,616	2,609	2,611	
Sample Volume, DSCF	40.57	36.98	33.85	37.13	
Isokinetic, %	100.4	98.0	94.8	97.7	
Duct Temperature, °F	826.3	829.7	832.9	829.6	
Stack Gas:					
Velocity, ft/sec	70.8	66.4	70.0	69.1	
Flow Rate, ACFM	19,488	18,285	19,258	19,010	
Flow Rate, DSCFM	7,223	6,749	7,090	7,021	
Water Vapor (H_2O), %	10.10	10.28	10.30	10.23	
Oxygen (O_2), %	10.64	10.18	10.65	10.49	
Carbon Dioxide (CO_2), %	8.56	8.82	9.00	8.79	
Filterable Particulate Emissions:					
Filterable Particulate, mg	1.70	0.92	1.90	1.51	
Filterable Particulate, gr/DSCF	0.00065	0.00038	0.00087	0.00063	
Filterable Particulate, lb/hr	0.0401	0.0221	0.0526	0.0383	
Condensable Particulate Emissions:					
Condensable Particulate, mg	1.36	0.87	0.96	1.06	
Condensable Particulate, gr/DSCF	0.00052	0.00065	0.00077	0.00064	
Condensable Particulate, lb/hr	0.0319	0.0374	0.0465	0.0386	
Total Particulate Emissions:					
Total Particulate as PM_{10}, mg	3.06	1.78	2.86	2.57	
Total Particulate as PM_{10}, gr/DSCF	0.0012	0.00074	0.0013	0.0011	
Total Particulate as PM_{10}, lb/hr	0.072	0.043	0.079	0.065	
Total Particulate as PM_{10}, g/BHp-hr	0.013	0.007	0.014	0.011	0.10

WHERE

DSCF = sample volume in dry standard cubic foot
DSCFM = dry standard cubic foot per minute
ACFM = actual cubic foot per minute
H_2O, volume % = stack gas percent water vapor
gr/DSCF = particulate concentration in grains per DSCF
Total Particulate = filterable and condensable particulate matter
Filterable (F/H)
Condensible (B/H)

CALCULATIONS

lb/hr Emission Rate = 0.00857 · gr/DSCF · DSCFM
12% CO_2 Correction = gr/DSCF · 12% / Actual CO_2%
Engine BHp = Engine kW · 1.3932 hp/kW

Table #4

Formaldehyde Results

Redwood Landfill, Inc
Engine #2 (S-65)

Parameter	Run #1	Run #2	Run #3	Average Results	Permit Limits
Test Date	7/15/21	7/15/21	7/15/21		
Test Time	1015-1045	1215-1245	1326-1356		
Sample Duration, min	30	30	30		
Standard Temperature, °F (Tstd)	70	70	70		
Exhaust Flow Rate, DSCFM *(EPA Method 2)*	7,223	6,749	7,090	7,021	
Meter Yd	1.0741	1.0741	1.0741	1.0741	
Meter Volume, L (Vm)	14.717	15.000	14.633	14.783	
Rotometer Rate, LPM	0.5	0.5	0.5	0.5	
Total Volume, L (Vm corr)	15.808	16.112	15.717	15.879	
Average Meter Temperature, °F (Tm)	66.2	77.3	80.0	74.5	
Standard Meter Volume, L (Vm std)	15.923	15.892	15.426	15.747	
Formaldehyde Emissions:					
Formaldehyde, ug/sample	1.34	1.64	1.17	1.38	
Formaldehyde, ug/DSCM	84.2	101.5	74.6	86.8	
Formaldehyde, ppb	68.2	81.7	60.1	70.0	
Formaldehyde, g/hr	1.03	1.16	0.90	1.03	
Formaldehyde, lb/hr	0.0023	0.0026	0.0020	0.0023	0.51

WHERE:
ml = milliliter
g = gram
ug = microgram
DSCFM = dry standard cubic foot per minute
DSCM = dry standard cubic meter
L = liter

CALCULATIONS:
Formaldehyde, ppb = 1,000 · (ug/sample) · 24.14 / (30.0 Mol.Wt. · Vm std L)
ug/DSCM = (1,000 L/DSCM) · (ug/sample) / (sample volume, L)
g/hr = ug/DSCM · (DSCM · 60 min-hr/35.3) / (1,000,000 ug/g)
lb/hr = (g/hr) / 453.6 g/lb
Vmstd = Vm · Yd · (460 + Tstd) / (460 + Tm)

APPENDIX O

S-55 STATIC PRESSURE PERFORMANCE TEST
(LEAK TEST)

MB SERVICES

P.O. Box 1299 Suisun City, CA 94585

707-290-7716 Mbservices1@yahoo.com

Letter of Transmittal

Date
03/21/2022

To:	RE:
REDWOOD LANDFILL 8950 REDWOOD HIGHWAY NOVATO, CA 94945	**Testing Results** **GDF# 8573**

Enclosed are copies of the Air Quality test results for your location for test performed Please see below for brief summary.

