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May 30, 2024

Director of Compliance and Enforcement
Bay Area Air Quality Management District
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San Francisco, CA 94105
Attn: Title V Reports
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San Francisco, CA 94105
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TV Tracking #: 918

1. ☐ RECEIVED IN ENFORCEMENT: 05/30/2024

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, 2023 to April 30, 2024, 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.

Scott Tignac
Area Director, Northern California and Nevada

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, 2023 to April 30, 2024

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

CONTENTS

List of Tables

List of Appendices

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, 2023 to April 30, 2024. 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, 2023 to April 30, 2024. 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 2023	721.00	0.63
December 2023	740.37	0.00
January 2024	201.37	0.77
February 2024	0.00	5.73
March 2024	2.73	1.50
April 2024	542.40	0.50
Total Hours:	**2,207.87**	**9.13**

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 2023	721.00	721.00
December 2023	744.00	744.00
January 2024	744.00	744.00
February 2024	696.00	696.00
March 2024	743.00	743.00
April 2024	212.75	194.17
Total Hours:	**3,860.75**	**3,842.17**

During the period covered in this report, the S-71 treatment system treated all landfill gasses going to the engines. Appendix B contains the S-64 and S-65 Engine SSM logs, and S-71 Downtime Log (with respect to engine operation) which lists dates, times, and lengths of shutdowns for the reporting period.

As directed by PG&E on 5/12/23, the engine plant had been shut down until the landslide area is fixed by PG&E/Caltrans. BAAQMD was notified on June 27, 2023 with the 10-day/30-day report that the following testing will not be completed as follows:

- 2nd and 3rd Quarter 2023 24-hour emissions testing of Engine No. 1 (S64) and Engine No. 2 (S65) by 9/30/23. Both engines were offline (Condition 25635 Part 4 (NOx), Part 5 (CO), Part 12 (H2S), and Part 14 (CH4))
- 2nd and 3rd Quarter 2023 Laboratory analysis of landfill gas to Engine inlet by 9/30/23. Engines were offline (2016 Compliance Agreement)
- July 2023 annual source tests for Engines S64 and S65 with the associated S71 Gas Treatment System (usually performed in July) will not be done because they were offline.

Testing will be resumed within 60 days of the engines restarting. The engines were restarted on April 8, 2024.

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, 3 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 2023 Downtime:	51.07
November 1, 2023 through April 30, 2024 Downtime:	0.63
January 1, 2024 through April 30, 2024 Total Downtime:	0.00
Total 2024 Downtime:	0.00

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	1/12/2023	3/9/2023	1,498	1,448
A-51	1/10/2024	3/8/2024	1,497	1,447
A-60 Zone A	7/13/2022	9/11/2022	1,582	1,532
A-60 Zone B	7/12/2023	9/8/2023	1,618	1,568

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, 2023 to April 30, 2024.

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 2022. Zone B was tested in July 2023, meeting the obligation to test each zone every five years.

As directed by PG&E on 5/12/23, the engine plant had been shut down until the landslide area is fixed by PG&E/Caltrans. BAAQMD was notified on June 27, 2023 with the 10-day/30-day report that the following testing will not be completed as follows:

- 2nd and 3rd Quarter 2023 24-hour emissions testing of Engine No. 1 (S64) and Engine No. 2 (S65) by 9/30/23. Both engines were offline (Condition 25635 Part 4 (NOx), Part 5 (CO), Part 12 (H2S), and Part 14 (CH4))

- 2nd and 3rd Quarter 2023 Laboratory analysis of landfill gas to Engine inlet by 9/30/23. Engines were offline (2016 Compliance Agreement)

- July 2023 annual source tests for Engines S64 and S65 with the associated S71 Gas Treatment System (usually performed in July) will not be done because they were offline.

Testing will be resumed within 60 days of the engines restarting. The engines were restarted on April 8, 2024.

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 30, 2023
- December 19, 2023
- January 23, 2024
- February 26, 2024
- March 29, 2024
- April 26, 2024

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 2023 SEM event was conducted by Roberts Environmental Services (RES) personnel on November 28, 2023. Five exceedances were identified. Corrective action and re-monitoring are described below:

- The first 10-day re-monitoring was completed on December 1, 2023. All locations were observed at less than 500 ppmv as methane.

- 1-month remonitoring was completed on December 21, 2023. All locations cleared.

The First Quarter 2024 SEM was conducted by RES on January 26, 2024. Four exceedances were identified. Corrective action and re-monitoring are described below:

- 10-day re-monitoring was completed on January 30, 2024. All locations cleared.

- 1-month remonitoring was completed February 23, 2024. All locations cleared.

Per the Compliance Agreement between RLI and BAAQMD, the SEM frequency was increased to bi-monthly. In the First Quarter 2024, the bi-monthly Instantaneous SEM was performed on March 25, 2024. 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 2023 – November 28, 2023
First Quarter 2024 – January 26, 2024

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, 2023 to April 30, 2024. 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, 2023 to April 30, 2024)	90,000 tons
Current Waste In Place as of May 1, 2024	15.26 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, 2023 to April 30, 2024 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, 6, 7, 8, 9, 10, 13, 14, 16, 17, and 20, 2023
- December 4, 6, 7, 8, 11, 12, 13, 14, 18, and 19, 2023
- January 5, 8, 12, 16, 18, 19, 22, 23, and 24, 2024
- February 5, 6, 9, 13, 15, 21, 22, and 23, 2024
- March 5, 6, 8, 13, 14, 15, 26, 27, and 28, 2024
- April 2, 3, 5, 10, 16, 17, and 18, 2024

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

A total of eighteen (18) deviations from the wellhead standards in 8-34-305 occurred during the reporting period. All but seven exceedances were addressed prior to the end of this reporting period (as of May 1, 2024).

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 for November 1, 2023 to April 30, 2024 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	2,160	1,128	52.0	146,249,087	380,758,434	1,824,487
A-60	4,359	1,682	47.8	439,862,963	826,817,160	3,219,340
S-64	507	547	49.4	16,645,221	16,717,869	929,079
S-65	526	559	49.7	17,644,843	28,552,190	888,997
Total	4,366	2,368	48.9	620,402,114	1,252,845,654	--

[1] Methane content was determined from the 7/13/22, 7/14/22, 1/12/23, 7/12/23, and 1/10/24 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.

As directed by PG&E on 5/12/23, the engine plant had been shut down until the landslide area is fixed by PG&E/Caltrans. BAAQMD was notified on June 27, 2023 with the 10-day/30-day report that the following testing will not be completed as follows:

- 2nd and 3rd Quarter 2023 24-hour emissions testing of Engine No. 1 (S64) and Engine No. 2 (S65) by 9/30/23. Both engines were offline (Condition 25635 Part 4 (NOx), Part 5 (CO), Part 12 (H2S), and Part 14 (CH4))

- 2nd and 3rd Quarter 2023 Laboratory analysis of landfill gas to Engine inlet by 9/30/23. Engines were offline (2016 Compliance Agreement)

- July 2023 annual source tests for Engines S64 and S65 with the associated S71 Gas Treatment System (usually performed in July) will not be done because they were offline.

Testing will be resumed within 60 days of the engines restarting. The engines were restarted on April 8, 2024.

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 one (1) well was removed from the collection system during the reporting period (November 1, 2023 to April 30, 2024).

As of the end of this reporting period, 136 total collectors (132 vertical wells and 4 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, 2023 to April 30, 2024. 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-2023	11,259	121,032
December-2023	11,494	121,565
January-2024	11,003	122,933
February-2024	10,643	125,109
March-2024	10,868	127,340
April-2024	12,252	129,143

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, 2023 to April 30, 2024.

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-2023	285	4,298
December-2023	285	4,286
January-2024	284	4,185
February-2024	260	4,089
March-2024	359	3,962
April-2024	403	4,065

Pursuant to Title V Permit Condition Number 16516, the Static Pressure Performance Test (Leak Test) for S-55 was performed on March 7, 2024. S-55 also passed the 2023 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-2023	11,259	121,032
December-2023	11,494	121,565
January-2024	11,003	122,933
February-2024	10,643	125,109
March-2024	10,868	127,340
April-2024	12,252	129,143

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 15.27 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 16.55 tons, which does not exceed the permit limit of 16.63 tons.
- The mean vehicle fleet weight for all on-site landfilling and construction related vehicles was 12.8 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. 2023 calendar year VMT on gravel roads was 24,952 VMT, below the limit of 87,080 VMT. 2024 partial calendar year VMT on gravel roads was 7,730 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. 2023 calendar year VMT on dirt roads was 117,419 VMT, below the limit of 198,650 VMT. 2024 partial calendar year VMT on dirt roads was 36,376 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. 2023 calendar year VMT on paved roads was 78,882 VMT, below the limit of 205,880 VMT. 2024 partial calendar year VMT on paved roads was 22,329 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. 2023 calendar year VMT on dirt roads is 18,365 VMT, below the limit of 19,080 VMT. 2024 partial calendar year VMT on dirt roads is 6,974 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, 2023 to April 30, 2024) 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. 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 pre-A80 treatment), 2-12 (Engine Inlet pre-S71 treatment), and Appendix M. The single test TRS limit of 370 ppm has been exceeded during this period. BAAQMD is working on a new Compliance Agreement.

Table 2-11 LFG (pre-A80 treatment) Characterization Results

Compound	Fourth Quarter 2023 Result (ppm_v)	First Quarter 2024 Result (ppm_v)

Compound	Fourth Quarter 2023 Result (ppm$_v$)	First Quarter 2024 Result (ppm$_v$)
Hydrogen Sulfide	1,700	3,100
Carbonyl Sulfide	1.40	ND
Methyl Mercaptan	2.20	1.50
Ethyl Mercaptan	0.44	ND
Dimethyl Sulfide	0.41	ND
Carbon Disulfide	ND	ND
Total Reduced Sulfur	**1,717**	**3,119**

ND = not detected
N/A = not applicable

Table 2-12 Engine Inlet (pre-S71 treatment) Characterization Results

Compound	Fourth Quarter 2023 Result (ppm$_v$)	First Quarter 2024 Result (ppm$_v$)
Hydrogen Sulfide	-	2,000
Carbonyl Sulfide	-	ND
Methyl Mercaptan	-	1.40
Ethyl Mercaptan	-	ND
Dimethyl Sulfide	-	ND
Carbon Disulfide	-	ND
Total Reduced Sulfur	**-**	**2,011**

ND = not detected
N/A = not applicable

As directed by PG&E on 5/12/23, the engine plant had been shut down until the landslide area is fixed by PG&E/Caltrans. BAAQMD was notified on June 27, 2023 with the 10-day/30-day report that the following testing will not be completed as follows:

- 2nd and 3rd Quarter 2023 24-hour emissions testing of Engine No. 1 (S64) and Engine No. 2 (S65) by 9/30/23. Both engines were offline (Condition 25635 Part 4 (NOx), Part 5 (CO), Part 12 (H2S), and Part 14 (CH4))

- 2nd and 3rd Quarter 2023 Laboratory analysis of landfill gas to Engine inlet by 9/30/23. Engines were offline (2016 Compliance Agreement)

- July 2023 annual source tests for Engines S64 and S65 with the associated S71 Gas Treatment System (usually performed in July) will not be done because they were offline.

Testing will be resumed within 60 days of the engines restarting. The engines were restarted on April 8, 2024.

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 rolling 4-quarter TRS concentration (after treatment) was in excess of the 350 ppm_v limit. BAAQMD is working on a new Compliance Agreement. 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)
2023 Q2	1,598	1,133
2023 Q3	349	1,075
2023 Q4	329	992
2024 Q1	326	651

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 10, 2024. 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 8, 2024.

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	81	1,500
Benzyl Chloride	<SRL	500
Carbon Tetrachloride	<SRL	200
Chlorobenzene	<SRL	200
Chloroethane	<SRL	500
Chloroform	<SRL	200
1,4-Dichlorobenzene	<SRL	1,000
Ethylbenzene	294	4,000
Ethylene Dibromide	<SRL	200
Ethylene Dichloride	<SRL	200
Ethylidene Dichloride	<SRL	500
Hexane	<SRL	2,000
Isopropyl Alcohol	304	10,000
Methyl Alcohol	745	300,000
Methyl Ethyl Ketone	722	15,000

Compound	**Result (ppb_v)**	**Concentration Limit* (ppb_v)**
Methylene Chloride	<SRL	1,000
Methyl tert-Butyl Ether	<SRL	500
Perchloroethylene	<SRL	1,000
Styrene	<SRL	500
1,1,2,2-Tetrachloroethane	<SRL	200
Toluene	789	20,000
1,1,1-Trichloroethane	<SRL	200
Trichloroethylene	<SRL	500
Vinyl Chloride	<SRL	2,000
Vinylidene Chloride	<SRL	500
Xylenes	698	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 December 7, 2022 and March 29, 2024 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 2023 Flare** (ppb_v)	**4th Quarter 2023 Engine Inlet** (ppb_v)	**1st Quarter 2024 Flare** (ppb_v)	**1st Quarter 2024 Engine Inlet** (ppb_v)	**Limit** (ppb_v)
Ethylbenzene	2,100	-	960	1,100	4,000
1,4-Dichlorobenzene	200	-	88	98	1,000

As directed by PG&E on 5/12/23, the engine plant had been shut down until the landslide area is fixed by PG&E/Caltrans. BAAQMD was notified on June 27, 2023 with the 10-day/30-day report that the following testing will not be completed as follows:

- 2nd and 3rd Quarter 2023 24-hour emissions testing of Engine No. 1 (S64) and Engine No. 2 (S65) by 9/30/23. Both engines were offline (Condition 25635 Part 4 (NOx), Part 5 (CO), Part 12 (H2S), and Part 14 (CH4))
- 2nd and 3rd Quarter 2023 Laboratory analysis of landfill gas to Engine inlet by 9/30/23. Engines were offline (2016 Compliance Agreement)
- July 2023 annual source tests for Engines S64 and S65 with the associated S71 Gas Treatment System (usually performed in July) will not be done because they were offline.

Testing will be resumed within 60 days of the engines restarting. The engines were restarted on April 8, 2024.

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 16, 2023
- December 19, 2023
- January 25, 2024
- February 22 and 27, 2024
- March 20 and 22, 2024
- April 11, 2024

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 2023	1,524,020	32,489,500
December 2023	1,563,840	32,721,180
January 2024	2,910,480	31,117,520
February 2024	5,925,940	32,246,960
March 2024	4,358,480	32,214,380
April 2024	2,472,460	30,838,780

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 7, 2023	16.4	5.6	ND	140
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, 2023 to April 30, 2024 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 2023	0	0	0
December 2023	0	0	0
January 2024	0	0	0
February 2024	0	0	0
March 2024	0	0	0
April 2024	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)**
2023	2	1,147	22.0	87.3
2023	3	1,214	23.9	88.8
2023	4	1,254	24.7	89.3
2024	1	1,264	24.0	69.7
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 2024 Annual Compliance Demonstration Test (Source Test) was conducted on January 10, 2024. The Test Report was submitted to BAAQMD on March 8, 2024. 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)	13.9	15	---	In Compliance
CO (ppm_v @ 15% O_2)	3.3	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	<5.5	---	30	In Compliance
NMOC Inlet (ppm_v)	44	360	---	In Compliance

Although the Compliance Agreement ended on January 15, 2023, RLI has continued to comply with the Compliance Agreement as BAAQMD works on a new Compliance Agreement. BAAQMD requested RLI to retest A-51 for TRS. RLI retested A-51 on May 16, 2024. The A51 source test report for the retest is pending.

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 2022 Source Test was performed on by Blue Sky Environmental, LLC on July 13, 2022 with the flare operating in Zone A. The Test Report was submitted to BAAQMD on September 11, 2022. 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)	12.2	15	---	In Compliance
CO (ppm_v @ 15% O_2)	34.7	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	<2.9	---	30	In Compliance
NMOC Inlet (ppm_v)	195	360	---	In Compliance

The 2023 Source Test was performed on by Blue Sky Environmental, LLC on July 12, 2023 with the flare operating in Zone B. The Test Report was submitted to BAAQMD on September 8, 2023 and was included in the November 2023 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)	7.6	15	---	In Compliance
CO (ppm_v @ 15% O_2)	21.0	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	<3.1	---	30	In Compliance
NMOC Inlet (ppm_v)	118	360		In Compliance

The A-60B test report (tested on 7/12/23) showed that the flare met all permit requirements except for TRS. Since 7/17/2023, RLI established sulfur treatment for the A60 flare and subsequent averaged sulfur inlet concentrations have been below the TRS limit.

3.1.3 ENGINES (S-64 AND S-65) SOURCE TEST RESULTS

The S-64 and S-65 landfill gas (LFG) Engines are operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Permit to Operate (PTO) for Facility 1179, Permit Condition 25635, Part 13. Testing also satisfied initial testing requirements of 40 CFR 60, Subpart JJJ – New Source Performance Standards for Spark Ignition Internal Combustion Engines.

The 2022 Source Test was performed on the S-64 and S-65 LFG Engines by Blue Sky Environmental, LLC on July 14 and 15, 2022. The Test Report was submitted to BAAQMD on September 12, 2022. A summary of the report is presented in Appendix N.

The results for S-64 Engine indicates that the engine is in compliance with PTO Permit Condition 25635, Part 13. Table 3-5 below shows the results of the source test, averaged from three test runs (particulate and formaldehyde have a testing frequency of one engine per year).

Table 3-5 S-64 Engine Source Test Results

Condition	S-64 Engine Average Results	Permit Limit	Compliance Status
NO_x (gm/BHp-hr)	0.01	0.15	In Compliance
CO (gm/BHp-hr)	0.4	1.8	In Compliance
NMOC (gm/BHp-hr as CH_4)	0.02	0.16	In Compliance
Total Particulate (g/BHp)	0.05	0.10	In Compliance
Formaldehyde (lb/hr)	0.04	0.51	In Compliance

The results for S-65 Engine indicates that the engine is in compliance with PTO Permit Condition 25635, Part 13. Table 3-6 below shows the results of the source test, averaged from three test runs.

Table 3-6 S-65 Engine Source Test Results

Condition	S-65 Engine Average Results	Permit Limit	Compliance Status
NO_x (gm/BHp-hr)	0.09	0.15	In Compliance
CO (gm/BHp-hr)	0.2	1.8	In Compliance
NMOC (gm/BHp-hr as CH_4)	0.02	0.16	In Compliance

As directed by PG&E on 5/12/23, the engine plant had been shut down until the landslide area is fixed by PG&E/Caltrans. BAAQMD was notified on June 27, 2023 with the 10-day/30-day report that the following testing will not be completed as follows:

- 2nd and 3rd Quarter 2023 24-hour emissions testing of Engine No. 1 (S64) and Engine No. 2 (S65) by 9/30/23. Both engines were offline (Condition 25635 Part 4 (NOx), Part 5 (CO), Part 12 (H2S), and Part 14 (CH4))

- 2nd and 3rd Quarter 2023 Laboratory analysis of landfill gas to Engine inlet by 9/30/23. Engines were offline (2016 Compliance Agreement)

- July 2023 annual source tests for Engines S64 and S65 with the associated S71 Gas Treatment System (usually performed in July) will not be done because they were offline.

Testing will be resumed within 60 days of the engines restarting. The engines were restarted on April 8, 2024.

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 one (1) well was removed to the collection system during the reporting period (November 1, 2023 to April 30, 2024).

As of the end of this reporting period, 136 total collectors (132 vertical wells and 4 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 Compliance Agreement ended on January 15, 2023 with RLI and BAAQMD currently working on a new Compliance Agreement. The 2016 agreement included 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 20th day of each month.

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

- December 8, 2023
- January 5, 2024
- February 7, 2024
- March 15, 2024

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, 2023 to April 30, 2024) are noted in this section and included in Appendix B. The following information is included as required:

- During the reporting period, 5 A-51 Flare SSM events, 24 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, 8 wellfield SSM events occurred. The time and duration of these events are included in Appendix D, Wellfield SSM Log.

- During the reporting period, 26 S-64 Engine (#1) SSM events, 14 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 78 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.*

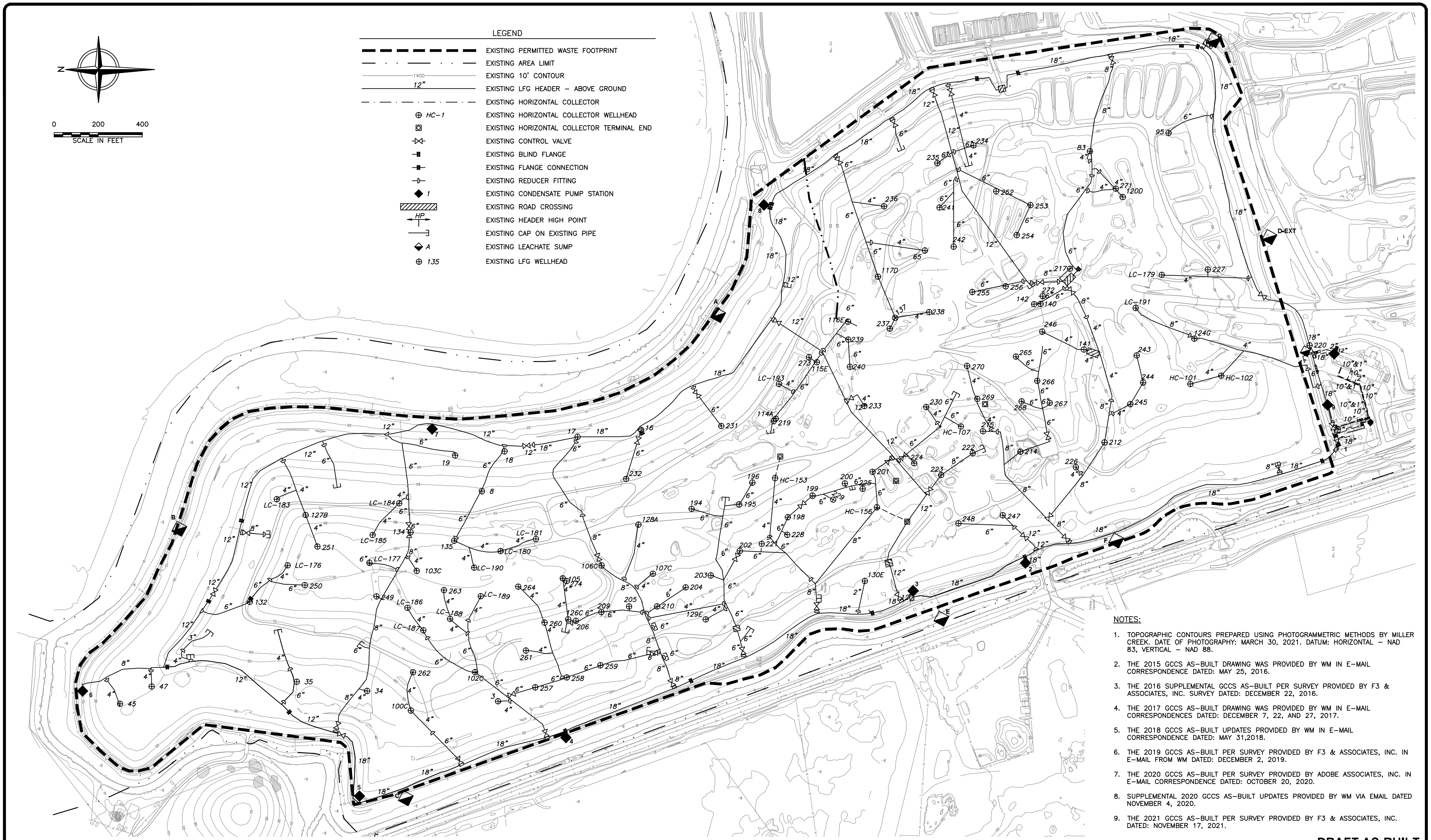
Signature of Responsible Official

May 30, 2024
Date

Scott Tignac
Name of Responsible Official

APPENDIX A

SITE MAP



LEGEND

▬ ▬ ▬	EXISTING PERMITTED WASTE FOOTPRINT
— · — · —	EXISTING AREA LIMIT
1400	EXISTING 10' CONTOUR
12"	EXISTING LFG HEADER – ABOVE GROUND
— · · — · · —	EXISTING HORIZONTAL COLLECTOR
⊕ HC–1	EXISTING HORIZONTAL COLLECTOR WELLHEAD
⊠	EXISTING HORIZONTAL COLLECTOR TERMINAL END
⋈	EXISTING CONTROL VALVE
▮	EXISTING BLIND FLANGE
▮	EXISTING FLANGE CONNECTION
▷	EXISTING REDUCER FITTING
◆ 1	EXISTING CONDENSATE PUMP STATION
▨	EXISTING ROAD CROSSING
HP	EXISTING HEADER HIGH POINT
⊐	EXISTING CAP ON EXISTING PIPE
◆ A	EXISTING LEACHATE SUMP
⊕ 135	EXISTING LFG WELLHEAD

NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK. DATE OF PHOTOGRAPHY: MARCH 30, 2021. 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.
9. THE 2021 GCCS AS–BUILT PER SURVEY PROVIDED BY F3 & ASSOCIATES, INC. DATED: NOVEMBER 17, 2021.

DRAFT AS-BUILT

1" 1/2" 0" 1"

File: X:\PROJECTS\REDWOOD\210036 – 2021 GCCS Phasing Plans\As–Built\200136_REDWOOD_AS–BUILT_DRAFT_211220.DWG Layout: S1 User: GERARDO.PAREDES Dec 20, 2021 – 8:59pm

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 12/21/21
DRAWN BY GVP
DESIGNED BY AMN
CHECKED BY KA
APPROVED BY PJS

TETRA TECH

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

GCCS RECORD LAYOUT

AS-BUILT SITE PLAN

SHEET NO.
1

PROJECT NO.
200136

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		A-51 Flare	9/20/23 10:30	9/20/23 10:32	0.03	2208.80	Manual shutdown running on A60 only. Manual restart for flare maintenance and testing	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	12/21/2023
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		12/21/23 11:18	12/21/23 11:20	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			
2		A-51 Flare	12/21/23 14:56	12/21/23 14:58	0.03	432.60	Manual shutdown running on A60 only. Manual restart for flare maintenance and testing	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	1/8/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/8/24 15:32	1/8/24 15:34	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			
3		A-51 Flare	1/8/24 15:34	1/8/24 15:36	0.03	17.87	Manual shutdown running on A60 only. Manual restart for flare maintenance. A51 source test on 1/10/24.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	1/9/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/9/24 9:26	1/9/24 9:28	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			
4		A-51 Flare	3/25/24 5:08	3/25/24 5:10	0.03	2.73	Low flow alarm shutdown. Flare Cycling up and down.	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	3/25/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/25/24 7:52	3/25/24 7:54	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	☐ Automatic (Go to 9)		☒ No	☐ No			
5		A-51 Flare	4/8/24 9:38	4/8/24 9:40	0.03	542.37	Manual shutdown for Engine Plant startup. Operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	5/1/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		A-51 shut down as of May 1, 2024					☐ 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	11/15/23 9:12	11/15/23 9:14	0.03	0.10	PG&E unplanned power outage. Flare switched to generator power.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/15/2023
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/15/23 9:18	11/15/23 9:20	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			
2		A-60 Zone A	11/21/23 12:48	11/21/23 12:50	0.03	0.53	VFD/Blower alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/21/2023
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/21/23 13:20	11/21/23 13:22	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		A-60 Zone A	1/25/24 9:52	1/25/24 9:54	0.03	0.03	Low temperature shutdown/restart	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	1/25/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/25/24 9:54	1/25/24 9:56	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			
4		A-60 Zone A	1/25/24 10:02	1/25/24 10:04	0.03	0.73	Manual shutdown for maintenance/thermocouple.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	1/25/2024
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/25/24 10:46	1/25/24 10:48	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			
5		A-60 Zone A	2/1/24 10:32	2/1/24 10:34	0.03	1.33	Manual shutdown for maintenance/thermocouple	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	2/1/2024
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/1/24 11:52	2/1/24 11:54	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	2/5/24 6:44	2/5/24 6:46	0.03	0.27	VFD/Flame alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	2/5/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/5/24 7:00	2/5/24 7:02	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			
7		A-60 Zone A	2/5/24 13:50	2/5/24 13:52	0.03	0.10	VFD/Flame alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	2/5/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/5/24 13:56	2/5/24 13:58	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			
8		A-60 Zone A	2/14/24 7:24	2/14/24 7:26	0.03	3.63	Flame alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	2/14/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/14/24 11:02	2/14/24 11:04	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			
9		A-60 Zone A	2/26/24 6:58	2/26/24 7:00	0.03	0.10	Flame alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	2/26/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/26/24 7:04	2/26/24 7:06	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			
10		A-60 Zone A	2/26/24 8:38	2/26/24 8:40	0.03	0.30	Flame alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	2/26/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/26/24 8:56	2/26/24 8:58	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			
11		A-60 Zone A	3/11/24 7:04	3/11/24 7:06	0.03	0.10	Low flow alarm shutdown.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	3/11/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/11/24 7:10	3/11/24 7:12	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	3/11/24 11:16	3/11/24 11:18	0.03	0.23	Low flow alarm due to S71 switching lead/lag vessels	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	3/11/2024
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/11/24 11:30	3/11/24 11:32	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			

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	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/12/24 9:56 3/12/24 10:06	3/12/24 9:58 3/12/24 10:08	0.03 0.03	0.17	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	3/12/2024
14	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/14/24 8:14 3/14/24 8:20	3/14/24 8:16 3/14/24 8:22	0.03 0.03	0.10	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	3/14/2024
15	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/15/24 6:44 3/15/24 6:48	3/15/24 6:46 3/15/24 6:50	0.03 0.03	0.07	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	3/15/2024
16	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/15/24 12:08 3/15/24 12:12	3/15/24 12:10 3/15/24 12:14	0.03 0.03	0.07	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	3/15/2024
17	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/19/24 11:04 3/19/24 11:12	3/19/24 11:06 3/19/24 11:14	0.03 0.03	0.13	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	3/19/2024
18	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/20/24 10:44 3/20/24 10:50	3/20/24 10:46 3/20/24 10:52	0.03 0.03	0.10	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	3/20/2024
19	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/28/24 10:38 3/28/24 11:24	3/28/24 10:40 3/28/24 11:26	0.03 0.03	0.77	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☐ No		Mike Chan	3/28/2024
20	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	3/28/24 15:08 3/28/24 15:12	3/28/24 15:10 3/28/24 15:14	0.03 0.03	0.07	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	3/28/2024
21	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	4/8/24 18:46 4/8/24 18:52	4/8/24 18:48 4/8/24 18:54	0.03 0.03	0.10	Low flow alarm shutdown. Engines coming back online	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	4/8/2024
22	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	4/10/24 23:52 4/11/24 0:00	4/10/24 23:54 4/11/24 0:02	0.03 0.03	0.13	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	4/11/2024
23	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	4/12/24 2:58 4/12/24 3:10	4/12/24 3:00 4/12/24 3:12	0.03 0.03	0.20	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	4/12/2024
24	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	4/12/24 9:28 4/12/24 9:32	4/12/24 9:30 4/12/24 9:34	0.03 0.03	0.07	Low flow alarm shutdown.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ 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) ☐ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☒ No		Mike Chan	4/12/2024

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	☒ Shutdown	A-60 Zone B	7/13/23 9:34	7/13/23 9:36	0.03	7022.43	Manual shutdown A60B after A60B source testing.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	5/1/2024
								☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		Zone B shut down as of May 1, 2024					☐ 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			

(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-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 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".

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)	5/18/23 16:35	5/18/23 16:37	0.03	7817.67	PG&E 5/12/23: No electricity export until landslide area is repaired	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		4/8/24 10:15	4/8/24 10:17	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			
2		Engine #1 (S-64)	4/8/24 10:30	4/8/24 10:32	0.03	0.25	compressor vibration	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 10:45	4/8/24 10:47	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			
3		Engine #1 (S-64)	4/8/24 11:00	4/8/24 11:02	0.03	0.50	detonation 17	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 11:30	4/8/24 11:32	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	☐ Automatic (Go to 9)		☒ No	☐ No			
4		Engine #1 (S-64)	4/8/24 12:30	4/8/24 12:32	0.03	0.92	low jacket water outlet pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 13:25	4/8/24 13:27	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			
5		Engine #1 (S-64)	4/8/24 14:00	4/8/24 14:02	0.03	0.17	low jacket water outlet pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 14:10	4/8/24 14:12	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			
6		Engine #1 (S-64)	4/8/24 14:25	4/8/24 14:27	0.03	0.17	low jacket water outlet pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 14:35	4/8/24 14:37	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			
7		Engine #1 (S-64)	4/8/24 14:50	4/8/24 14:52	0.03	0.33	exhaust temperature	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 15:10	4/8/24 15:12	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			
8		Engine #1 (S-64)	4/8/24 16:10	4/8/24 16:12	0.03	5.00	low jacket water outlet pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 21:10	4/8/24 21:12	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 #1 (S-64)	4/9/24 8:55	4/9/24 8:57	0.03	2.83	gas compressor vibration	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/9/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/9/24 11:45	4/9/24 11:47	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			
10		Engine #1 (S-64)	4/9/24 14:45	4/9/24 14:47	0.03	0.25	gas compressor vibration	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/9/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/9/24 15:00	4/9/24 15:02	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 #1 (S-64)	4/10/24 3:05	4/10/24 3:07	0.03	0.92	engine over speed	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/10/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/10/24 4:00	4/10/24 4:02	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 #1 (S-64)	4/10/24 19:20	4/10/24 19:22	0.03	1.00	engine over speed	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/10/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/10/24 20:20	4/10/24 20:22	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			

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		Engine #1 (S-64)	4/13/24 13:05	4/13/24 13:07	0.03	0.75	detonation 17	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/13/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/13/24 13:50	4/13/24 13:52	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			
14		Engine #1 (S-64)	4/15/24 14:40	4/15/24 14:42	0.03	0.92	exhasut claps broken	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/15/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/15/24 15:35	4/15/24 15:37	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 #1 (S-64)	4/18/24 8:55	4/18/24 8:57	0.03	0.17	113 114 wire change to q2 q2	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/18/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/18/24 9:05	4/18/24 9:07	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			
16		Engine #1 (S-64)	4/18/24 21:10	4/18/24 21:12	0.03	1.50	greg adjust gas flow	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/18/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/18/24 22:40	4/18/24 22:42	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 #1 (S-64)	4/18/24 22:55	4/18/24 22:57	0.03	0.17	condensate	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/18/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/18/24 23:05	4/18/24 23:07	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			
18		Engine #1 (S-64)	4/19/24 8:45	4/19/24 8:47	0.03	7.00	plant oputage	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/19/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/19/24 15:45	4/19/24 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			
19		Engine #1 (S-64)	4/19/24 15:45	4/19/24 15:47	0.03	1.17	unknown	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/19/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/19/24 16:55	4/19/24 16:57	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			
20		Engine #1 (S-64)	4/22/24 6:55	4/22/24 6:57	0.03	6.42	broken clapms/oil leak	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/22/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/22/24 13:20	4/22/24 13:22	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			
21		Engine #1 (S-64)	4/23/24 23:50	4/23/24 23:52	0.03	0.75	engine over speed	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/24/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/24/24 0:35	4/24/24 0:37	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			
22		Engine #1 (S-64)	4/24/24 1:10	4/24/24 1:12	0.03	0.17	engine over speed	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/24/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/24/24 1:20	4/24/24 1:22	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			
23		Engine #1 (S-64)	4/24/24 2:15	4/24/24 2:17	0.03	0.67	engine over speed	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/24/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/24/24 2:55	4/24/24 2:57	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			
24		Engine #1 (S-64)	4/24/24 18:35	4/24/24 18:37	0.03	1.25	gas compressor shut down	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/24/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/24/24 19:50	4/24/24 19:52	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			

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
25		Engine #1 (S-64)	4/25/24 7:20	4/25/24 7:22	0.03	0.42	gas compressor shutdown	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/25/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/25/24 7:45	4/25/24 7:47	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			
26		Engine #1 (S-64)	4/29/24 20:55	4/29/24 20:57	0.03	0.83	low fuel pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/29/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/24 21:45	4/29/24 21:47	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			

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)	5/12/23 10:55	5/12/23 10:57	0.03	7966.83	PG&E 5/12/23: No electricity export until PG&E give approval. Landslide area being repaired	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		4/8/24 9:45	4/8/24 9:47	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			
2		Engine #2 (S-65)	4/8/24 10:00	4/8/24 10:02	0.03	0.17	gas compressor vibration sensor	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/24 10:10	4/8/24 10:12	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			
3		Engine #2 (S-65)	4/9/24 11:25	4/9/24 11:27	0.03	0.25	gas compressor vibration sensor	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/9/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/9/24 11:40	4/9/24 11:42	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			
4		Engine #2 (S-65)	4/9/24 14:45	4/9/24 14:47	0.03	0.17	gas compressor vibration sensor	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/9/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/9/24 14:55	4/9/24 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			
5		Engine #2 (S-65)	4/16/24 12:15	4/16/24 12:17	0.03	0.83	detination 1	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/16/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/16/24 13:05	4/16/24 13:07	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			
6		Engine #2 (S-65)	4/18/24 21:10	4/18/24 21:12	0.03	1.58	condensate	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/18/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/18/24 22:45	4/18/24 22:47	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			
7		Engine #2 (S-65)	4/18/24 22:55	4/18/24 22:57	0.03	0.25	gas compressire shut down	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/18/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/18/24 23:10	4/18/24 23:12	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			
8		Engine #2 (S-65)	4/19/24 8:45	4/19/24 8:47	0.03	7.00	plant outage	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/19/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/19/24 15:45	4/19/24 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			
9		Engine #2 (S-65)	4/23/24 9:05	4/23/24 9:07	0.03	0.50	unknown	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/23/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/23/24 9:35	4/23/24 9:37	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)	4/23/24 10:05	4/23/24 10:07	0.03	1.50	unknown	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/23/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/23/24 11:35	4/23/24 11:37	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)	4/24/24 18:35	4/24/24 18:37	0.03	1.17	gas compreessor shut down	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/24/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/24/24 19:45	4/24/24 19:47	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			
12		Engine #2 (S-65)	4/25/24 7:25	4/25/24 7:27	0.03	1.58	gas compressor shut down	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/25/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/25/24 9:00	4/25/24 9:02	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)	4/29/24 21:00	4/29/24 21:02	0.03	1.17	low fuel pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/29/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/24 22:10	4/29/24 22:12	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)	4/29/24 22:30	4/29/24 22:32	0.03	0.25	pol to coolant diff	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/29/2024
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/24 22:45	4/29/24 22:47	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			

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
1		Treatment System (S-71)	5/18/23 16:35	5/18/23 16:37	0.03	7817.17	PG&E 5/12/23: No electricity export until landslide area is repaired	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		C Johnson	4/8/2024
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		4/8/24 9:45	4/8/24 9:47	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			

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

Redwood Landfill, Novato, CA
GCCS DOWNTIME REPORT Period: November 1, 2023 to April 30, 2024

SHUTDOWN DATE/TIME	START-UP DATE/TIME	TOTAL DOWNTIME (hours)	COMMENTS/ACTION TAKEN
11/15/23 09:12	11/15/23 09:18	0.10	PG&E unplanned power outage. Flare switched to generator power.
11/21/23 12:48	11/21/23 13:20	0.53	VFD/Blower alarm shutdown.
		0.00	No GCCS Downtime in December 2023
		0.00	No GCCS Downtime in January 2024
		0.00	No GCCS Downtime in February 2024
		0.00	No GCCS Downtime in March 2024
		0.00	No GCCS Downtime in April 2024

Combined Emission Control Devices	
Total 2023 Downtime:	**51.07**
November 1, 2023 through April 30, 2024 Downtime:	**0.63**
January 1, 2024 through April 30, 2024 Total Downtime:	**0.00**
Total 2024 Downtime:	**0.00**

APPENDIX C

CORRESPONDENCE

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

April 23, 2024

Mr. Davis Zhu
Senior Air Quality Engineer
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105
dzhu@baaqmd.gov

Re: Well Actions Letter
Title V Permit Condition Number 19867, Part 17, Facility A1179
Redwood Landfill, Inc., Novato, California

Dear Mr. Zhu:

On behalf of Redwood Landfill, Inc. (RLI), this letter is to notify the Bay Area Air Quality Management District (BAAQMD) of the well actions recently performed at the RLI, pursuant to Title V Permit A1179 as modified by Application Number (AN) 30065. These well actions are summarized below:

- 1 Horizontal collector RLHC0153 was decommissioned on 4/18/2024.

AN 30065 allows installation of up to 100 new vertical wells, unlimited one-to-one replacement of vertical wells, installation of up to 50 new horizontal collectors, decommissioning of up to 50 vertical wells, and decommissioning of up to 15 horizontal collectors.

As stated in the May 1, 2023 Well Actions Letter, prior to the completion of this well action, RLI had 137 total collectors (132 vertical wells and 5 horizontal collectors) connected to the GCCS. With the completion of this well action, RLI's existing GCCS component count and permitted remaining actions per AN 30065 are listed in the following table:

	Install New Vertical Wells	Decommission Vertical Wells	Install New Horizontal Collectors	Decommission Horizontal Collectors	Replace Vertical Wells*
Actions Permitted Under AN 30065	100	50	50	15	Unlimited
Actions Performed by RLI per AN 30065	54	23	0	5	-
Actions Remaining Under AN 30065	46	27	50	10	Unlimited
Active Collector Count after Actions in this Letter	136 Total Collectors: 132 Vertical LFG Wells and 4 Horizontal Collectors				

*One-for-one well replacement at new optimal locations.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

Chan, Michael

From: Chan, Michael
Sent: Tuesday, April 23, 2024 2:13 PM
To: 'Davis Zhu'
Cc: McCutcheon, Alisha
Subject: Redwood Landfill Well Actions Notification April 2024
Attachments: 2024.04.23 - RLI Well Actions Letter decom well RLHC0153.pdf

Hi Davis,

Attached is the Well Actions Notification letter that Redwood Landfill has decommissioned 1 well in the collection system.

Thanks,

Mike

Michael Chan
EP Air Quality Specialist
mchan2@wm.com

T: 510.613.2852
C: 510.205.0410
172 98th Avenue
Oakland, CA 94603

Chan, Michael

From: Microsoft Outlook <MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@wm.com>
To: 'Davis Zhu'
Sent: Tuesday, April 23, 2024 2:13 PM
Subject: Relayed: Redwood Landfill Well Actions Notification April 2024

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

'Davis Zhu' (dzhu@baaqmd.gov)

Subject: Redwood Landfill Well Actions Notification April 2024

ATT00002

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	☒ Shutdown ☐ Startup ☐ Malfunction	RLLC0254	10/19/22 10:18 Well offline as of May 1, 2024	10/19/22 10:20	0.03	13,429.70	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance ☒ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ 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) ☒ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	5/1/2024
2	☒ Shutdown ☒ Startup ☐ Malfunction	RLLC0224	7/3/23 12:20 12/5/23 12:05	7/3/23 12:22 12/5/23 12:07	0.03 0.03	3,719.75	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance ☒ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ 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) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	12/5/2023
3	☒ Shutdown ☒ Startup ☐ Malfunction	RLLC0222	8/24/23 14:15 10/31/23 10:55	8/24/23 14:17 10/31/23 10:57	0.03 0.03	1,628.67	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance ☒ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ 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) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	10/31/2023
4	☒ Shutdown ☒ Startup ☐ Malfunction	RLLC0201	10/31/23 9:05 11/6/23 14:15	10/31/23 9:07 11/6/23 14:17	0.03 0.03	149.17	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance ☒ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ 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) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	11/6/2023
5	☒ Shutdown ☒ Startup ☐ Malfunction	RLLC0225	10/31/23 9:05 11/6/23 14:15	10/31/23 9:07 11/6/23 14:17	0.03 0.03	149.17	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance ☒ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ 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) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	11/6/2023
6	☒ Shutdown ☐ Startup ☐ Malfunction	RLLC0222	11/17/23 14:30 Well offline as of May 1, 2024	11/17/23 14:32	0.03	3,969.50	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance ☒ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ 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) ☒ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	5/1/2024
7	☒ Shutdown ☐ Startup ☐ Malfunction	RLLC0233	12/18/23 11:05 Well offline as of May 1, 2024	12/18/23 11:07	0.03	3,228.92	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance ☒ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ 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) ☒ No ☐ Yes (Go to 9) ☐ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	5/1/2024
8	☒ Shutdown ☐ Startup ☐ Malfunction	RLHC0153	4/18/24 14:30 N/A	4/18/24 14:32	0.03	N/A	Well decommissioned pursuant to AN #30065 on 4/18/24	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) N/A	Procedures 1 to 3	☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No		Mike Chan	N/A

(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 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".

APPENDIX E

A-51 AND A-60 FLARE TEMPERATURE REPORTS

Redwood Landfill, Novato, CA

A-51 Flare TEMPERATURE DEVIATION/ INOPERATIVE MONITOR REPORT **November 1, 2023 to April 30, 2024**

REPORT PREPARED BY: Michael Chan **DATE:** May 30, 2024

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 2023					
No deviations or inoperative monitors during the month of December 2023					
No deviations or inoperative monitors during the month of January 2024					
No deviations or inoperative monitors during the month of February 2024					
No deviations or inoperative monitors during the month of March 2024					
No deviations or inoperative monitors during the month of April 2024					

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 1448°F (3/9/23 to 3/7/24) or 1447°F (3/8/24 to current) limits established during the January 12, 2023 and January 10, 2024 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, 2023 to April 30, 2024**

REPORT PREPARED BY: Michael Chan **DATE:** May 30, 2024

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 2023					
No deviations or inoperative monitors during the month of December 2023					
No deviations or inoperative monitors during the month of January 2024					
No deviations or inoperative monitors during the month of February 2024					
No deviations or inoperative monitors during the month of March 2024					
No deviations or inoperative monitors during the month of April 2024					

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 1,525°F (9/10/21 - 9/10/22) or 1,532°F (9/11/22 - current) limits established during the July 13, 2021 and July 13, 2022 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 9/7/23) or 1,568°F (9/8/23 to current) limits established in the July 17, 2018 and July 12, 2023 Source Tests. 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, 2023 to April 30, 2024

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2023				
There was no missing data for December 2023				
There was no missing data for January 2024				
There was no missing data for February 2024				
There was no missing data for March 2024				
There was no missing data for April 2024				

Flare A-51	**Hours**	**Days**
Total Missing Data:	0.00	0.00
Total Complete Data:	4,367.00	181.96
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, 2023 to April 30, 2024

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2023				
There was no missing data for December 2023				
There was no missing data for January 2024				
There was no missing data for February 2024				
There was no missing data for March 2024				
There was no missing data for April 2024				

Flare A-60	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,367.00	181.96
Missing Data Percentage:	0.00%	0.00%

APPENDIX G

COVER INTEGRITY MONITORING REPORTS

Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	11/30/2023	Received		Manager	Ramin Khany	Date	11/30/2023
Technician	Riley Lindberg	Repairs Complete		Manager		Date	
Cell/Pad				Cell/Pad			
Description of finding : No cover integrity issues found in the month of November.				**Description of corrective action:**			
Date Identified				Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding:				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	Waste Management- Redwood Landfill					
Date	12/19/2023	**Received**	**Manager**	Ramin Khany	**Date**	12/19/2023
Technician	Riley Lindberg	**Repairs Complete**	**Manager**	Ramin Khany	**Date**	1/25/2024
Cell/Pad	**Area E/F**		**Cell/Pad**			

Description of finding : West side of the hill where working area is located has some deep runoff ravines. Due to the large amount of rain we have received in last week.

Description of corrective action: Area was filled in with new dirt and fill

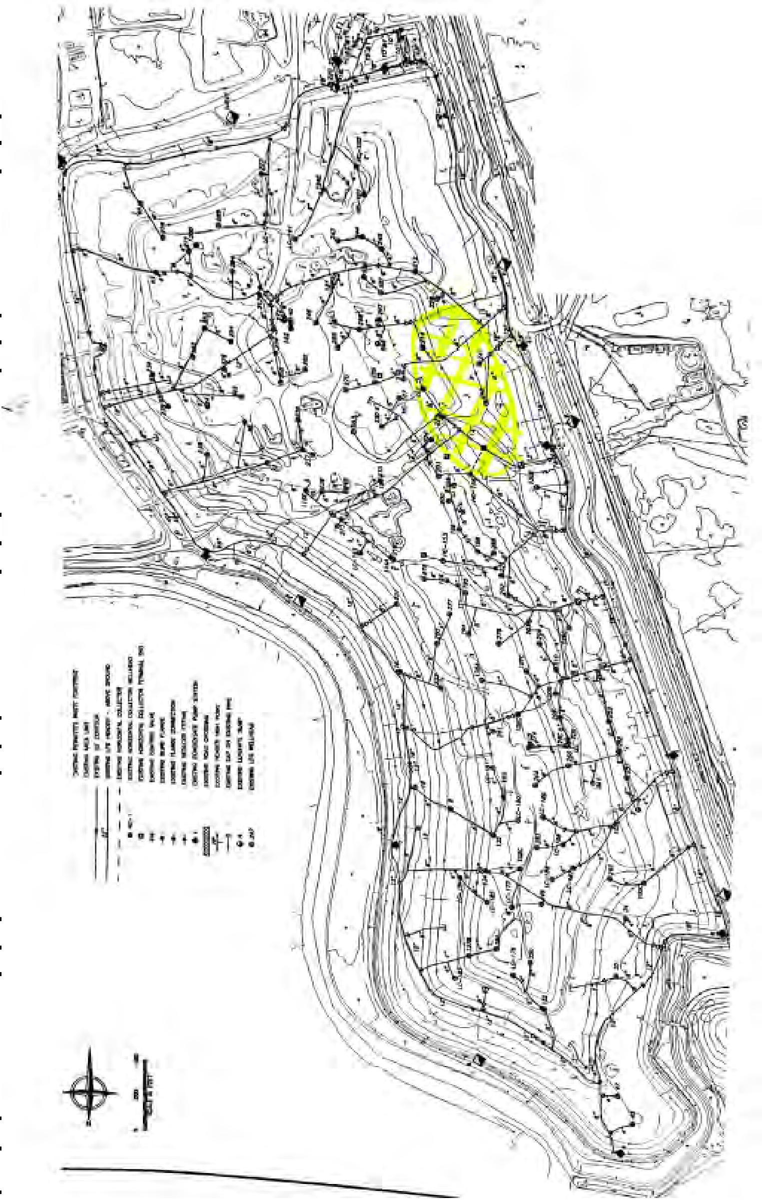
Date Identified	12/19/2023			**Date Identified**	12/19/2023	**Repaired**	1/25/2024

Cell/Pad

Description of finding:

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	1/25/2024	**Received**	**Manager**	Ramin Khany	**Date**	1/25/2024
Technician	Riley Lindberg	**Repairs Complete**	**Manager**		**Date**	
Cell/Pad	**Well 230, south of working face**		Cell/Pad			
Description of finding : Area surrounding well 230 needs to be filled in, large hole formed around it.			**Description of corrective action: Pending**			
Date Identified	1/25/2024		**Date Identified**	1/25/2024	**Repaired**	

Cell/Pad

Description of finding:

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

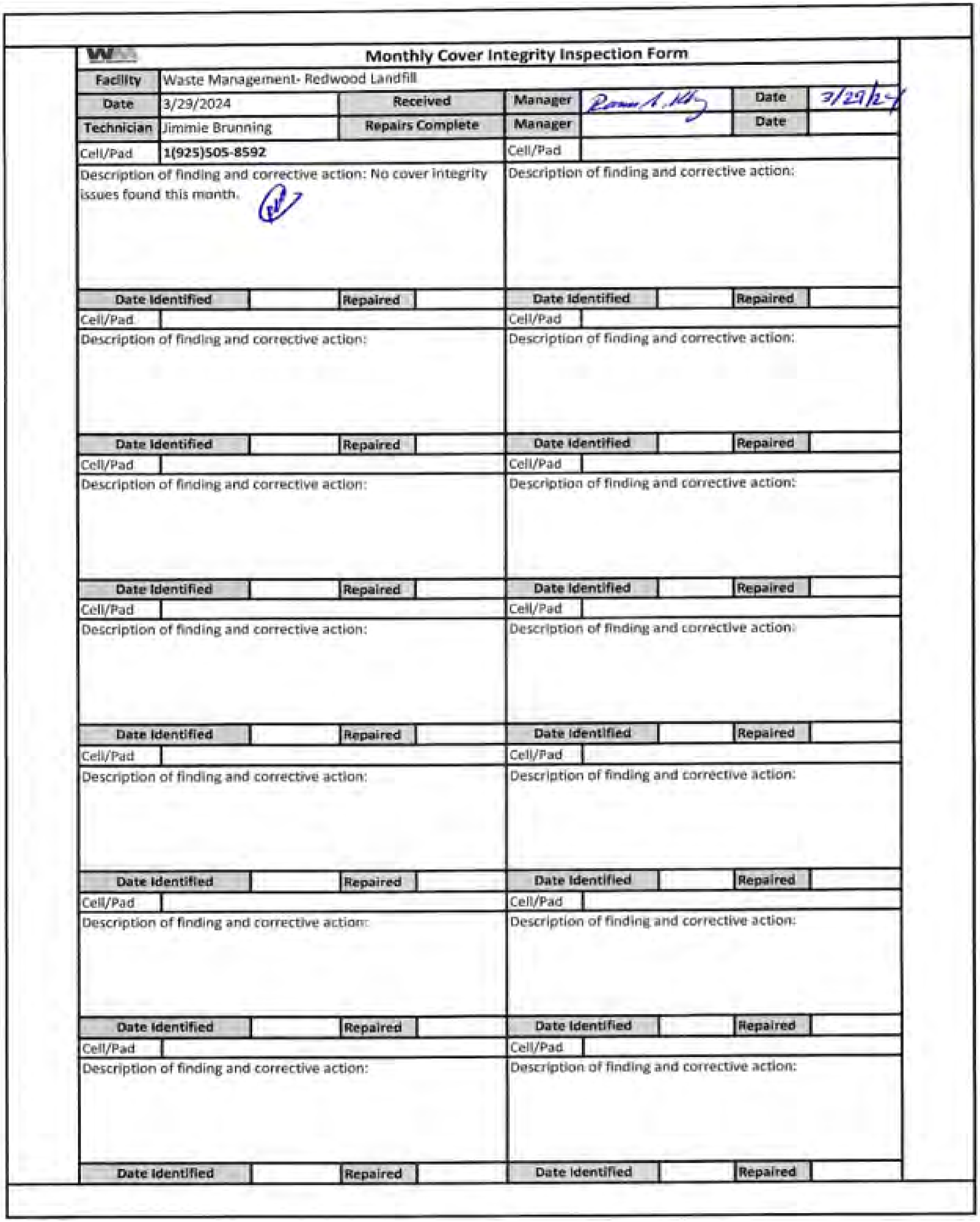
Description of finding and corrective action:

Date Identified | | **Repaired**

Monthly Cover Integrity Inspection Form

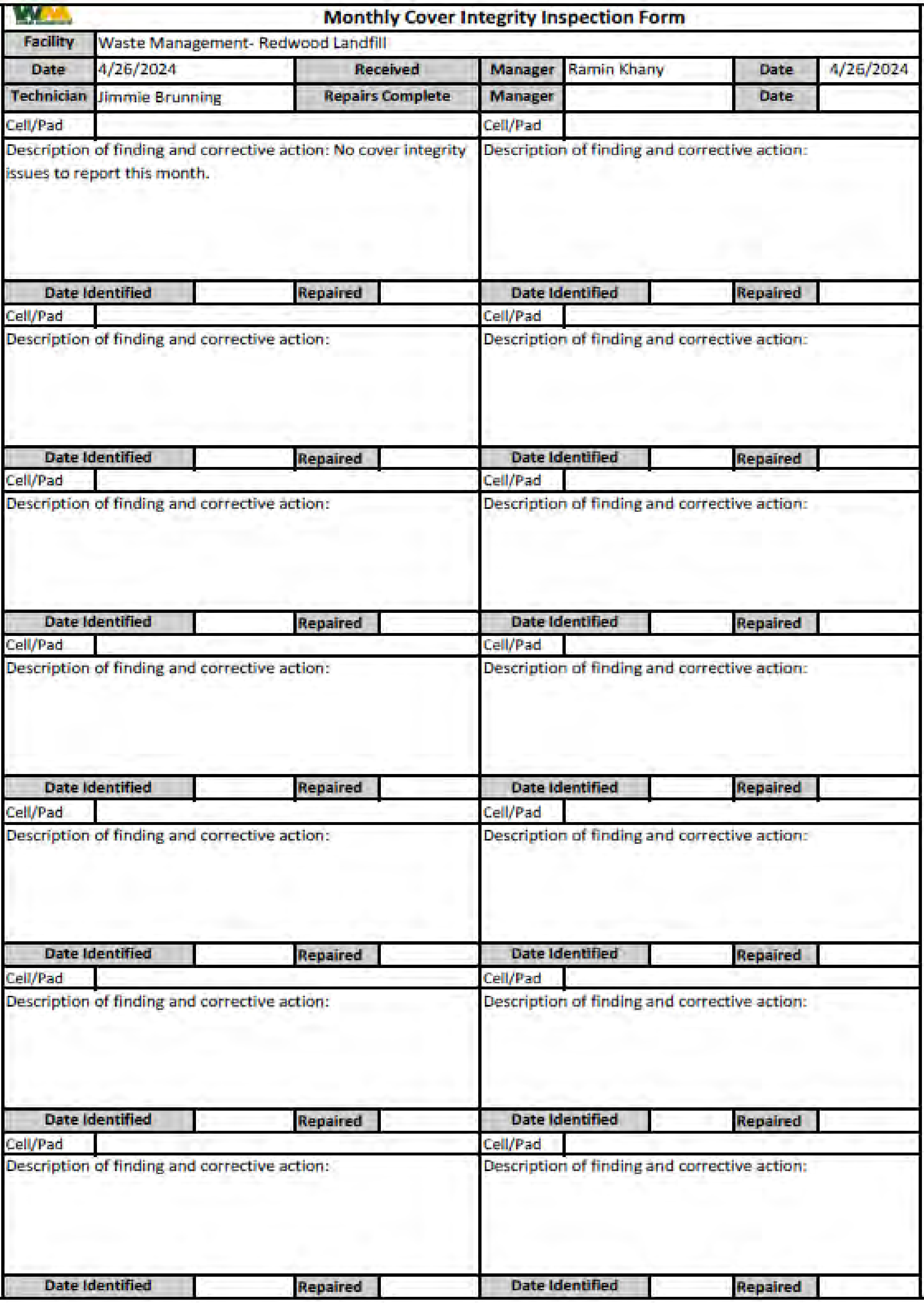
Facility	Waste Management- Redwood Landfill					
Date	2/26/2024	**Received**	**Manager**	Ramin Khany	**Date**	2/26/2024
Technician	Riley Lindberg	**Repairs Complete**	**Manager**		**Date**	

Cell/Pad				Cell/Pad			
Description of finding : No cover integrity issues found for this month.				**Description of corrective action:**			
Date Identified	2/26/2024			**Date Identified**	2/26/2024	**Repaired**	
Cell/Pad				Cell/Pad			
Description of finding:				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	Waste Management- Redwood Landfill						
Date	3/29/2024	**Received**		**Manager**		**Date**	3/29/24
Technician	Jimmie Brunning	**Repairs Complete**		**Manager**		**Date**	
Cell/Pad	**1(925)505-8592**			Cell/Pad			
Description of finding and corrective action: No cover integrity issues found this month.				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**	
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	Waste Management- Redwood Landfill					
Date	4/26/2024	**Received**	**Manager**	Ramin Khany	**Date**	4/26/2024
Technician	Jimmie Brunning	**Repairs Complete**	**Manager**		**Date**	

Cell/Pad				Cell/Pad			
Description of finding and corrective action: No cover integrity issues to report this month.				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**	
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

December 28, 2023

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

Re: Fourth Quarter 2023 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 2023 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 25-foot interval 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)(3).

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 2023 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the Fourth Quarter 2023.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on November 28, 2023 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 five (5) exceedances of 500 ppm$_v$ as methane detected on November 28, 2023. 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 December 1, 2023. 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 December 21, 2023. 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 28, 2023. 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 27 and December 14, 2023 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 28, 2023. 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

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

2023 QUARTER: 4
PERFORMED BY: RES and WM
LANDFILL NAME: **Redwood Landfill, Inc.**

Flag Number	Grid Number	Latitude	Longitude	Date of Monitoring	Concentration of Emission (ppm$_v$)	Comments
O1	107	38.17252	-122.56627	11/28/2023	514	capwell
O2	98	38.17134	-122.56577	11/28/2023	512	well18
O21	128	38.17385	-122.56678	11/28/2023	830	Well127
O22	187	38.17168	-122.56925	11/28/2023	638	Well102c
O23	157	38.16905	-122.56786	11/28/2023	1,700	Well204

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)

2023 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: Riley Lindberg

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			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	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
O1	11/28/2023	514	12/1/2023	Increased BECs	12/1/2023	1		n/a			12/21/2023	3		capwell
O2	11/28/2023	512	12/1/2023	Added and compacted soil	12/1/2023	446		n/a			12/21/2023	352		well18
O21	11/28/2023	830	12/1/2023	Increased BECs & Added and compacted soil	12/1/2023	83		n/a			12/21/2023	103		Well127
O22	11/28/2023	638	12/1/2023	Added and compacted soil	12/1/2023	49		n/a			12/21/2023	51		Well102c
O23	11/28/2023	1,700	12/1/2023	Added and compacted soil	12/1/2023	237		n/a			12/21/2023	219		Well204

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

2023 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: Riley Lindberg

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			Comments
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
O1	11/28/2023	514	12/1/2023	1		n/a			capwell
O2	11/28/2023	512	12/1/2023	446		n/a			well18
O21	11/28/2023	830	12/1/2023	83		n/a			Well127
O22	11/28/2023	638	12/1/2023	49		n/a			Well102c
O23	11/28/2023	1,700	12/1/2023	237		n/a			Well204

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

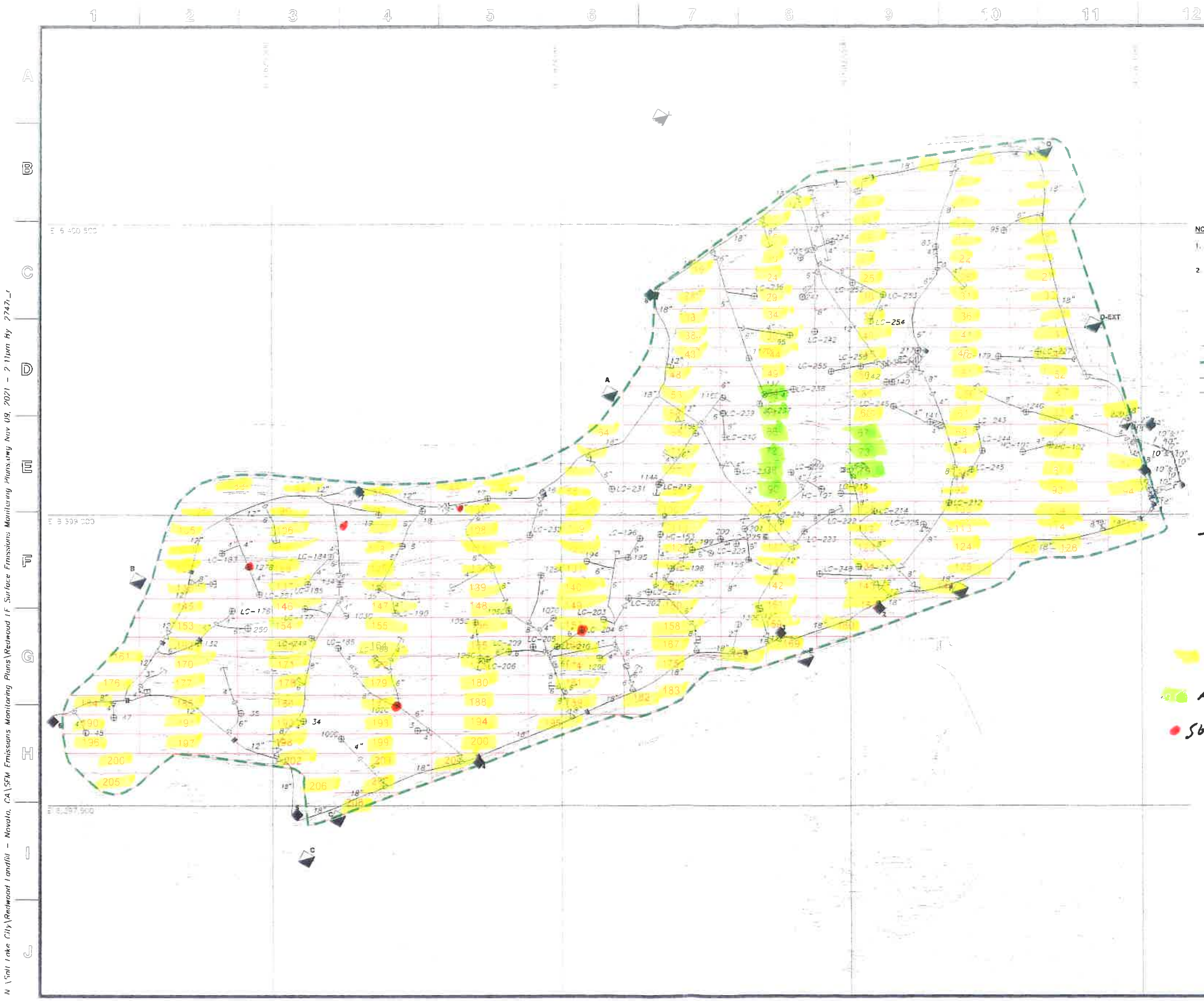
2023 QUARTER: 4

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					



N:\Salt Lake City\Redwood Landfill - Novato, CA\SEM Emissions Monitoring Plans\Redwood LF Surface Emissions Monitoring Plans.dwg Nov 09, 2021 - 2:11pm By 2747r_r

D SIZE: 1"=250' (22"X34")
B SIZE 1"=500' (11"X17")

NOTES:

1. TOPOGRAPHIC DATA BASED ON AERIAL MAPPING PREPARED BY MILLER CREEK ASSOCIATES DATED MARCH 30, 2021
2. LOCATIONS DEPICTED FOR THE EXISTING GCCS COMPONENTS PROVIDED TO SCS BY WASTE MANAGEMENT, VARIOUS DATES.

LEGEND

- LIMIT WASTE BOUNDARY
- ABOVE GRADE HDPE SDR 17 LFG HEADER/LATERAL
- BELOW GRADE HDPE SDR 17 LFG HEADER/LATERAL
- EW-1 ⊕ LFG EXTRACTION WELL
- ⋈ LFG VALVE
- LFG REDUCER
- ▨ ROAD/BENCH CROSSING
- SEM GRID BLOCK

Instenteneous
11-28-23

🟨 grids monitored
🟩 Active-tress 3
● 500 ppm

PRELIMINARY PLAN
FOR REVIEW AND PLANNING PURPOSES ONLY

NO	REVISION	DATE
△		
△		
△		
△		
△		
△		

SHEET TITLE:
SEM GRID AND PENETRATION MAP

PROJECT TITLE:
SURFACE EMISSIONS
MONITORING PLANS
REDWOOD LANDFILL
NOVATO, CALIFORNIA

CLIENT:
WM
WASTE MANAGEMENT

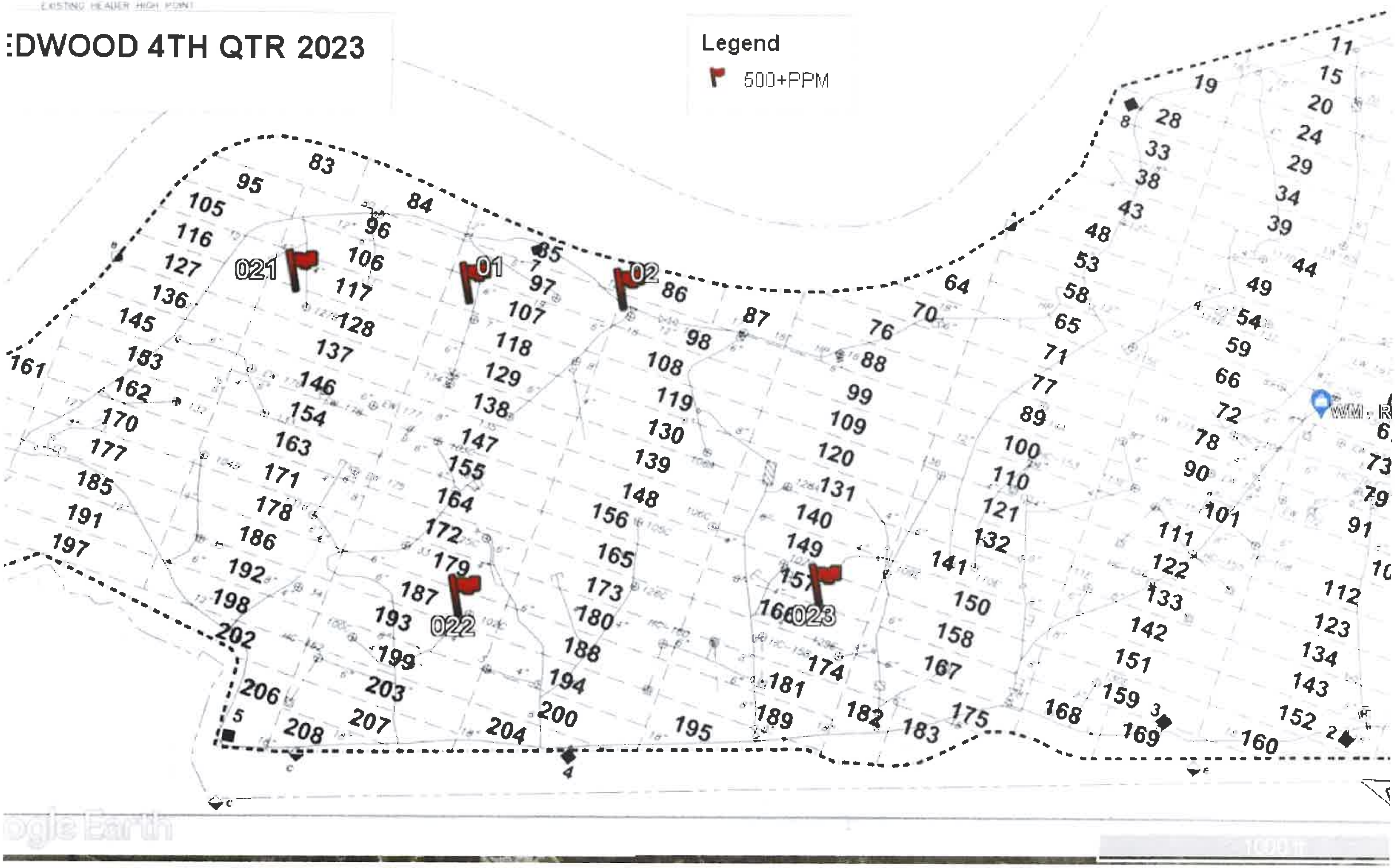
SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
3900 KILROY AIRPORT WAY, STE 100
LONG BEACH, CA 90806
(562) 426-9544

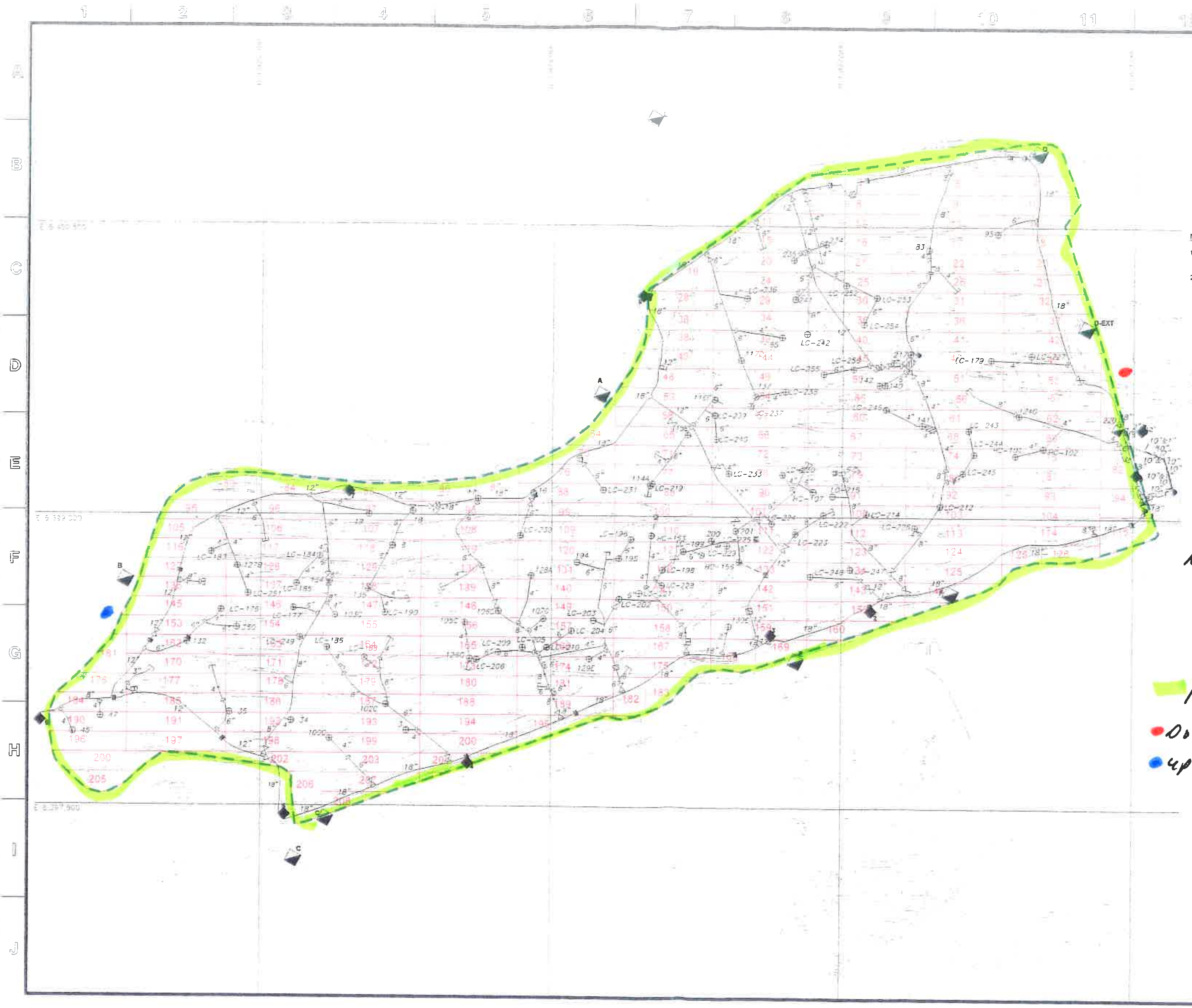
PROJ NO: 01221102.00
DSN BY: ATV/RR
DWN BY: ATV/RR
CHK BY: DF
ACAD FILE: N/SALT LAKE
APP BY:

DATE: 11-09-2021
SCALE: AS SHOWN

3

EDWOOD 4TH QTR 2023





NOTES:

1. TOPOGRAPHIC DATA BASED ON AERIAL MAPPING PREPARED BY MILLER CREEK ASSOCIATES DATED MARCH 30, 2021
2. LOCATIONS DEPICTED FOR THE EXISTING GCCS COMPONENTS PROVIDED TO SCS BY WASTE MANAGEMENT, VARIOUS DATES.

LEGEND

— — — LIMIT WASTE BOUNDARY
—— ABOVE GRADE HDPE SDR 17 LFG HEADER/LATERAL
– – – BELOW GRADE HDPE SDR 17 LFG HEADER/LATERAL
EW-1 ⊕ LFG EXTRACTION WELL
⋈ LFG VALVE
] LFG REDUCER
▨ ROAD/BENCH CROSSING
SEM GRID BLOCK

4th quarter
NSPS

🟩 perimeter sweep
🔴 Downwind
🔵 upwind

PRELIMINARY PLAN
FOR REVIEW AND PLANNING PURPOSES ONLY

N:\Salt Lake City\Redwood Landfill - Novato, CA\SEM Emissions Monitoring Plans\Redwood LF Surface Emissions Monitoring Plans.dwg Nov 09, 2021 - 2:11pm By 2747r_i

DATE	REVISION	NO

SHEET TITLE
SEM GRID AND PENETRATION MAP

PROJECT TITLE
SURFACE EMISSIONS
MONITORING PLANS
REDWOOD LANDFILL
NOVATO, CALIFORNIA

CLIENT
WASTE MANAGEMENT

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
3900 KILROY AIRPORT WAY STE 100
LONG BEACH, CA 90806
(562) 426-9544

PROJ. NO. 01221102.00	DWN. BY ATV/RR	ACAD FILE N:/SALT LAKE
DSN. BY ATV/RR	CHK. BY DF	APP. BY

DATE
11-09-2021

SCALE
AS SHOWN

3

Orange Flag Landfill Surface Emissions Monitoring

Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year: 4th 2023

Technician: LEISHWADE

Instrument: TVA 1000

Calibration Standard: 500 ppm

Page of Pages

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	
~~0~~-1	107	514	11-28-23										unmarked pipe
~~0~~-2	98	512	↓										well 18
~~0~~-21	128	830	↓										well 127
~~0~~-22	187	638	↓										well 102c
~~0~~-23	157	1700	↓										well 204
0-													
0-													
0-													
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0-													

REDWOOD 4TH 2023

wpt ID	lat	lon	time	name	cmt
1	38.172517	-122.56627	2023-11-28T19:00:11Z	O1	514Ppmcapwell
2	38.17134303	-122.56577	2023-11-28T19:05:15Z	O2	512Ppmwell18
3	38.17384796	-122.566781	2023-11-28T19:00:17Z	O21	Ppm830Well127
4	38.17167998	-122.56925	2023-11-28T19:26:19Z	O22	Ppm638Well102c
5	38.16904597	-122.567864	2023-11-28T19:41:02Z	O23	Well204Ppm1700

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leish Wade | Eddie DeLira |
Michael Estrada | Joveni Medina |
Jerry Munoz | | Cal. Gas Exp. Date: 11-16-24

Date: 11-28-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 35 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	
1	LW	0520	0535	14	3	4	16	
2	ME	0520	0535	22	3	4	16	
3	JM	0520	0535	19	3	4	16	
4	ED	0520	0535	51	3	4	16	
5	JM	0520	0535	47	3	4	16	
6	LW	0535	0550	26	3	4	16	
7	ME	0535	0550	51	3	4	16	
8	JM	0535	0550	39	3	4	16	
9	ED	0535	0550	25	3	4	16	
10	JM	0535	0550	17	3	4	16	
11	LW	0550	0605	65	4	4	16	
12	ME	0550	0605	84	4	4	16	
13	JM	0550	0605	47	4	4	16	
14	ED	0550	0605	26	4	4	16	
15	JM	0550	0605	51	4	4	16	
16	LW	0605	0620	108	3	3	2	
17	ME	0605	0620	74	3	3	2	
18	JM	0605	0620	16	3	3	2	
19	ED	0615	0620	64	3	3	2	
20	JM	0605	0620	145	3	3	2	
21	LW	0620	0635	107	3	3	2	
22	ME	0620	0635	41	3	3	2	
23	JM	0620	0635	28	3	3	2	
24	ED	0620	0635	96	3	3	2	
25	JM	0620	0635	145	3	3	2	
26	LW	0635	0650	36	3	4	15	
27	ME	0635	0650	18	3	4	15	
28	JM	0635	0650	71	3	4	15	
29	ED	0635	0650	115	3	4	15	
30	JM	0635	0650	85	3	4	15	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Luis L Wade | Eddie Delira
Miguel Estrada | Juvenl Medina
Jerry Munoz

Cal. Gas Exp. Date: 11-10-24

Date: 11-28-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 37 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	
31	LW	0650	0705	27	3	4	16	
32	ME	0650	0705	34	3	4	16	
33	JM	0650	0705	78	3	4	16	
34	ED	0650	0705	95	3	4	16	
35	JM	0650	0705	71	3	4	16	
36	LW	0705	0720	42	3	3	16	
37	ME	0705	0720	25	3	3	16	
38	JM	0705	0720	31	3	3	16	
39	ED	0705	0720	27	3	3	16	
40	JM	0705	0720	54	3	3	16	
41	LW	0720	0735	39	2	3	16	
42	ME	0720	0735	26	2	3	16	
43	JM	0720	0735	81	2	3	16	
44	ED	0720	0725	42	2	3	16	
45	JM	0720	0735	30	2	3	16	
46	LW	0735	0750	27	3	5	14	
47	ME	0735	0750	41	3	5	14	
48	JM	0735	0750	66	3	5	14	
49	ED	0735	0750	51	3	5	14	
50	JM	0735	0750	30	3	5	14	
51	LW	0750	0805	22	2	3	14	
52	ME	0750	0805	47	2	3	14	
53	JM	0750	0805	35	2	3	14	
55	ED	0750	0805	118	2	3	14	
56	JM	0750	0805	26	2	3	14	
57	LW	0805	0820	49	2	3	14	
58	ME	0805	0820	32	2	3	14	
60	JM	0805	0820	64	2	3	14	
61	ED	0805	0820	37	2	3	14	
62	JM	0805	0820	28	2	3	14	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Luis Lwaot | Ondie Delira
Misael Elfredo | Juveni Aldino
Jerry Munoz

Cal. Gas Exp. Date: 11-10-24

Date: 11-28-23 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	
63	LW	0820	0835	41	3	4	15	
64	ME	0820	0835	38	3	4	15	
65	JA	0820	0835	94	3	4	15	
68	ED	0820	0835	31	3	4	15	
69	JA	0820	0835	27	3	4	15	
70	LW	0835	0850	40	2	3	16	
71	ME	0835	0850	86	2	3	16	
74	JA	0835	0850	51	2	3	16	
75	ED	0835	0850	30	2	3	16	
76	JM	0835	0858	27	2	3	16	
77	LW	0850	0905	61	2	2	16	
80	ME	0850	0905	50	2	2	16	
81	JM	0850	0905	22	2	2	16	
82	ED	0850	0905	39	2	2	16	
83	JM	0850	0905	47	2	2	16	
84	LW	0905	0920	36	2	3	16	
85	ME	0905	0920	22	2	3	16	
86	JM	0905	0920	41	2	3	16	
87	ED	0905	0920	30	2	3	16	
88	JA	0905	0920	57	2	3	16	
89	LW	0920	0935	84	3	4	14	
91	ME	0920	0935	39	3	4	14	
92	JM	0920	0935	22	3	4	14	
93	ED	0920	0935	47	3	4	14	
94	JA	0920	0935	30	3	4	14	
95	LW	0935	0950	62	2	3	14	
96	ME	0935	0950	39	2	3	14	
97	JM	0935	0950	25	2	3	14	
98	ED	0935	0950	512	2	3	14	Well 18
99	JM	0935	0950	41	2	3	14	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Ward — Eddie Avilas
Miguel Estrada — Juvenal Medina
Jerry Mullen
Cal. Gas Exp. Date: 11-10-24

Date: 11-28-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 51 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	
100	LW	0950	1005	113	2	3	14	
101	ME	0950	1005	87	2	3	14	
102	JM	0950	1005	54	2	3	14	
103	ED	0950	1005	77	2	3	14	
104	JM	0950	1005	49	2	3	14	
105	LW	1005	1020	37	2	4	14	
106	ME	1015	1020	54	2	4	14	
107	JM	1005	1020	514	2	4	14	unmarked pipe
108	ED	1005	1020	29	2	4	14	
109	JM	1005	1020	36	2	4	14	
110	LW	1020	1035	40	3	5	10	
111	ME	1020	1035	22	3	5	10	
112	JM	1020	1035	89	3	5	10	
113	ED	1020	1035	26	3	5	10	
114	JM	1020	1035	30	3	5	10	
115	LW	1035	1050	44	5	7	10	
116	ME	1035	1050	22	5	7	10	
117	JM	1035	1050	60	5	7	10	
118	ED	1035	1050	51	5	7	10	
119	JM	1035	1050	37	5	7	10	
120	LW	1050	1105	54	5	7	12	
121	ME	1050	1105	46	5	7	12	
122	JM	1050	1105	35	5	7	12	
123	ED	1050	1105	22	5	7	12	
124	JM	1050	1105	70	5	7	12	
125	LW	1105	1120	60	3	5	10	
126	ME	1105	1120	35	3	5	10	
127	JM	1105	1120	60	3	5	10	
128	ED	1105	1120	830	3	5	10	Well 127
129	JM	1105	1120	40	3	5	10	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WAAL — EDDIE DELINS
MISHEL ESTRADA — JUVENY MEDINA
JERRY MUNOZ

Cal. Gas Exp. Date: 11-10-24

Date: 11-28-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 59 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	
130	LW	1120	1135	52	4	6	11	
131	ME	1120	1135	30	4	6	11	
132	JM	1120	1135	27	4	6	11	
133	ED	1120	1135	45	4	6	11	
134	JM	1120	1135	61	4	6	11	
135	LW	1135	1150	38	5	6	10	
136	ME	1135	1150	28	5	6	10	
137	JM	1135	1150	40	5	6	10	
138	ED	1135	1150	27	5	6	10	
139	JM	1135	1150	49	5	6	10	
140	LW	1150	1205	62	5	7	12	
141	ME	1150	1205	36	5	7	12	
142	JM	1150	1205	41	5	7	12	
143	ED	1150	1205	39	5	7	12	
144	JM	1150	1205	26	5	7	12	
145	LW	1230	1245	51	5	8	11	
146	ME	1230	1245	30	5	8	11	
147	JM	1230	1245	22	5	8	11	
148	ED	1230	1245	37	5	8	11	
149	JM	1230	1245	25	5	8	11	
150	LW	1245	1300	114	5	10	11	
151	ME	1245	1300	87	5	10	11	
152	JM	1245	1300	66	5	10	11	
153	ED	1245	1300	49	5	10	11	
154	JM	1245	1300	51	5	10	11	
155	LW	1300	1315	30	6	9	11	
156	ME	1300	1315	22	6	9	11	
157	JM	1300	1315	1700	6	9	11	Well 204
158	ED	1300	1315	75	6	9	11	
159	JM	1300	1315	40	6	9	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 5 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Luis Hwador | Eddie Delias
Miguel Estacor | Jevani Manning
Jenny Munoz

Cal. Gas Exp. Date: 11-10-24

Date: 11-28-23 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			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
160	LW	1315	1330	32	5	10	12	
161	ME	1315	1330	29	5	10	12	
162	JM	1315	1330	61	5	10	12	
163	ED	1315	1330	40	5	10	12	
164	JM	1315	1330	35	5	10	12	
165	LW	1330	1345	26	5	8	12	
166	ME	1330	1345	19	5	8	12	
167	JM	1330	1345	77	5	8	12	
168	ED	1330	1345	35	5	8	12	
169	JM	1330	1345	41	5	8	12	
170	LW	1345	1400	20	7	13	12	
171	ME	1345	1400	26	7	13	12	
172	JM	1345	1400	39	7	13	12	
173	ED	1345	1400	26	7	13	12	
174	JM	1345	1400	41	7	13	12	
175	LW	1400	1415	58	4	5	12	
176	ME	1400	1415	46	4	5	12	
177	JM	1400	1415	30	4	5	12	
178	ED	1400	1415	22	4	5	12	
179	JM	1400	1415	84	4	5	12	
180	LW	1415	1430	26	5	9	10	
181	ME	1415	1430	40	5	9	10	
182	JM	1415	1430	31	5	9	10	
183	ED	1415	1430	27	5	9	10	
184	JM	1415	1430	34	5	9	10	
185	LW	1430	1445	22	5	7	11	
186	ME	1430	1445	35	5	7	11	
187	JM	1430	1445	638	5	7	11	W011102C
188	ED	1435	1445	65	5	7	11	
189	JM	1435	1445	27	5	7	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 6 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Louis Wang, Eddie Dejias, Michael Estrada, Juven Medina, Jeremy Munoz

Cal. Gas Exp. Date: 11-10-24

Date: 11-28-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 67 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	
190	LW	1445	1500	14	5	8	10	
191	ME	1445	1500	19	5	8	10	
192	JM	1445	1500	35	5	8	10	
193	ED	1445	1500	54	5	8	10	
194	JM	1445	1500	26	5	8	10	
195	LW	1500	1515	30	5	9	12	
196	M.E	1500	1515	41	5	9	12	
197	JM	1500	1515	28	5	9	12	
198	ED	1500	1515	19	5	9	12	
199	JM	1500	1515	26	5	9	12	
200	LW	1515	1530	34	7	10	12	
201	ME	1515	1530	22	7	10	12	
202	JM	1515	1530	40	7	10	12	
203	ED	1515	1530	18	7	10	12	
204	JM	1515	1530	26	7	10	12	
205	LW	1530	1545	22	6	9	11	
206	ME	1530	1545	19	6	9	11	
207	JM	1530	1545	77	6	9	11	
208	ED	1530	1545	14	6	9	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 7 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leishwaob

Cal. Gas Exp Date:

Date: 11-28-23 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-trench
59								↓
66								
67								
72								
73								
78								
79								
90								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: 2023
Quarter: 4th

IME Date	IME Location ID	IME Concentration (ppm)
11-28-23	P-2	18
	P-4	16
	P-5	21
	P-6	14
	P-7	16
	P-8	21
	P-1	34
	P-9	19
	RLLC0234	45
	RLI00083	27
	RLI00095	31
	RLLC0235	34
	RLLC0252	14
	RLLC0236	23
	RLLC0241	27
	RLLC0253	46
	P-10	32
	RLLC0254	20
	P-14	45
	RLI00065	37
	RLLC0242	20
	P-16	16
	P-17	29
	RLI0117D	18
	RLLC0179	13
	RLLC0217	24
	RLLC0227	21
	P-47	46
	RLI00140	35
	RLI00142	19
	RLLC0255	20
	RLLC0256	43
	P-19	71
	RLI0116E	19
	RLI00137	26
	RLLC0237	35
	RLLC0238	27
	P-11	46
	RLLC0239	31
	RLI00141	20

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: ______________________

Quarter: ______________________

IME Date	IME Location ID	IME Concentration (ppm)
11-28-23	RLLC0246	24
	RLI0124G	85
	RLI00220	27
	P-21	34
	P-22	66
	P-23	21
	P-82	118
	P-83	27
	P-84	64
	P-85	32
	RLI0115E	24
	RLLC0240	29
	RLLC0243	36
	RLLC0244	25
	RLIHC101	23
	RLIHC102	57
	RLLC0230	49
	RLLC0233	30
	RLLC0245	22
	P-86	127
	P-48	39
	P-43	24
	P-36	61
	P-38	40
	RLI00017	19
	RLI00016	28
	RLLC0231	34
	RLI0114A	26
	RLLC0219	42
	RLLC0215	20
	RLIHC107	16
	P-49	28
	RLI00018	512
	RLI00019	51
	RLLC0214	37
	RLLC0222	20
	RLLC0212	16
	P-50	45
	RLLC0232	39
	RLLC0196	20

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: ______________________
Quarter: ______________________

IME Date	IME Location ID	IME Concentration (ppm)
	RLLC0229	31
11-28-23	RLHC0153	20
	RLLC0200	45
	RLLC0201	37
	RLLC0223	26
	RLLC0224	19
	RLLC0226	27
	RLLC0183	34
	P-51	29
	RLLC0184	31
	RLI00008	22
	RLLC0195	51
	RLLC0199	46
	RLLC0225	39
	P-52	52
	RLI0127B	830
	RLI0128A	20
	RLLC0194	17
	RLLC0198	36
	RLHC0156	24
	P-13	32
	RLLC0247	18
	RLLC0248	14
	P-53	67
	RLLC0251	40
	RLI00134	18
	RLI00135	27
	RLLC0221	24
	RLLC0228	31
	P-12	29
	RLLC0176	40
	P-55	36
	RLI0103C	21
	RLLC0190	24
	RLI0106C	38
	RLLC0202	21
	P-54	23
	RLLC0250	27
	RLI0105C	46
	RLI0107C	31

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: ______________________
Quarter: ______________________

IME Date	IME Location ID	IME Concentration (ppm)
11-28-23	RLLC0203	47
	RLLC0204	1700
	RLI0130E	30
	P-56	18
	RLI00132	21
	RLLC0249	35
	RLLC0186	37
	RLLC0209	26
	RLLC0205	41
	RLLC0210	36
	RLLC0188	25
	RLI0126C	18
	RLI0129E	29
	RLLC0206	37
	P-61	26
	RLI00035	45
	RLI0102C	638
	P-81	26
	RLI00045	18
	RLI00047	25
	P-74	36
	RLI00034	29
	RLI00003	37
	P-76	40
	P-77	18
	P-78	25
	RLI0100C	31
	P-75	16
	P-79	14
	RLLC0192	53
	P-44	18
	P-45	16
	P-73	27
	73	REMOVE
	79	
	79	
	79	
	67-73	
	67	
	195	25

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: ______________________

Quarter: ______________________

IME Date	IME Location ID	IME Concentration (ppm)
11-28-23	RLLC0257	31
	RLLC0258	20
	RLLC0259	46
	RLLC0260	19
	RLLC0261	30
	RLLC0262	14
	RLLC0263	27
	RLLC0264	18
	RLLC0265	54
	RLLC0266	31
	RLLC0267	22
	RLLC0268	36
	RLLC0269	45
	RLLC0270	18
	RLLC0271	39
	RLLC0272	51
	RLLC0273	26
	RLLC0274	30
	RLI00275	24
	RLI00276	32
	RLI00277	25
	RLI00278	46
	RLI00279	18
	RLI00280	31
	RLI00281	20
	RLI00282	26
	RLI00283	45
	RLI00284	30
	RLI00285	29
	RLI00286	34
	RLI00287	41
	RLLC0177	55
	RLLC0180	20
	RLLC0181	17
	RLLC0185	14
	RLLC0187	29
	RLLC0189	35
	RLLC0191	41
	RLLC0193	26

Attachment B

Integrated Surface Emission Monitoring Event Records

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

2023 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 Detected									

N:\Salt Lake City\Redwood Landfill - Novato, CA\SEM Emissions Monitoring Plans\Redwood LF Surface Emissions Monitoring Plans.dwg Nov 09, 2021 - 2:11pm By 27471_r

N

D SIZE: 1"=250' (22"X34")
B SIZE 1"=500' (11"X17")

NOTES:

1. TOPOGRAPHIC DATA BASED ON AERIAL MAPPING PREPARED BY MILLER CREEK ASSOCIATES DATED MARCH 30, 2021
2. LOCATIONS DEPICTED FOR THE EXISTING GCCS COMPONENTS PROVIDED TO SCS BY WASTE MANAGEMENT, VARIOUS DATES.

LEGEND

— — —	LIMIT WASTE BOUNDARY
———	ABOVE GRADE HDPE SDR 17 LFG HEADER/LATERAL
— — —	BELOW GRADE HDPE SDR 17 LFG HEADER/LATERAL
FW-1 ⊕	LFG EXTRACTION WELL
⋈	LFG VALVE
‖	LFG REDUCER
▨	ROAD/BENCH CROSSING
☐	SEM GRID BLOCK

Integrated
11-27-23
12-14-23

🟨 GRIDS monitored
🟩 Active Area?