Test	Passed	Failed	Notes
Air Quality	✓	----	
TP-206.3	✓	----	

State law requires that you keep a copy of these test results at your location. For you convenience the test results were submitted to your local agency.

If you have any question please feel free to contact us at:
707-290-7716
707-439-3778
mbservices1@yahoo.com

Thank you,
MB Services

TP-206.3
AST Static Pressure Performance Test Report Form

Permit Number: GDF# 8573		Test Company: MB Services	
Site Name: Redwood Landfill		Technician: Brian Dunahay	
Site Address: 8950 Redwood Highway		Certification Number	Expiration Date
City: Novato CA	Zip: 94945	ICC: 8021436	08/03/2022
Date of Test: 3/21/2022			

TEST INFORMATION			
Total number of nozzles: 1		Are the tanks manifolded? ☐ Yes ☒ No	
Phase I vapor recovery system executive order			VR-101
Phase I vapor recovery system configuration	☒ Direct-fill Remote-fill		
Phase II vapor recovery system executive order			N/A
Nitrogen introduction point	X Phase I vapor coupler	☐ Phase I vent line	☐ Phase II vapor riser
Pressure measuring device	X digital manometer		
Calibration date for pressure measuring device (must be within 180 days of the test)			01/15/2022
Ending value for digital manometer drift test if applicable (must be 0.01 in. w.c. or less)			0.00wc
Nitrogen introduction flow rate, F (must be between 1 and 5 CFM)			2 CFM
Number of hoses with over 100 ml (balance hoses must be drained prior to testing)			0

TANK INFORMATION					
Tank No.	1	2	3	4	ALL
Product grade	87				
Actual tank capacity (gallons)	1,000				1,000
Gasoline volume (gallons)	736				736
Ullage (gallons)[1]	264				264
If tanks are not manifolded, number of nozzles	1				1

2 IN. W.C. STATIC PRESSURE TEST					
Test No.	1	2	3	4	5
Start time	2:30 pm				
Initial Pressure, inches of water column (in. w.c.)	2.00				
Pressure at one minute, in. w.c.	2.06				
Pressure at two minutes, in. w.c.	2.14				
Pressure at three minutes, in. w.c.	2.25				
Pressure at four minutes, in. w.c.	2.34				
Pressure at five minutes, in. w.c.	2.50				
Allowable minimum pressure, in. w.c.	**88**				
Pass / Fail	**Pass**				

NOTE: [1]The minimum ullage shall be 25 percent and the maximum shall be 75% of the tank capacity.

I declare, under penalty of perjury under the laws of the state of California that based on information and belief formed after reasonable inquiry, the statements and information provided in this document are true, accurate, and complete.

Signature of Technician: Brian Dunahay Date: 03/21/2022

TABLE 1
TP-206.3

Leak Rate Criteria

ULLAGE (GALLONS)	MINIMUM PRESSURE AFTER 5 MINUTES, (INCHES OF WATER COLUMN)
100	**0.21**
150	0.45
200	**0.65**
250	0.82
300	**0.95**
350	1.05
400	**1.14**
450	1.22
500	**1.28**
550	1.33
600	**1.38**
650	1.42
700	**1.45**
750	1.48
800	**1.51**
850	1.54
900	**1.56**
950	1.58
1,000	**1.60**
1,200	1.66
1,400	**1.70**
1,600	1.74
1,800	**1.77**
2,000	1.79
2,200	**1.81**
2,400	1.82
2,600	**1.83**
2,800	1.85
3,000	**1.86**
3,500	1.88
4,000	**1.89**
4,500	1.90
5,000	**1.91**
6,000	1.93
7,000	**1.94**
8,000	1.94
9,000	**1.95**
10,000	1.96
15,000	**1.97**
20,000	1.98

NOTE: [1]The minimum ullage shall be 25 percent and the maximum shall be 75% of the tank capacity.