No Exceedances

PRELIMINARY PLAN
FOR REVIEW AND PLANNING PURPOSES ONLY

NO	REVISION	DATE

SHEET TITLE
SEM GRID AND PENETRATION MAP

PROJECT TITLE
SURFACE EMISSIONS
MONITORING PLANS
REDWOOD LANDFILL
NOVATO, CALIFORNIA

CLIENT
WM WASTE MANAGEMENT

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
3900 KILROY AIRPORT WAY STE 100
LONG BEACH, CA 90806
(562) 426-9544

PROJ NO 01221102.00
DWN BY ATV/RR
CHK BY: DF
DSN BY ATV/RR
ACAD FILE: N:/SALT LAKE
APP BY

DATE: 11-09-2021
SCALE: AS SHOWN

3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE | EDDIE DELIAS
MIGUEL ESTRADA | JOVANI MEDINA
JERRY MUNOZ

Cal. Gas Exp. Date: 11-10-24

Date: 11-27-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 67 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	
1	LW	1005	1030	4.61	4	6	10	
2	ME	1005	1030	3.98	4	6	16	
3	JM	1005	1030	4.12	4	6	10	
4	ED	1005	1030	6.51	4	6	10	
5	JM	1005	1030	5.98	4	6	10	
6	LW	1030	1055	4.57	4	7	10	
7	ME	1030	1055	8.34	4	7	10	
8	JM	1030	1055	10.40	4	7	10	
9	ED	1030	1055	8.71	4	7	10	
10	JM	1030	1055	5.46	4	7	10	
11	LW	1055	1120	8.70	3	5	10	
12	ME	1055	1120	9.66	3	5	10	
13	JM	1055	1120	6.14	3	5	10	
14	ED	1055	1120	5.38	3	5	10	
15	JM	1055	1120	12.41	3	5	10	
16	LW	1120	1145	9.74	5	7	10	
17	ME	1120	1145	6.13	5	7	10	
18	JM	1120	1145	5.84	5	7	10	
19	ED	1120	1145	7.25	5	7	10	
20	JM	1120	1145	14.27	5	7	10	
21	LW	1145	1210	11.64	4	6	11	
22	ME	1145	1210	6.07	4	6	11	
23	JM	1145	1210	5.42	4	6	11	
24	ED	1145	1210	11.41	4	6	11	
25	JM	1145	1210	16.85	4	6	11	
26	LW	1210	1235	5.39	4	7	10	
27	ME	1210	1235	4.71	4	7	10	
28	JM	1210	1235	11.47	4	7	10	
29	ED	1210	1235	9.60	4	7	10	
30	JM	1210	1235	12.41	4	7	10	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE; EDDIE DAVILA; MIGUEL ESTRADA; JOVANI MEDINA; JERRY MUNOZ

Cal. Gas Exp. Date: 11-10-24

Date: 11-27-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 67 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	
31	LW	1235	1300	5.50	5	10	10	
32	ME	1235	1300	4.68	5	10	10	
33	JM	1235	1300	7.21	5	10	10	
34	ED	1235	1300	9.45	5	10	10	
35	JM	1235	1300	7.66	5	10	10	
36	LW	1300	1325	5.94	5	9	11	
37	ME	1300	1325	5.10	5	9	11	
38	JM	1300	1325	8.47	5	9	11	
39	ED	1300	1325	10.61	5	9	11	
40	JM	1300	1325	8.75	5	9	11	
41	LW	1325	1350	7.21	4	6	10	
42	ME	1325	1350	5.48	4	6	10	
43	JM	1325	1350	7.91	4	6	10	
44	ED	1325	1350	9.24	4	6	10	
45	JM	1325	1350	6.12	4	6	10	
46	LW	1350	1415	5.47	3	7	11	
47	ME	1350	1415	5.91	3	7	11	
48	JM	1350	1415	8.30	3	7	11	
49	ED	1350	1415	7.22	3	7	11	
50	JM	1350	1415	9.14	3	7	11	
51	LW	1415	1440	6.22	5	9	11	
52	ME	1415	1440	5.48	5	9	11	
53	JM	1415	1440	8.71	5	9	11	
55	ED	1415	1440	6.90	5	9	11	
56	JM	1415	1440	5.47	5	9	11	
57	LW	2440	1505	4.81	4	7	11	
58	ME	1440	1505	6.71	4	7	11	
60	JM	1440	1505	7.48	4	7	11	
61	ED	1440	1505	6.54	4	7	11	
62	JM	1440	1505	5.92	4	7	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEISHWADE | EDDIE OBLING
MIGUEL ESTRADA | JOVENI MEDINS
JERRY MUNOZ

Cal. Gas Exp. Date: 11-10-24

Date: 11-27-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 67 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	
63	LW	1505	1530	4.21	5	7	11	
64	ME	1505	1530	7.34	5	7	11	
65	JM	1505	1530	6.18	5	7	11	
68	ED	1505	1530	7.35	5	7	11	
69	JM	1505	1530	6.28	5	7	11	
70	LW	1530	1555	6.75	4	6	12	
71	ME	1530	1555	7.40	4	6	12	
74	JM	1530	1555	5.68	4	6	12	
75	ED	1530	1555	6.13	4	6	12	
76	JM	1530	1555	8.40	4	6	12	
77	LW	1555	1620	9.56	5	7	11	
80	ME	1555	1620	6.45	5	7	11	
81	JM	1555	1620	6.11	5	7	11	
82	ED	1555	1620	5.28	5	7	11	
83	JM	1555	1620	5.11	5	7	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leishman

Cal. Gas Exp. Date: ______

Date: 11-27-23 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-trash
59								↓
66								
67								
72								
73								
78								
79								
90								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGHWADE, MIGUELESTRADA, JERRY MUNOZ, JUVENI MEDINA, EDDIE DE LIRA

Cal. Gas Exp Date: 11-10-24

Date: 12-14-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 47 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
84	LW	0630	0655	5.13	1	1	16	
85	ME	0630	0655	4.77	1	1	16	
86	JM	0630	0655	5.21	1	1	16	
87	JM	0630	0655	4.85	1	1	16	
88	ED	0630	0655	4.66	1	1	16	
89	LW	0655	0720	7.24	4	5	2	
91	ME	0655	0720	6.89	4	5	2	
92	JM	0655	0720	6.54	4	5	2	
93	JM	0655	0720	5.27	4	5	2	
94	ED	0655	0720	6.13	4	5	2	
95	LW	0720	0745	5.58	1	2	16	
96	ME	0720	0745	5.26	1	2	16	
97	JM	0720	0745	5.44	1	2	16	
98	JM	0720	0745	6.26	1	2	16	
99	ED	0720	0745	5.88	1	2	16	
100	LW	0745	0810	6.61	5	7	6	
101	ME	0745	0810	8.40	5	7	6	
102	JM	0745	0810	9.65	5	7	6	
103	JM	0745	0810	8.30	5	7	6	
104	ED	0745	0810	6.21	5	7	6	
105	LW	0810	0835	5.47	6	9	6	
106	ME	0810	0835	6.03	6	9	6	
107	JM	0810	0835	5.67	6	9	6	
108	JM	0810	0835	6.50	6	9	6	
109	ED	0810	0835	9.74	6	9	6	
110	LW	0835	0900	8.52	6	8	6	
111	ME	0825	0900	7.56	6	6	6	
112	JM	0825	0900	7.38	6	8	6	
113	JM	0835	0900	6.40	6	8	6	
114	ED	0835	0900	6.07	6	8	6	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE; MIGUEL ESTRADA; JERRY MUNOZ; JOVENI MEDINA; EDDIE DE LIMA

Cal. Gas Exp. Date: 11-10-24

Date: 12-14-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 47 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
115	LW	0900	0925	4.70	5	7	6	
116	ME	0900	0925	4.38	5	7	6	
117	JM	0900	0925	5.10	5	7	6	
118	JM	0900	0925	5.41	5	7	6	
119	ED	0900	0925	6.02	5	7	6	
120	LW	0925	0950	5.74	4	6	6	
121	ME	0925	0950	7.28	4	6	6	
122	JM	0925	0950	7.98	4	6	6	
123	JM	0925	0950	5.60	4	6	6	
124	ED	0925	0950	4.28	4	6	6	
125	LW	0950	1015	5.92	5	7	7	
126	ME	0950	1015	5.07	5	7	7	
127	JM	0950	1015	5.90	5	7	7	
128	JM	0950	1115	6.07	5	7	7	
129	ED	0950	1015	5.41	5	7	7	
130	LW	1015	1040	4.58	6	8	8	
131	ME	1015	1040	5.30	6	8	8	
132	JM	1015	1040	7.84	6	8	8	
133	JM	1015	1040	6.50	6	8	8	
134	ED	1015	1040	6.72	6	8	8	
135	LW	1040	1105	5.41	5	7	8	
136	ME	1040	1105	4.12	5	7	8	
137	JM	1040	1105	5.07	5	7	8	
138	JM	1040	1105	5.30	5	7	8	
139	ED	1040	1105	5.22	5	7	8	
140	LW	1105	1130	6.10	6	10	7	
141	ME	1105	1130	8.71	6	10	7	
142	JM	1105	1130	6.90	6	10	7	
143	JM	1105	1130	6.10	6	10	7	
144	ED	1105	1130	5.47	6	10	7	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, JUVENI MEDINA, MIGUEL ESTRADA, EDDIE DE LIRA, JERRY MUNOZ

Cal. Gas Exp. Date: 11-10-24

Date: 12-14-23 Instrument Used TVA1000 Grid Spacing: 25'

Temperature: 47 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
145	LW	1130	1155	5.17	5	10	8	
146	ME	1130	1155	4.20	5	10	8	
147	JM	1130	1155	5.92	5	10	8	
148	JM	1130	1155	6.25	5	10	8	
149	ED	1130	1155	7.95	5	10	8	
150	LW	1155	1220	12.40	5	10	8	
151	ME	1155	1220	10.18	5	10	8	
152	JM	1155	1220	6.80	5	10	8	
153	JM	1155	1220	5.21	5	10	8	
154	ED	1155	1220	5.70	5	10	8	
155	LW	1220	1245	6.11	4	6	9	
156	ME	1220	1245	6.21	4	6	9	
157	JM	1220	1245	5.92	4	6	9	
158	JM	1220	1245	9.20	4	6	9	
159	ED	1220	1245	9.57	4	6	9	
160	LW	1245	1310	5.80	5	9	8	
161	ME	1245	1310	4.26	5	9	8	
162	JM	1245	1310	6.18	5	9	8	
163	JM	1245	1310	9.30	5	9	8	
164	ED	1245	1310	12.57	5	9	8	
165	LW	1310	1335	9.82	6	10	8	
166	ME	1310	1335	7.40	6	10	8	
167	JM	1310	1335	8.50	6	10	8	
168	JM	1310	1335	6.50	6	10	8	
169	ED	1310	1335	5.12	6	10	8	
170	LW	1335	1400	7.25	5	9	8	
171	ME	1335	1400	6.48	5	9	8	
172	JM	1335	1400	9.14	5	9	8	
173	JM	1335	1400	7.30	5	9	8	
174	ED	1335	1400	7.12	5	9	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, MIGUEL ESTRADA, JERRY MUNOZ, JOVENI MEDINA, EDDIE DE LIMA

Cal. Gas Exp Date: 11-10-24

Date: 12-14-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 47 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
175	LW	1410	1425	5.41	4	6	8	
176	ME	1400	1425	6.20	4	6	8	
177	JM	1400	1425	5.84	4	6	8	
178	JM	1400	1425	6.16	4	6	8	
179	ED	1400	1425	5.35	4	6	8	
180	LW	1425	1450	5.81	5	10	8	
181	ME	1425	1450	7.23	5	10	8	
182	JM	1425	1450	6.45	5	10	8	
183	JM	1425	1450	6.12	5	10	8	
184	ED	1425	1450	5.31	5	10	8	
185	LW	1410	1515	6.07	5	9	8	
186	ME	1450	1515	5.44	5	9	8	
187	JM	1450	1515	4.58	5	9	8	
188	JM	1450	1515	6.20	5	9	8	
189	ED	1450	1515	5.34	5	9	8	
190	LW	1515	1540	5.47	5	10	8	
191	ME	1515	1540	6.67	5	10	8	
192	JM	1515	1540	8.13	5	10	8	
193	ED	1515	1540	6.85	5	10	8	
194	JM	1515	1540	5.47	5	10	8	
195	LW	1540	1605	6.62	5	10	8	
196	ME	1540	1605	5.95	5	10	8	
197	JM	1540	1605	4.70	5	10	8	
198	JM	1540	1605	5.03	5	10	8	
199	ED	1540	1605	5.51	5	10	8	
200	LW	1605	1630	4.80	3	5	10	
201	ME	1605	1630	5.06	3	5	10	
202	JM	1605	1630	4.92	3	5	10	
203	JM	1605	1630	5.67	3	5	10	
204	ED	1605	1630	4.12	3	5	10	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE — JUVENI MEDINA
MIGUEL ESTRADA — EDDIE DE LIMA
JERRY MUNOZ

Cal. Gas Exp Date: 11-10-24

Date: 12-14-23 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 47 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
205	LW	1630	1655	4.18	3	5	16	
206	ME	1630	1655	3.76	3	5	16	
207	JM	1630	1655	4.21	3	5	16	
208	JM	1630	1655	4.80	3	5	16	

Attach Calibration Sheet
Attach site map showing grid ID

Page 5 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wadr ____ ____
____ ____ ____
____ ____ Cal. Gas Exp. Date: ____

Date: 12-14-23 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-face
59								↓
66								
67								
72								
73								
78								
79								
90								↓

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

Attachment C

Component Leak Monitoring Event Records

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

2023 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

2023 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

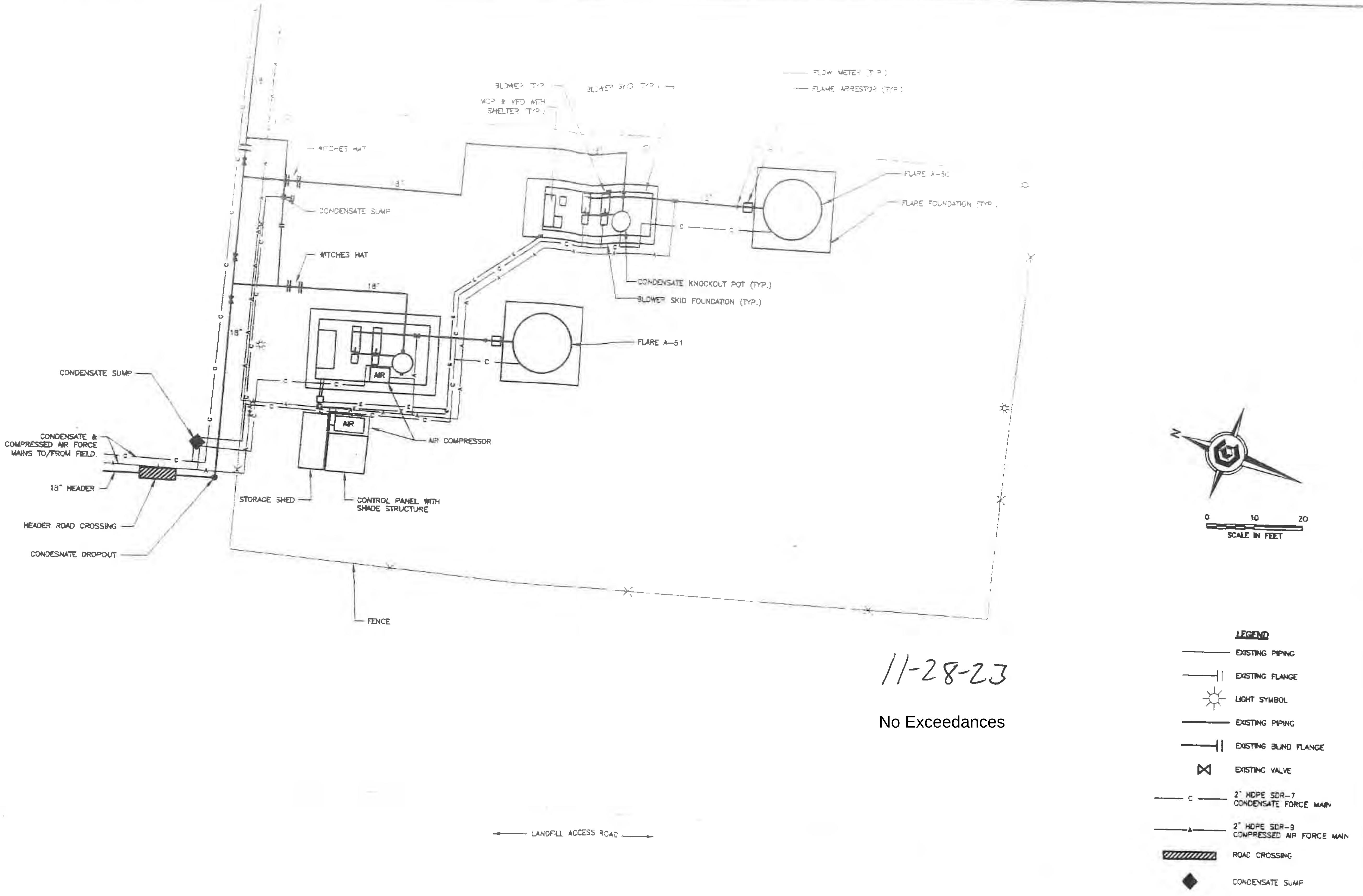
DATE OF SAMPLING: 11-28-23
TECHNICIAN: Leigh Winter

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.



11-28-23

No Exceedances

DRAFT

WASTE MANAGEMENT

CORNERSTONE Environmental Group LLC

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

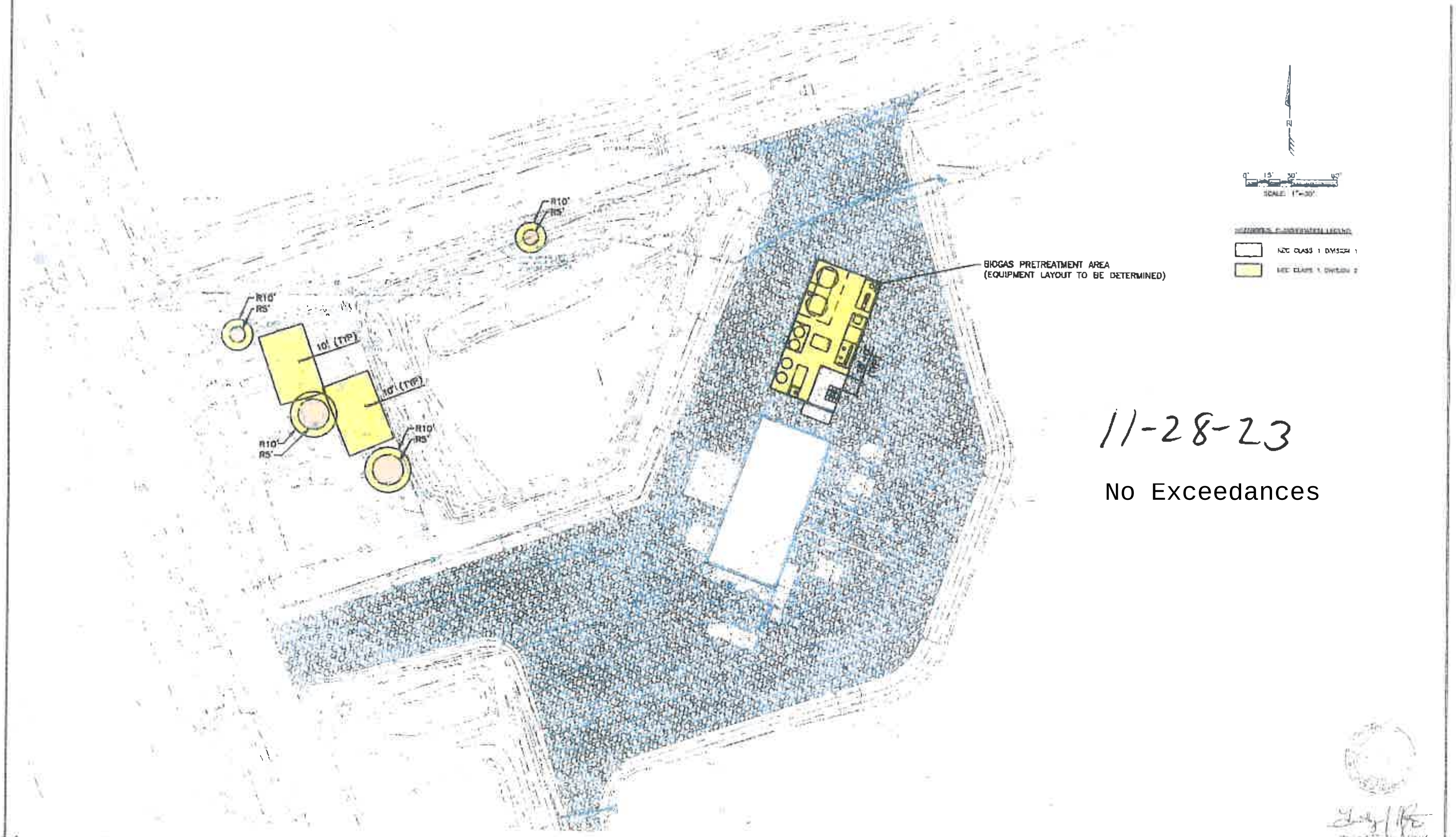
LFG FLARE AND GCCS AS-BUILT

SHEET NO
1

REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948



11-28-23

No Exceedances

7	3-1-18	RAA	ISSUED FOR CONSTRUCTION
6	10-26-15	RAA	BUILDING PERMIT APPLICATION SET
5	10-2-15	RAA	95% DESIGN RESUBMITTAL
4	8-7-15	RAA	ISSUED FOR GAS TREATMENT SKID BID
3	6-12-15	RAA	95% DESIGN SUBMITTAL
2	5-6-15	RAA	50% DESIGN SUBMITTAL
REV	DATE	BY	DESCRIPTION

SCALE: AS SHOWN
DATE: 5-5-15
DRAWN: JFD
CHECKED: RFC
APPROVED: RAA

ACEng
www.ac-engineering.com

CLIENT
WASTE MANAGEMENT RENEWABLE ENERGY
LANDFILL TO GAS ENERGY PROJECT
REDWOOD LANDFILL, NOVATO, CA

DESCRIPTION
PROPOSED CONDITIONS AND
HAZARDOUS AREA CLASSIFICATIONS

PROJECT NO. 1003.005.001
SHEET G-5

7/25/2017

Landfill component Leak Check
Redwood (Flare A-51)

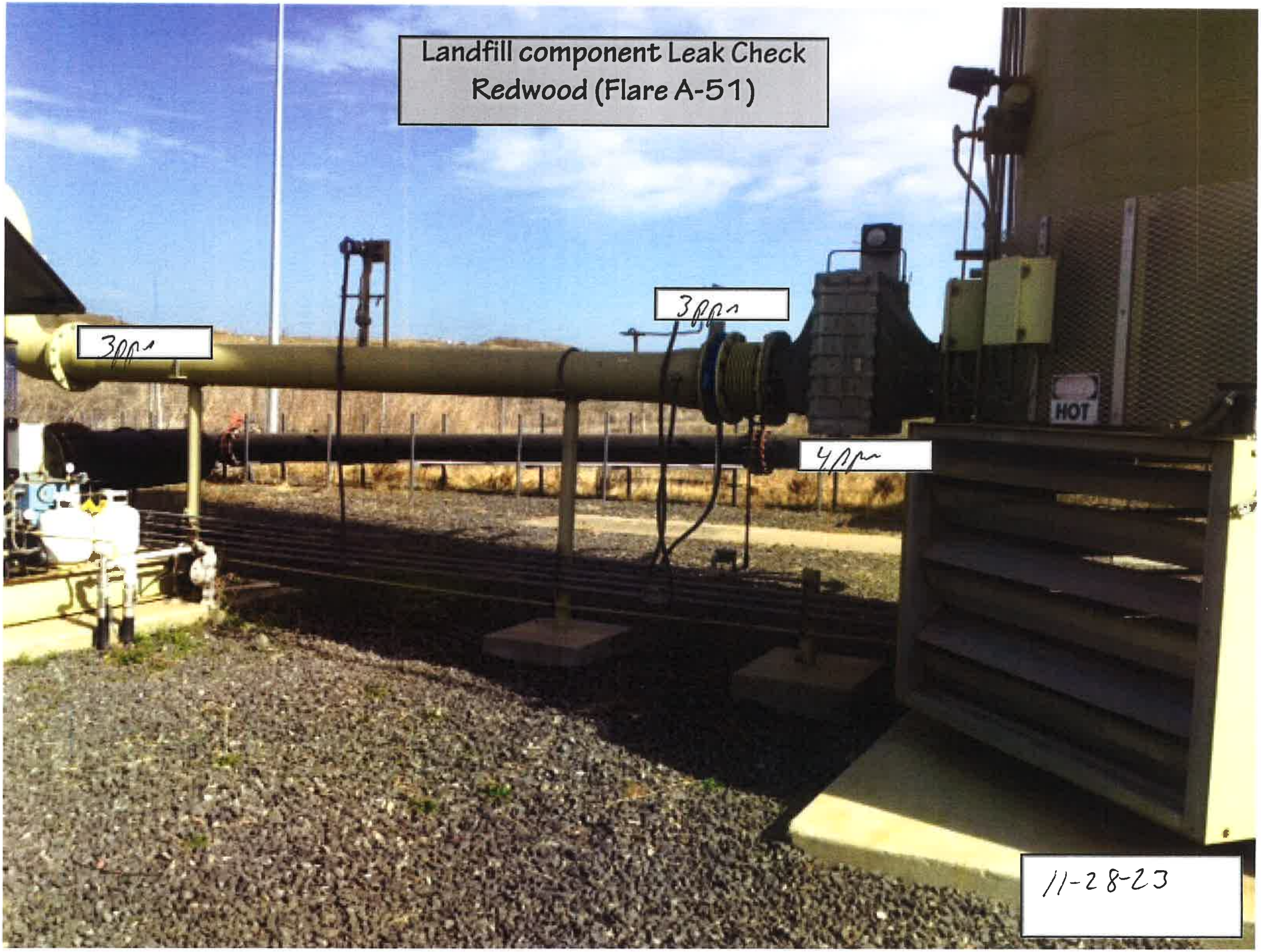
6ppm

8ppm

6ppm

11-28-23

Landfill component Leak Check
Redwood (Flare A-51)



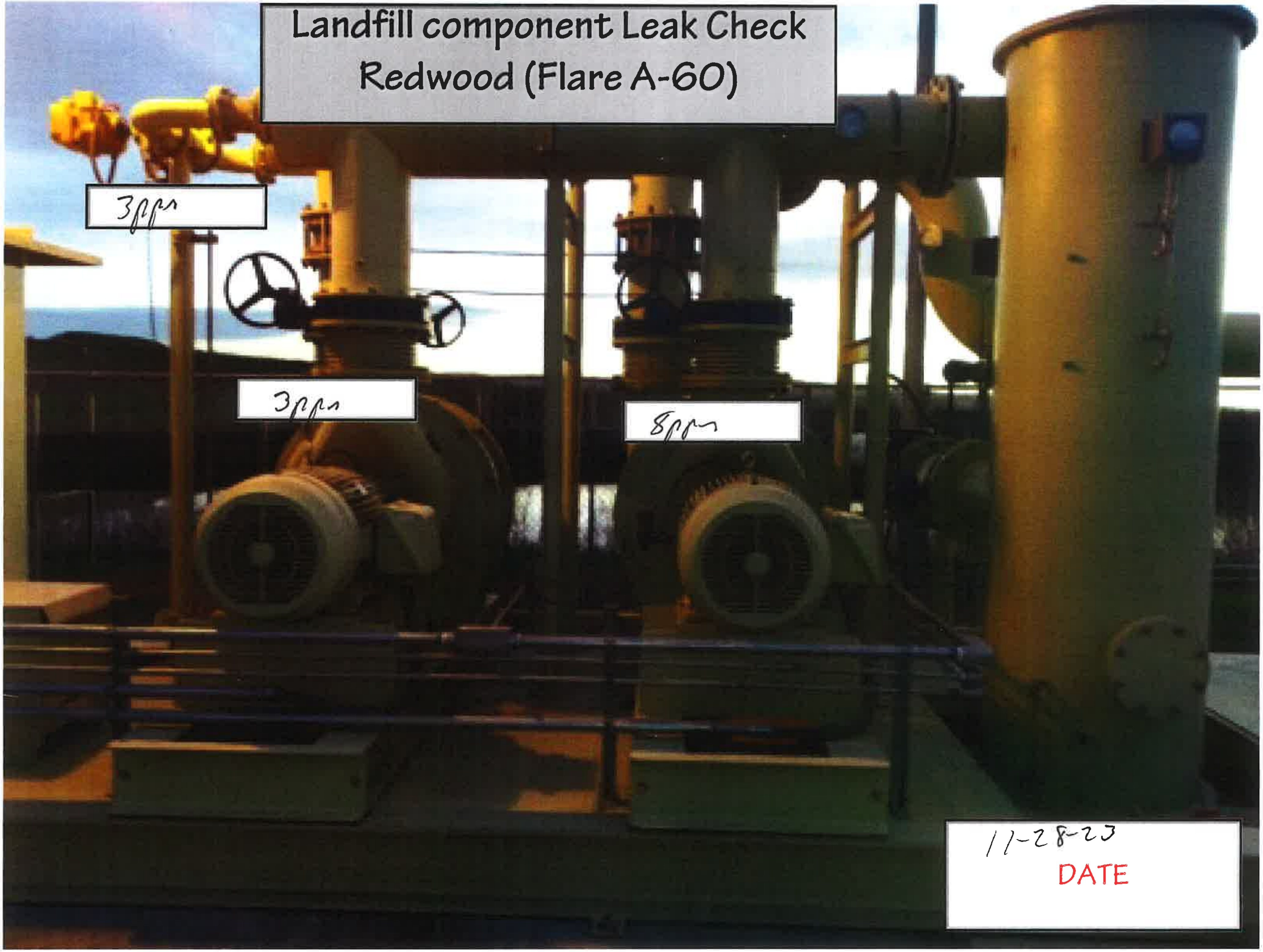
3ppm

3ppm

4ppm

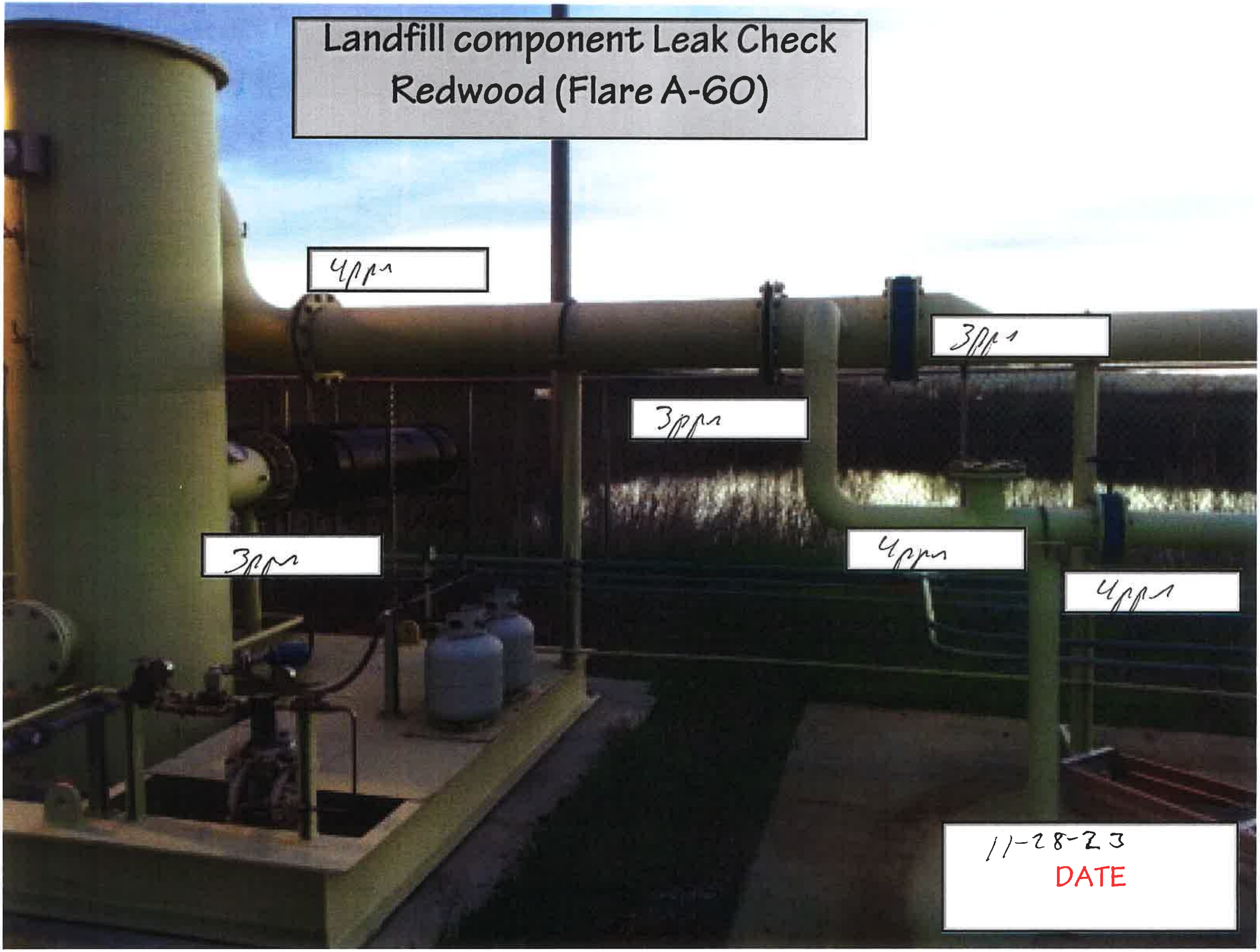
11-28-23

Landfill component Leak Check Redwood (Flare A-60)



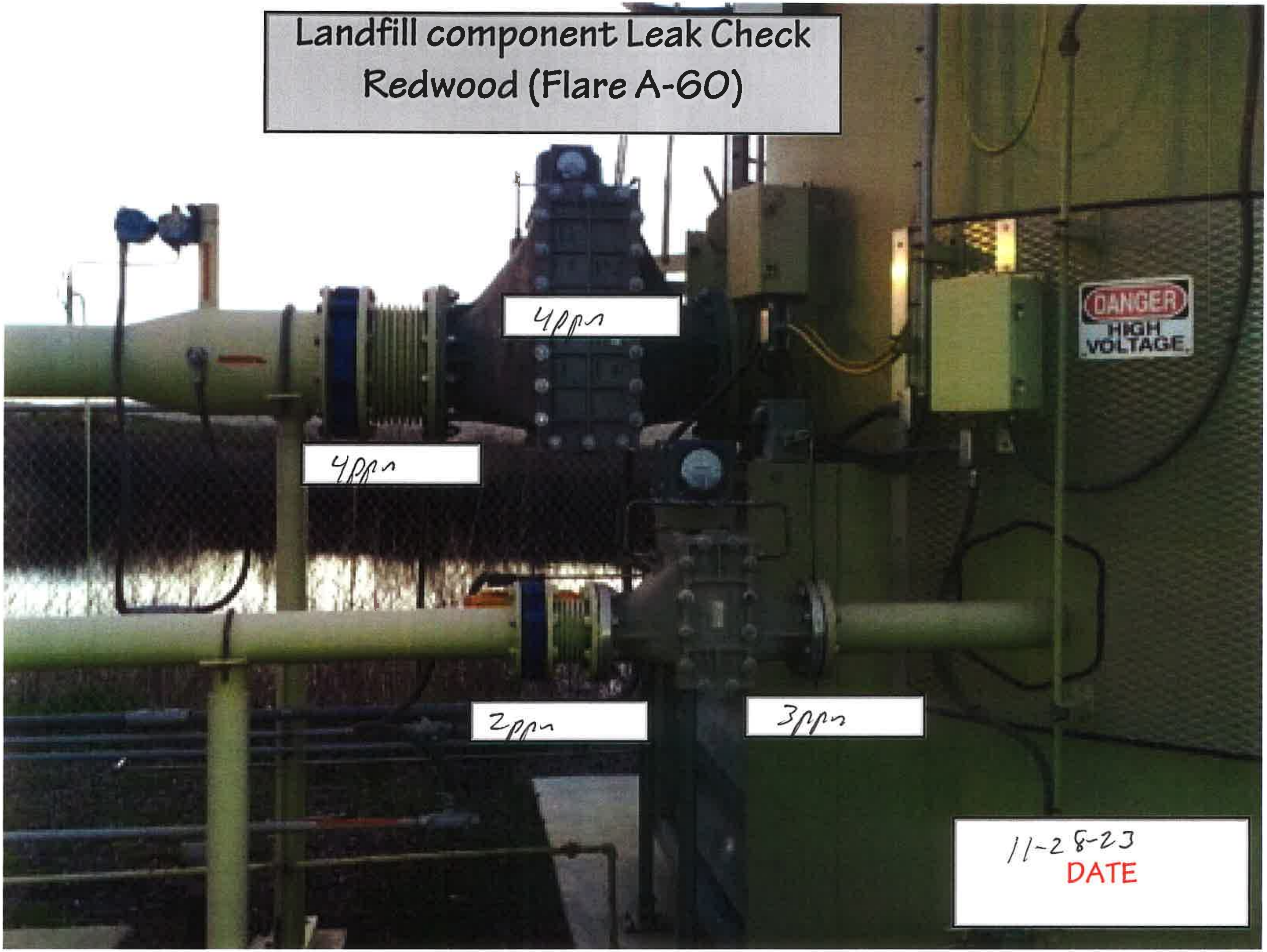
11-28-23
DATE

Landfill component Leak Check
Redwood (Flare A-60)



11-28-23
DATE

Landfill component Leak Check
Redwood (Flare A-60)



4ppm

4ppm

2ppm

3ppm

11-28-23
DATE

Attachment D

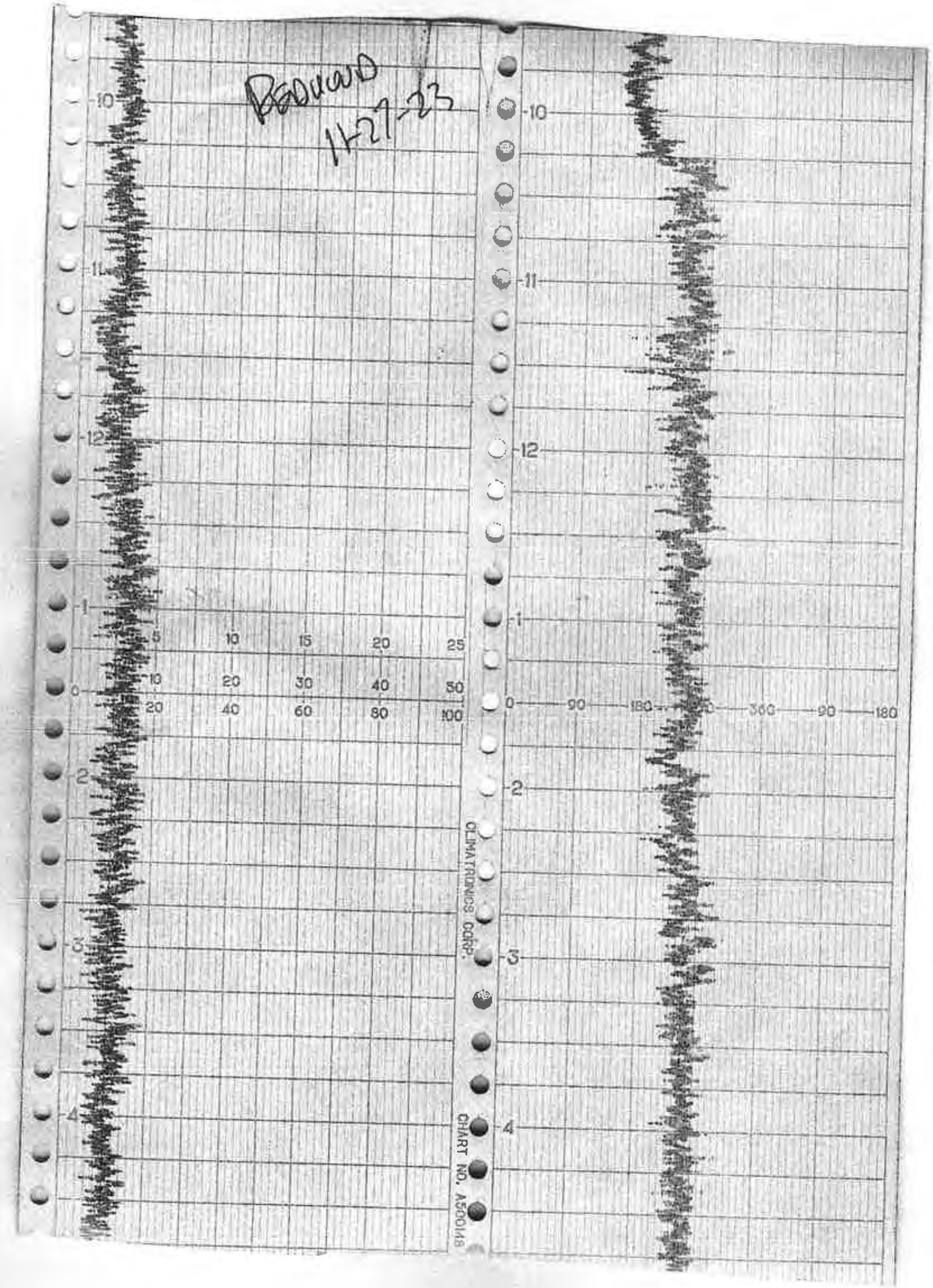
Weather Station Data

RES
Environmental Inc.

16-POINT WIND DIRECTION INDEX

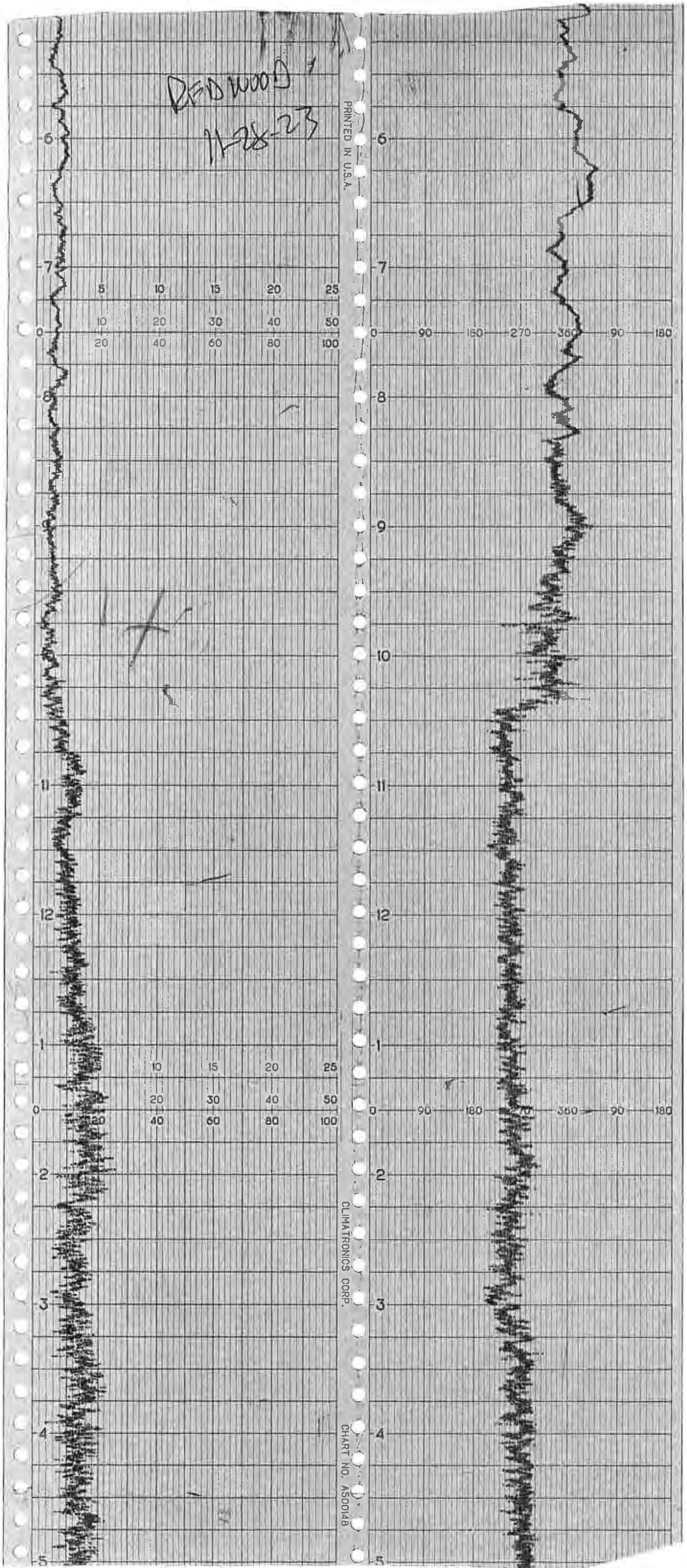
NO	DIRECTION	DEGREES		
		FROM	CENTER	TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (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

WIND SPEED & DIRECTION CHART ROLL

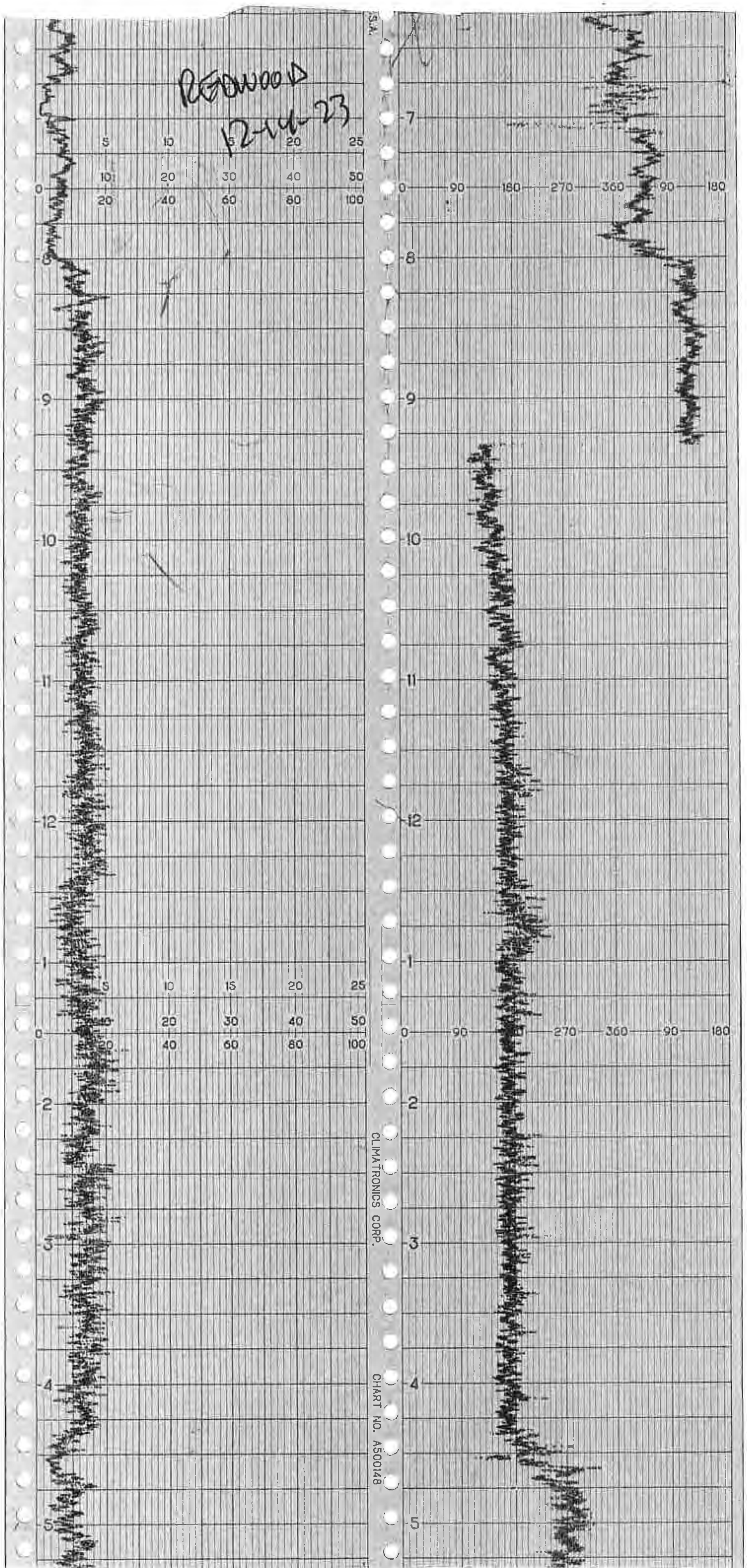


Redwood
11-27-23

WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



REDWOOD
12-14-23

Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 10/17/23

Expiration Date (3 months): 1/17/23

Time: 9:35 AM _______ PM

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

Measurement #1:

Stabilized Reading Using Calibration Gas: 496.3 ppm

90% of the Stabilized Reading: 49.6 ppm

Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 16 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 493.7 ppm

90% of the Stabilized Reading: 49.4 ppm

Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 14 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 493.5 ppm

90% of the Stabilized Reading: 49.4 ppm

Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 14 seconds (c)

Calculate Response Time:

$$\frac{(a) + (b) + (c)}{3} =$$ 14.6$\bar{6}$ seconds (must be less than 30 seconds)

Performed By: R. Lindberg

CALIBRATION PRECISION TEST RECORD

Date: 10/17/23

Expiration Date (3 months): 1/17/23

Time: 9:35 AM ______ PM

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

Measurement #1:

Meter Reading for Zero Air: 0.0 ppm (a)

Meter Reading for Calibration Gas: 496.3 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0.0 ppm (c)

Meter Reading for Calibration Gas: 493.7 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0.0 ppm (e)

Meter Reading for Calibration Gas: 493.5 ppm (f)

Calculate Precision:

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

1.1 % (must be < than 10%)

Performed By: R. Lindberg

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 12/1/2023

Time: 10:30 AM ________ PM

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

Calibration Procedure

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

Stable Reading = 501.7 ppm

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 1.6 ppm (a)
2. Downwind Reading (highest in 30 seconds): 1.1 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 1.35 ppm

Performed By: Riley Lindberg

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 12/21/2023

Time: 8:30 AM ________ PM

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

Calibration Procedure

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

Stable Reading = 500.9 ppm

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 2.2 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0.9 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 1.55 ppm

Performed By: Riley Lindberg

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-28-23 TIME: 0515

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	2.8 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	504 ppm	454 ppm	6
#2	498 ppm	448 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	0.18 ppm	504 ppm	4
#2	0.14 ppm	498 ppm	2
#3	0.11 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: Leo Lwaow Date/Time: 11-28-23- 0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346772

MONITORING DATE: 11-28-23 TIME: 0515

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	2.8 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	504 ppm	454 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	0.09 ppm	514 ppm	4
#2	0.07 ppm	500 ppm	0
#3	0.04 ppm	510 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.26 #DIV/0! Must be less than 10%

Performed By: MIGUEL ESTRADA Date/Time: 11-28-23-0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-28-23 TIME 0515

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	2.8 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	455 ppm	445 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	0.09 ppm	455 ppm	5
#2	0.05 ppm	502 ppm	2
#3	0.06 ppm	500 ppm	0
Calculate Precision	**[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1 / 500 X 100 / 1**		0.46 #DIV/0! Must be less than 10%

Performed By: Jerry Munoz Date/Time: 11-28-23-0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746725

MONITORING DATE: 11-28-23 TIME: 0515

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	2.8 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	490 ppm	440 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	0.13 ppm	490 ppm	10
#2	0.08 ppm	500 ppm	0
#3	0.06 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.66 #DIV/0! Must be less than 10%

Performed By: EDDIE DELING Date/Time: 11-28-23 - 0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 16 SERIAL #: 1102746776

MONITORING DATE: 11-28-23 TIME: 0515

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	2.8 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	507 ppm	457 ppm	6
#2	500 ppm	450 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	507 ppm	7
#2	0.06 ppm	500 ppm	0
#3	0.04 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By: Jovani Medins Date/Time: 11-28-23-0515

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL # 1036346773

MONITORING DATE: 11-27-23 TIME 1000

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.2 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 $\frac{(1+2+3)}{3}$		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	0.10 ppm	24 ppm	1
#2	0.07 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 Leigh Wade Date/Time 11-27-23-1000

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE tHermo

MODEL TVA1000 EQUIPMENT # 11 SERIAL # 1036346772

MONITORING DATE: 11-27-23 TIME 1000

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.2 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 $\frac{(1+2+3)}{3}$			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	23 ppm	2
#2	0.11 ppm	25 ppm	0
#3	0.06 ppm	25 ppm	0
Calculate Precision	$\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By MIGUEL ESTRADA Date/Time 11-27-23-1000

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE: Thermo
MODEL TVA 1000 EQUIPMENT # 12 SERIAL # 1036246741
MONITORING DATE: 11-27-23 TIME: 1000

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	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	0.09 ppm	24 ppm	1
#2	0.07 ppm	24 ppm	1
#3	0.04 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By Jerry Munoz Date/Time 11-27-23- 1000

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE: Thermo
MODEL: TVA1000 EQUIPMENT # 13 SERIAL # 1102746775
MONITORING DATE 11-27-23 TIME. 1600

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.2 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 $\frac{(1+2+3)}{3}$			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	0.13 ppm	24 ppm	1
#2	0.10 ppm	25 ppm	0
#3	0.07 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3}$ X $\frac{1}{25}$ X $\frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By EDDie DElias Date/Time 11-27-23 -1000

CALIBRATION PROCEDURE AND BACKGROUND REPORT - INTEGRATED

LANDFILL NAME REDWOOD INSTRUMENT MAKE THERMO
MODEL: TVA1000 EQUIPMENT # 16 SERIAL #: 1102746776
MONITORING DATE 11-27-23 TIME 1000

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.2 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	7
#2	24 ppm	21.6 ppm	7
#3	25 ppm	22.5 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 = 25 **ppm**

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.10 ppm	23 ppm	2
#2	0.07 ppm	24 ppm	1
#3	0.05 ppm	25 ppm	0
Calculate Precision $\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$			4.0 #DIV/0! Must be less than 10%

Performed By JOVENI MEDING Date/Time 11-27-23 -1000

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 12-14-23 TIME 0620

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
2.0 ppm	2.8 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	24 ppm	21.6 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	0.07 ppm	24 ppm	1
#2	0.05 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: LEISZWANR Date/Time: 12-14-23- 0620

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL # 1036346772

MONITORING DATE: 12-14-23 TIME 0620

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
2.0 ppm	2.8 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	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	0.13 ppm	24 ppm	1
#2	0.09 ppm	24 ppm	1
#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: Miguel Estrada Date/Time: 12-14-23 - 0620

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741
MONITORING DATE: 12-14-23 TIME: 0620

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
2.0 ppm	2.8 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	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	0.12 ppm	24 ppm	1
#2	0.08 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: Jerry Munoz Date/Time: 12-14-23 – 0620

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 12-14-23 TIME 0620

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:** $\frac{\text{(Upwind + Downwind)}}{2}$
2.0 ppm	2.8 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	24 ppm	21.6 ppm	4
#2	25 ppm	22.5 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	0.15 ppm	24 ppm	1
#2	0.10 ppm	25 ppm	0
#3	0.06 ppm	25 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: JOVANI MEDINA Date/Time: 12-14-23-0625

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 16 SERIAL #: 1102746776

MONITORING DATE 12-14-23 TIME: 0620

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
2.0 ppm	2.8 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	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	0.11 ppm	24 ppm	1
#2	0.07 ppm	24 ppm	1
#3	0.05 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: EDDIE DE LIRA Date/Time: 12-14-23 - 0620

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ____

Purpose: ____

Operator: ____

Date: 11-3-23 Time: 0815

Model # TVA 1000

Serial # #10 103634677

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.3 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-6-23
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 6

Average 6.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments: ____

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-3-23

Time: 0830

Model # TVA 1000

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.4 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 10-6-23

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 5
2. 5
3. 5

Average 5.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH_4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-3-23 Time: 0845

Model # TVA 1000

Serial # #12 1036246244

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.4 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-6-23
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 100%
Time required to attain 90% of Cal Gas ppm
1. 5
2. 5
3. 6

Average 5.3
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-3-23 Time: 0900

Model # TVA 1000

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	21 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-6-23
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 450
Time required to attain 90% of Cal Gas ppm
1. 6
2. 6
3. 5
Average 5.6
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH_4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-3-23 Time: 0945

Model # TVA 1000

Serial # #16 1102746276

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.4 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-6-23
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 450
Time required to attain 90% of Cal Gas ppm
1. 5
2. 5
3. 6
Average 5.3
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH4 gas.

Comments:

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 12-2-23

Time: 0900

Model # TVA 1000

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.5 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 10-6-23

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 5
2. 6
3. 6

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 12-2-23 Time: 0915

Model # TVA 1000

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.5 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 10-6-23

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 5
2. 5
3. 6

Average 5.3

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 12-2-23 Time: 0930

Model # TCA 1000

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.1 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-6-23
Factory calibration record w/instrument within 3 months	Pass / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 5

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 12-2-23

Time: 0945

Model # TVA 1000

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.6 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 10-6-23

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 5
2. 5
3. 5

Average 5s

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 12-2-23 Time: 1030

Model # TVA-1000

Serial # #16 1102246726

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.5 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 10-6-23

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 6

Average 6.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 10

SERIAL NUMBER: 1036346773

TECHNICIAN:

DATE: 10-6-23

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	0.05	< 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.

P.O. Box 748 ▪ Colton, California 92324
(909) 422-1001 ▪ TOLL FREE (888) 325-1098 ▪ FAX (909) 422-0707 ▪ www.resenvironmental.com

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: MES Cart #11

SERIAL NUMBER: 1036346774

TECHNICIAN:

DATE: 10-6-23

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	0.63	< 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.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #12

SERIAL NUMBER: 1036246291

TECHNICIAN:

DATE: 10-6-23

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	0,69	< 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.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #13

SERIAL NUMBER: 1102746275

TECHNICIAN:

DATE: 10-6-23

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	0.68	< 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.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #16

SERIAL NUMBER: 1102746776

TECHNICIAN:

DATE: 10-6-23

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	10,211	+/- 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.

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 (+/-)
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	**20-7421**
Mfg. Date:	5/20/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	NY02268

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:	5/20/2020


viroSupply
& Service
INC
Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
ntents: 3.6ft³ @ 70°F and 1,000 PSIG
Exp Date
7/10/2024
Lot#: 20-7421
P/N:01-100
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103-01-100
Oxygen
103 L
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	

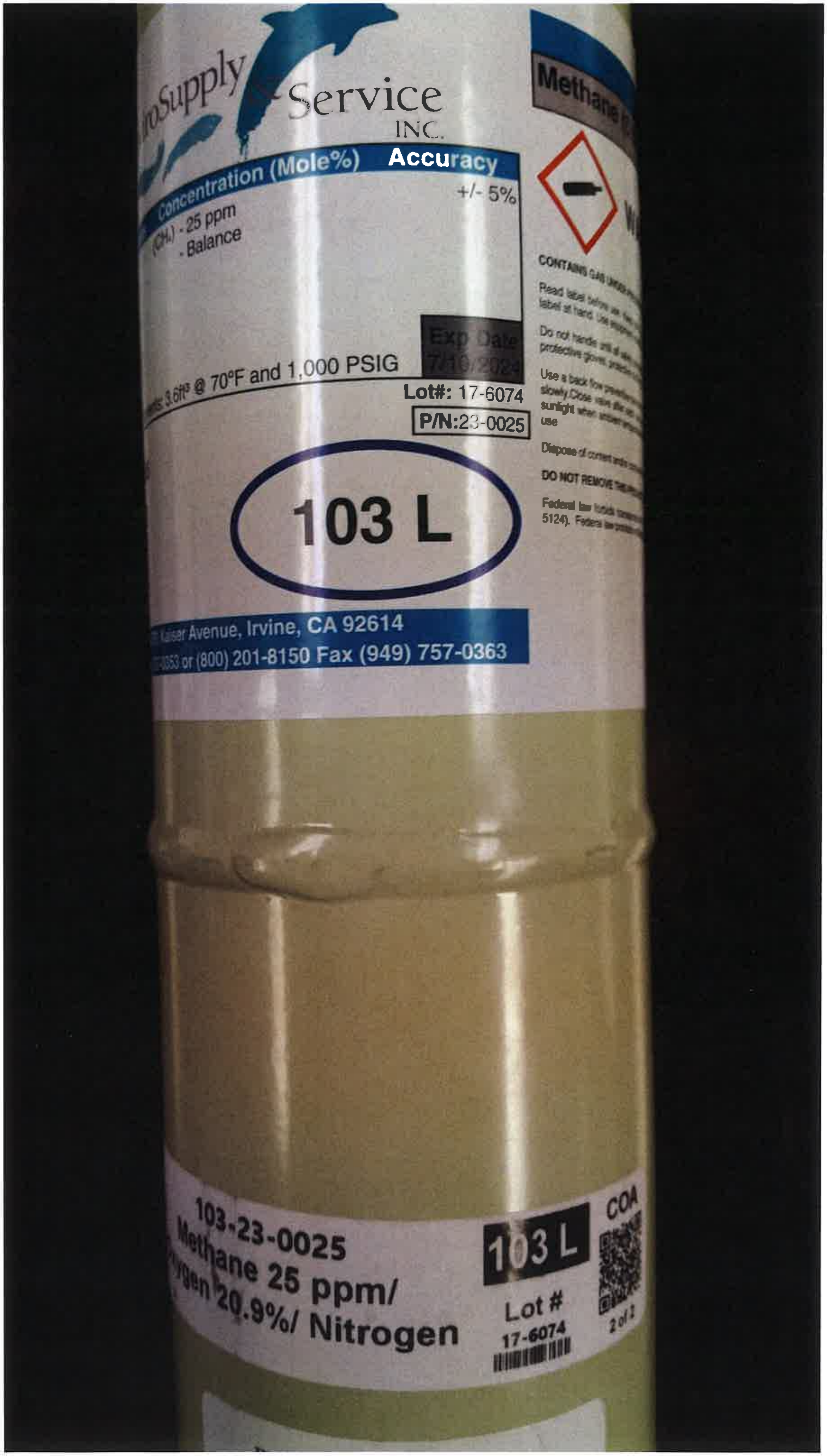
Lot # 17-6074

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


roSupply Service INC.
Concentration (Mole%)
Accuracy
(CH4) - 25 ppm
- Balance
+/- 5%
Methane
ents: 3.6ft³ @ 70°F and 1,000 PSIG
Exp Date
7/10/2024
Lot#: 17-6074
P/N:23-0025
CONTAINS GAS UNDER
Read label before use.
Do not handle until all
Use a back flow preventer
Dispose of content and/or
DO NOT REMOVE THIS
Federal law forbids
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
Methane 25 ppm/
ygen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
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	

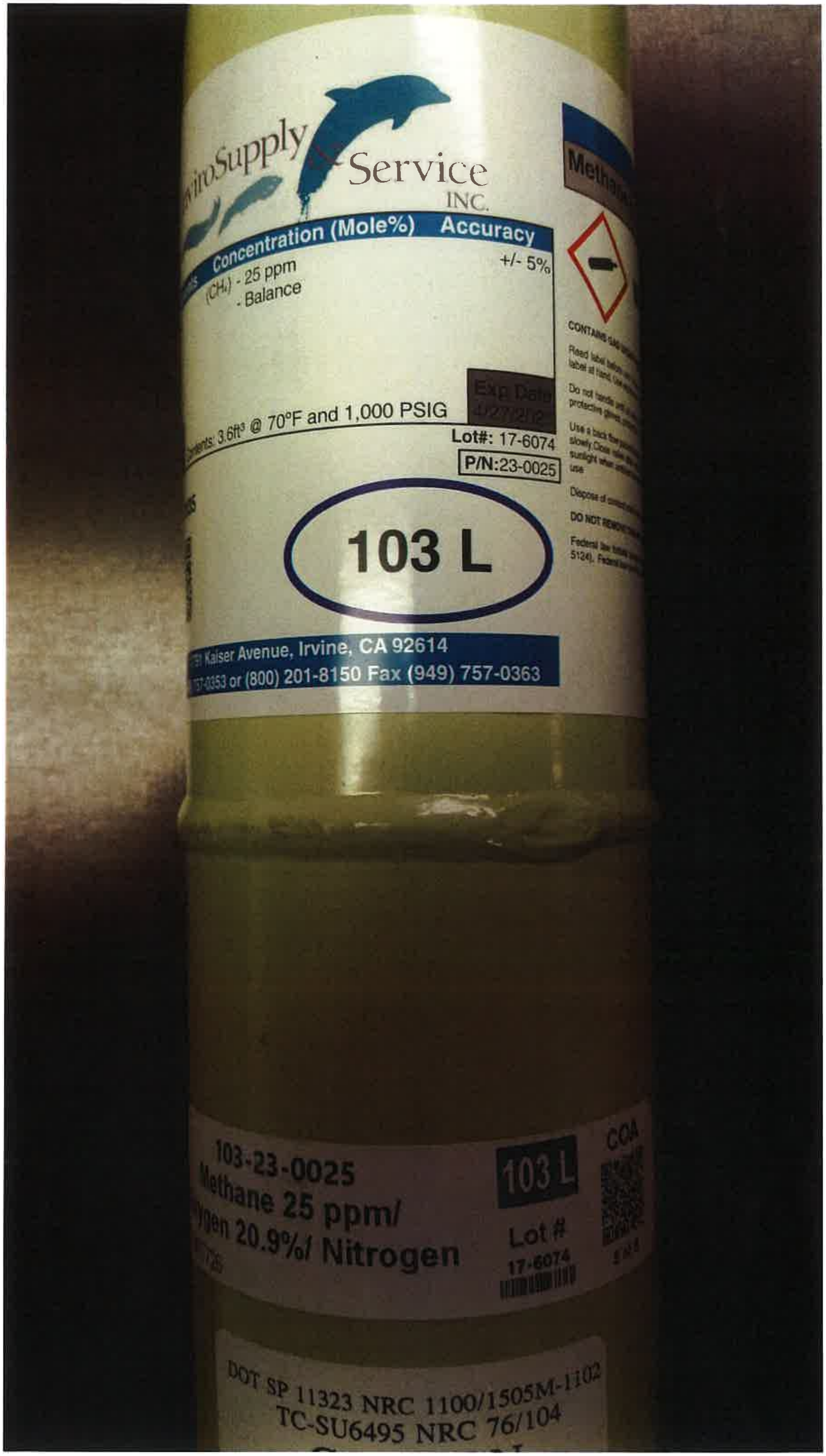
Lot # 17-6074

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



EnviroSupply & Service INC.
Concentration (Mole%)
Accuracy
(CH4) - 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
757-0353 or (800) 201-8150 Fax (949) 757-0363
Methane
CONTAINS GAS
DO NOT REMOVE
103-23-0025
Methane 25 ppm/
Oxygen 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)
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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

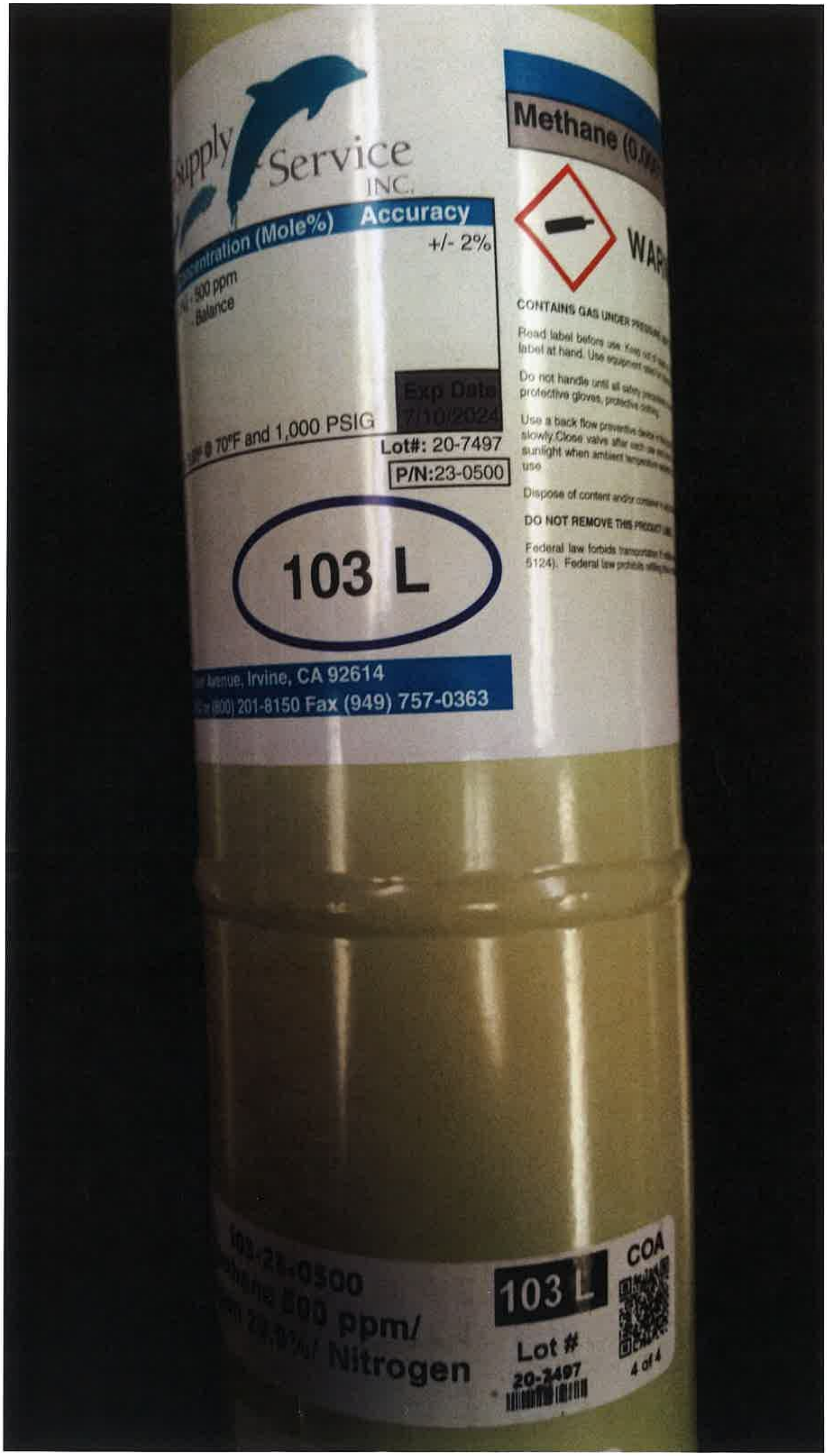
Method of Preparation:

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.
ntration (Mole%)
Accuracy
+/- 2%
500 ppm
Balance
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
Methane (0.0
WAR
CONTAINS GAS UNDER PRESSURE
Read label before use. Keep out of
label at hand. Use equipment
Do not handle until all safety
protective gloves, protective clothing
Use a back flow preventive device
slowly. Close valve after each use
sunlight when ambient temperature
use
Dispose of content and/or container
DO NOT REMOVE THIS PRODUCT
Federal law forbids transportation
5124). Federal law prohibits refilling
-23-0500
500 ppm/
Nitrogen
103 L
Lot #
20-7497
COA
4 of 4

NorLAB®
A DIVISION OF NORCO, INC.
Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number	07152
Order Number	69671309
PO Number	08361523

Lot Number	2-108-80
Norlab Part#	J1971500PA
Cylinder Size	103 Liter
Number of Cyl	1

Date on Manufacture	6/10/2022
Expires	06/2025
Analytical Accuracy	+/- 2 %

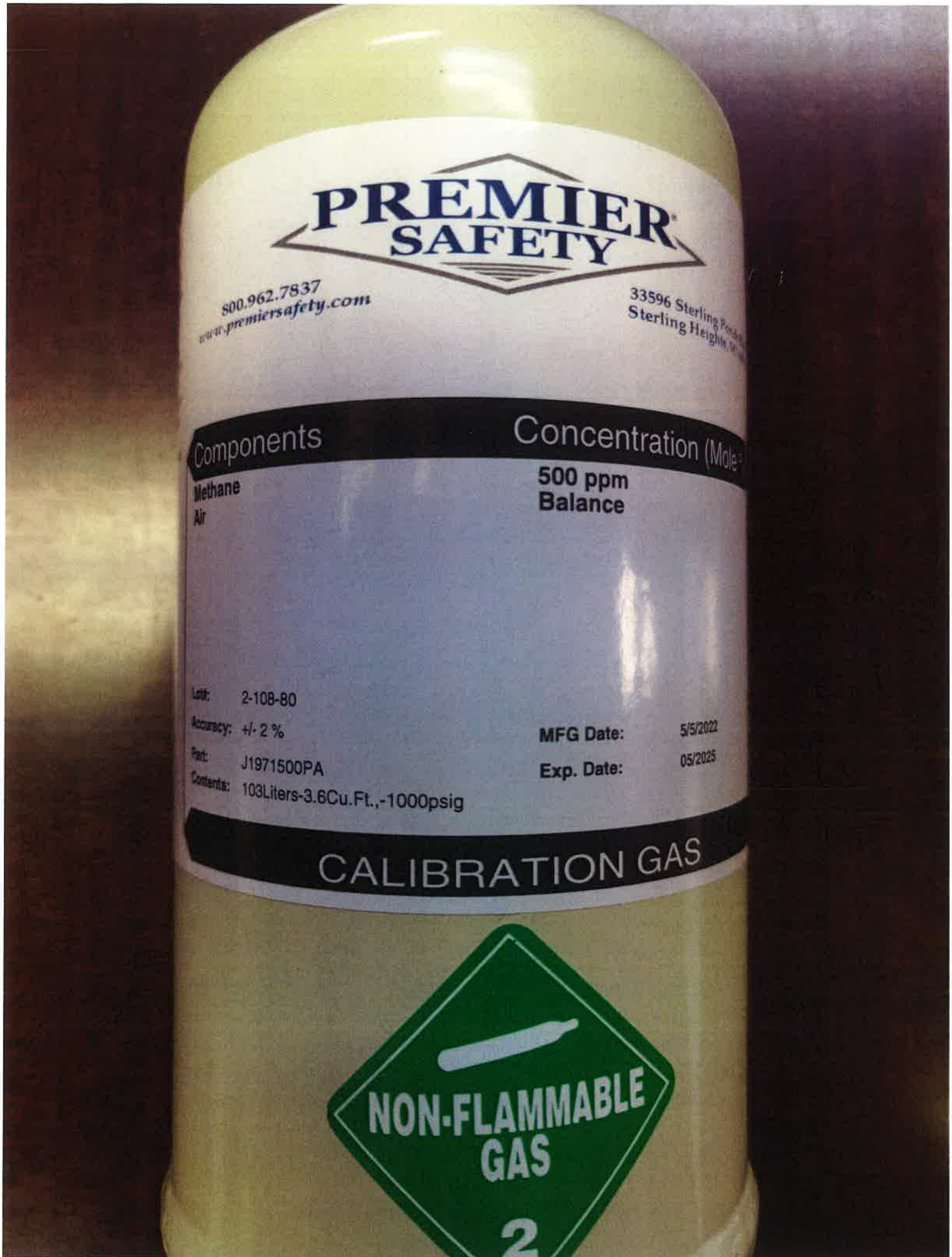
Customer Part# N/A

Component	Reported Concentration	Requested Concentration
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: ______________________ Date Signed: 6/10/2022
David Reed
Lab Technician



Components	Concentration (Mole
Methane	500 ppm
Air	Balance

Lot#: 2-108-80

Accuracy: +/- 2 %

Part: J1971500PA

Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 5/5/2022

Exp. Date: 05/2025

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CERTIFICATE OF ANALYSIS

Norco, Inc
Twin Falls Warehouse
203 S. Park Ave. West
Twin Falls, ID 83301

Cust Number	WH012
Order Number	71846398
PO Number	04A35563

Lot Number	3-088-88
Norlab Part#	J1971500PA
Cylinder Size	103 Liter
Number of Cyl	5

Date on Manufacture	4/7/2023
Expires	04/2027
Analytical Accuracy	+/- 2 %

Customer Part# N/A

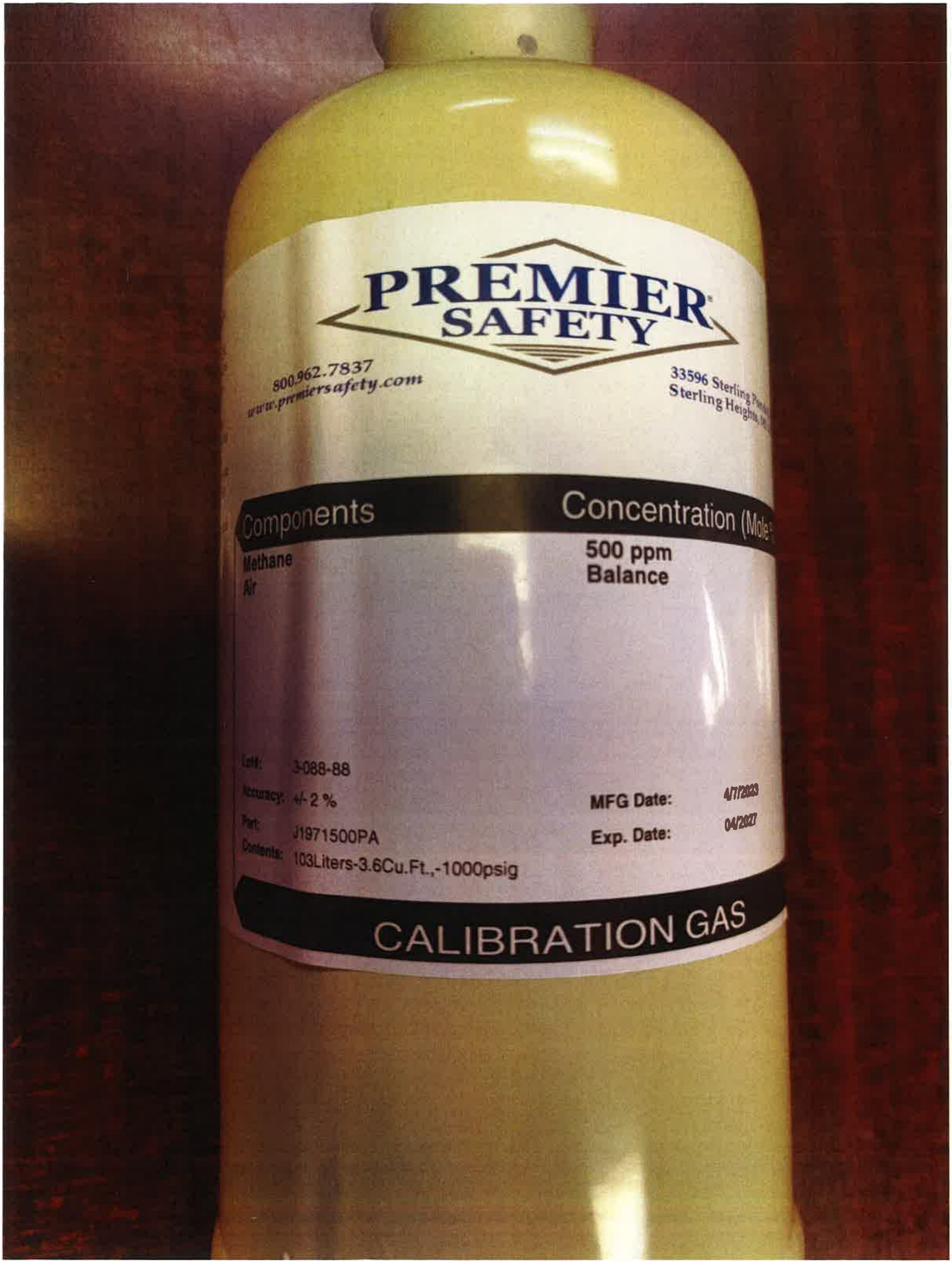
Component	Reported Concentration	Requested Concentration
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: Date Signed: 4/7/2023

Jeff Korn
Lab Technician



Components	Concentration (Mole
Methane	500 ppm
Air	Balance

Lot#: 3-088-88

Accuracy: +/- 2 %

Part: J1971500PA

Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 4/7/2023

Exp. Date: 04/2027

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CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number	07152
Order Number	69679439
PO Number	04906817

Lot Number	2-154-85
Norlab Part#	J1002
Cylinder Size	103 Liter
Number of Cyl	1

Date on Manufacture	6/13/2022
Expires	06/2025
Analytical Accuracy	Certified

Customer Part# N/A

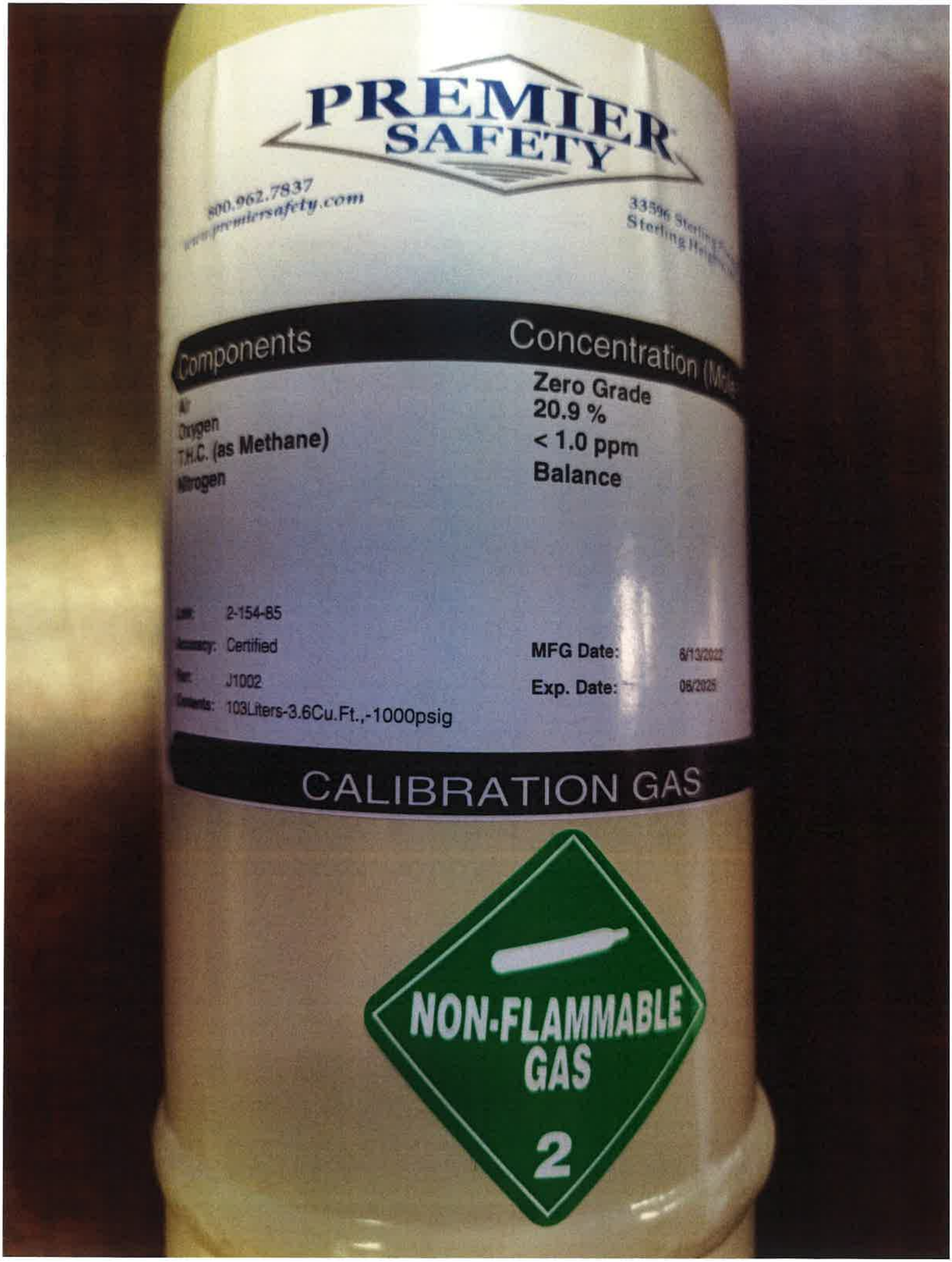
Component	**Reported Concentration**	**Requested Concentration**
Air	Zero Grade	Zero Grade
Oxygen	20.9 %	20.9 %
T.H.C. (as Methane)	< 1.0 ppm	< 1.0 ppm
Nitrogen	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

Minor constituents tested with standards traceable to NIST by mass or comparison to SRM's (Standard Reference Materials).

NIST Traceable Numbers are available upon request.

Approved: Date Signed: 6/13/2022
David Reed
Lab Technician



PREMIER SAFETY

800.962.7837
www.premiersafety.com

33596 Sterling
Sterling Heig

Components	Concentration (Mo
Air	Zero Grade
Oxygen	20.9 %
T.H.C. (as Methane)	< 1.0 ppm
Nitrogen	Balance

Lot: 2-154-85
Accuracy: Certified
Part: J1002
Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 6/13/2022
Exp. Date: 06/2025

CALIBRATION GAS

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CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number 07152
Order Number 73732858
PO Number 04B70733

Lot Number	3-340-61
Norlab Part#	J1971500PA
Cylinder Size	103 Liter
Number of Cyl	5

Date on Manufacture	12/7/2023
Expires	12/2027
Analytical Accuracy	+/- 2 %

Customer Part# N/A

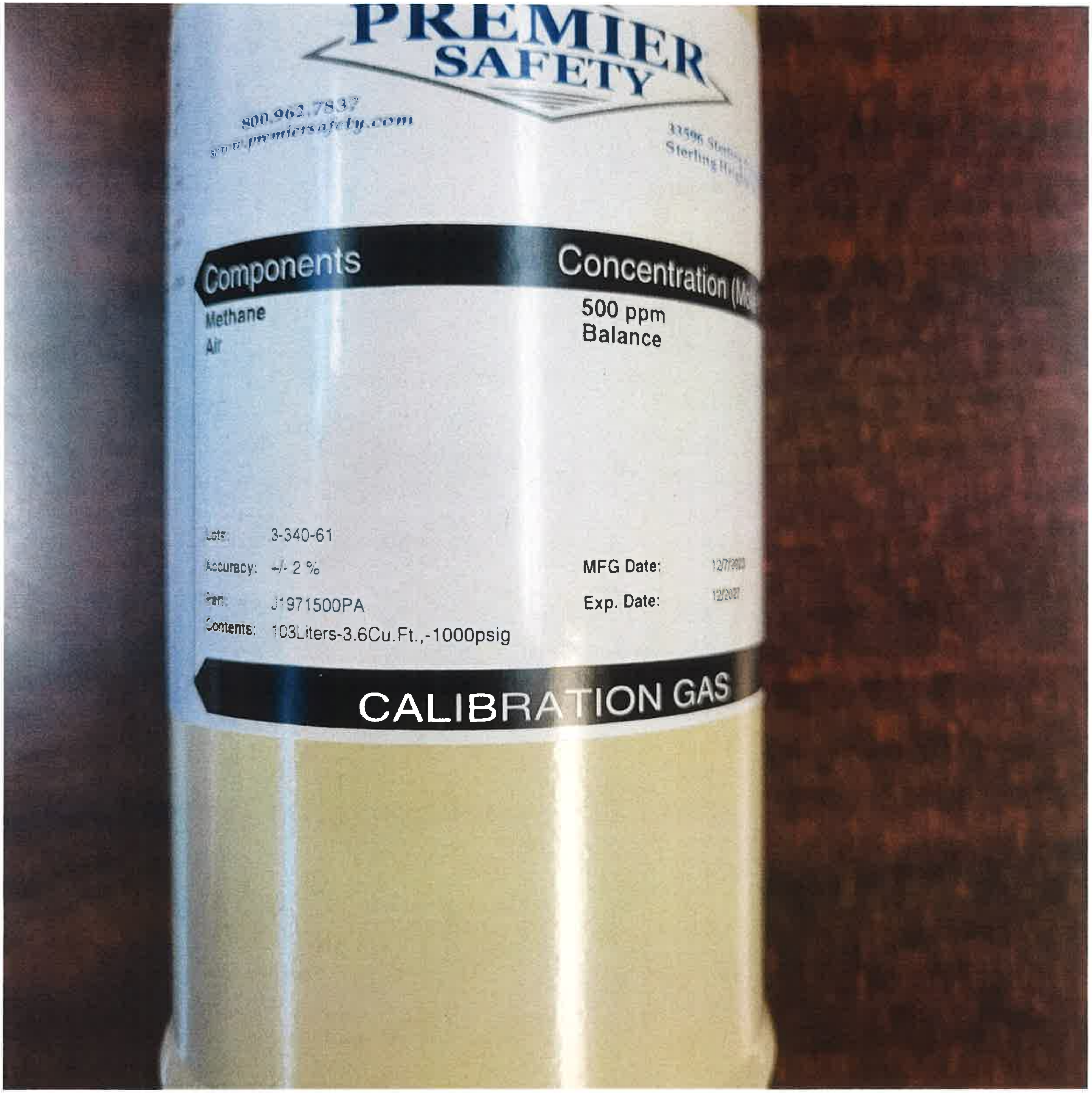
Component	Reported Concentration	Requested Concentration
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs.

NIST Traceable Numbers are available upon request.

Approved: ______________________ Date Signed: 12/7/2023
Aaron Schwenken
Lab Manager



Components	Concentration (Mo
Methane	500 ppm
Air	Balance

Lots: 3-340-61

Accuracy: +/- 2 %

Part: J1971500PA

Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: [illegible]

Exp. Date: 12/2027

CALIBRATION GAS

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Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number	07152
Order Number	73732858
PO Number	04B70733

Lot Number	3-340-62
Norlab Part#	J197125PA
Cylinder Size	103 Liter
Number of Cyl	5
Customer Part#	N/A

Date on Manufacture	12/7/2023
Expires	12/2027
Analytical Accuracy	+/- 5 %

Component	**Reported Concentration**	**Requested Concentration**
Methane	25 ppm	25 ppm
Air	Balance	Balance

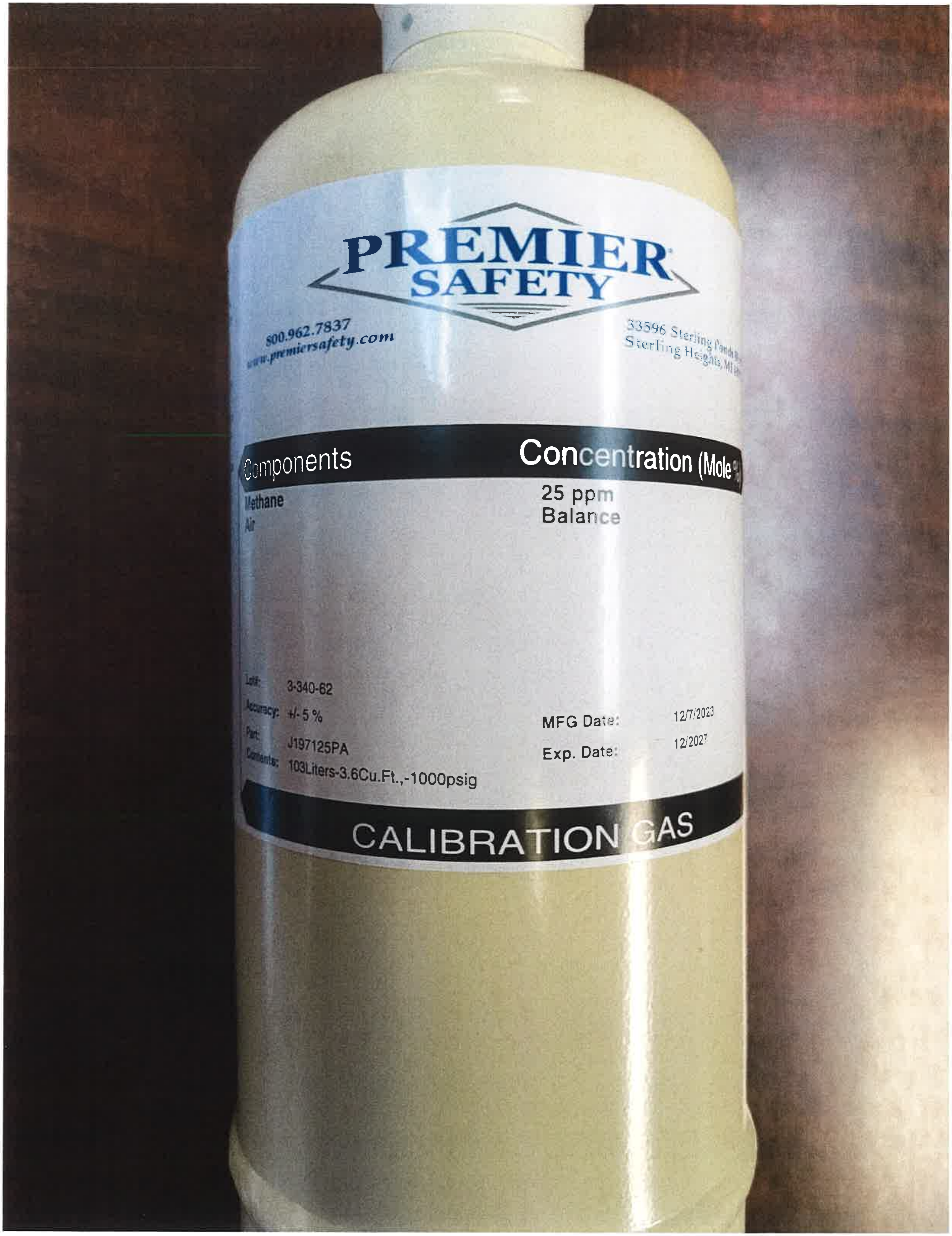
Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: ______________________ Date Signed: 12/7/2023

Aaron Schwenken
Lab Manager

898 W. GOWEN ROAD • BOISE, IDAHO 83705
Phone (208) 336-1643 • Fax (208) 331-3038 • 800-657-6672

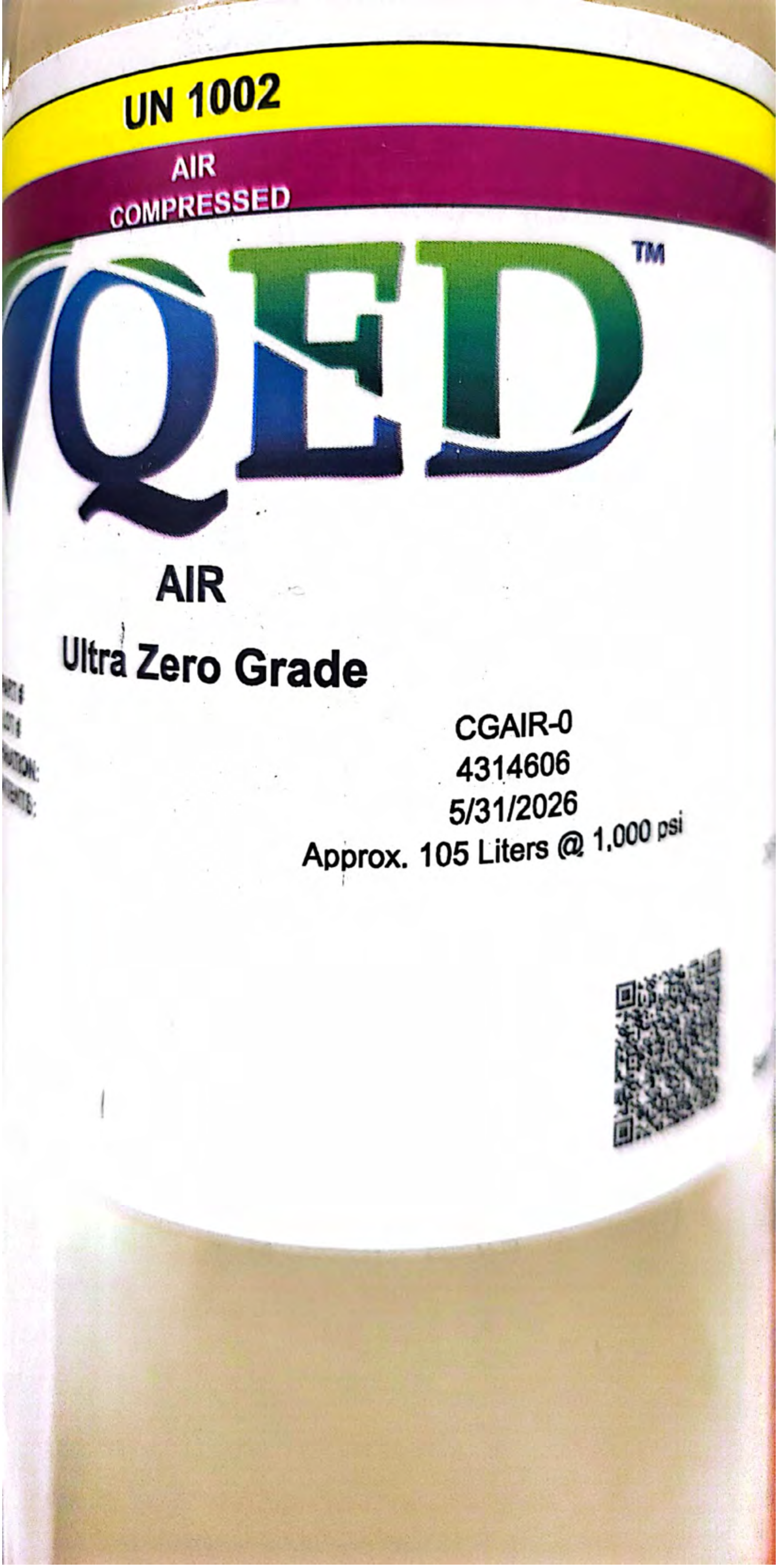


Components	Concentration (Mole
Methane	25 ppm
Air	Balance

Lot#: 3-340-62
Accuracy: +/- 5 %
Part: J197125PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 12/7/2023
Exp. Date: 12/2027

CALIBRATION GAS



UN 1002

AIR
COMPRESSED

QED™

AIR

Ultra Zero Grade

CGAIR-0
4314606
5/31/2026
Approx. 105 Liters @ 1,000 psi

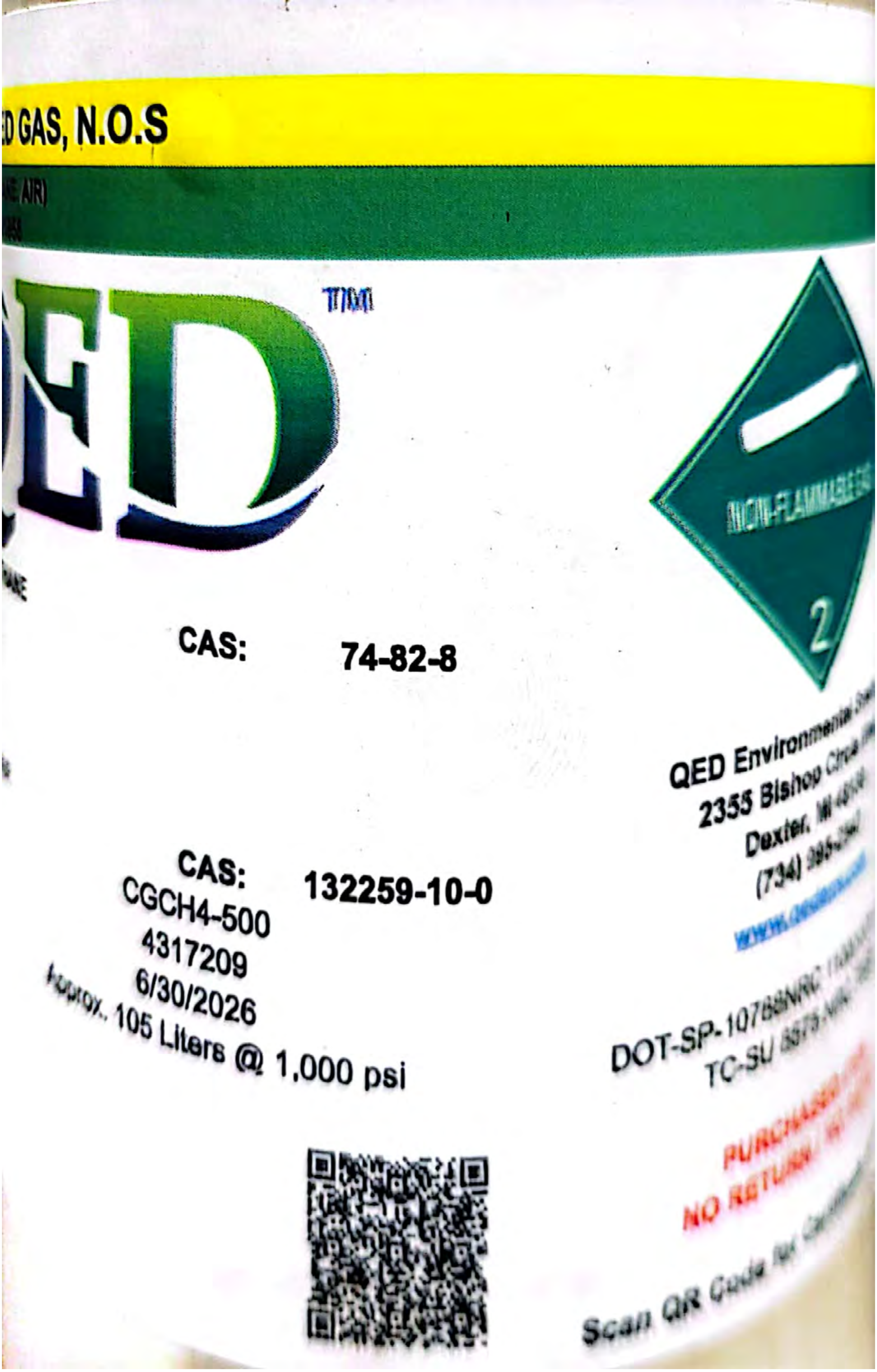
COMPRESSED GAS, N.O.S

(METHANE, AIR)
UN1956

QED

500 PPM	METHANE	CAS:
BALANCE	AIR	CAS:

PART # CGCH4-500
LOT # 4317208
EXPIRATION: 6/30/2026
CONTENTS: Approx. 105 Liters @



D GAS, N.O.S

NE AIR)

ED™

CAS: 74-82-8

CAS: 132259-10-0
CGCH4-500
4317209
6/30/2026
pprox. 105 Liters @ 1,000 psi

QED Environmental
2355 Bishop Circle
Dexter, MI
(734) 995-
www.