APPENDIX P

ROLLING QUARTERLY LFG INPUT AND CO AND SO2 EMISSIONS

QUARTERLY LFG Input to all LFG-Fired Combustion Equipment

WM - REDWOOD LANDFILL, Novato, CA

Quarter	Month	Total LFG Throughput (MMscf)				Monthly Total (MMscf)	Quarterly Total (MMscf)	Rolling 4-Qtr Total (MMscf)
		A-51	A-60	S-64	S-65			
2021 Q2	April	0.00	37.47	28.42	24.39	90.28	269.56	1,127
	May	0.00	46.39	27.28	18.05	91.73		
	June	0.00	55.98	23.92	7.65	87.55		
2021 Q3	July	0.00	56.37	23.90	9.07	89.34	254.42	1,086
	August	0.00	36.09	27.79	23.66	87.53		
	September	0.00	41.75	14.96	20.83	77.55		
2021 Q4	October	0.00	57.12	12.98	19.35	89.45	292.80	1,093
	November	0.00	44.64	29.43	27.55	101.63		
	December	0.00	45.06	29.06	27.62	101.73		
2022 Q1	January	0.69	42.98	24.31	24.23	92.21	285.56	1,102
	February	0.00	46.17	23.61	24.22	94.00		
	March	0.00	45.76	27.82	25.78	99.36		
2022 Q2	April	0.00	41.68	27.54	23.81	93.03	93.03	926
	May	0.00	0.00	0.00	0.00	0.00		
	June	0.00	0.00	0.00	0.00	0.00		

Pursuant to Title V Permit Condition Number 25634 Part 1, the total landfill gas throughput to the landfill gas combustion equipment at Plant #1179 shall not exceed 2,625 million scf of landfill gas during any consecutive rolling 4-quarter period.

S-66, and S-67 have not been installed.

QUARTERLY CO EMISSIONS From All LFG-Fired Combustion Equipment

WM - REDWOOD LANDFILL, Novato, CA

Quarter	Month	Total CO Emissions (tons)				Monthly Total (tons)	Quarterly Total (tons)	Rolling 4-Qtr Total (tons)
		A-51	A-60	S-64	S-65			
2021 Q2	April	0.00	0.97	0.63	0.59	2.19	6.60	27.2
	May	0.00	1.20	0.61	0.43	2.24		
	June	0.00	1.45	0.53	0.18	2.17		
2021 Q3	July	0.00	1.46	0.53	0.22	2.21	5.44	25.7
	August	0.00	0.93	0.62	0.57	2.12		
	September	0.00	0.95	0.07	0.09	1.11		
2021 Q4	October	0.00	1.27	0.05	0.08	1.40	3.87	22.6
	November	0.00	0.99	0.12	0.11	1.23		
	December	0.00	1.00	0.12	0.11	1.24		
2022 Q1	January	0.01	0.96	0.10	0.10	1.17	3.63	19.5
	February	0.00	1.03	0.10	0.10	1.22		
	March	0.00	1.02	0.12	0.11	1.24		
2022 Q2	April	0.00	0.93	0.11	0.10	1.14	1.14	14.1
	May	0.00	0.00	0.00	0.00	0.00		
	June	0.00	0.00	0.00	0.00	0.00		

Pursuant to Title V Permit Condition Number 25634 Part 2, the total CO emissions from all landfill gas combustion equipment at Plant #1179 shall not exceed 237.5 tons during any consecutive rolling 4-quarter period.

S-66, and S-67 have not been installed.

QUARTERLY SO_2 EMISSIONS From All LFG-Fired Combustion Equipment

WM - REDWOOD LANDFILL, Novato, CA

Quarter	Month	Total SO_2 Emissions (tons)				Monthly Total (tons)	Quarterly Total (tons)	Rolling 4-Qtr Total (tons)
		A-51	A-60	S-64	S-65			
2021 Q2	April	0.00	2.75	0.02	0.02	2.79	10.35	46.5
	May	0.00	3.40	0.02	0.01	3.43		
	June	0.00	4.10	0.02	0.01	4.13		
2021 Q3	July	0.00	2.47	0.02	0.01	2.50	5.96	40.5
	August	0.00	1.58	0.02	0.02	1.62		
	September	0.00	1.83	0.0001	0.0002	1.83		
2021 Q4	October	0.00	3.36	0.0001	0.0002	3.36	8.63	36.7
	November	0.00	2.62	0.0003	0.0003	2.62		
	December	0.00	2.65	0.0003	0.0003	2.65		
2022 Q1	January	0.04	2.34	0.0002	0.0002	2.37	7.37	32.3
	February	0.00	2.51	0.0002	0.0002	2.51		
	March	0.00	2.49	0.0003	0.0002	2.49		
2022 Q2	April	TBD	TBD	0.0002	0.0002	0.00	TBD	TBD
	May					0.00		
	June					0.00		

Pursuant to Title V Permit Condition Number 25634 Part 3, the total SO2 emissions from all landfill gas combustion equipment at Plant #1179 shall not exceed 99 tons during any consecutive rolling 4-quarter period.

TBD=To Be Determined.

SO2 emissions from flares are updated at the end of each quarter when the quarterly average emission factor is calculated.