DOT-SP-10788NRC
TC-SU 8575

PURCHASED
NO RETURN

Scan QR Code for

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

May 15, 2024

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

Re: First Quarter 2024 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 2024 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 25-foot interval 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)(3).

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 2024 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the First Quarter 2024.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on January 26, 2024 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 four (4) exceedances of 500 ppm_v as methane detected on January 26, 2024. 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 January 30, 2024. 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, 2024. 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 26, 2024. 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 27 and 28, 2024 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 26, 2024. 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

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

2024 QUARTER: 1
PERFORMED BY: RES and WM
LANDFILL NAME: **Redwood Landfill, Inc.**

Flag Number	Grid Number	Latitude	Longitude	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
O11	35	38.16539	-122.56216	1/26/2024	1,438	Well 276
O12	54	38.16704	-122.56363	1/26/2024	5,620	Well 116
O1	82	38.16139	-122.56432	1/26/2024	1,530	Well 220
O31	24	38.16662	-122.56185	1/26/2024	1,000	Well 236

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)

2024 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: Riley Lindberg

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			Corrective Action		1st 10-day Follow-Up			2nd 10-day Follow-Up			1-month 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	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
O11	1/26/2024	1,438	1/30/2024	Increased BECs	1/30/2024	158		n/a			2/23/2024	205		Well 276
O12	1/26/2024	5,620	1/30/2024	Increased BECs & Added and compacted soil	1/30/2024	258		n/a			2/23/2024	122		Well 116
O1	1/26/2024	1,530	1/30/2024	Added and Compacted soil	1/30/2024	197		n/a			2/23/2024	58		Well 220
O31	1/26/2024	1,000	1/30/2024	Increased BECs	1/30/2024	204		n/a			2/23/2024	217		Well 236

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

2024 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: Riley Lindberg

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			Comments
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
O11	1/26/2024	1,438	1/30/2024	158		n/a			Well 276
O12	1/26/2024	5,620	1/30/2024	258		n/a			Well 116
O1	1/26/2024	1,530	1/30/2024	197		n/a			Well 220
O31	1/26/2024	1,000	1/30/2024	204		n/a			Well 236

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

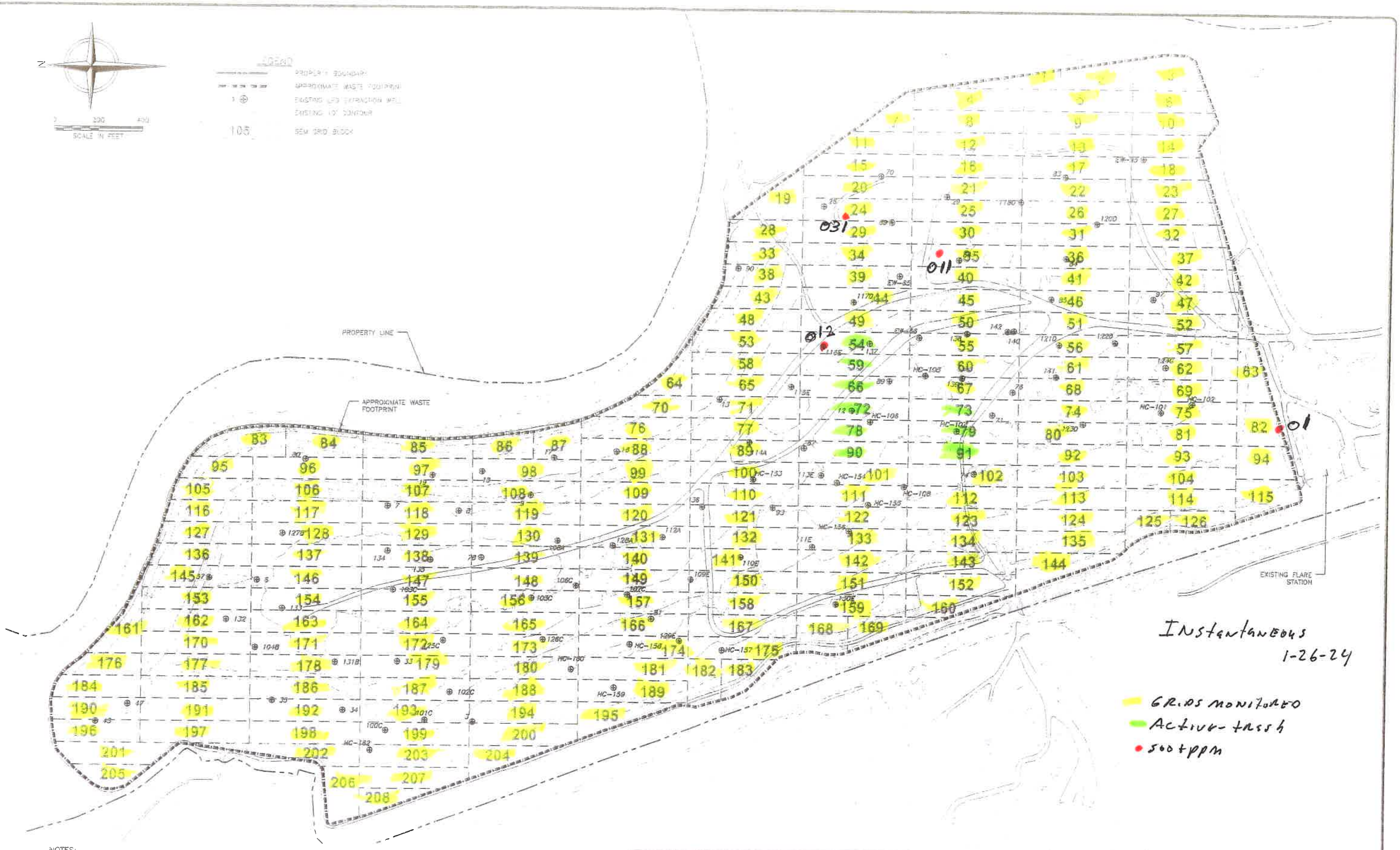
2024 QUARTER: 1

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					



LEGEND

PROPERTY BOUNDARY
APPROXIMATE WASTE FOOTPRINT
EXISTING LFG EXTRACTION WELL
EXISTING 10' CONTOUR
105 SEM GRID BLOCK

Instantaneous
1-26-24

Grids monitored
Active-trash
500+ppm

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 FZ AND ASSOCIATES (DATE OF SURVEY: AUGUST 12, 2013), AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 3, 2013 AND JUNE 19, 2014.

WASTE MANAGEMENT

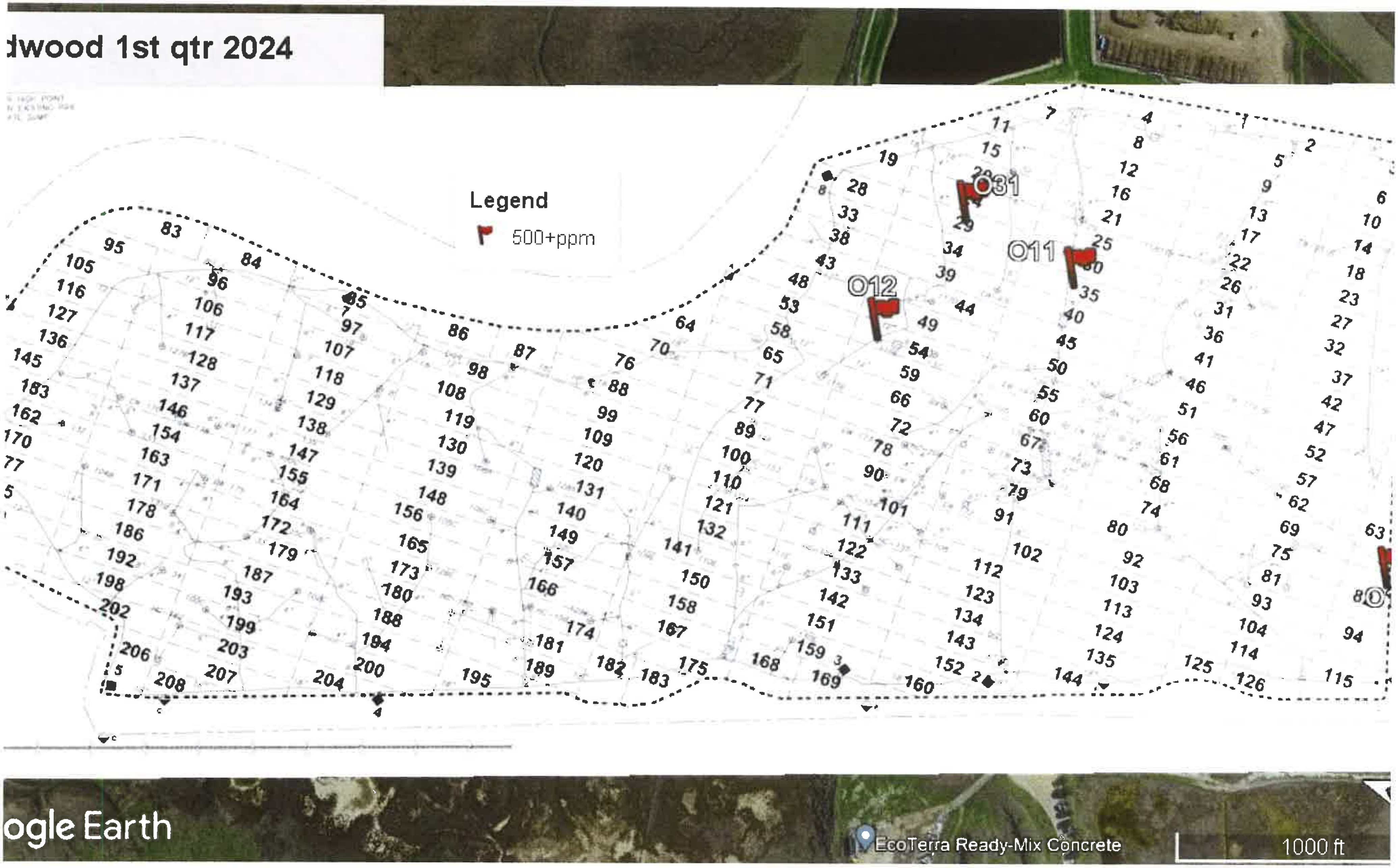
PREPARED BY
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO
1

dwood 1st qtr 2024



1st Quarter 2024
NSPS

🟩 perimeter sweep

● upwind

● downwind

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 [illegible] AND ASSOCIATES (DATE OF SURVEY AUGUST [illegible], 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 3, 2013 AND JUNE 18, 2014.

WM WASTE MANAGEMENT

cornerstone environmental

PREPARED BY
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO
1

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year: 1st 2024
Technician: LEISHWADE
Instrument: TVA1000
Calibration Standard: 500ppm

Page of Pages

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-31	24	1,000	1-26-24										Well 236
O-1	82	1,530	↓										W220
O-11	35	1,438											Well 276
O-12	54	5,620											Well 116
O-													
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wpt			redwood 1st qtr 2024		
ID	lat	lon	time	name	cmt
1	38.16538601	-122.562156	2024-01-26T19:28:39Z	O11	1438PPMWELL276
2	38.16704404	-122.563634	2024-01-26T19:42:00Z	O12	5620PPMWELL116
3	38.16138902	-122.564322	2024-01-26T15:56:02Z	O1	1530PPMW220
4	38.16662201	-122.561845	2024-01-26T19:31:28Z	O31	1000PPMWEll236

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Miguel Estrada; Jerry Munoz; Jovany Aedins; Greg Lopez

Cal. Gas Exp Date: 11-10-24

Date: 1-26-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 41 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	0700	0715	35	4	5	7	
2	ME	0700	0715	21	4	5	7	
3	JM	0700	0715	19	4	5	7	
4	JM	0700	0715	47	4	5	7	
5	GL	0700	0715	56	4	5	7	
6	LW	0715	0730	22	3	4	7	
7	ME	0715	0730	119	3	4	7	
8	JA	0715	0730	94	3	4	7	
9	JA	0715	0730	127	3	4	7	
10	GL	0715	0730	34	3	4	7	
11	LW	0730	0745	90	3	4	8	
12	ME	0730	0745	120	3	4	8	
13	JA	0730	0745	54	3	4	8	
14	JA	0730	0745	37	3	4	8	
15	GL	0730	0745	89	3	4	8	
16	LW	0745	0800	146	1	2	6	
17	ME	0745	0800	42	1	2	6	
18	JM	0745	0800	30	1	2	6	
19	JA	0745	0800	145	1	2	6	
20	GL	0745	0800	117	1	2	6	
21	LW	0800	0815	154	0	1	6	
22	ME	0800	0815	78	0	1	6	
23	JM	0800	0815	25	0	1	6	
24	JA	0800	0815	1000	0	1	6	Well 236
25	GL	0800	0815	82	0	1	6	
26	LW	0815	0830	47	2	4	8	
27	ME	0815	0830	31	2	4	8	
28	JM	0815	0830	64	2	4	8	
29	JM	0815	0830	89	2	4	8	
30	GL	0815	0830	66	2	4	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel LEIS hWARDT JOVANI MEDINA
MIGUEL ESTRADA CRUZ lopez
JERRY MUNOZ

Cal Gas Exp Date 11-10-24

Date 1-26-24 Instrument Used TVA1000 Grid Spacing 25'

Temperature: 50 Precip: 0 Upwind BG: 2.4 Downwind BG 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
31	LW	0830	0845	41	3	4	9	
32	ME	0830	0845	35	3	4	9	
33	JM	0830	0845	76	3	4	9	
34	JM	0830	0845	104	3	4	9	
35	CL	0830	0845	1,438	3	4	9	WELL 276
36	LW	0845	0900	51	1	2	6	
37	ME	0845	0900	37	1	2	6	
38	JM	0845	0900	75	1	2	6	
39	JM	0845	0900	81	1	2	6	
40	CL	0845	0910	136	1	2	6	
41	LW	0900	0915	42	1	3	6	
42	ME	0900	0915	30	1	3	6	
43	JM	0900	0915	57	1	3	6	
44	JM	0900	0915	69	1	3	6	
45	CL	0900	0915	54	1	3	6	
46	LW	0915	0930	39	3	4	6	
47	ME	0915	0930	27	3	4	6	
48	JM	0915	0930	113	3	4	6	
49	JM	0915	0930	62	3	4	6	
50	CL	0915	0930	87	3	4	6	
51	LW	0930	0945	34	1	2	4	
52	ME	0930	0945	26	1	2	4	
53	JM	0930	0945	79	1	2	4	
55	JM	0930	0945	113	1	2	4	
56	CL	0930	0945	86	1	2	4	
57	LW	0945	1000	39	3	5	12	
58	ME	0945	1000	34	3	5	12	
60	JM	0945	1000	47	3	5	12	
61	JM	0945	1000	38	3	5	12	
62	CL	0945	1000	42	3	5	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leis Lwadv — Jovany Medins
Miguel Ostacoa — Greg Lopez
Jonny Munoz

Cal Gas Exp Date: 11-10-24

Date: 1-26-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 50 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
63	LW	1000	1015	25	3	4	12	
64	MO	1000	1015	57	3	4	12	
65	JM	1000	1015	39	3	4	12	
67	JM	1000	1015	51	3	4	12	
68	GL	1000	1015	40	3	4	12	
69	LW	1015	1030	32	4	5	12	
70	MO	1015	1030	56	4	5	12	
71	JM	1015	1030	38	4	5	12	
74	JM	1015	1030	66	4	5	12	
75	GL	1015	1030	59	4	5	12	
76	LW	1030	1045	84	4	6	12	
77	MO	1030	1045	37	4	6	12	
80	JM	1030	1045	50	4	6	12	
81	JM	1030	1045	47	4	6	12	
82	GL	1030	1045	1,530	4	6	12	W220 pipe
83	LW	1045	1100	37	4	6	9	
84	MO	1045	1100	58	4	6	9	
85	JM	1045	1100	91	4	6	9	
86	JM	1045	1100	55	4	6	9	
87	GL	1045	1100	71	4	6	9	
88	LW	1100	1115	84	2	4	10	
89	MO	1100	1115	61	2	4	10	
92	JM	1100	1115	108	2	4	10	
93	JM	1100	1115	87	2	4	10	
94	GL	1100	1115	45	2	4	10	
95	LW	1115	1130	32	1	3	12	
96	MO	1115	1130	45	1	3	12	
97	JM	1115	1130	37	1	3	12	
98	JM	1115	1130	61	1	3	12	
99	GL	1115	1130	40	1	3	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Ware / Jovani Medina
Miguel Escobar / Gavel Lopez
Jerry Munoz

Cal Gas Exp Date 11-10-24

Date 1-26-24 Instrument Used TVA1000 Grid Spacing 25'

Temperature: 50 Precip: 0 Upwind BG 2.4 Downwind BG. 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
100	LW	1130	1145	77	5	8	9	
101	ME	1130	1145	54	5	8	9	
102	JM	1130	1145	111	5	8	9	
103	JM	1130	1145	60	5	8	9	
104	GL	1130	1145	47	5	8	9	
105	LW	1145	1200	34	5	7	10	
106	ME	1145	1200	26	5	7	10	
107	JM	1145	1200	39	5	7	10	
108	JM	1145	1200	51	5	7	10	
109	GL	1145	1200	72	5	7	10	
110	LW	1200	1215	54	6	8	10	
111	ME	1200	1215	70	6	8	10	
112	JM	1200	1215	62	6	8	10	
113	JM	1200	1215	39	6	8	10	
114	GL	1200	1215	41	6	8	10	
115	LW	1215	1230	60	5	8	10	
116	ME	1215	1230	128	5	8	10	
117	JM	1215	1230	69	5	8	10	
118	JM	1215	1230	42	5	8	10	
119	GL	1215	1230	36	5	8	10	
120	LW	1230	1245	24	5	8	10	
121	ME	1230	1245	57	5	8	10	
122	JM	1230	1245	68	5	8	10	
123	JM	1230	1245	43	5	8	10	
124	GL	1230	1245	47	5	8	10	
125	LW	1245	1300	31	4	6	10	
126	ME	1245	1300	19	4	6	10	
127	JM	1245	1300	34	4	6	10	
128	JM	1245	1300	26	4	6	10	
129	GL	1245	1300	59	4	6	10	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade — Jovani Medina
Miguel Estrada — Greg Lopez
Jerry Munoz

Cal. Gas Exp. Date 11-10-24

Date 1-26-24 Instrument Used TVA1000 Grid Spacing 25'

Temperature 54 Precip. 0 Upwind BG: 2.4 Downwind BG 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
130	LW	1300	1315	44	4	7	8	
131	ME	1300	1315	26	4	7	8	
132	JM	1300	1315	65	4	7	8	
133	JM	1300	1315	114	4	7	8	
134	GL	1300	1315	48	4	7	8	
135	LW	1315	1330	29	2	5	8	
136	ME	1315	1330	37	2	5	8	
137	JM	1315	1330	42	2	5	8	
138	JM	1315	1330	31	2	5	8	
139	GL	1315	1330	20	2	5	8	
140	LW	1330	1345	46	2	5	9	
141	ME	1330	1345	32	2	5	9	
142	JM	1330	1345	76	2	5	9	
143	JM	1330	1345	45	2	5	9	
144	GL	1330	1345	32	2	5	9	
145	LW	1345	1400	51	1	7	9	
146	ME	1345	1400	30	1	7	9	
147	JM	1345	1400	28	1	7	9	
148	JM	1345	1400	26	1	7	9	
149	GL	1345	1400	74	1	7	9	
150	LW	1400	1415	148	5	7	8	
151	ME	1400	1415	92	5	7	8	
152	JM	1400	1415	47	5	7	8	
153	JM	1400	1415	31	5	7	8	
154	GL	1400	1415	29	5	7	8	
155	LW	1415	1430	57	5	8	9	
156	ME	1415	1430	72	5	8	9	
157	JM	1415	1430	89	5	8	9	
158	JM	1415	1430	66	5	8	9	
159	GL	1415	1430	40	5	8	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 5 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leishwana | Jovani Medina
Miguel Elfacht | Greg Lopez
Jerry Munoz

Cal. Gas Exp. Date 11-10-24

Date 1-26-24 Instrument Used TVA1000 Grid Spacing 25'

Temperature 56 Precip: 0 Upwind BG 2.4 Downwind BG 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
160	LW	1430	1445	31	5	8	9	
161	ME	1430	1445	25	5	8	9	
162	JM	1430	1445	38	5	8	9	
163	JM	1430	1445	55	5	8	9	
164	GL	1430	1445	72	5	8	9	
165	LW	1445	1500	104	5	7	10	
166	ME	1445	1500	68	5	7	10	
167	JM	1445	1500	91	5	7	10	
168	JM	1445	1500	40	5	7	10	
169	GL	1445	1500	28	5	7	10	
170	LW	1500	1515	75	7	9	11	
171	ME	1500	1515	61	7	9	11	
172	JM	1500	1515	45	7	9	11	
173	JM	1500	1515	82	7	9	11	
174	GL	1500	1515	55	7	9	11	
175	LW	1515	1530	49	7	9	10	
176	ME	1515	1530	21	7	9	10	
177	JM	1515	1530	35	7	9	10	
178	JM	1515	1530	64	7	9	10	
179	GL	1515	1530	98	7	9	10	
180	LW	1530	1545	49	6	9	10	
181	ME	1530	1545	35	6	9	10	
182	JM	1530	1545	27	6	9	10	
183	JM	1530	1545	34	6	9	10	
184	GL	1530	1545	20	6	9	10	
185	LW	1545	1600	26	5	10	11	
186	ME	1545	1600	45	5	10	11	
187	JM	1545	1600	71	5	10	11	
188	JM	1545	1600	50	5	10	11	
185	GL	1545	1600	38	5	10	11	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leish Ward · Jovani Medina
Miguel Estrada · Greg Lopez
Jerry Munoz

Cal Gas Exp Date 11-10-24

Date 1-26-24 Instrument Used TVA1000 Grid Spacing 25'

Temperature 60 Precip: 0 Upwind BG: 2.4 Downwind BG 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
190	LW	1600	1615	18	3	5	10	
191	ME	1600	1615	24	3	5	10	
192	JM	1600	1615	65	3	5	10	
193	JM	1600	1615	31	3	5	10	
194	GL	1600	1615	48	3	5	10	
195	LW	1615	1630	36	4	6	10	
196	ME	1615	1630	23	4	6	10	
197	JM	1615	1630	27	4	6	10	
198	JM	1615	1630	41	4	6	10	
199	GL	1615	1630	30	4	6	10	
200	LW	1630	1645	57	4	7	10	
201	ME	1630	1645	28	4	7	10	
202	JM	1630	1645	56	4	7	10	
203	JM	1630	1645	34	4	7	10	
204	GL	1630	1645	24	4	7	10	
205	LW	1645	1700	19	5	8	11	
206	ME	1645	1700	46	5	8	11	
207	JM	1645	1700	21	5	8	11	
208	JM	1645	1700	30	5	8	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 7 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leighvanr ______ ______ ______

______ ______ ______

______ ______ Cal. Gas Exp. Date ______

Date 1-26-24 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 15 POINT	
54								Active-face
59								
66								
72								
73								
78								
79								
90								
91								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: 2024
Quarter: 1st

IME Date	Time	IME Location ID	IME Concentration (ppm)
1-26-24	0519	P-2	18
	0528	P-4	12
	0531	P-5	22
	0522	P-6	16
	0524	P-7	31
	0540	P-8	24
	0530	P-1	17
	0615	P-9	15
	0532	RLLC0234	31
	0637	RLI00083	26
	0600	RLI00095	45
	0540	RLLC0235	31
	0611	RLLC0252	24
	0626	RLLC0236	1,000
	0628	RLLC0241	19
	0630	RLLC0253	27
	0610	P-10	31
	0531	RLLC0254	54
	0547	P-14	17
	0541	RLI00065	36
	0617	RLLC0242	22
	0639	P-16	26
	0627	P-17	14
	0610	RLI0117D	41
	0554	RLLC0179	30
	0617	RLLC0217	81
	0630	RLLC0227	37
	0520	P-47	31
	0651	RLI00140	45
	0525	RLI00142	62
	0638	RLLC0255	30
	0651	RLLC0256	19
	0628	P-19	15
	0551	RLI0116E	5,620
	0613	RLI00137	45
	0557	RLLC0237	51
	0640	RLLC0238	76
	0542	P-11	26
	0619	RLLC0239	34
	0651	RLI00141	20

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: 2024
Quarter: 1ST

IME Date	TIME	IME Location ID	IME Concentration (ppm)
1-26-24	0631	RLLC0246	37
	0538	RLI0124G	25
	0611	RLI00220	28
	0524	P-21	38
	0640	P-22	51
	0539	P-23	17
	0611	P-82	26
	0519	P-83	30
	0628	P-84	19
	0615	P-85	17
	0527	RLI0115E	36
	0619	RLLC0240	45
	0619	RLLC0243	22
	0655	RLLC0244	31
	0532	RLIHC101	39
	0612	RLIHC102	20
	0654	RLLC0230	17
	0610	RLLC0233	34
	0531	RLLC0245	51
	0540	P-86	35
	0528	P-48	22
	0540	P-43	61
	0540	P-36	32
	0618	P-38	48
	0638	RLI00017	42
	0528	RLI00016	47
	0547	RLLC0231	38
	0620	RLI0114A	24
	0618	RLLC0219	40
	0654	RLLC0215	61
	0537	RLIHC107	38
	0645	P-49	77
	0532	RLI00018	25
	0630	RLI00019	17
	0555	RLLC0214	21
	0528	RLLC0222	48
	0521	RLLC0212	32
	0634	P-50	25
	0545	RLLC0232	27
	0540	RLLC0196	51

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: 2024

Quarter: 1ST

IME Date	Time	IME Location ID	IME Concentration (ppm)
1-26-24	0539	RLLC0229	25
	0612	RLHC0153	40
	0541	RLLC0200	36
	0539	RLLC0201	25
	0534	RLLC0223	43
	0551	RLLC0224	24
	0611	RLLC0226	26
	0528	RLLC0183	39
	0527	P-51	48
	0617	RLLC0184	48
	0611	RLI00008	39
	0632	RLLC0195	20
	0538	RLLC0199	18
	0542	RLLC0225	26
	0528	P-52	76
	0614	RLI0127B	44
	0530	RLI0128A	51
	0655	RLLC0194	49
	0620	RLLC0198	30
	0634	RLHC0156	27
	0519	P-13	21
	0532	RLLC0247	39
	0630	RLLC0248	26
	0549	P-53	49
	0547	RLLC0251	41
	0635	RLI00134	30
	0631	RLI00135	32
	0537	RLLC0221	20
	0611	RLLC0228	15
	0549	P-12	68
	0520	RLLC0176	28
	0636	P-55	35
	0641	RLI0103C	79
	0531	RLLC0190	42
	0558	RLI0106C	85
	0557	RLLC0202	39
	0618	P-54	41
	0530	RLLC0250	24
	0547	RLI0105C	17
	0634	RLI0107C	28

REDWOOD LANDFILL
PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: 2024
Quarter: 1ST QTR

IME Date	TIME	IME Location ID	IME Concentration (ppm)
1-26-24	0611	RLLC0203	61
	0524	RLLC0204	44
	0613	RLI0130E	38
	0517	P-56	64
	0520	RLI00132	25
	0548	RLLC0249	31
	0610	RLLC0186	22
	0618	RLLC0209	27
	0555	RLLC0205	45
	0607	RLLC0210	42
	0630	RLLC0188	36
	0539	RLI0126C	24
	0652	RLI0129E	31
	0617	RLLC0206	40
	0611	P-61	87
	0635	RLI00035	35
	0547	RLI0102C	27
	0614	P-81	18
	0551	RLI00045	17
	0530	RLI00047	24
	0641	P-74	41
	0614	RLI00034	35
	0519	RLI00003	20
	0548	P-76	39
	0612	P-77	87
	0541	P-78	26
	0548	RLI0100C	38
	0611	P-75	44
	0528	P-79	51
	0624	RLLC0192	77
	0650	P-44	38
	0554	P-45	26
	0612	P-73	72

REDWOOD LANDFILL

PENETRATION SCAN RESULTS, EXCEEDANCES, AND CORRECTIVE ACTIONS

Year: 2024

Quarter: 1st

IME Date	TIME	IME Location ID	IME Concentration (ppm)
1-26-24	0541	RLLC0257	40
	0540	RLLC0258	26
	0615	RLLC0259	15
	0602	RLLC0260	24
	0617	RLLC0261	21
	0539	RLLC0262	26
	0547	RLLC0263	15
	0650	RLLC0264	29
	0618	RLLC0265	13
	0547	RLLC0266	24
	0630	RLLC0267	30
	0542	RLLC0268	41
	0530	RLLC0269	29
	0617	RLLC0270	47
	0645	RLLC0271	30
	0548	RLLC0272	24
	0634	RLLC0273	68
	0531	RLLC0274	54
	0610	RLI00275	37
	0624	RLI00276	1,438
	0649	RLI00277	64
	0540	RLI00278	94
	0605	RLI00279	107
	0632	RLI00280	38
	0602	RLI00281	65
	0531	RLI00282	32
	0520	RLI00283	17
	0528	RLI00284	24
	0525	RLI00285	22
	0554	RLI00286	29
	0650	RLI00287	87
	0618	RLLC0177	60
	0547	RLLC0180	54
	0619	RLLC0181	39
	0558	RLLC0185	25
	0630	RLLC0187	66
	0520	RLLC0189	42
	0527	RLLC0191	51
	0554	RLLC0193	60
	0639	W220	1,530

Attachment B

Integrated Surface Emission Monitoring Event Records

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

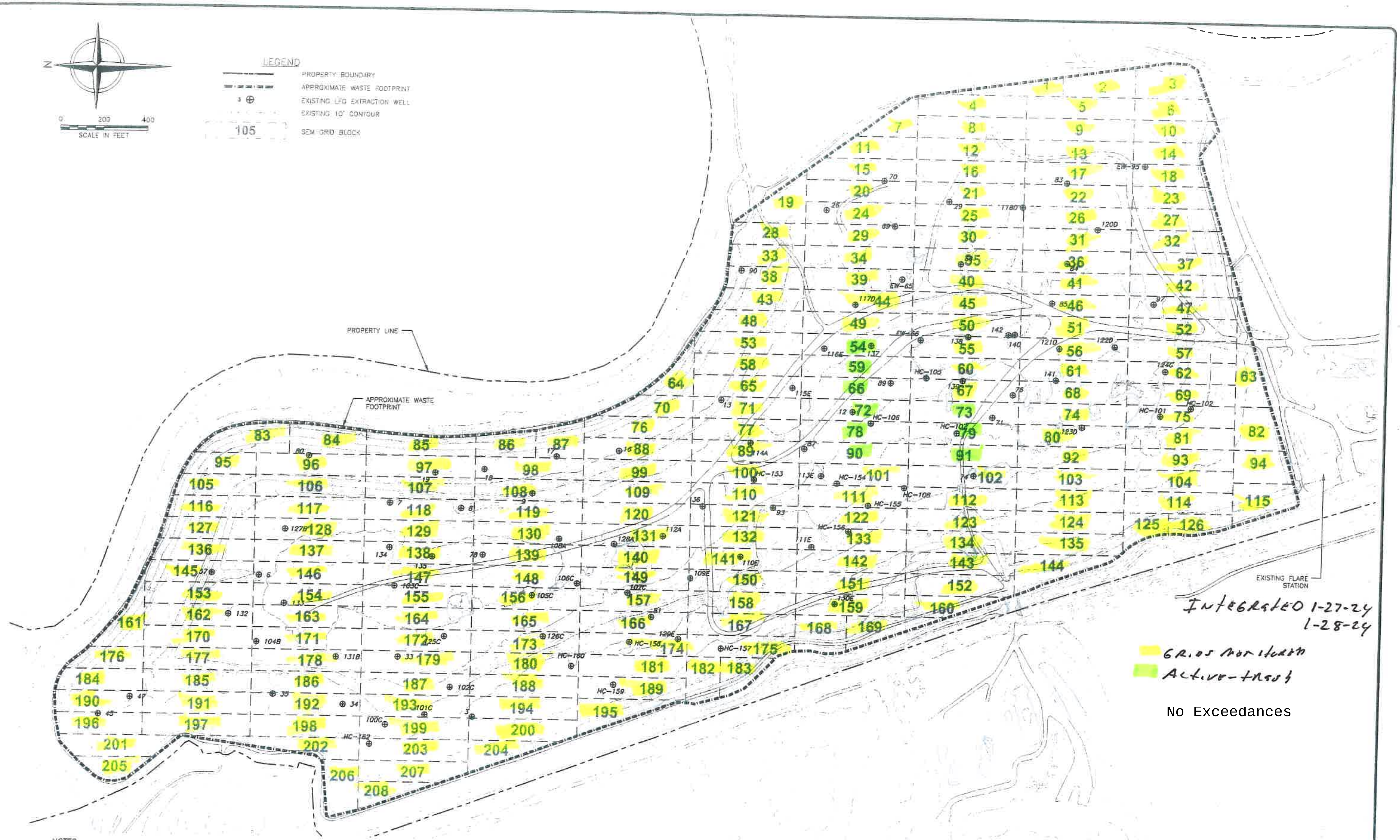
2024 QUARTER: 1

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 Detected									



INTEGRATED 1-27-24
1-28-24

🟨	GRIDS MONITORED
🟩	Active-tested

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: LEISH WADE; MIGUEL ESTRADA; JERRY MUNOZ; JOVANI MEDINA; GREG LOPEZ

Cal. Gas Exp. Date: 11-10-24

Date: 1-27-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 40 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	0545	0610	4.10	3	4	2	
2	ME	0545	0610	5.16	3	4	2	
3	JM	0545	0610	4.98	3	4	2	
4	JM	0545	0610	8.71	3	4	2	
5	GL	0545	0610	8.13	3	4	2	
6	LW	0610	0635	6.32	3	5	1	
7	ME	0610	0635	10.14	3	5	1	
8	JM	0610	0635	12.24	3	5	1	
9	JM	0610	0635	9.75	3	5	1	
10	GL	0610	0635	7.11	3	5	1	
11	LW	0635	0700	12.46	2	3	16	
12	ME	0635	0700	15.90	2	3	16	
13	JM	0635	0700	10.27	2	3	16	
14	JM	0635	0700	6.45	2	3	16	
15	GL	0635	0700	16.38	2	3	16	
16	LW	0700	0725	20.44	3	5	2	
17	ME	0700	0725	8.07	3	5	2	
18	JM	0700	0725	6.92	3	5	2	
19	JM	0700	0725	12.26	3	5	2	
20	GL	0700	0725	21.40	3	5	2	
21	LW	0725	0750	18.77	2	4	16	
22	ME	0725	0750	9.45	2	4	16	
23	JM	0725	0750	7.18	2	4	16	
24	JM	0725	0750	15.66	2	4	16	
25	GL	0725	0750	17.90	2	4	16	
26	LW	0750	0815	8.64	2	4	2	
27	ME	0750	0815	6.10	2	4	2	
28	JM	0750	0815	8.45	2	4	2	
29	JM	0750	0815	11.22	2	4	2	
30	GL	0750	0815	14.51	2	4	2	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WOOD; JUVENI MEDINA; MIGUEL ESTRADA; GREG LOPEZ; JERRY MUNOZ

Cal. Gas Exp. Date: 11-10-24

Date: 1-27-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 50 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
31	LW	0815	0840	7.20	2	4	2	
32	ME	0815	0840	6.51	2	4	2	
33	JM	0815	0840	7.48	2	4	2	
34	JM	0815	0840	14.51	2	4	2	
35	GL	0815	0840	9.60	2	4	2	
36	LW	0840	0905	8.35	2	4	2	
37	ME	0840	0905	6.28	2	3	2	
38	JM	0840	0905	11.90	2	3	2	
39	JM	0840	0905	20.75	2	3	2	
40	GL	0840	0905	15.57	2	3	2	
41	LW	0905	0930	6.40	4	7	6	
42	ME	0905	0930	5.32	4	7	6	
43	JM	0905	0930	7.98	4	7	6	
44	JM	0905	0930	12.66	4	7	6	
45	GL	0905	0930	9.54	4	7	6	
46	LW	0930	0955	7.26	5	8	6	
47	ME	0930	0955	5.28	5	8	6	
48	JM	0930	0955	9.64	5	8	6	
49	JM	0930	0955	10.58	5	8	6	
50	GL	0930	0955	12.27	5	8	6	
51	LW	0955	1020	8.65	6	8	6	
52	ME	0955	1020	6.03	6	8	6	
53	JM	0955	1020	8.66	6	8	6	
55	JM	0955	1020	9.75	6	8	6	
56	GL	0955	1020	8.31	6	8	6	
57	LW	1020	1045	7.28	5	7	6	
58	ME	1020	1045	8.46	5	7	6	
60	JM	1020	1045	6.97	5	7	6	
61	JM	1020	1045	7.02	5	7	6	
62	GL	1020	1045	7.14	5	7	6	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade | Juvenci Medina
Mighel Estrada | Greg Lopez
Jerry Munoz

Cal. Gas Exp. Date: 11-10-24

Date: 1-27-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 50 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
63	LW	1045	1110	5.47	5	6	6	
64	ME	1045	1110	7.28	5	6	6	
65	JM	1045	1110	16.57	5	6	6	
67	JM	1045	1110	7.24	5	6	6	
68	GL	1045	1110	6.81	5	6	6	
69	LW	1110	1135	6.30	5	7	7	
70	ME	1110	1135	6.92	5	7	7	
71	JM	1110	1135	9.14	5	7	7	
74	JM	1110	1135	7.11	5	7	7	
75	GL	1110	1135	6.84	5	7	7	
76	LW	1135	1200	8.45	5	7	7	
77	ME	1135	1200	13.56	5	7	7	
80	JM	1135	1200	11.92	5	7	7	
81	JM	1135	1200	8.45	5	7	7	
82	GL	1135	1200	9.70	5	7	7	
83	LW	1200	1225	6.54	5	7	7	
84	ME	1200	1225	5.91	5	7	7	
85	JM	1200	1225	6.12	6	7	7	
86	JM	1200	1225	5.48	5	7	7	
87	GL	1200	1225	6.30	5	7	7	
88	LW	1225	1250	9.57	5	7	7	
89	ME	1225	1250	11.64	5	7	7	
92	JM	1225	1250	8.07	5	7	7	
93	JM	1225	1250	7.55	5	7	7	
94	GL	1225	1250	6.28	5	7	7	
95	LW	1250	1315	6.81	5	6	6	
96	ME	1250	1315	7.55	5	6	6	
97	JM	1250	1315	6.30	5	6	6	
98	JM	1250	1315	8.27	5	6	6	
99	GL	1250	1315	6.11	5	6	6	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Luis Lwardt, Juveni Medina, Miguel Estrada, Greg Lopez, Jerry Minor

Cal. Gas Exp. Date: 11-10-24

Date: 1-27-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 54 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
100	LW	1315	1340	9.60	4	7	8	
101	ME	1315	1340	11.45	4	7	8	
102	JM	1315	1340	13.77	4	7	8	
103	JM	1315	1340	9.28	4	7	8	
104	GL	1315	1340	7.16	4	7	8	
105	LW	1340	1405	6.75	5	7	8	
106	JM	1340	1405	6.50	5	7	8	
107	JM	1340	1405	6.81	5	7	8	
108	ME	1340	1405	7.34	5	7	8	
109	GL	1340	1405	9.27	5	7	8	
110	LW	1405	1430	6.40	5	8	8	
111	ME	1405	1430	8.21	5	8	8	
112	JM	1405	1430	11.45	5	8	8	
113	JM	1405	1430	9.68	5	8	8	
114	GL	1405	1430	8.39	5	6	6	
115	LW	1430	1455	7.33	5	7	8	
116	ME	1430	1455	6.51	5	7	8	
117	JM	1430	1455	6.19	5	7	8	
118	JM	1430	1455	6.47	5	7	8	
119	GL	1430	1455	8.61	5	7	6	
120	LW	1455	1520	9.20	5	7	7	
121	ME	1455	1520	9.84	5	7	7	
122	JM	1455	1520	11.16	5	7	7	
123	JM	1455	1520	8.78	5	7	7	
124	GL	1455	1520	7.46	5	7	7	
125	LW	1520	1545	6.51	3	5	9	
126	ME	1520	1545	6.02	3	5	9	
127	JM	1520	1545	5.49	3	5	9	
128	JM	1520	1545	6.37	3	5	9	
129	GL	1520	1545	6.11	3	5	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE JOVANI MUNOZ
MIGUEL ESCOBAR GREG LOPEZ
JERRY MUNOZ

Cal. Gas Exp. Date: 11-10-24

Date: 1-27-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 60 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
130	LW	1545	1610	8.44	1	2	10	
131	ME	1545	1610	6.51	1	2	10	
132	JM	1545	1610	6.98	1	2	10	
133	JM	1545	1610	9.75	1	2	10	
134	GL	1545	1610	8.22	1	2	10	
135	LW	1610	1635	8.07	1	3	10	
136	ME	1610	1635	7.20	1	3	10	
137	JM	1610	1635	6.44	1	3	10	
138	JM	1610	1635	6.10	1	3	10	
139	GL	1610	1635	6.07	1	3	10	
140	LW	1635	1700	8.29	5	7	12	
141	ME	1635	1700	10.20	5	7	12	
142	JM	1635	1700	9.56	5	7	12	
143	JM	1635	1700	7.11	5	7	12	
144	GL	1635	1700	6.41	5	7	12	
145	LW	1700	1725	6.25	4	6	12	
146	ME	1700	1725	7.81	4	6	12	
147	JM	1700	1725	9.55	4	6	12	
148	JM	1700	1725	10.30	4	6	12	
145	GL	1700	1725	9.65	4	6	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 5 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGHWADE

Cal. Gas Exp. Date: ______

Date: 1-27-24 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-TRASH
59								
66								
72								
73								
78								
79								
90								
91								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Lois Hwarr — Jovani Munoz
Miguel Estrada — Greg Lopez
Jerry Lopez

Cal. Gas Exp. Date: 11-10-24

Date: 1-28-24 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 40 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
150	LW	0630	0655	12.17	3	4	16	
151	ME	0630	0655	14.03	3	4	16	
152	JL	0630	0655	9.27	3	4	16	
153	JM	0630	0655	6.55	3	4	16	
154	GL	0630	0655	6.81	3	4	16	
155	LW	0655	0720	5.47	3	4	16	
156	ME	0655	0720	6.30	3	4	16	
157	JM	0655	0720	9.68	3	4	16	
158	JM	0655	0720	11.45	3	4	16	
159	GL	0655	0720	8.13	3	4	16	
160	LW	0720	0745	7.20	4	5	1	
161	ME	0720	0745	5.18	4	5	1	
162	JL	0720	0745	6.30	4	5	1	
163	JM	0720	0745	6.55	4	5	1	
164	GL	0720	0745	8.35	4	5	1	
165	LW	0745	0810	9.77	3	4	2	
166	ME	0745	0810	10.35	3	4	2	
167	JM	0745	0810	8.65	3	4	2	
168	JM	0745	0810	7.38	3	4	2	
169	GL	0745	0810	6.57	3	4	2	
170	LW	0810	0835	7.45	2	3	16	
171	ME	0810	0825	6.90	2	3	16	
172	JL	0810	0835	9.35	2	3	16	
173	JM	0810	0825	8.14	2	3	16	
174	GL	0810	0835	10.27	2	3	16	
175	LW	0835	0900	8.15	3	4	16	
176	ME	0835	0900	6.92	3	4	16	
177	JL	0835	0900	6.47	3	4	16	
178	JM	0835	0900	8.30	3	4	16	
179	GL	0835	0900	11.44	3	4	16	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Luis Wade, Miguel Estrada, Jerry Munoz, Jovani Medina, Gabel Lopez

Cal. Gas Exp. Date: 11-10-24

Date: 1-28-24 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 41 Precip: 0 Upwind BG: 2.4 Downwind BG: 2.8

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
180	LW	0900	0925	9.74	2	3	16	
181	ME	0900	0925	6.50	2	3	16	
182	JM	0900	0925	5.47	2	3	16	
183	JM	0900	0925	6.11	2	3	16	
184	GL	0900	0925	6.92	2	3	16	
185	LW	0925	0950	7.45	5	7	6	
186	ME	0925	0950	7.12	5	7	6	
187	JM	0925	0950	9.54	5	7	6	
188	JM	0925	0950	7.38	5	7	6	
189	GL	0925	0950	6.55	5	7	6	
190	LW	0950	1015	5.28	4	6	8	
191	ME	0950	1015	8.39	4	6	8	
192	JM	0950	1015	10.71	4	6	8	
193	JM	0950	1015	9.50	4	6	8	
194	GL	0950	1015	9.68	4	6	8	
195	LW	1015	1040	7.34	4	6	8	
196	ME	1015	1040	5.20	4	6	8	
197	JM	1015	1040	6.17	4	6	8	
198	JM	1015	1040	6.84	4	6	8	
199	GL	1015	1040	8.13	4	6	8	
200	LW	1040	1105	7.91	4	5	8	
201	ME	1040	1105	6.47	4	5	8	
202	JM	1040	1105	6.80	4	5	8	
203	JM	1040	1105	6.57	4	5	8	
204	GL	1040	1105	5.28	4	5	8	
205	LW	1105	1130	6.03	4	5	8	
206	ME	1105	1130	5.40	4	5	8	
207	JM	1105	1130	6.21	4	5	8	
208	JM	1105	1130	5.46	4	5	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

Attachment C

Component Leak Monitoring Event Records

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

2024 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

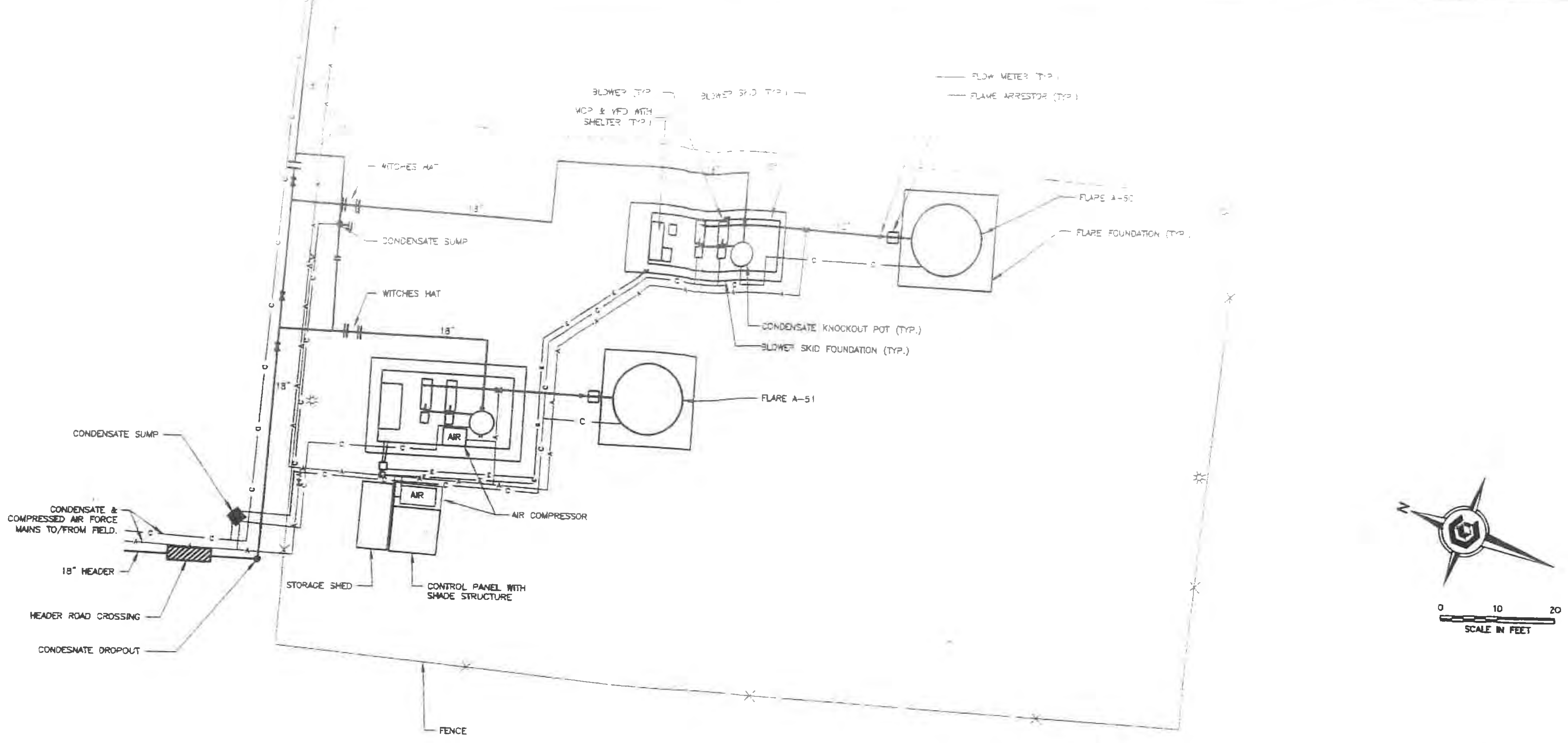
2024 QUARTER: 1

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								



1-26-24

No Exceedances

LANDFILL ACCESS ROAD

LEGEND

———	EXISTING PIPING
———‖	EXISTING FLANGE
☼	LIGHT SYMBOL
———	EXISTING PIPING
———‖	EXISTING BLIND FLANGE
⋈	EXISTING VALVE
—— C ——	2" HDPE SDR-7 CONDENSATE FORCE MAIN
—— A ——	2" HDPE SDR-9 COMPRESSED AIR FORCE MAIN
▨	ROAD CROSSING
◆	CONDENSATE SUMP

DRAFT

WASTE MANAGEMENT

PAUL ... STOUT P.E.

CORNERSTONE
Environmental Group, LLC

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

LFG FLARE AND GCCS AS-BUILT

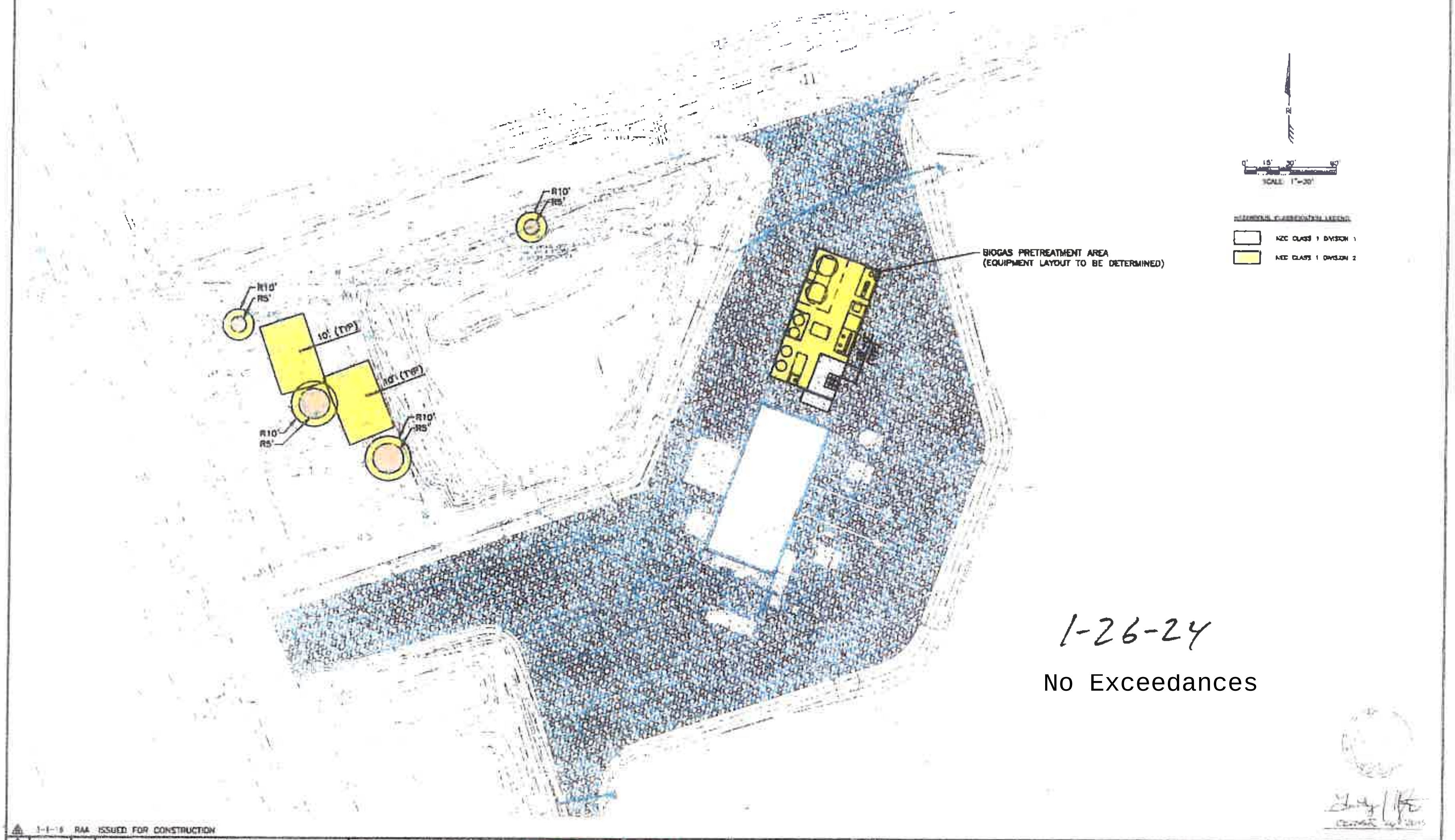
SHEET NO.
1

PROJECT NO.

REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948



1-26-24

No Exceedances

REV	DATE	BY	DESCRIPTION
7	1-1-16	RAA	ISSUED FOR CONSTRUCTION
6	10-26-15	RAA	BUILDING PERMIT APPLICATION SET
5	10-2-15	RAA	95% DESIGN RESUBMITTAL
4	8-7-15	RAA	ISSUED FOR GAS TREATMENT SKID BID
3	6-12-15	RAA	95% DESIGN SUBMITTAL
2	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
WASTE MANAGEMENT RENEWABLE ENERGY
LANDFILL TO GAS ENERGY PROJECT
REDWOOD LANDFILL NOVATO, CA

DESCRIPTION
PROPOSED CONDITIONS AND
HAZARDOUS AREA CLASSIFICATIONS

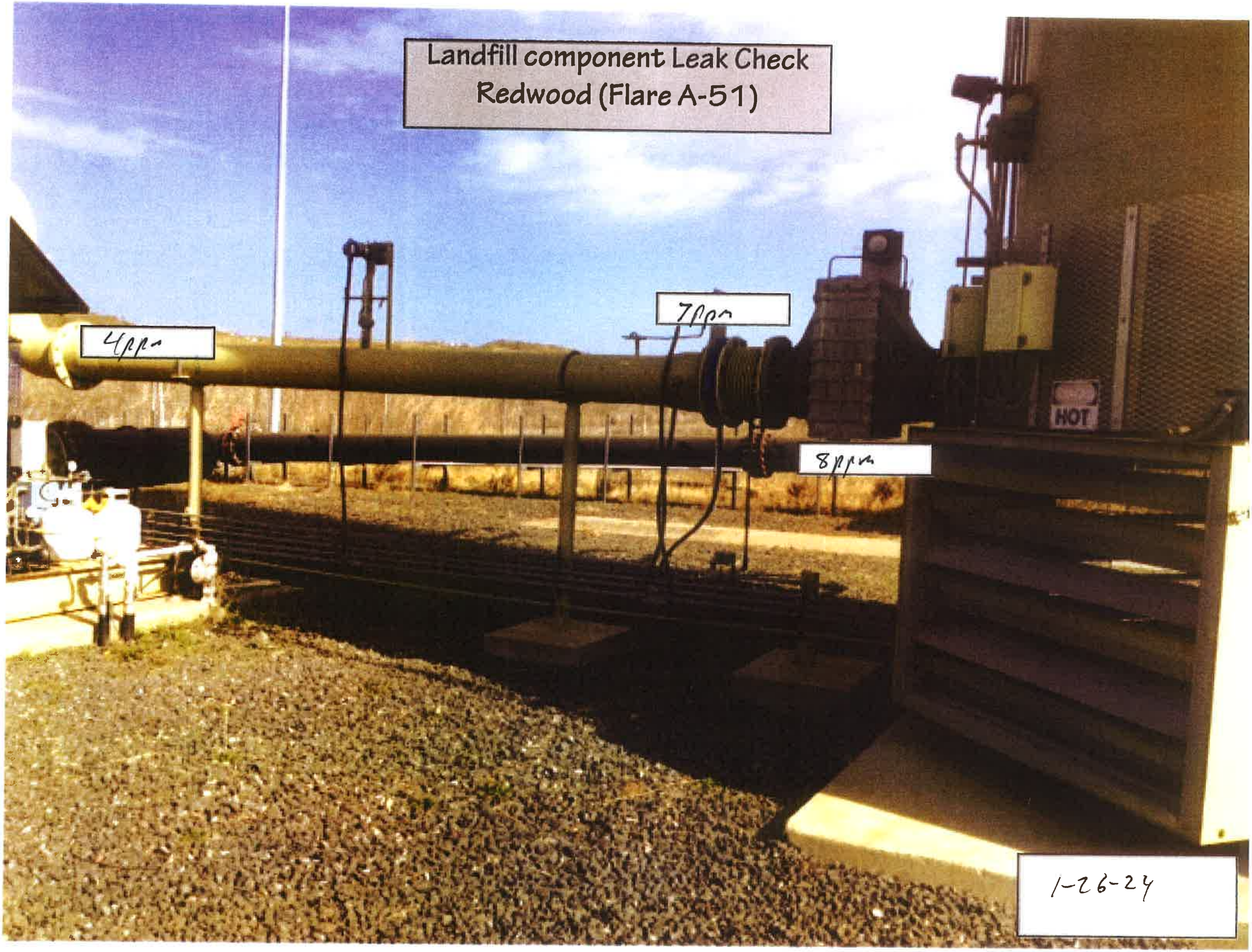
PROJECT NO.
1003.005.001

SHEET:
G-5

7/25/2017

Landfill component Leak Check
Redwood (Flare A-51)

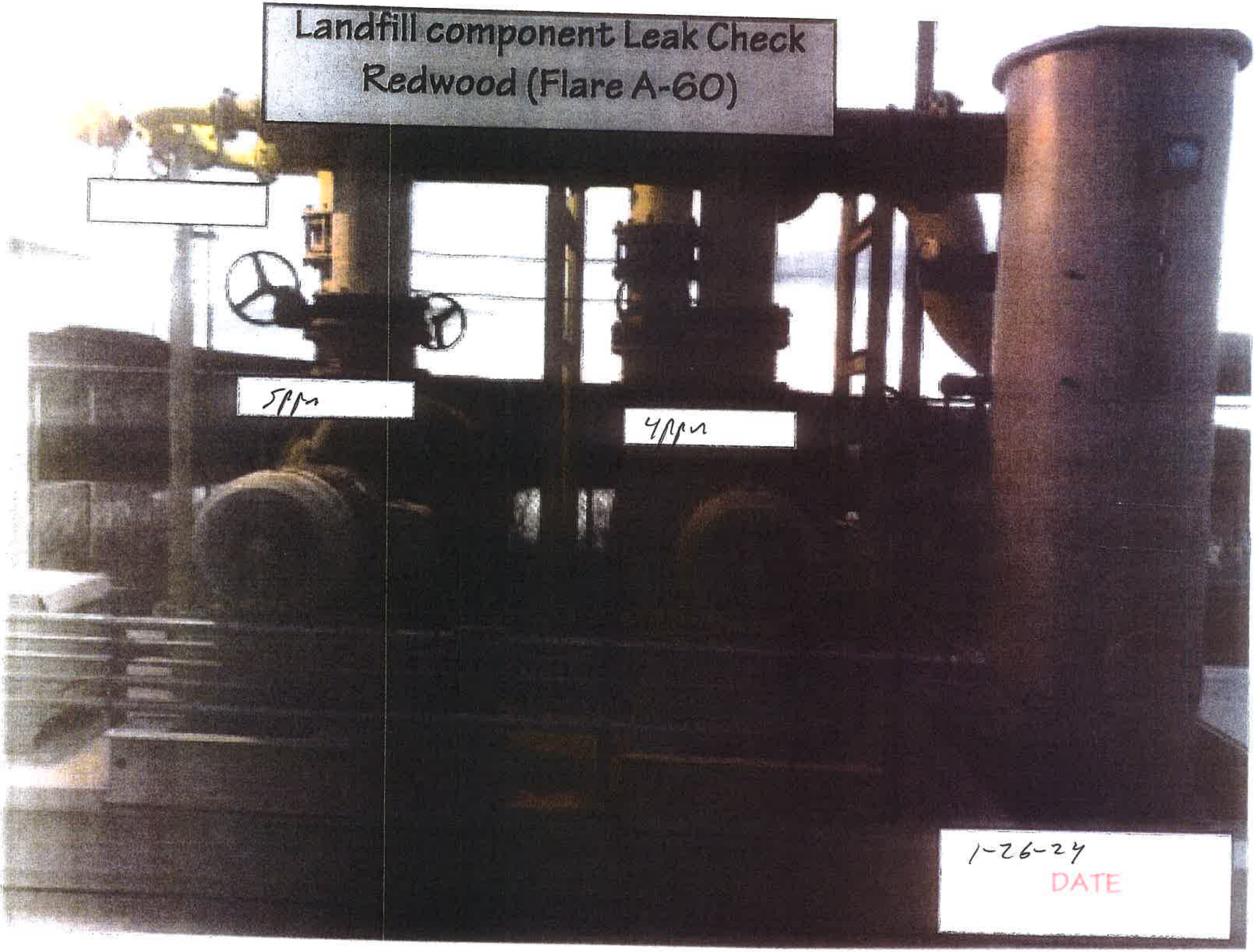
1-26-24



Landfill component Leak Check
Redwood (Flare A-51)

1-26-24

Landfill component Leak Check
Redwood (Flare A-60)

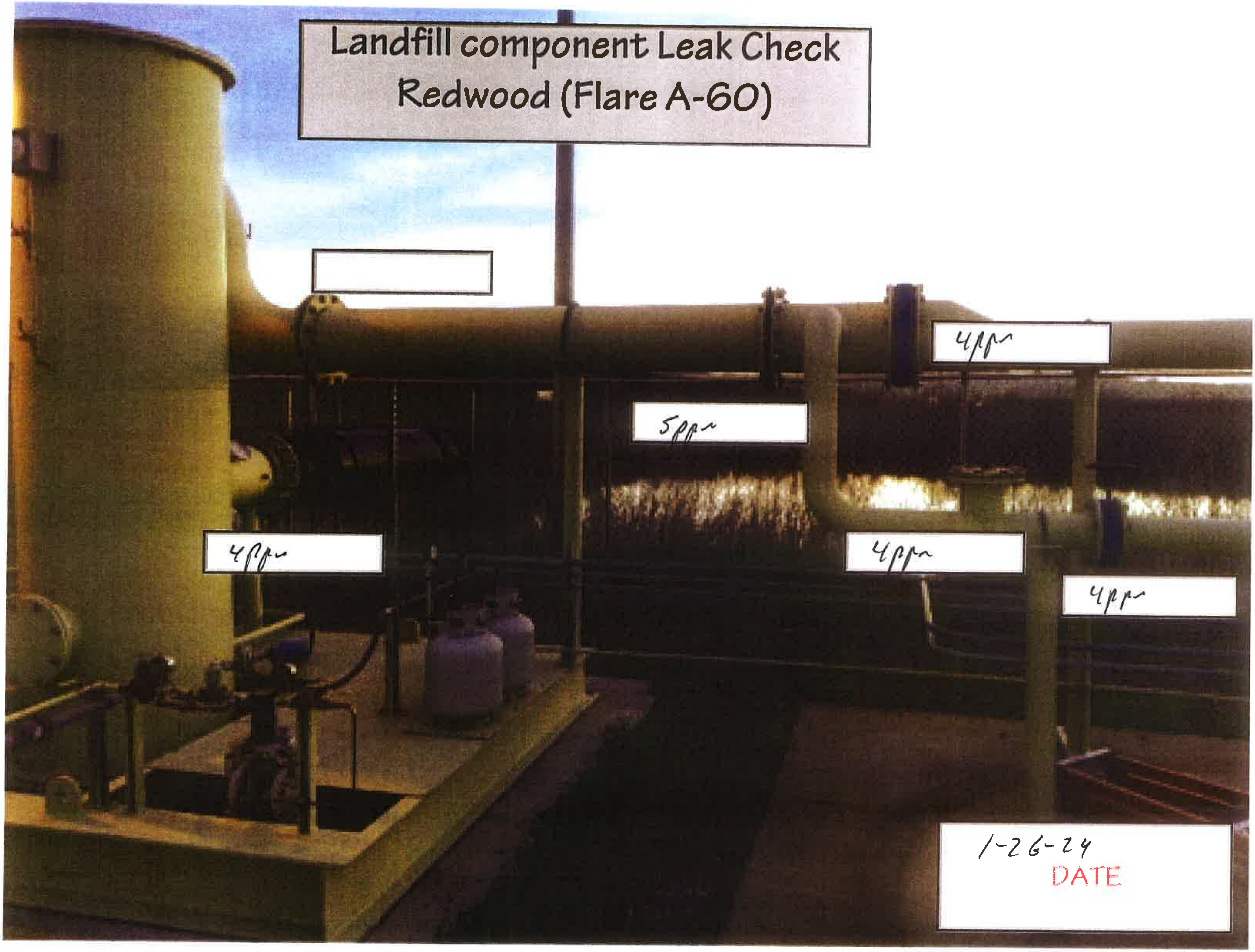


5ppm

4ppm

1-26-24
DATE

Landfill component Leak Check
Redwood (Flare A-60)



4ppm

5ppm

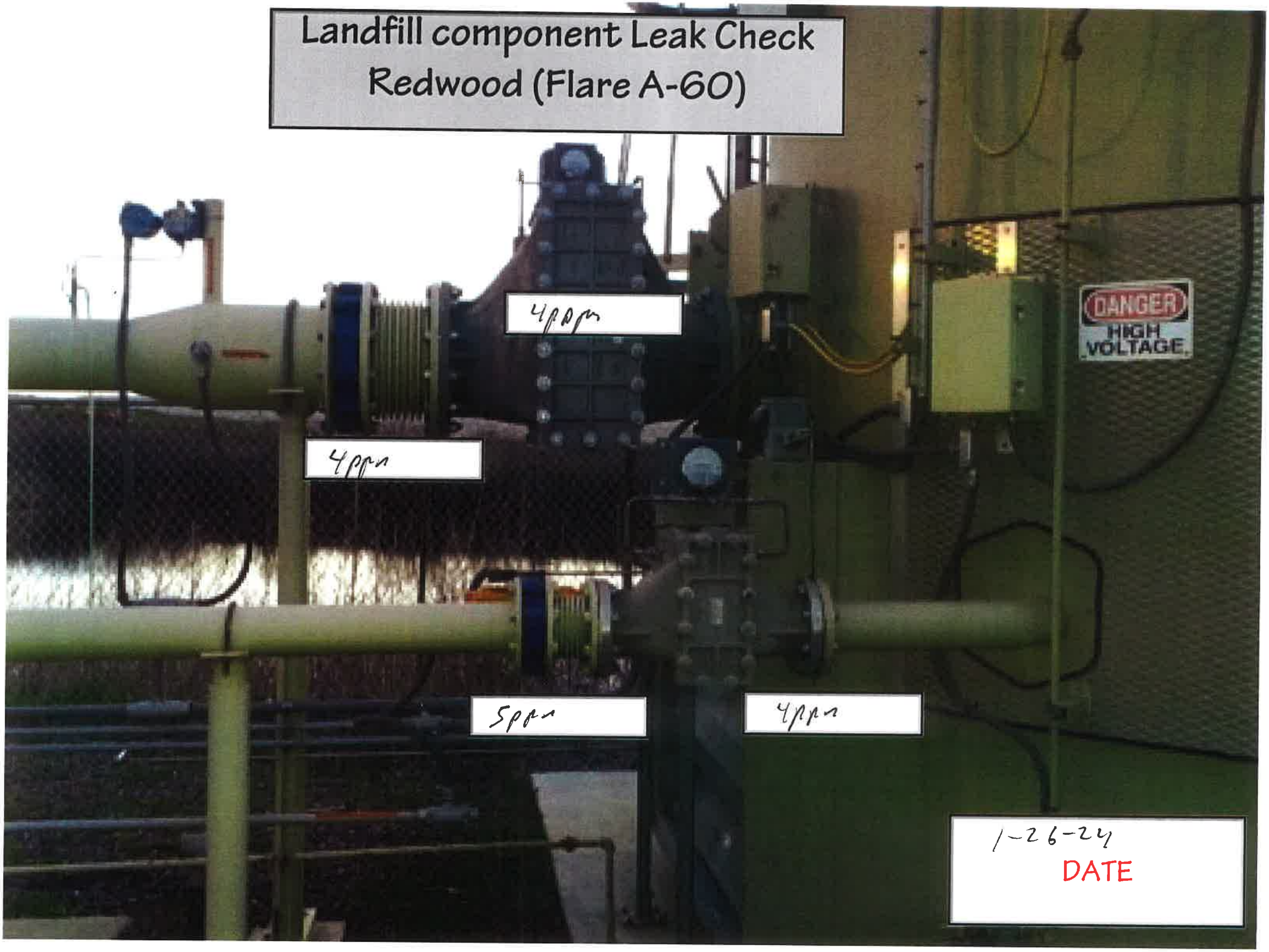
4ppm

4ppm

4ppm

1-26-24
DATE

Landfill component Leak Check
Redwood (Flare A-60)



4ppm

4ppm

5ppm

4ppm

1-26-24
DATE

Attachment D

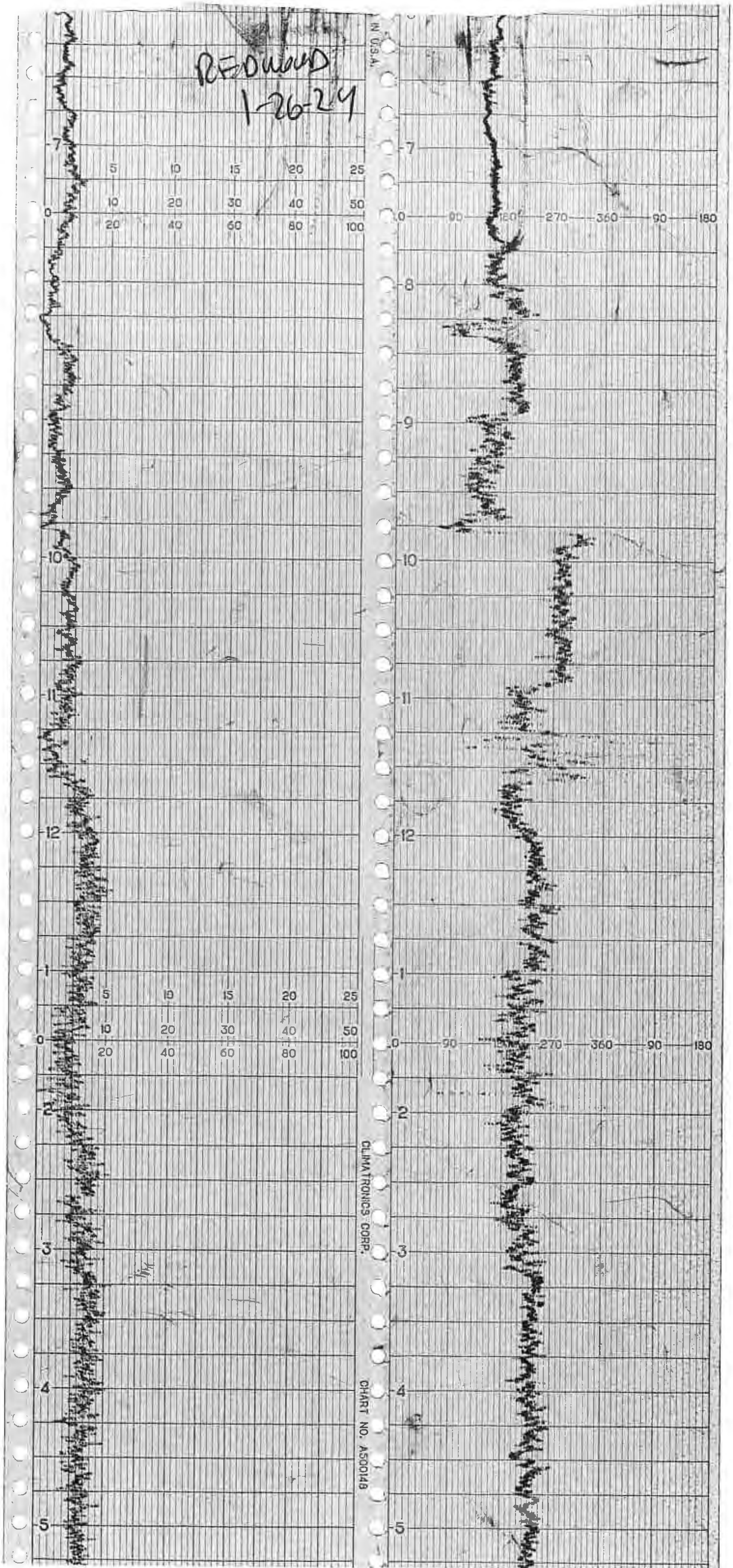
Weather Station Data

RES
Environmental Inc.

16-POINT WIND DIRECTION INDEX

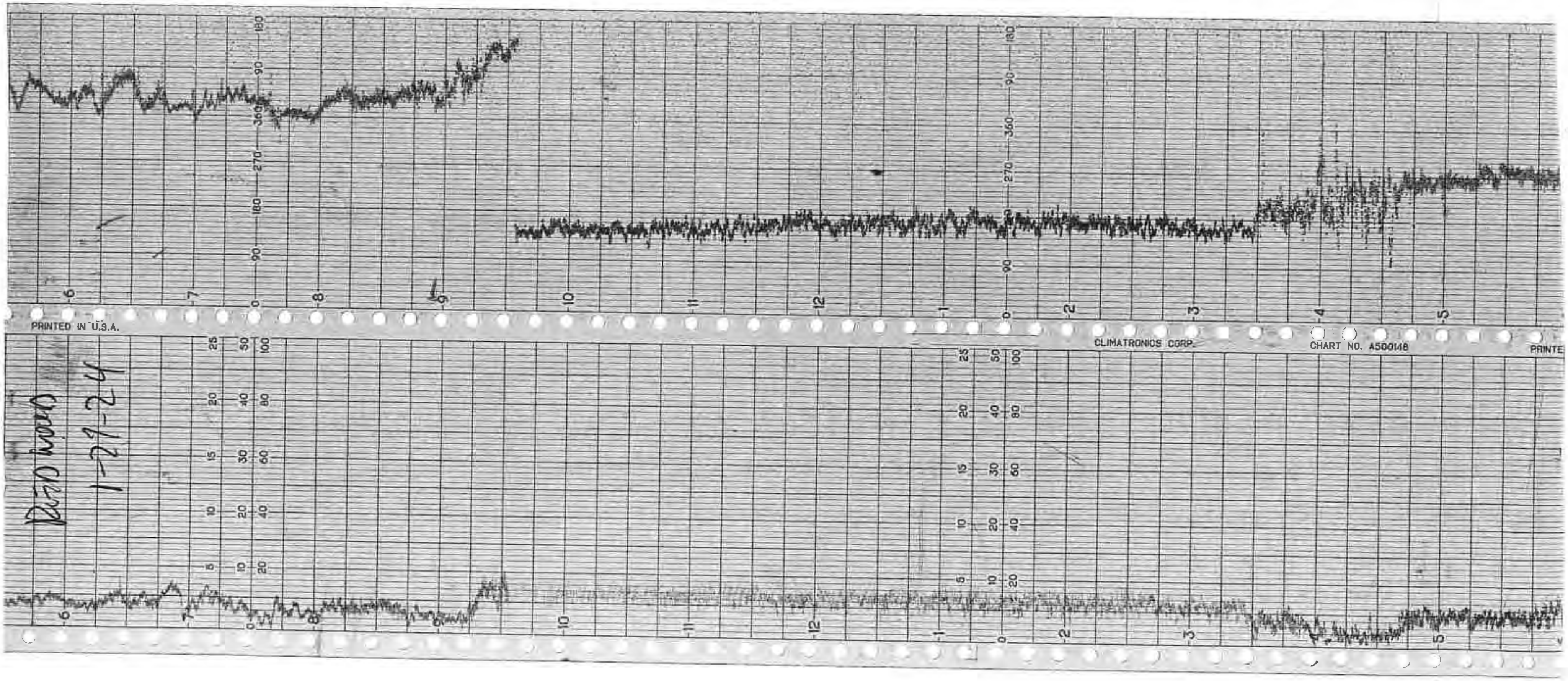
NO	DIRECTION	DEGREES		
		FROM	CENTER	TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (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

WIND SPEED & DIRECTION CHART ROLL



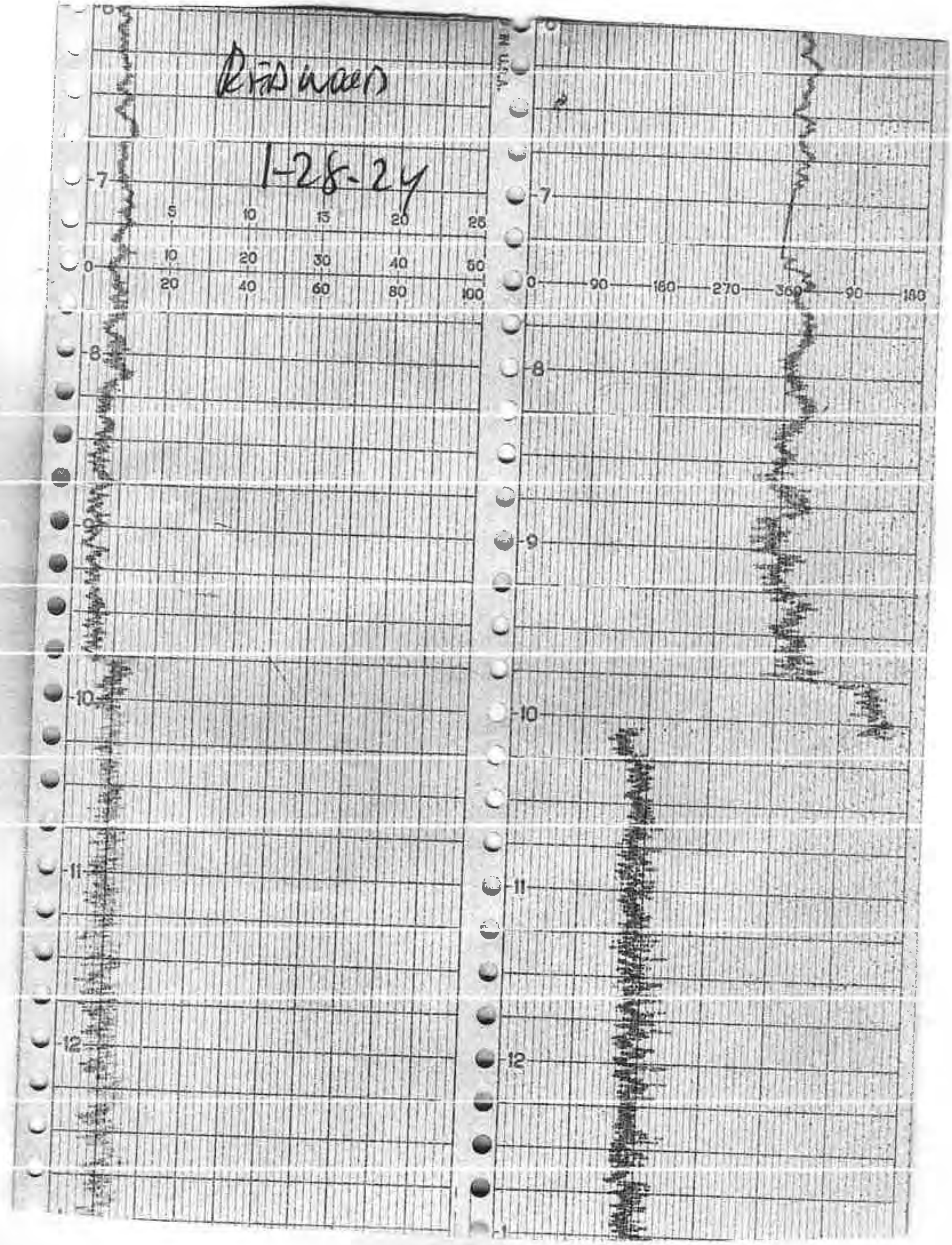
REDWOOD
1-26-24

WIND SPEED & DIRECTION CHART ROLL



Redwood
1-21-24

WIND SPEED & DIRECTION CHART ROLL



Ridgwood

1-28-24

Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 1/30/2024 Location: Redwood Landfill

Expiration Date (3 months): 4/30/2024

Time: 10:45am

Instrument Make: Micro FID Model: FID S/N: CZMF340

Measurement #1:

Stabilized Reading Using Calibration Gas: 499 ppm

90% of the Stabilized Reading: 441 ppm

Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 8 seconds (1)

Measurement #2:

Stabilized Reading Using Calibration Gas: 490.7 ppm

90% of the Stabilized Reading: 441.6 ppm

Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 8 seconds (2)

Measurement #3:

Stabilized Reading Using Calibration Gas: 491.1 ppm

90% of the Stabilized Reading: 442 ppm

Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 9 seconds (3)

Calculate Response Time:

$$\frac{(1) + (2) + (3)}{3} = $$ 8.3333 seconds (must be less than 30 seconds)

Performed By: Riley Lindberg

CALIBRATION PRECISION TEST RECORD

Landfill Name: Redwood Landfill Date: 1/30/2024

Expiration Date (3 months): 4/30/2024

Time: 10:45am hh:mm

Instrument Make: Micro FID Model: FID S/N: CZMF340

Calibration Gas Standard: 500 ppm

Measurement #1:

Meter Reading for Zero Air: 0.0 ppm (1)

Meter Reading for Calibration Gas: 490 ppm (2)

Measurement #2:

Meter Reading for Zero Air: 0.0 ppm (3)

Meter Reading for Calibration Gas: 490.7 ppm (4)

Measurement #3:

Meter Reading for Zero Air: 0.0 ppm (5)

Meter Reading for Calibration Gas: 491.1 ppm (6)

Calculate Precision:

$$\frac{[(500) - (2)] + [(500) - (4)] + |(500) - (6)|]}{3} \quad x \quad \frac{1}{500} \quad x \quad \frac{100}{1}$$

= 1.88 % (must be < than 10%)

Performed By: Riley Lindberg

Calibration Gas Certification Data and Expiration Date:

QED, Air, Ultra Zero THC <0.1 ppm Analytical Accuracy ± 2% Exp: 8/1/2024
Lot #4123701

QED, Methane 500ppm Analytical Accuracy ± 2% Exp: 1/1/2025 Lot #4202001

INCLUDE A COPY OF THE CALIBRATION GAS CERTIFICATION SHEET FROM GAS SUPPLIER/MANUFACTURER

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 1/30/2024

Time: 10:30 AM ________ PM

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

Calibration Procedure

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

Stable Reading = 500.6 ppm

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 1.2 ppm (a)
2. Downwind Reading (highest in 30 seconds): 1.1 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 1.15 ppm

Performed By: Riley Lindberg

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 2/23/2024

Time: 9:35 AM ________ PM

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

Calibration Procedure

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

Stable Reading = 500.9 ppm

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 1.2 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0.5 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.85 ppm

Performed By: Riley Lindberg

KIES

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE: Thermo
MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773
MONITORING DATE: 1-26-24 TIME: 0515

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	455 ppm	445 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	0.18 ppm	495 ppm	5
#2	0.15 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: Leighrnor Date/Time: 1-26-24 0515

RES
Environmental In

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE THERMO
MODEL TVA1000 EQUIPMENT # 11 SERIAL # 1036346772
MONITORING DATE: 1-26-24 TIME: 0515

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	2.8 ppm	2.6 ppm

Background Value = 2.6 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	452 ppm	5
#2	455 ppm	445 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	0.10 ppm	506 ppm	6
#2	0.08 ppm	455 ppm	1
#3	0.06 ppm	500 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By Miguel Estrada Date/Time: 1-26-24 0515

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE: THERMO
MODEL TVA1000 EQUIPMENT # 12 SERIAL # 1036246741
MONITORING DATE 1-26-24 TIME 0515

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: $\frac{(\text{Upwind} + \text{Downwind})}{2}$
2.4 ppm	2.8 ppm	2.6 ppm

Background Value = 2.6 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	7
#2	500 ppm	450 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	0.13 ppm	489 ppm	11
#2	0.08 ppm	500 ppm	0
#3	0.06 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.73 #DIV/0! Must be less than 10%

Performed By Jerry Munoz Date/Time 1-26-24 0515

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo
MODEL: TVA1000 EQUIPMENT #: 13 SERIAL # 1102746775
MONITORING DATE: 1-26-24 TIME 0515

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	2.8 ppm	2.6 ppm

Background Value = 2.6 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	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	0.09 ppm	497 ppm	3
#2	0.07 ppm	502 ppm	2
#3	0.14 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: Greg Lopez Date/Time 1-26-24 0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME Redwood INSTRUMENT MAKE: Thermo
MODEL TVA1000 EQUIPMENT # 16 SERIAL #: 1102746776
MONITORING DATE 1-26-24 TIME 0515

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	5
#2	498 ppm	448 ppm	5
#3	500 ppm	451 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	0.13 ppm	503 ppm	3
#2	0.10 ppm	498 ppm	2
#3	0.09 ppm	500 ppm	0
Calculate Precision	$\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.60 #DIV/0! Must be less than 10%

Performed By: Juvenal Medina Date/Time: 1-26-24 0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: thermo
MODEL: tvA 2000 EQUIPMENT #: 10 SERIAL #: 1036346773
MONITORING DATE: 1-27-24 TIME 0530

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	7
#2	24 ppm	21.6 ppm	7
#3	25 ppm	22.5 ppm	7
	Calculate Response Time **(1+2+3) / 3**		7 #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	0.09 ppm	23 ppm	2
#2	0.04 ppm	24 ppm	1
#3	0.04 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: LEISHMAN Date/Time: 1-27-24 – 0530

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346772

MONITORING DATE: 1-27-24 TIME: 0530

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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 $\frac{(1+2+3)}{3}$			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	0.16 ppm	24 ppm	1
#2	0.11 ppm	24 ppm	1
#3	0.05 ppm	25 ppm	0
Calculate Precision $\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$			2.6 #DIV/0! Must be less than 10%

Performed By: Miguel Esparza Date/Time 1-27-24 -0530

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

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

MONITORING DATE: 1-27-24 TIME 0530

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	0.16 ppm	24 ppm	1
#2	0.11 ppm	25 ppm	0
#3	0.06 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: JERRY MUNOZ Date/Time: 1-27-24-0530

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME REDWOOD INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT #: 13 SERIAL # 1102746775

MONITORING DATE: 1-27-24 TIME: 0530

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	0.10 ppm	23 ppm	2
#2	0.03 ppm	25 ppm	0
#3	0.04 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: JOVENI MEDINA Date/Time: 1-27-24-0530

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 16 SERIAL #: 1102746776
MONITORING DATE 1-27-24 TIME 0530

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	2.6 ppm

Background Value = 2.6 **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 $\frac{(1+2+3)}{3}$			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	0.10 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: GREG LOPEZ Date/Time: 1-27-24 0530

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-28-24 TIME 0600

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	0.15 ppm	23 ppm	2
#2	0.12 ppm	25 ppm	0
#3	0.08 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.8 #DIV/0! Must be less than 10%

Performed By: Date/Time 1-28-24 0610

KDS
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346772

MONITORING DATE: 1-28-24 TIME: 0600

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	0.4 ppm	24 ppm	1
#2	0.08 ppm	25 ppm	0
#3	0.84 ppm	25 ppm	6
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 Miguel Estrada Date/Time 1-28-24-0600

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Redwood INSTRUMENT MAKE Thermo

MODEL TVA 1000 EQUIPMENT #: 12 SERIAL #

MONITORING DATE: 1-28-24 TIME 0600

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	0.20 ppm	23 ppm	2
#2	0.14 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		4.0 #DIV/0! Must be less than 10%

Performed By: Jerry Alvarez Date/Time: 1-28-24 0600

RES Environmental inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME Runwood INSTRUMENT MAKE Thermo

MODEL: TVA1000 EQUIPMENT # 13 SERIAL # 1102746775

MONITORING DATE 1-28-24 TIME 0600

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	2.8 ppm	2.6 ppm

Background Value = 2.6 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	0.08 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: Jovani Medinas Date/Time 1-28-24-0600

RES
Environmental inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME REDWOOD INSTRUMENT MAKE THERMO

MODEL: TVA1000 EQUIPMENT #: 16 SERIAL #: 1102746776

MONITORING DATE: 1-28-24 TIME: 0600

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	2.8 ppm	2.6 ppm

Background Value = 2.6 **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	0.16 ppm	24 ppm	1
#2	0.10 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: GRUC lopez Date/Time: 1-28-24- 0600

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-5-24 Time: 0815

Model # TVA 1000

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	211 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-5-24
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 5

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-5-24

Time: 0830

Model # TVA 1000

Serial # #11 1036346779

INSTRUMENT INTEGRITY CHECKLIST

Battery test	Pass / Fail
Reading following ignition	2.6 ppm
Leak test	Pass / Fail / NA
Clean system check (check valve chatter)	Pass / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA
Date of last factory calibration	1-5-24
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 6

Average 6.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator: JM

Date: 1-5-24 Time: 0845

Model # TVA 1000

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.3 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-5-24

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 5

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator: JM

Date: 1-5-24 Time: 0900

Model # TVA 1000

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.1 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-5-24

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 450
Time required to attain 90% of Cal Gas ppm
1. 6
2. 6
3. 5

Average 5.6
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-5-24 Time: 0945

Model # TVA-1000

Serial # #16 1102746776

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.1 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-5-24

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 5

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to cety gas.

Comments:

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT # 10

SERIAL NUMBER: 1036346773

TECHNICIAN:

DATE: 1-5-24

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	10,004	+/- 2500
< 1	ZERO GAS	0.69	< 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.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 11

SERIAL NUMBER: 1036346774

TECHNICIAN:

DATE: 1-5-24

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	10,001	+/- 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.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #12

SERIAL NUMBER: 1036246741

TECHNICIAN:

DATE: 1-5-24

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	0.54	< 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.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #13

SERIAL NUMBER: 1102746775

TECHNICIAN:

DATE: 1-5-24

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	99	+/- 25
500	500	503	+/- 125
10000	10000	10,200	+/- 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.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #16

SERIAL NUMBER: 1102746776

TECHNICIAN:

DATE: 1-5-24

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	99	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 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.

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 (+/-)
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	**20-7421**
Mfg. Date:	5/20/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	NY02268

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: 5/20/2020

EnviroSupply & Service INC.
Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
Contents: 3.6ft³ @ 70°F and 1,000 PSIG
Exp Date
7/10/2024
Lot#: 20-7421
P/N:01-100
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103-01-100
103L
Oxygen
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	

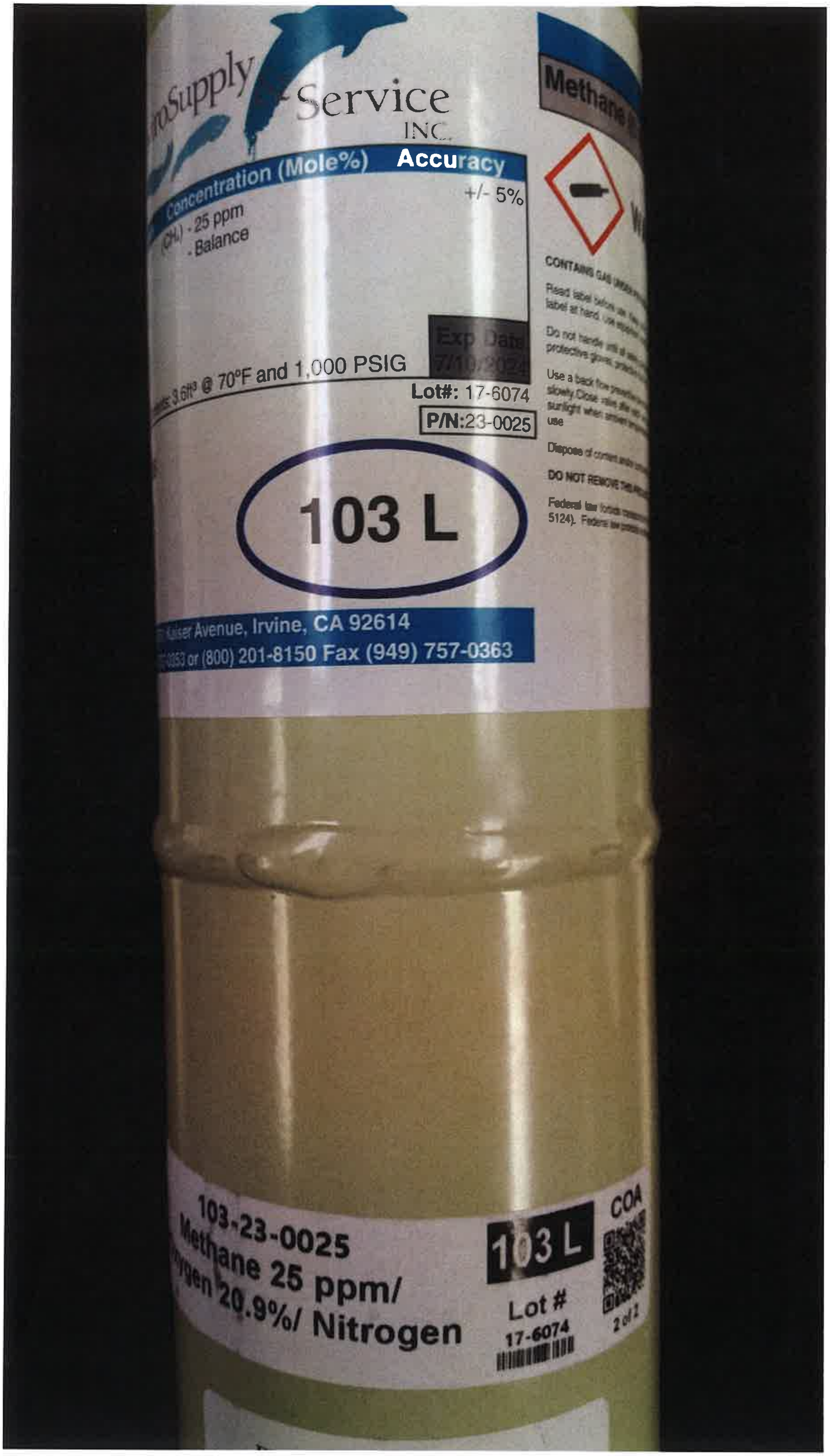
Lot # 17-6074

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


roSupply Service
INC.
Concentration (Mole%)
Accuracy
(CH4) - 25 ppm
- Balance
+/- 5%
Exp Date
7/10/2024
ents: 3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
0353 or (800) 201-8150 Fax (949) 757-0363
Methane
CONTAINS GAS UNDER
103-23-0025
Methane 25 ppm/
ygen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
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	

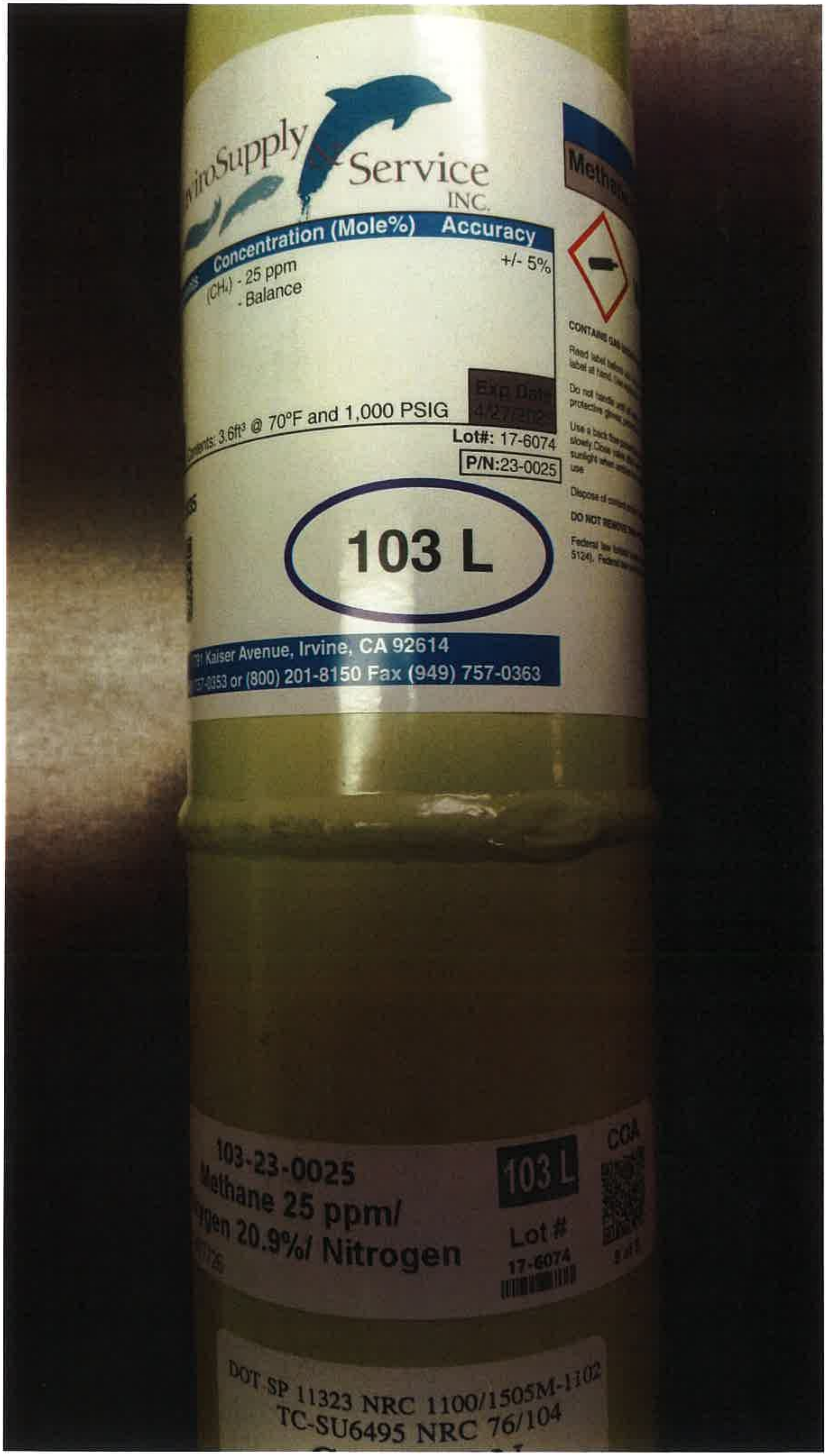
Lot # 17-6074

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
- Balance
+/- 5%
Exp Date 4/27/202
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
Metha
CONTAINS GAS
103-23-0025
ethane 25 ppm/
ygen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
DOT-SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104

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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

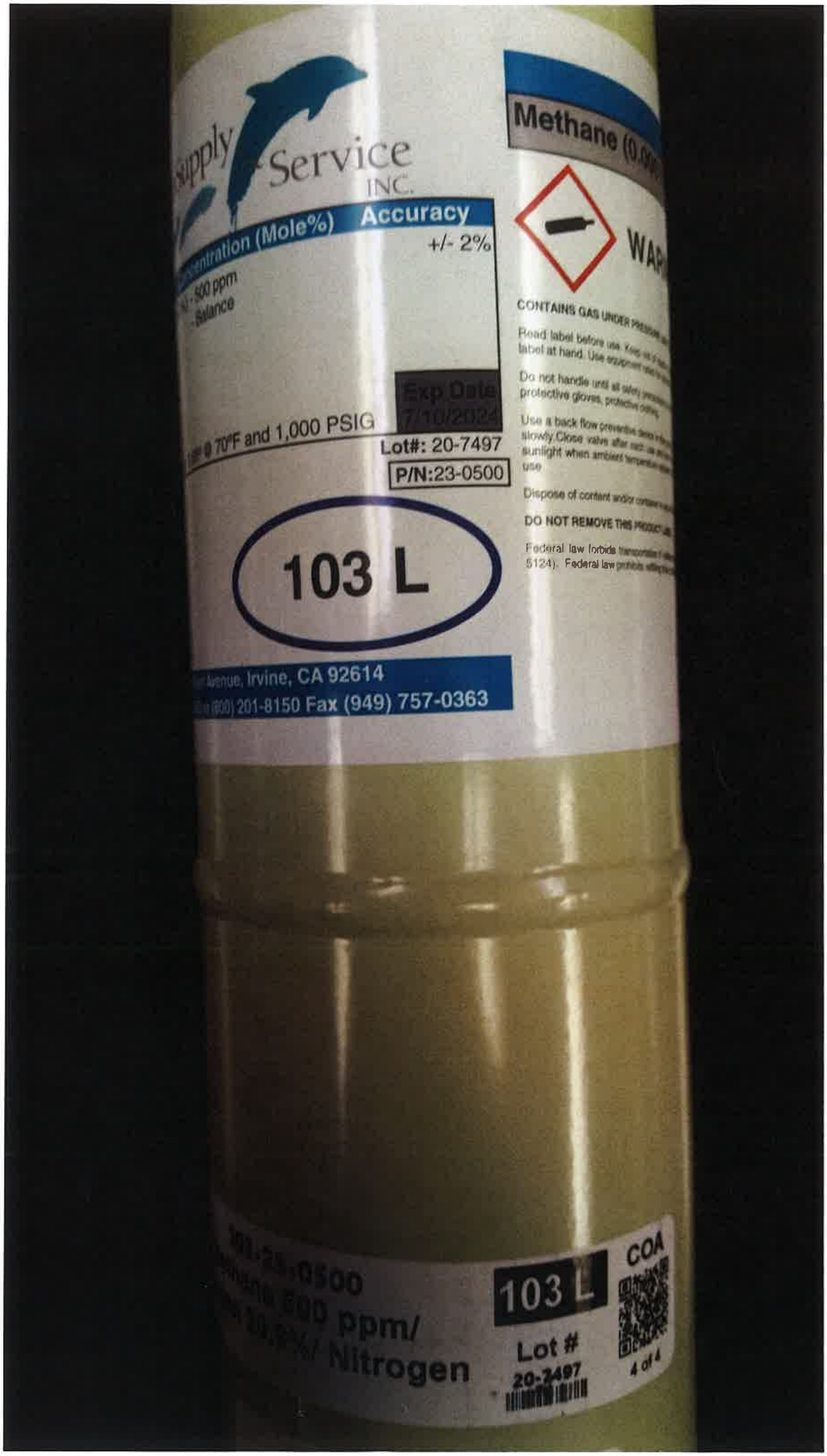
Method of Preparation:

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


Supply Service INC.
Concentration (Mole%)
Accuracy
+/- 2%
500 ppm
Balance
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
Methane
WAR
CONTAINS GAS UNDER PRESSURE
Read label before use.
label at hand.
Do not handle until all safety
protective gloves, protective clothing
Use a back flow preventive device
slowly.Close valve after each use
sunlight when ambient temperature
use
Dispose of content and/or container
DO NOT REMOVE THIS PRODUCT LABEL
Federal law forbids transportation
5124). Federal law prohibits refilling
101-23-0500
Methane 500 ppm/
20.9%/ Nitrogen
103 L
Lot #
20-7497
COA
4 of 4

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Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number 07152
Order Number 69671309
PO Number 08361523

Lot Number 2-108-80
Norlab Part# J1971500PA
Cylinder Size 103 Liter
Number of Cyl 1

Customer Part# N/A

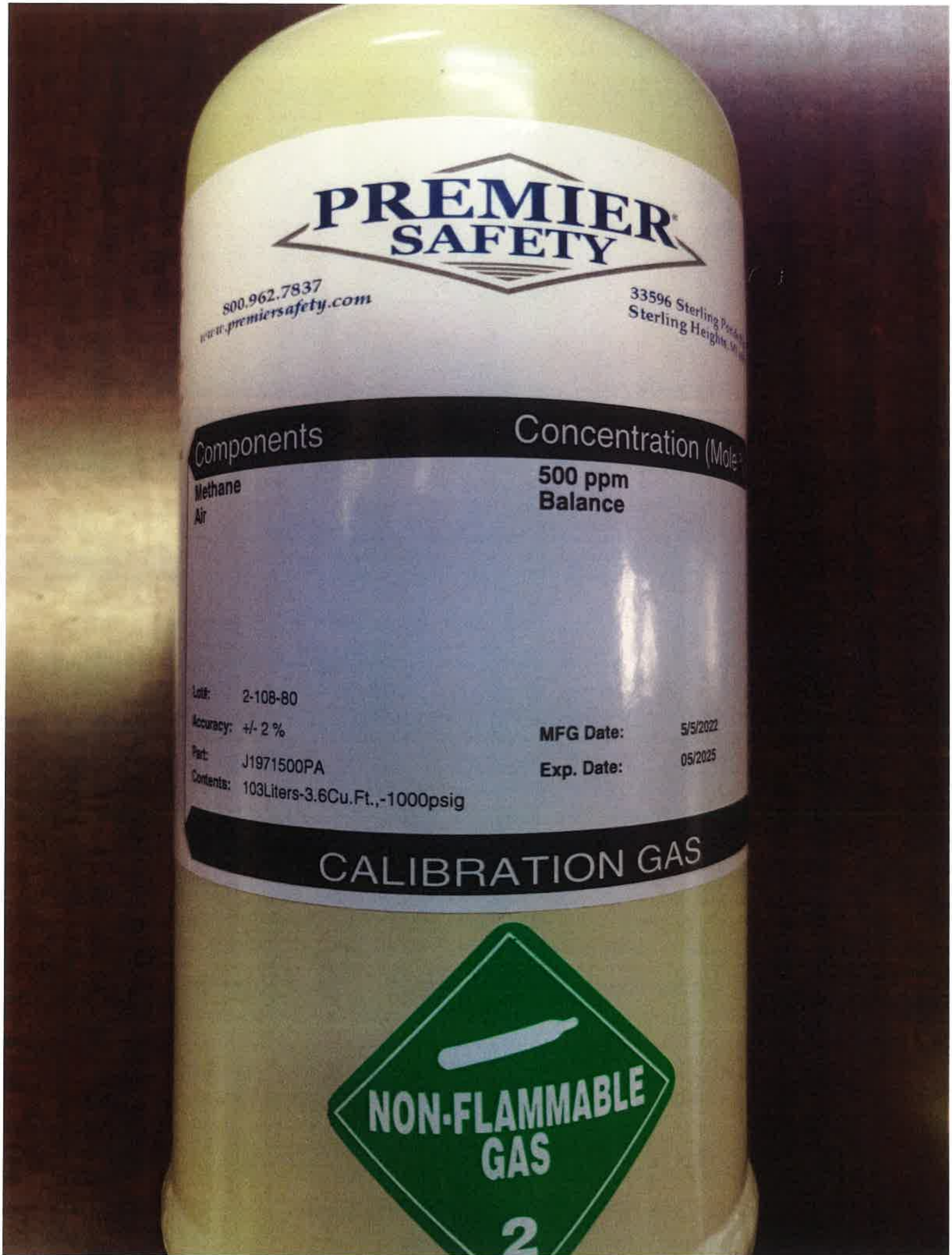
Date on Manufacture 6/10/2022
Expires 06/2025
Analytical Accuracy +/- 2 %

Component	Reported Concentration	Requested Concentration
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: Date Signed: 6/10/2022
David Reed
Lab Technician



PREMIER SAFETY

800.962.7837
www.premiersafety.com

33596 Sterling
Sterling Heights,

Components	Concentration (Mole
Methane	500 ppm
Air	Balance

Lot#: 2-108-80
Accuracy: +/- 2 %
Part: J1971500PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 5/5/2022
Exp. Date: 05/2025

CALIBRATION GAS

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CERTIFICATE OF ANALYSIS

Norco, Inc
Twin Falls Warehouse
203 S. Park Ave. West
Twin Falls, ID 83301

Cust Number WH012
Order Number 71846398
PO Number 04A35563

Lot Number	3-088-88
Norlab Part#	J1971500PA
Cylinder Size	103 Liter
Number of Cyl	5
Customer Part#	N/A

Date on Manufacture	4/7/2023
Expires	04/2027
Analytical Accuracy	+/- 2 %

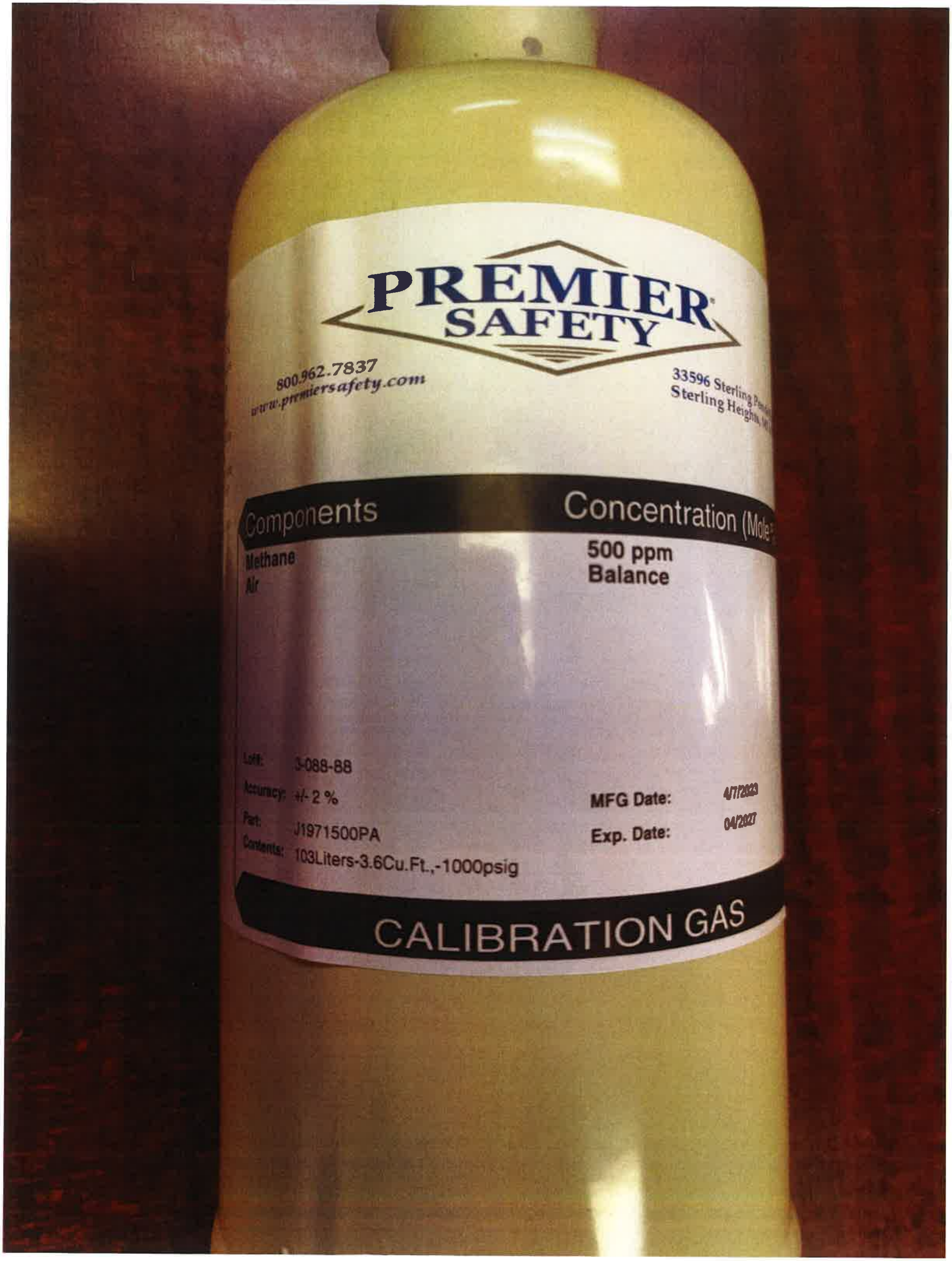
Component	**Reported Concentration**	**Requested Concentration**
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: Date Signed: 4/7/2023

Jeff Korn
Lab Technician



Components	Concentration (Mole
Methane	500 ppm
Air	Balance

Lot#: 3-088-88
Accuracy: +/- 2 %
Part: J1971500PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig
MFG Date: 4/7/2023
Exp. Date: 04/2027

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CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number	07152
Order Number	69679439
PO Number	04906817

Lot Number	2-154-85
Norlab Part#	J1002
Cylinder Size	103 Liter
Number of Cyl	1

Date on Manufacture	6/13/2022
Expires	06/2025
Analytical Accuracy	Certified

Customer Part# N/A

Component	**Reported Concentration**	**Requested Concentration**
Air	Zero Grade	Zero Grade
Oxygen	20.9 %	20.9 %
T.H.C. (as Methane)	< 1.0 ppm	< 1.0 ppm
Nitrogen	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

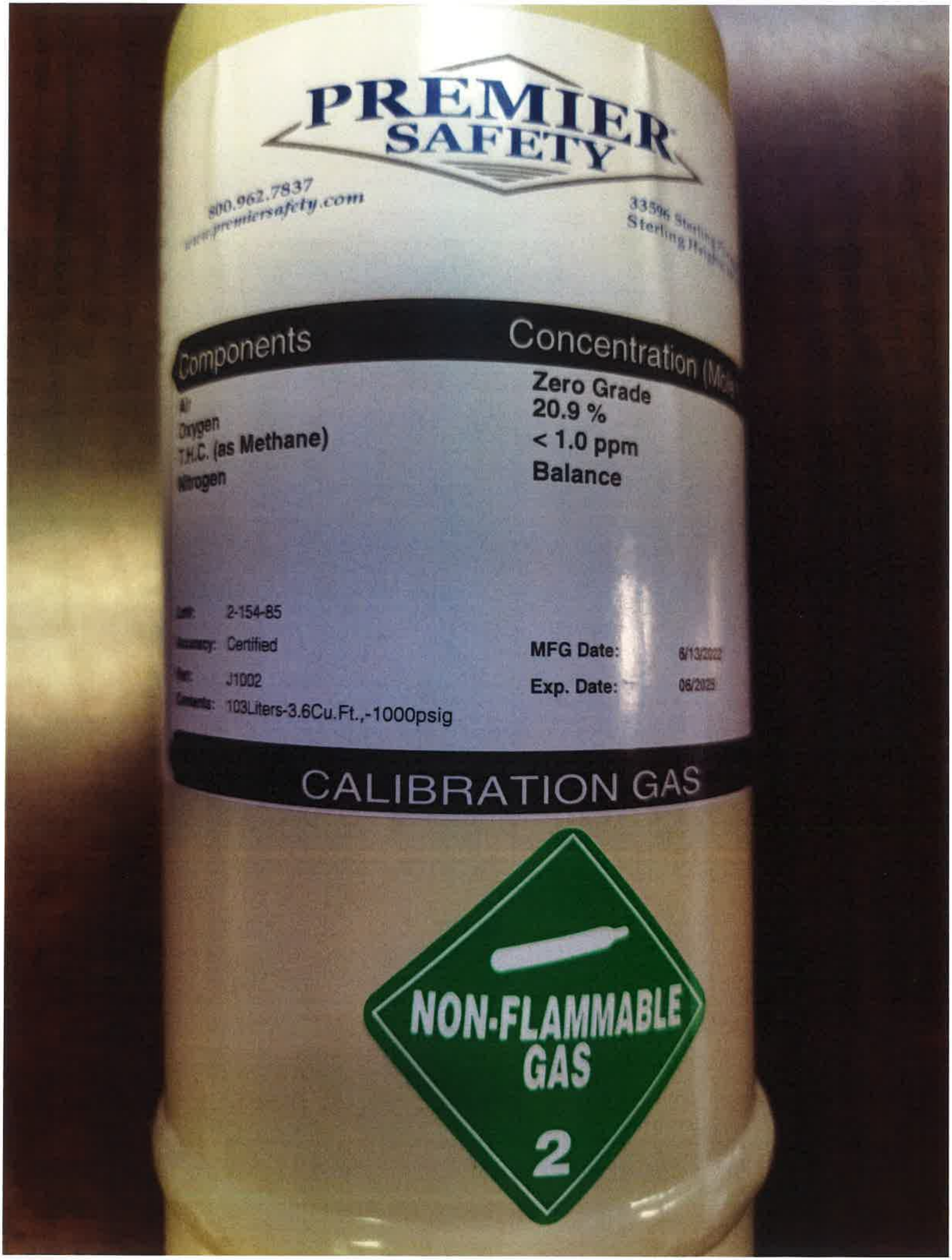
Minor constituents tested with standards traceable to NIST by mass or comparison to SRM's (Standard Reference Materials).

NIST Traceable Numbers are available upon request.

Approved: Date Signed: 6/13/2022

David Reed
Lab Technician

898 W. GOWEN ROAD • BOISE, IDAHO 83705
Phone (208) 336-1643 • Fax (208) 331-3038 • 800-657-6672



PREMIER SAFETY

800.962.7837
www.premiersafety.com

33596 Sterling
Sterling Heigh

Components	Concentration (Mo
Air	Zero Grade
Oxygen	20.9 %
T.H.C. (as Methane)	< 1.0 ppm
Nitrogen	Balance

Lot: 2-154-85

Accuracy: Certified

Ref: J1002

Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 6/13/2022

Exp. Date: 06/2025

CALIBRATION GAS

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Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number	07152
Order Number	73732858
PO Number	04B70733

Lot Number	3-340-61
Norlab Part#	J1971500PA
Cylinder Size	103 Liter
Number of Cyl	5
Customer Part#	N/A

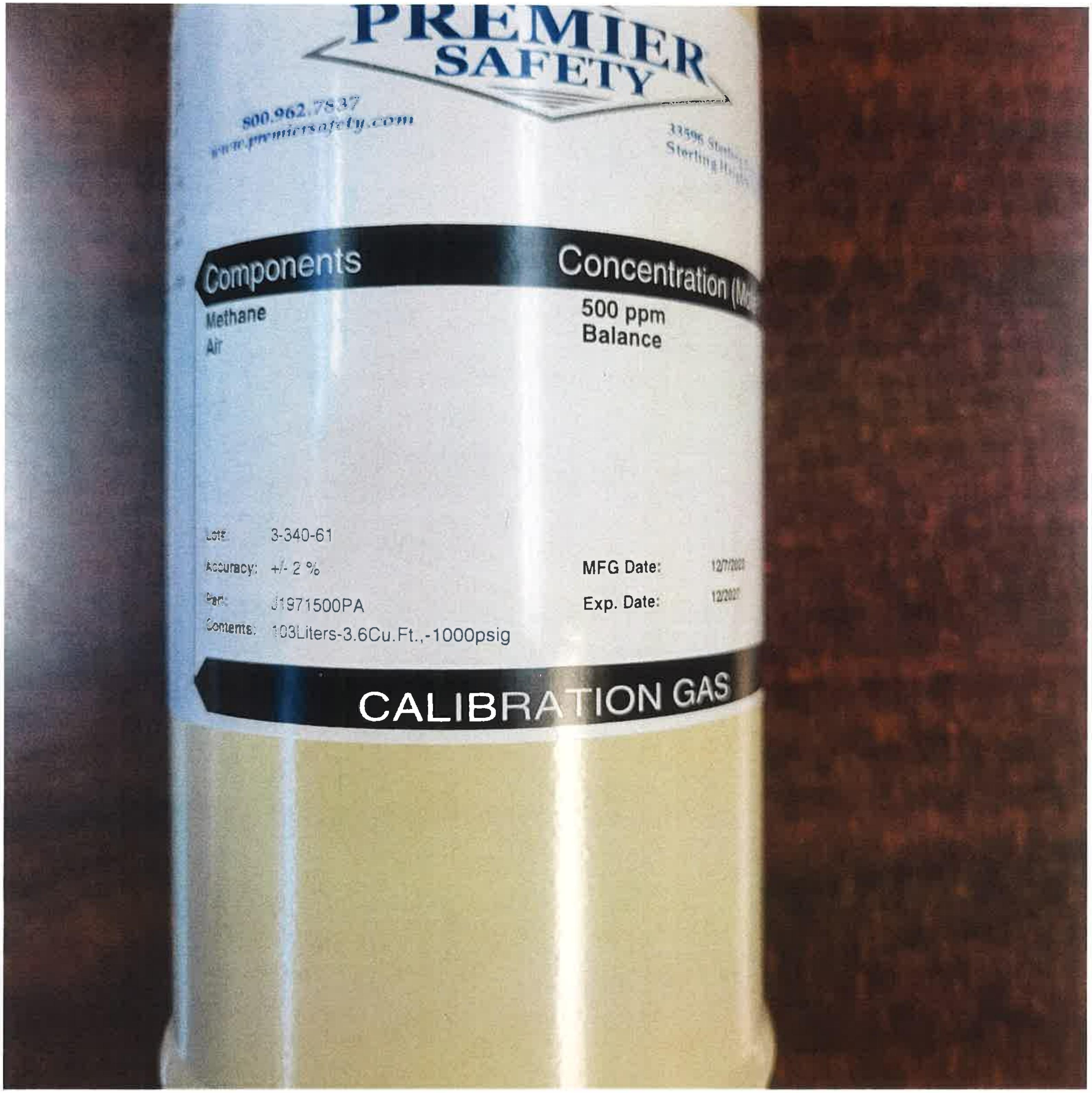
Date on Manufacture	12/7/2023
Expires	12/2027
Analytical Accuracy	+/- 2 %

Component	**Reported Concentration**	**Requested Concentration**
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: ________________________ Date Signed: 12/7/2023
Aaron Schwenken
Lab Manager


PREMIER SAFETY
800.962.7837
www.premiersafety.com
33596 Sterling
Sterling Heights
Components
Concentration (Mo
Methane
500 ppm
Air
Balance
Lot: 3-340-61
Accuracy: +/- 2 %
Part: J1971500PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig
MFG Date: 12/7/2020
Exp. Date: 12/2022
CALIBRATION GAS

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CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number 07152
Order Number 73732858
PO Number 04B70733

Lot Number	3-340-62
Norlab Part#	J197125PA
Cylinder Size	103 Liter
Number of Cyl	5

Date on Manufacture	12/7/2023
Expires	12/2027
Analytical Accuracy	+/- 5 %

Customer Part# N/A

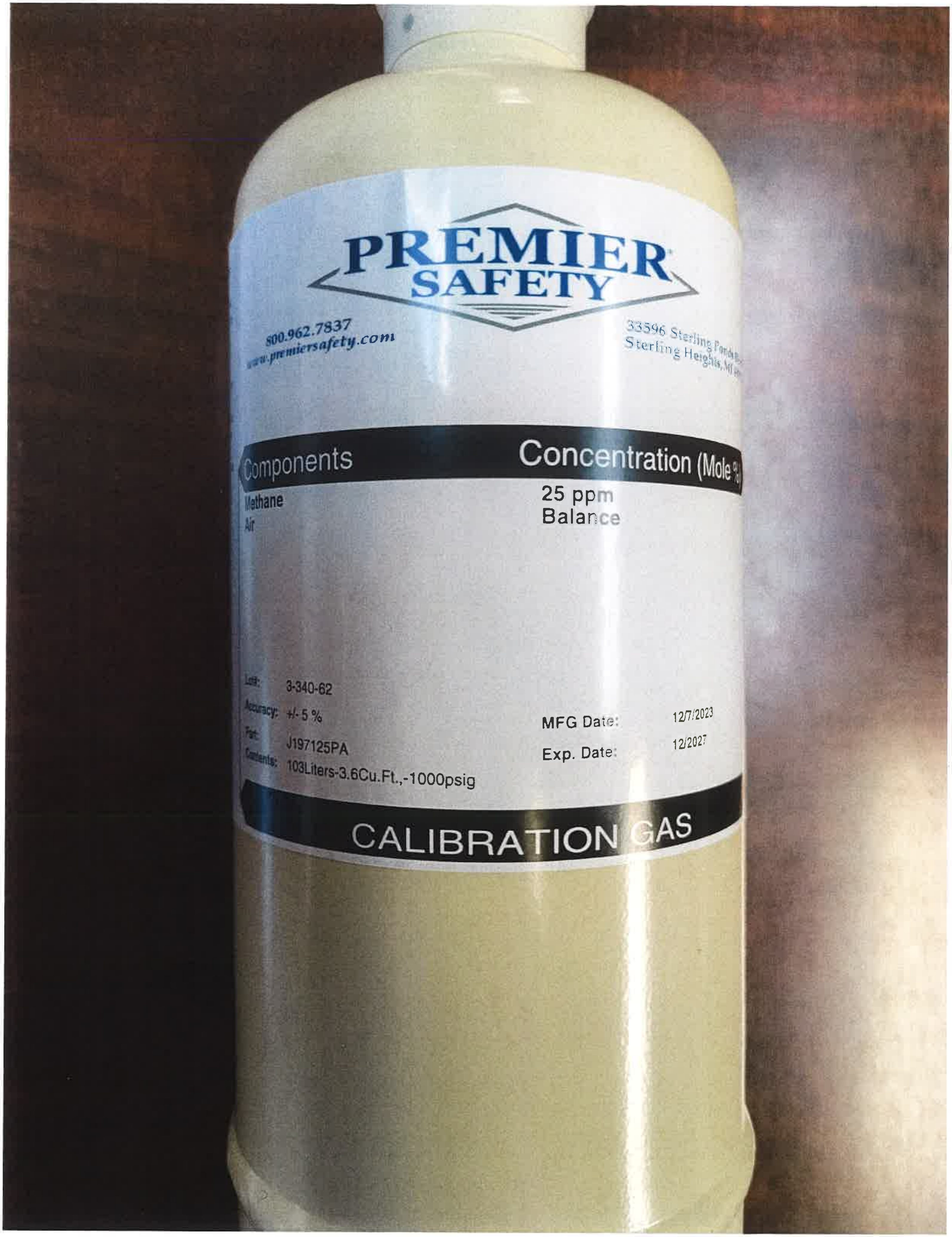
Component	**Reported Concentration**	**Requested Concentration**
Methane	25 ppm	25 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: Date Signed: 12/7/2023

Aaron Schwenken
Lab Manager



PREMIER SAFETY

800.962.7837
www.premiersafety.com

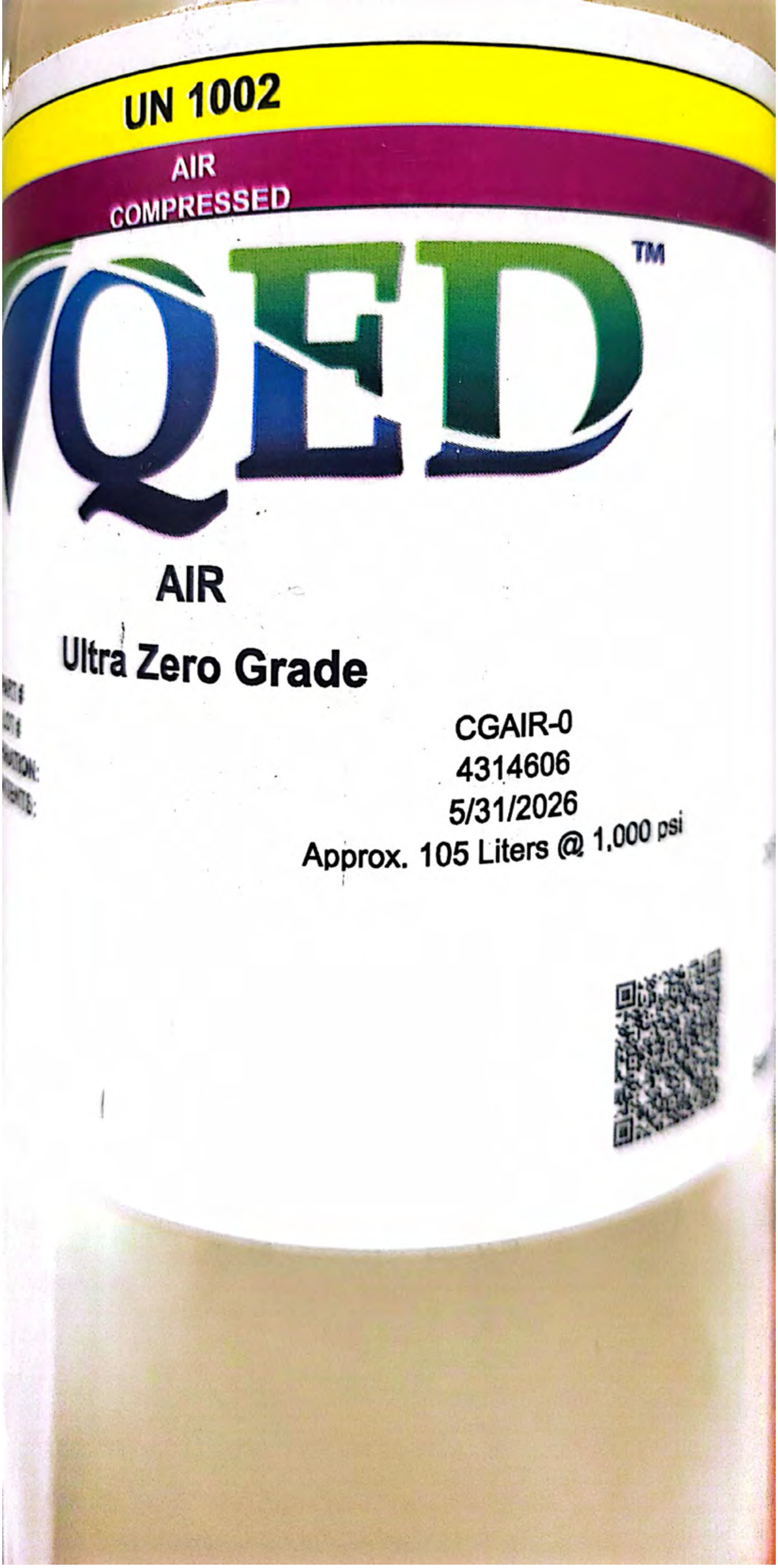
33596 Sterling Ponds
Sterling Heights, MI

Components	Concentration (Mole %
Methane	25 ppm
Air	Balance

Lot#: 3-340-62
Accuracy: +/- 5 %
Part: J197125PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 12/7/2023
Exp. Date: 12/2027

CALIBRATION GAS



UN 1002

AIR
COMPRESSED

QED™

AIR

Ultra Zero Grade

CGAIR-0
4314606
5/31/2026
Approx. 105 Liters @ 1,000 psi

COMPRESSED GAS, N.O.S

(METHANE, AIR)

UN1956

VQED™

500 PPM **METHANE** CAS: 744

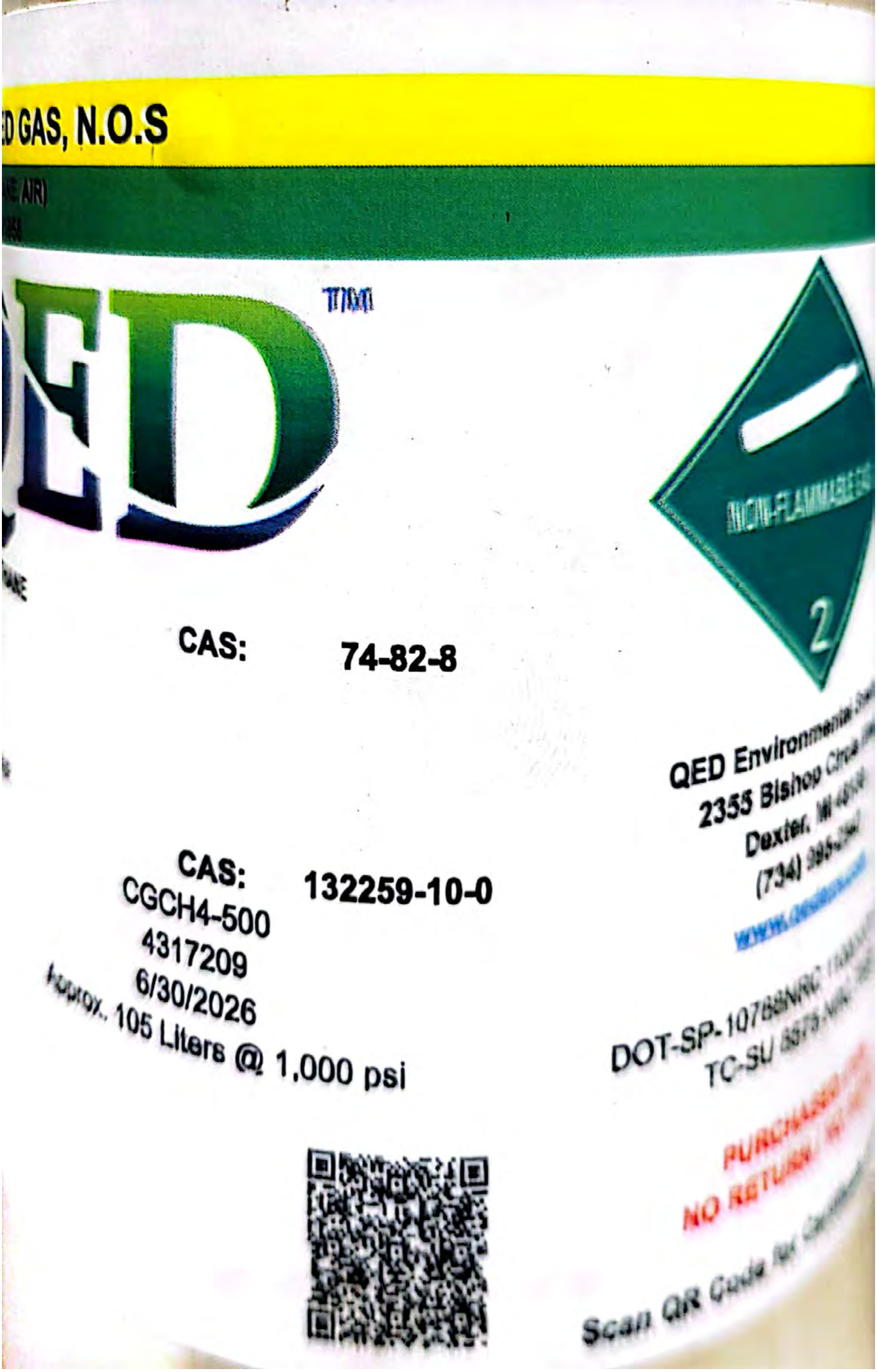
BALANCE **AIR** CAS: 1322

PART # CGCH4-500

LOT # 4317209

EXPIRATION: 6/30/2026

CONTENTS: Approx. 105 Liters @ 1,000 ps



CAS: 74-82-8

CAS: 132259-10-0
CGCH4-500
4317209
6/30/2026
Approx. 105 Liters @ 1,000 psi

QED Environmental
2355 Bishop Circle
Dexter, MI
(734)

DOT-SP-10788NRC
TC-SU

PURCHASED
NO RETURN

Scan QR Code for

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

May 15, 2024

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

Re: March 2024 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 2024 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-foot interval 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 2024 SEM RESULTS

The Instantaneous surface monitoring was performed on March 25, 2024, 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 25, 2024. Remonitoring was not 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

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
⊕ EW- EXISTING HORIZONTAL COLLECTOR WELLHEAD
EXISTING HORIZONTAL COLLECTOR TERMINAL HEAD
⋈ EXISTING CONTROL VALVE
EXISTING BLIND FLANGE
EXISTING FLANGE CONNECTION
EXISTING REDUCER FITTING
◆ CS- EXISTING CONDENSATE PUMP STATION
▨ EXISTING ROAD CROSSING
EXISTING HEADER HIGH POINT
EXISTING CAP ON EXISTING PIPE
◆ CS- EXISTING LEACHATE SUMP

🟩 NSPS 3-25-24 WALK ROUTE

● UPWIND

● DOWNWIND

NO EXCEEDANCES

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

REDWOOD LANDFILL
AS-BUILT GCCS PLAN
2015 GCCS IMPROVEMENTS
NOVATO CALIFORNIA MARIN COUNTY

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)

2024 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**			
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	**Comments**
No Exceedances on March 25, 2024											

Attachment B

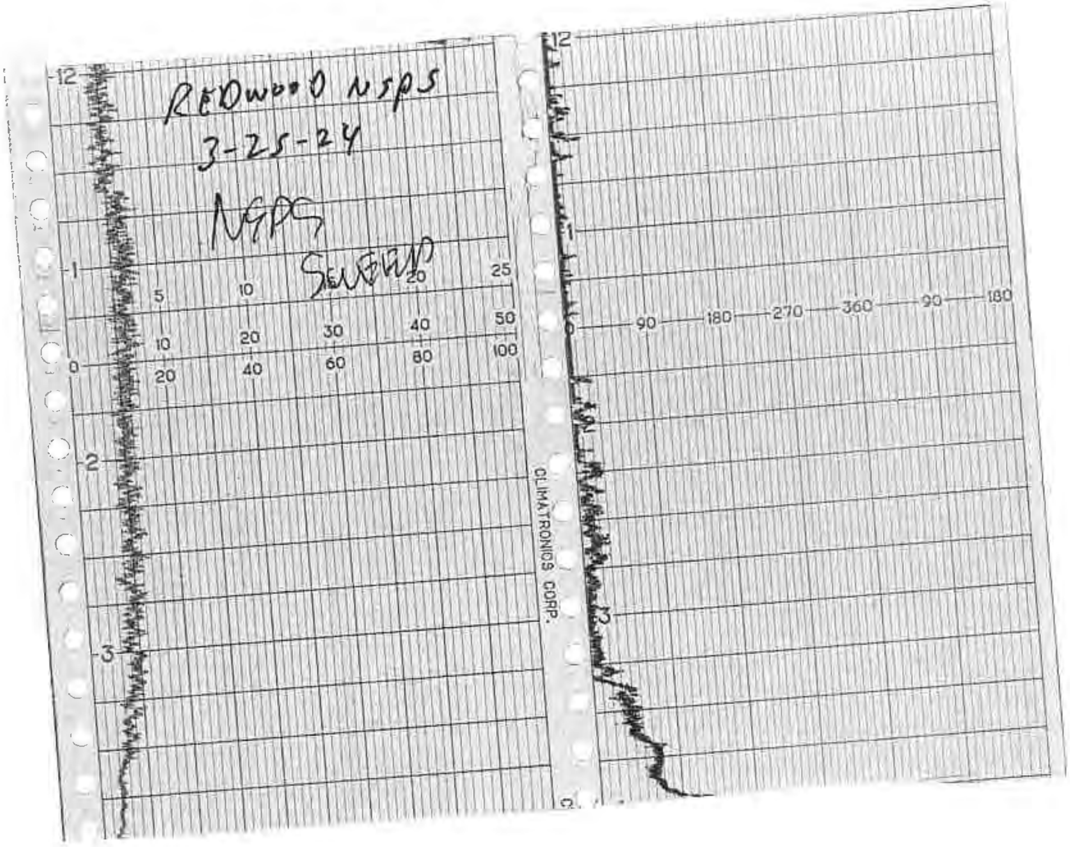
Weather Station Data

RES
Environmental Inc.

16-POINT WIND DIRECTION INDEX

NO	DIRECTION	DEGREES FROM	CENTER	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

WIND SPEED & DIRECTION CHART ROLL



Attachment C

Calibration Records

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME Rosnwind INSTRUMENT MAKE Thermo

MODEL TVA1000 EQUIPMENT #: 10 SERIAL # 1036346773

MONITORING DATE: 3-25-24 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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.8 ppm	3.2 ppm	3.0 ppm

Background Value = 3.0 **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	505 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	491 ppm	9
#2	0.05 ppm	500 ppm	0
#3	0.04 ppm	505 ppm	5
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.60 #DIV/0! Must be less than 10%

Performed By: Leishwant Date/Time: 3-25-24 – 1200

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL # 1036346772

MONITORING DATE: 3-25-24 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: $\frac{(Upwind + Downwind)}{2}$
2.8 ppm	3.2 ppm	3.0 ppm

Background Value = 3.0 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	498 ppm	448 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	0.12 ppm	507 ppm	7
#2	0.08 ppm	498 ppm	2
#3	0.04 ppm	510 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.66 #DIV/0! Must be less than 10%

Performed By: JOVANI MEDINA Date/Time 3-25-24-1200

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE THERMO

MODEL TVA1000 EQUIPMENT #: 12 SERIAL # 1036246741

MONITORING DATE: 3-25-24 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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.8 ppm	3.2 ppm	3.0 ppm

Background Value = 3.0 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	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	0.16 ppm	495 ppm	5
#2	0.12 ppm	500 ppm	0
#3	0.08 ppm	500 ppm	0
Calculate Precision $\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{500} \times \frac{100}{1}$			0.33 #DIV/0! Must be less than 10%

Performed By: EDDIE DELING Date/Time 3-25-24-1200

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE: Thermo

MODEL TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 3-25-24 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
2.8 ppm	3.2 ppm	3.0 ppm

Background Value = 3.0 **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	7
#2	502 ppm	452 ppm	7
#3	500 ppm	450 ppm	7
Calculate Response Time (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	0.17 ppm	485 ppm	11
#2	0.14 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		0.86 #DIV/0! Must be less than 10%

Performed By: Tyler Anderson Date/Time: 3-25-24-1200

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME REDWOOD INSTRUMENT MAKE THERMO

MODEL: TVA1000 EQUIPMENT #: 16 SERIAL #: 1102746776

MONITORING DATE: 3-25-24 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
2.8 ppm	3.2 ppm	3.0 ppm

Background Value = 3.0 **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	6
#2	499 ppm	449 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	0.15 ppm	507 ppm	7
#2	0.10 ppm	499 ppm	1
#3	0.07 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.53 #DIV/0! Must be less than 10%

Performed By: GREG LOPEZ Date/Time: 3-25-24-1200

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-2-24 Time: 0930

Model # TVA1000

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 24 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-5-24

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 5
3. 5

Average 5.3

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-2-24 Time: 0945

Model # TVA 1000

Serial # #11 103634774

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.3 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-5-24

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 5
2. 5
3. 5

Average 5.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-2-24 Time: 1000

Model # TVA 1000

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	211 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-5-24
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 5

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-2-24

Time: 1015

Model # TVA 1000

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.4 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-5-24
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 5

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator: MM

Date: 3-2-24   Time: 1100

Model # TVA-1000

Serial # #16 1102746776

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.3 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-5-24

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 5

Average 5.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to cal gas.

Comments:

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT # 10

SERIAL NUMBER: 1036346773

TECHNICIAN:

DATE: 1-5-24

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	10,004	+/- 2500
< 1	ZERO GAS	0.69	< 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.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 11

SERIAL NUMBER: 1036346774

TECHNICIAN:

DATE: 1-5-24

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	10,001	+/- 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.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #12

SERIAL NUMBER: 1036246741

TECHNICIAN:

DATE: 1-5-24

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	0.54	< 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.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #13

SERIAL NUMBER: 1102746775

TECHNICIAN:

DATE: 1-5-24

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	99	+/- 25
500	500	503	+/- 125
10000	10000	10,200	+/- 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.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #16

SERIAL NUMBER: 1102746776

TECHNICIAN:

DATE: 1-5-24

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	99	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 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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INTERMOUNTAIN
SPECIALTY GASES
"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

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

Lot #	**20-7421**
Mfg. Date:	5/20/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	NY02268

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:	5/20/2020


viroSupply
Service
INC.
Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
7/10/2024
Contents: 3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 20-7421
P/N:01-100
103 L
791 Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103-01-100
Oxygen
103 L
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	

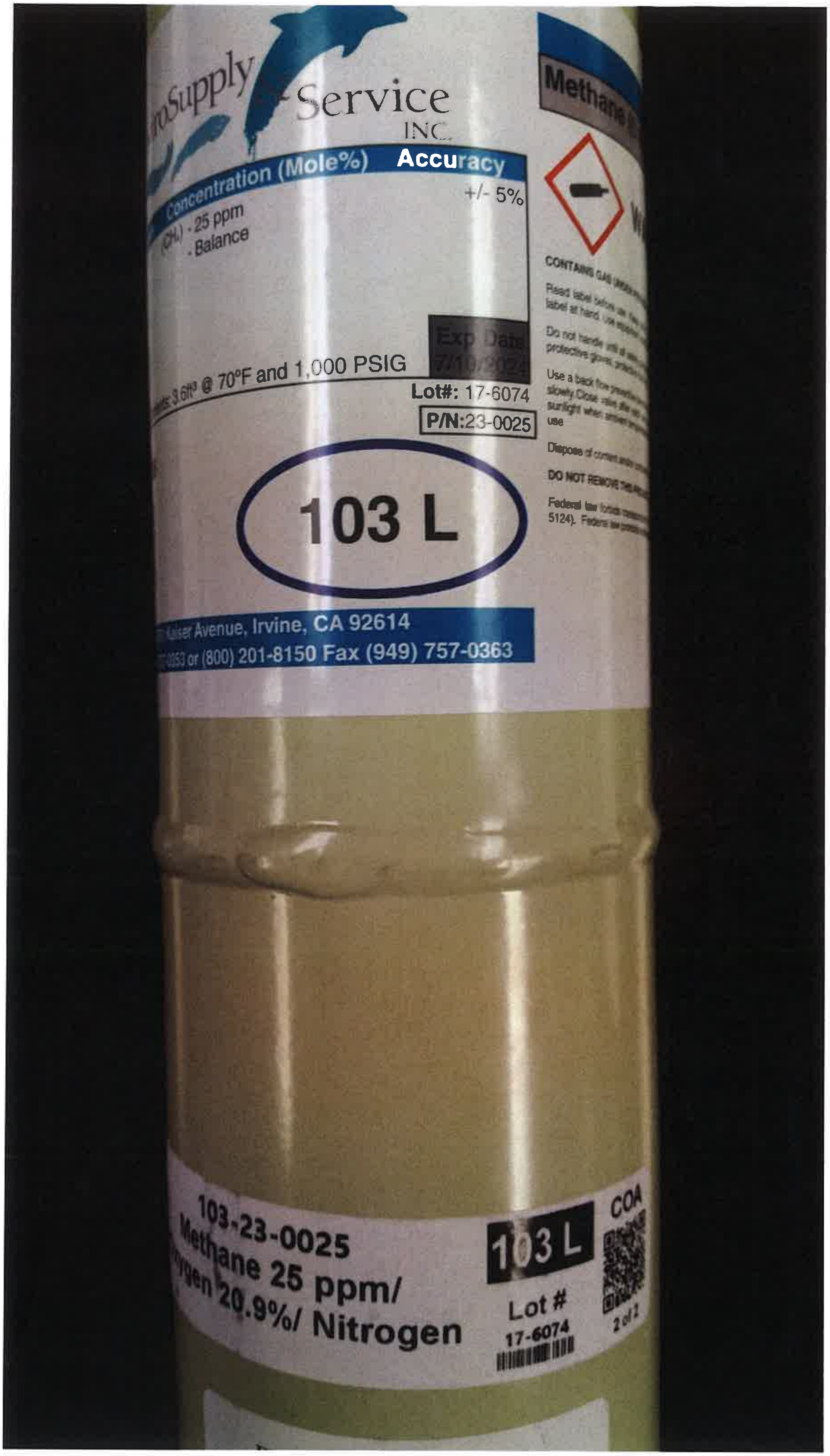
Lot # 17-6074

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


roSupply
Service
INC.
Concentration (Mole%)
Accuracy
(CH4) - 25 ppm
- Balance
+/- 5%
Exp Date
7/10/2024
ents: 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
103-23-0025
Methane 25 ppm/
gen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
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	

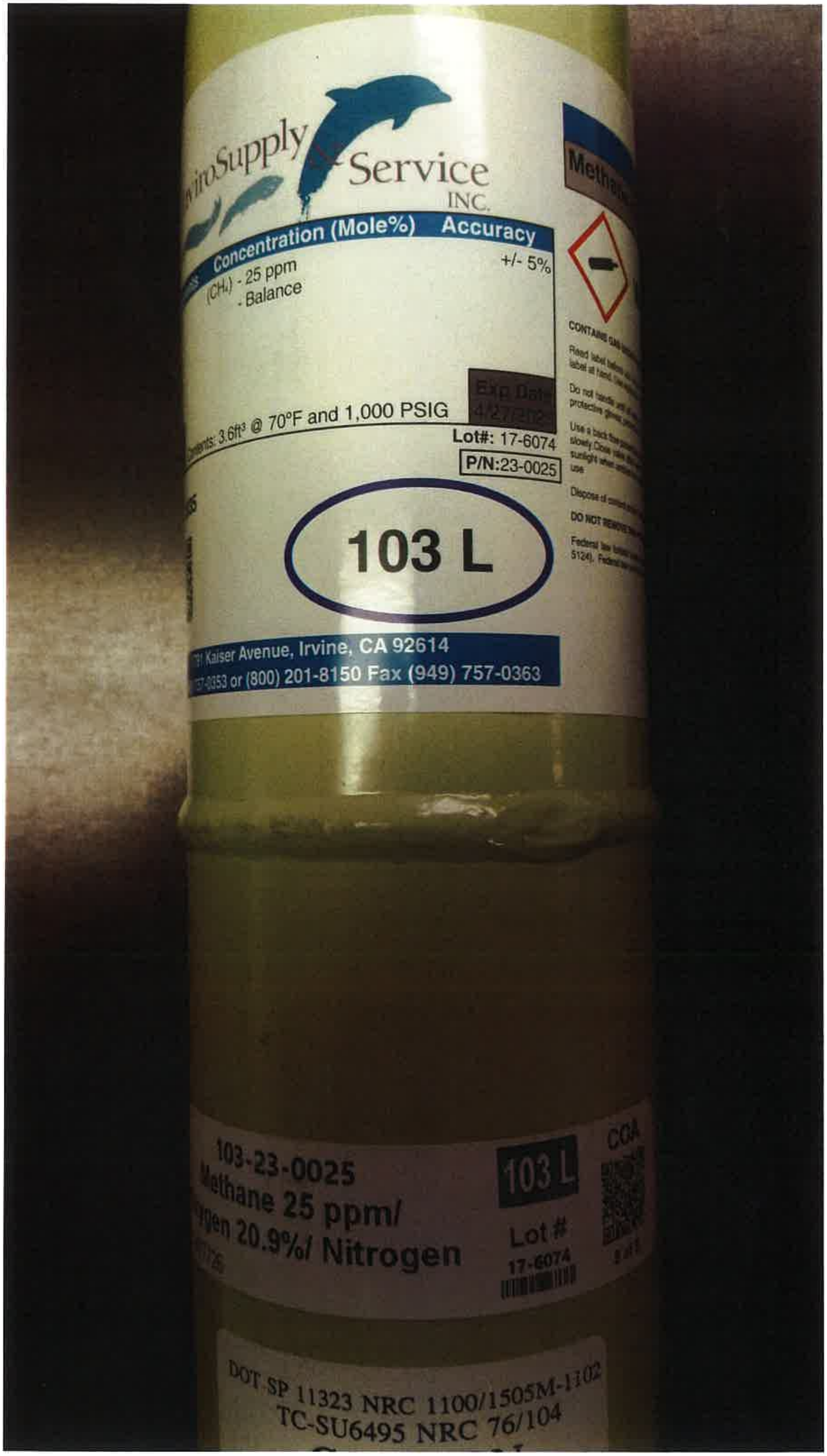
Lot # 17-6074

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
- Balance
+/- 5%
Exp Date
4/27/202
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
Metha
CONTAINS GAS
103-23-0025
Methane 25 ppm/
ygen 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

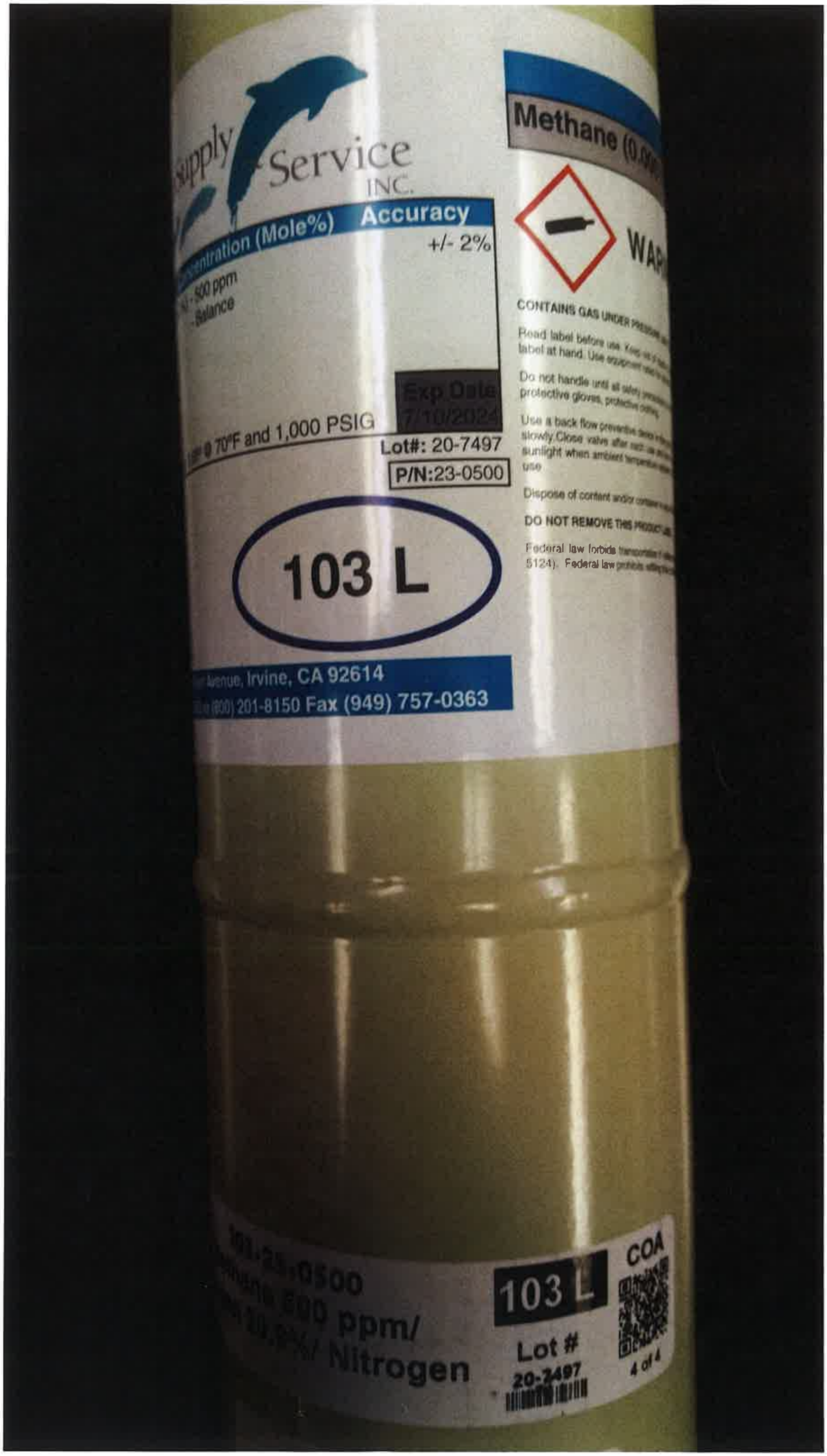
Method of Preparation:

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.
Concentration (Mole%)
Accuracy
+/- 2%
- 500 ppm
- Balance
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
Methane
WAR
CONTAINS GAS UNDER PRESSURE
Read label before use.
label at hand.
Do not handle until all safety
protective gloves, protective clothing
Use a back flow preventive device
slowly.Close valve after each use
sunlight when ambient temperature
use
Dispose of content and/or container
DO NOT REMOVE THIS PRODUCT LABEL
Federal law forbids
5124). Federal law prohibits
0500
ppm/
Nitrogen
103 L
Lot #
20-2497
COA
4 of 4

NorLAB®
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Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number 07152
Order Number 69671309
PO Number 08361523

Lot Number 2-108-80
Norlab Part# J1971500PA
Cylinder Size 103 Liter
Number of Cyl 1

Customer Part# N/A

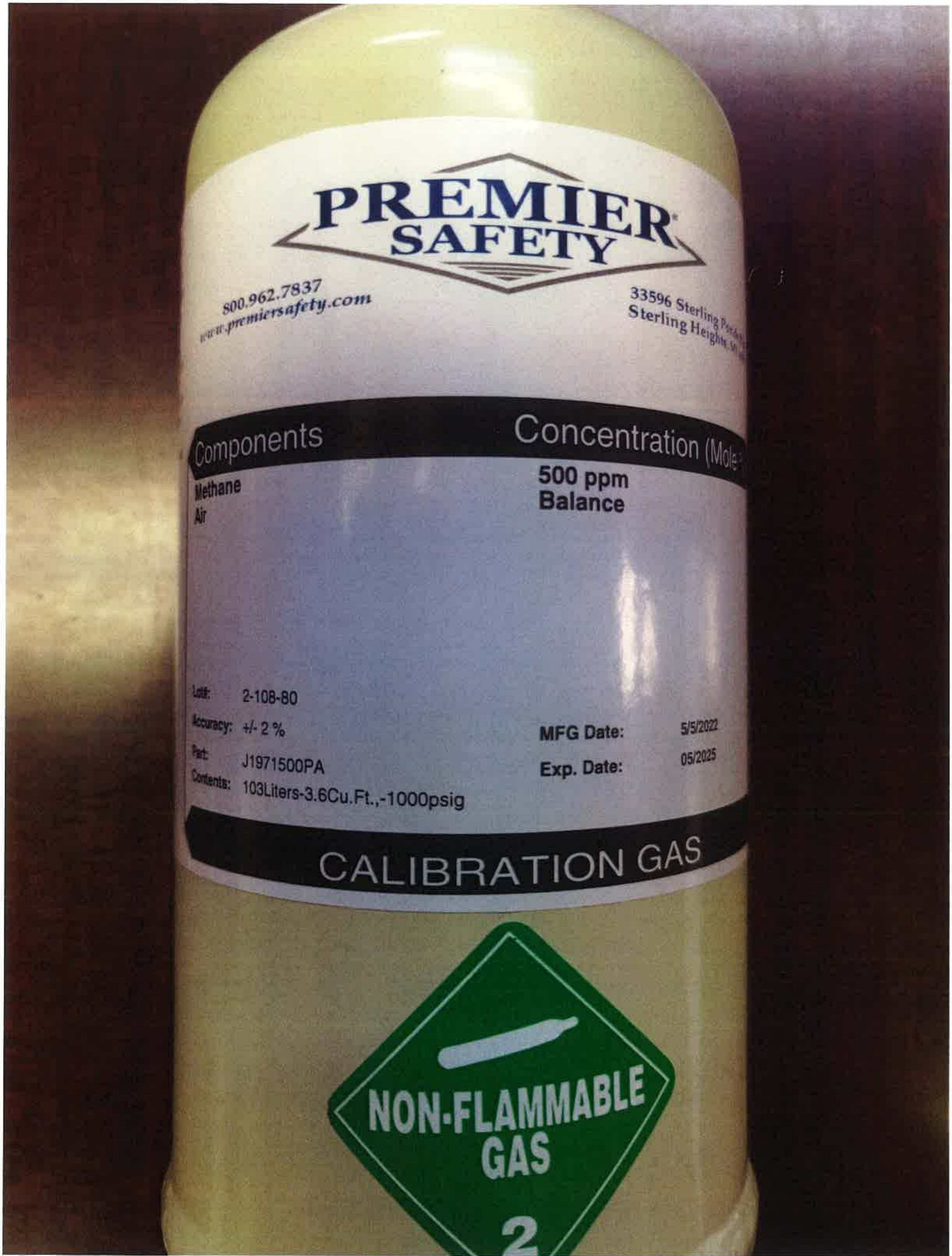
Date on Manufacture 6/10/2022
Expires 06/2025
Analytical Accuracy +/- 2 %

Component	**Reported Concentration**	**Requested Concentration**
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: Date Signed: 6/10/2022
David Reed
Lab Technician



Components	Concentration (Mole
Methane	500 ppm
Air	Balance

Lot#: 2-108-80
Accuracy: +/- 2 %
Part: J1971500PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig
MFG Date: 5/5/2022
Exp. Date: 05/2025

CALIBRATION GAS

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Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Norco, Inc
Twin Falls Warehouse
203 S. Park Ave. West
Twin Falls, ID 83301

Cust Number	WH012
Order Number	71846398
PO Number	04A35563

Lot Number	3-088-88
Norlab Part#	J1971500PA
Cylinder Size	103 Liter
Number of Cyl	5

Date on Manufacture	4/7/2023
Expires	04/2027
Analytical Accuracy	+/- 2 %

Customer Part# N/A

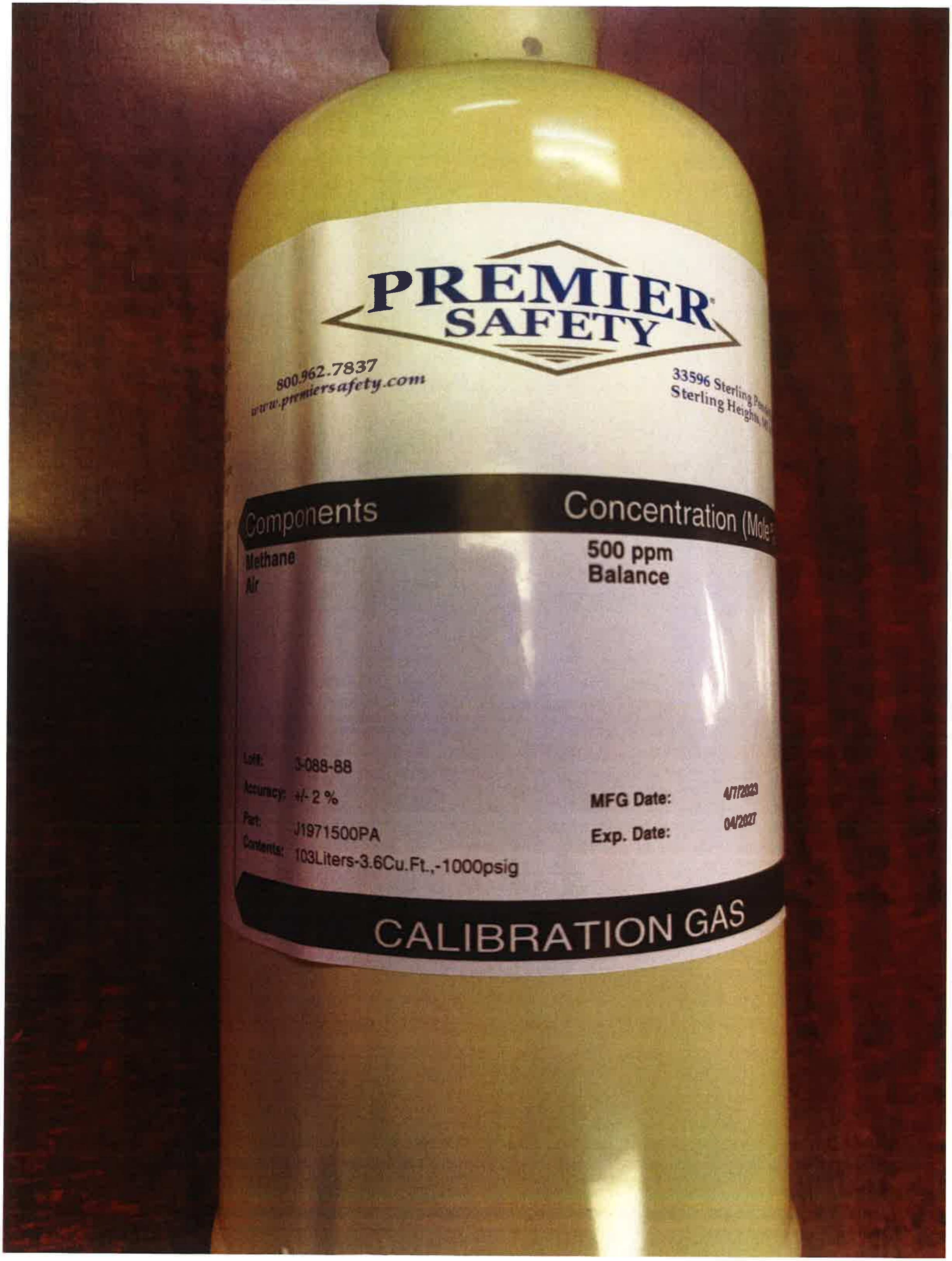
Component	**Reported Concentration**	**Requested Concentration**
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: Date Signed: 4/7/2023

Jeff Korn
Lab Technician



Components	Concentration (Mole
Methane	500 ppm
Air	Balance

Lot#: 3-088-88
Accuracy: +/- 2 %
Part: J1971500PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 4/7/2023
Exp. Date: 04/2027

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Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number 07152
Order Number 69679439
PO Number 04906817

Lot Number	2-154-85
Norlab Part#	J1002
Cylinder Size	103 Liter
Number of Cyl	1

Customer Part# N/A

Date on Manufacture	6/13/2022
Expires	06/2025
Analytical Accuracy	Certified

Component	Reported Concentration	Requested Concentration
Air	Zero Grade	Zero Grade
Oxygen	20.9 %	20.9 %
T.H.C. (as Methane)	< 1.0 ppm	< 1.0 ppm
Nitrogen	Balance	Balance

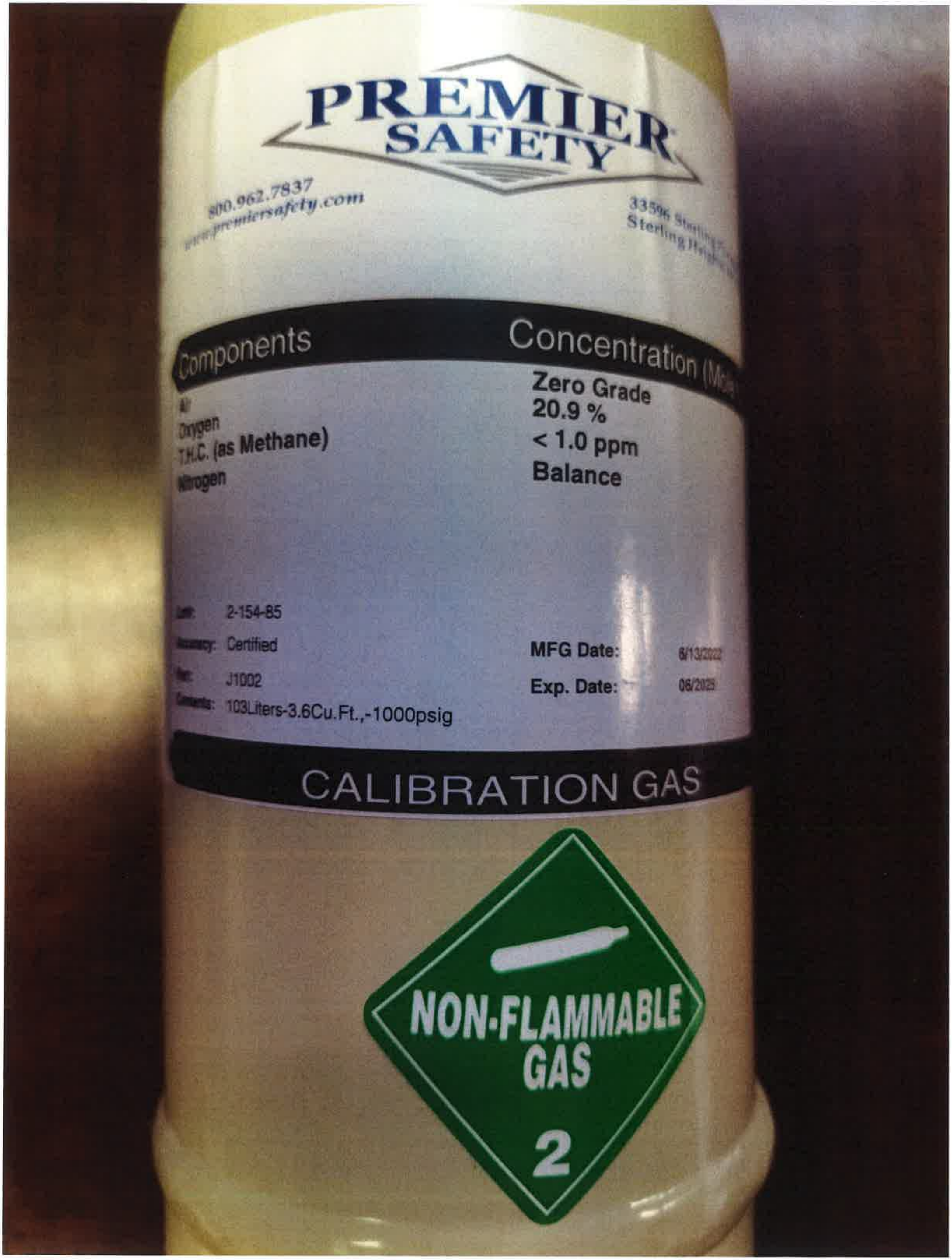
Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

Minor constituents tested with standards traceable to NIST by mass or comparison to SRM's (Standard Reference Materials).

NIST Traceable Numbers are available upon request.

Approved: Date Signed: 6/13/2022

David Reed
Lab Technician



800.962.7837
www.premiersafety.com

33596 Sterling
Sterling Heig

Components	Concentration (Mo
Air	Zero Grade
Oxygen	20.9 %
T.H.C. (as Methane)	< 1.0 ppm
Nitrogen	Balance

Lot: 2-154-85
Accuracy: Certified
Ref: J1002
Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 6/13/2022
Exp. Date: 06/2025

CALIBRATION GAS

NorLAB®
A DIVISION OF NORCO, INC.
Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number	07152
Order Number	73732858
PO Number	04B70733

Lot Number	3-340-61
Norlab Part#	J1971500PA
Cylinder Size	103 Liter
Number of Cyl	5
Customer Part#	N/A

Date on Manufacture	12/7/2023
Expires	12/2027
Analytical Accuracy	+/- 2 %

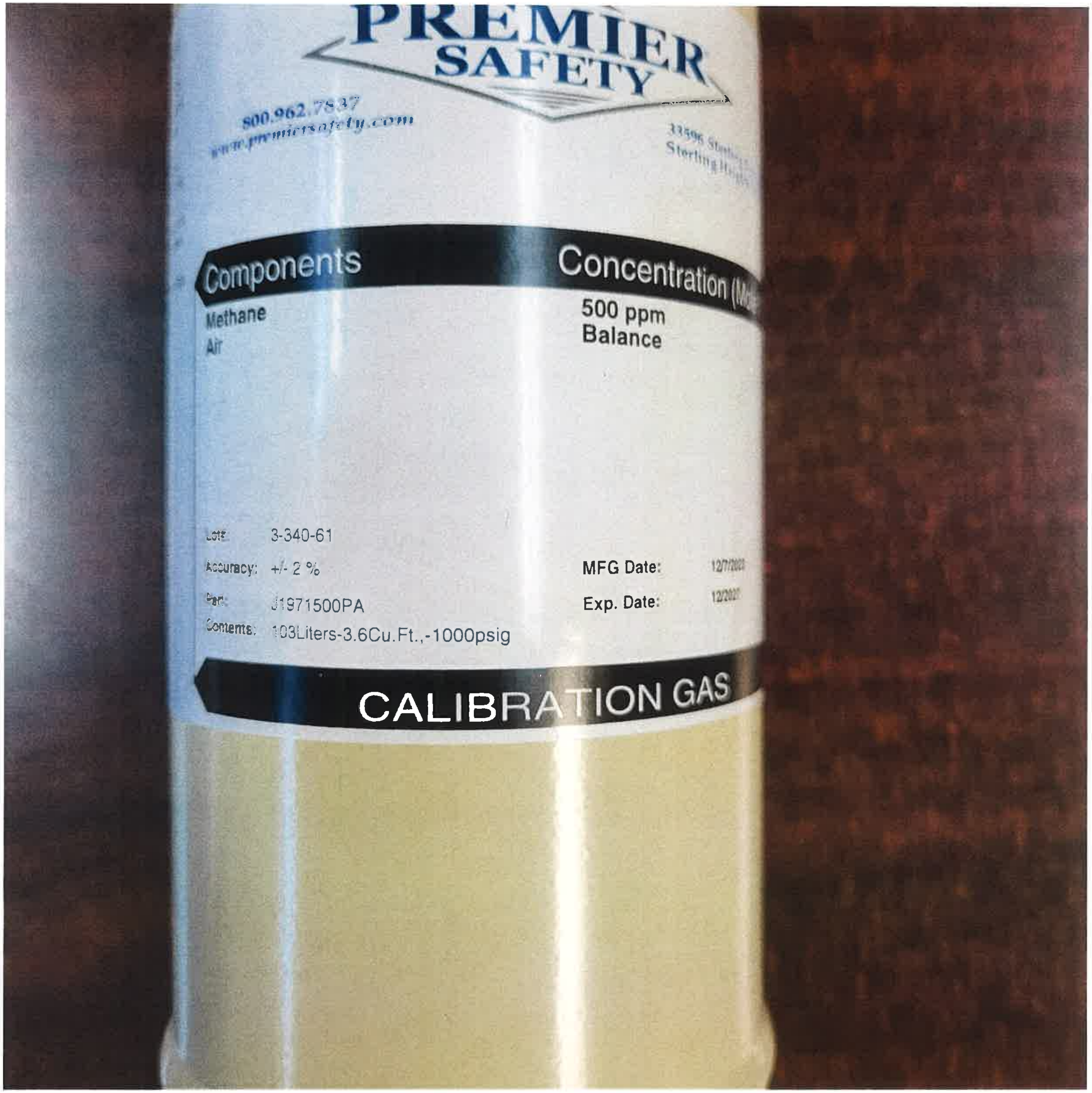
Component	**Reported Concentration**	**Requested Concentration**
Methane	500 ppm	500 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: ______________________ Date Signed: 12/7/2023

Aaron Schwenken
Lab Manager


PREMIER
SAFETY
800.962.7837
www.premiersafety.com
33596 Sterlin
Sterling Heigh
Components
Concentration (Mo
Methane
Air
500 ppm
Balance
Lot: 3-340-61
Accuracy: +/- 2 %
Part: J1971500PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig
MFG Date: 12/7/2020
Exp. Date: 12/2022
CALIBRATION GAS

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A DIVISION OF NORCO, INC.

Calibration Gases & Equipment

CERTIFICATE OF ANALYSIS

Premier Safety & Service

33596 Sterling Pond Blvd
Sterling Hights MI 48312

Cust Number	07152
Order Number	73732858
PO Number	04B70733

Lot Number	3-340-62
Norlab Part#	J197125PA
Cylinder Size	103 Liter
Number of Cyl	5

Date on Manufacture	12/7/2023
Expires	12/2027
Analytical Accuracy	+/- 5 %

Customer Part# N/A

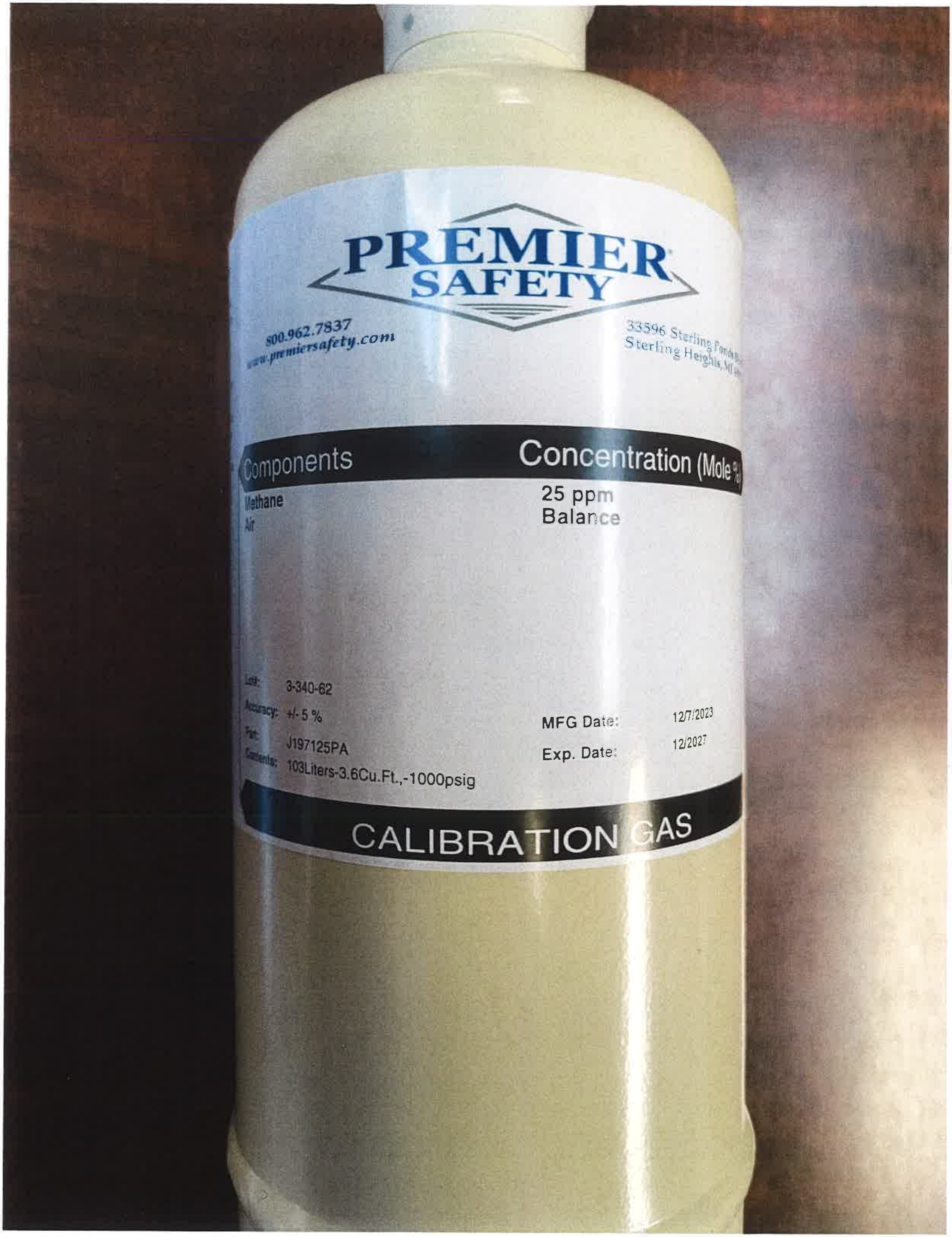
Component	**Reported Concentration**	**Requested Concentration**
Methane	25 ppm	25 ppm
Air	Balance	Balance

Storage: Keep away from heat, flames, and sparks. Store and use with adequate ventilation. Close valve when not in use and when empty. Never allow cylinder temperature to exceed 125 degrees F.

The cylinders in this lot were transfilled from cylinders prepared gravimetrically and traceable to the NIST by the certified weights used to calibrate the scale. The transfilled cylinders were then analyzed against standards traceable to the NIST by weights or SRMs. NIST Traceable Numbers are available upon request.

Approved: Date Signed: 12/7/2023

Aaron Schwenken
Lab Manager



PREMIER SAFETY

800.962.7837
www.premiersafety.com

33596 Sterling Ponds
Sterling Heights, MI

Components	Concentration (Mole
Methane	25 ppm
Air	Balance

Lot#: 3-340-62
Accuracy: +/- 5 %
Part: J197125PA
Contents: 103Liters-3.6Cu.Ft.,-1000psig

MFG Date: 12/7/2023
Exp. Date: 12/2027

CALIBRATION GAS

APPENDIX I

WELLFIELD MONITORING LOGS

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 2, 6, 7, 8, 9, 10, 13, 14, 16, 17, and 20, 2023

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	11/16/23 18:01	60.2	39.2	0	0.6	-0.3	98	-0.5	100
RLI00003	11/13/23 19:06	46.8	34.2	1.3	17.7	-4.2	73	-3.8	73
RLI00008	11/17/23 14:38	64.4	35.3	0.1	0.2	-16.8	82	-19.6	79
RLI00016	11/17/23 14:05	33.4	28.3	0	38.3	-16.6	71	-16.7	71
RLI00017	11/17/23 14:11	47.6	32.6	0.6	19.2	-14.4	73	-13.6	73
RLI00018	11/17/23 14:19	31.2	28.4	0.5	39.9	-14.7	72	-15	73
RLI00019	11/17/23 14:31	54.7	32.6	2	10.7	-20.1	68	-20.4	69
RLI00034	11/10/23 14:50	60	39.9	0	0.1	-17.1	80	-17.4	81
RLI00035	11/10/23 15:01	60.5	38.8	0	0.7	-18.8	76	-19	76
RLI00045	11/10/23 15:13	42.1	32.2	0	25.7	-1.3	74	-1.1	74
RLI00047	11/10/23 15:10	42.1	34	0	23.9	-2	79	-1.8	79
RLI00065	11/13/23 18:16	55.8	44.1	0	0.1	-9.1	96	-10.4	96
RLI00083	11/13/23 15:04	61.6	38.3	0	0.1	-31.2	92	-30.8	92
RLI00095	11/13/23 14:22	52.3	35.3	0	12.4	-1.6	102	-1.7	103
RLI00132	11/10/23 14:22	61.2	38.7	0	0.1	-19	90	-19.8	90
RLI00134	11/9/23 18:16	41.8	35.5	0	22.7	-5.6	126	-5.1	127
RLI00135	11/6/23 15:40	58.2	41.7	0	0.1	-4.9	109	-5.3	109
RLI00137	11/20/23 18:29	63	31	1.5	4.5	-24.2	86	-29	86
RLI00140	11/8/23 17:22	48	40	0	12	-12.5	112	-11.3	112
RLI00141	11/8/23 16:49	50.2	42.1	0	7.7	-0.3	35	-0.3	106
RLI00142	11/8/23 17:15	56.6	42.4	0	1	-19.8	102	-22	103
RLI00220	11/16/23 19:01	45	34.8	1.9	18.3	-25.6	81	-23	74
RLI00275	11/13/23 14:59	49.9	36.9	0	13.2	-20.6	94	-20.6	94
RLI00276	11/13/23 16:05	55	40.5	0	4.5	-33.2	95	-33.1	95
RLI00277	11/7/23 19:28	49.2	38.7	0	12.1	-0.8	109	-0.7	109
RLI00278	11/7/23 19:24	51.7	39.9	0	8.4	-3.1	107	-3.1	107
RLI00279	11/7/23 19:10	57.2	42.7	0	0.1	-0.9	127	-1.1	128
RLI00280	11/9/23 18:04	46.7	35.8	0	17.5	-7	110	-6.3	110
RLI00281	11/7/23 19:43	55.6	40.9	0	3.5	-2.1	113	-2.3	113
RLI00282	11/8/23 17:53	56.4	42.8	0	0.8	-10.4	110	-11.4	110
RLI00283	11/8/23 18:11	57.3	42.6	0	0.1	-6.2	116	-6.8	117
RLI00284	11/13/23 15:22	61.4	38.5	0	0.1	-30.6	75	-31.2	72
RLI00285	11/13/23 15:27	50.7	35.5	1	12.8	-36.4	69	-35.5	68
RLI00286	11/2/23 14:34	48.1	40.3	0	11.6	-0.2	98	-0.1	99
RLI00287	11/2/23 14:37	52.2	42.3	0	5.5	-17.1	104	-17.2	104
RLI0100C	11/10/23 14:39	59.2	38	0.7	2.1	-13	77	-14.3	77
RLI0102C	11/13/23 18:59	61.5	38.4	0	0.1	-13.7	91	-13.9	91
RLI0103C	11/6/23 15:30	58.8	41.1	0	0.1	-16.8	94	-17.4	95
RLI0105C	11/7/23 18:56	49.1	39.7	0.2	11	-5.5	75	-5.5	75
RLI0106C	11/7/23 19:06	56.4	42.2	0	1.4	-8.4	100	-9.3	100
RLI0107C	11/17/23 15:51	53.5	39	0	7.5	-0.2	116	-0.9	117
RLI0114A	11/17/23 14:53	64.3	31.8	1	2.9	-2.8	75	-2.9	76
RLI0115E	11/9/23 14:08	63.8	35.9	0.1	0.2	-11.7	75	-14.7	77
RLI0115E	11/9/23 14:51	58	30.1	1.8	10.1	-4.5	72	-7.5	74
RLI0116E	11/14/23 18:58	50.4	32.1	2.7	14.8	-18.9	73	-19.5	74
RLI0117D	11/16/23 18:30	43.8	34	2.6	19.6	-27.4	71	-24.8	71
RLI0124G	11/2/23 14:08	61.8	38.1	0	0.1	-21.2	86	-20.5	86
RLI0126C	11/10/23 17:32	57.5	27	3.2	12.3	-8.5	89	-9.4	89
RLI0127B	11/9/23 18:34	56.1	36.3	0.1	7.5	-14.4	102	-14.8	102
RLI0128A	11/7/23 19:37	53.8	41.5	0	4.7	-1.2	115	-1.6	115
RLI0129E	11/14/23 15:41	70.9	28.2	0.5	0.4	-3.7	70	-3.6	70
RLI0130E	11/14/23 15:49	45.9	31.4	0	22.7	-10.4	73	-9.3	73
RLIHC101	11/2/23 13:48	59.1	40.8	0	0.1	-15.7	109	-15.5	109
RLIHC102	11/2/23 14:01	59.4	40.5	0	0.1	-26.4	109	-26.1	110
RLLC0176	11/6/23 14:09	35.4	32.3	0.9	31.4	-10.5	84	-10.5	82
RLLC0177	11/6/23 14:28	59.1	40.8	0	0.1	-12.9	108	-14.6	109

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 2, 6, 7, 8, 9, 10, 13, 14, 16, 17, and 20, 2023

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	11/16/23 18:01	60.2	39.2	0	0.6	-0.3	98	-0.5	100
RLI00003	11/13/23 19:06	46.8	34.2	1.3	17.7	-4.2	73	-3.8	73
RLLC0179	11/13/23 14:49	55.6	35.8	0	8.6	-34.1	85	-34.1	85
RLLC0180	11/7/23 18:19	59.5	40.4	0	0.1	-19.5	107	-16.4	108
RLLC0181	11/7/23 18:44	59.9	40	0	0.1	-3.2	106	-3.8	106
RLLC0183	11/9/23 18:48	36.8	33.2	0	30	-1.5	83	-1.6	79
RLLC0184	11/9/23 18:24	60	38.6	0	1.4	-16.2	101	-17.8	101
RLLC0185	11/6/23 14:33	53	39.7	0	7.3	-0.6	111	-1.1	106
RLLC0186	11/6/23 14:58	60.4	39.3	0.2	0.1	-18.6	88	-16.9	88
RLLC0187	11/6/23 15:05	59.7	39.8	0.3	0.2	-19.9	88	-18	87
RLLC0188	11/6/23 15:09	58.3	41.6	0	0.1	-15.8	102	-16.6	102
RLLC0189	11/7/23 18:06	55.4	40.1	0	4.5	-2.7	115	-3.2	115
RLLC0190	11/7/23 18:16	56.6	41.7	0	1.7	-0.9	108	-1	109
RLLC0191	11/16/23 18:52	59.5	40.4	0	0.1	-31.4	94	-32.1	94
RLLC0193	11/9/23 14:25	58.3	38.6	0	3.1	-9	103	-9.4	99
RLLC0194	11/7/23 19:32	53.1	40.6	0	6.3	-3.8	106	-3.8	106
RLLC0195	11/7/23 19:18	56.6	43.3	0	0.1	-0.1	98	-0.4	103
RLLC0196	11/7/23 19:21	62.5	37.4	0	0.1	-2.1	92	-2.2	93
RLLC0198	11/17/23 16:42	51.4	44.1	4.3	0.2	-0.3	70	-0.3	69
RLLC0199	11/17/23 16:06	59.8	36.9	0	3.3	-3.8	106	-4.3	106
RLLC0200	11/17/23 16:13	63.7	36.2	0	0.1	-0.1	80	-0.3	81
RLLC0201	11/17/23 16:17	58.2	41.7	0	0.1	-3.7	87	-4.6	87
RLLC0202	11/10/23 18:04	62.5	37.4	0	0.1	-4.5	80	-4.7	81
RLLC0204	11/10/23 17:58	50.6	36.9	0	12.5	-1.7	104	-1.9	105
RLLC0205	11/10/23 17:49	33.1	30.9	0	36	-0.1	91	-0.1	90
RLLC0206	11/10/23 17:39	48.7	36.6	0	14.7	-5.5	95	-5.3	93
RLLC0209	11/10/23 17:43	46.3	34.9	0	18.8	-0.7	92	-0.7	93
RLLC0210	11/10/23 17:53	41.1	33.5	0	25.4	-0.4	91	-0.3	91
RLLC0212	11/2/23 15:00	43.3	35.6	0.5	20.6	-8.5	108	-7.2	109
RLLC0214	11/2/23 14:56	59.1	40.2	0	0.7	-14.2	103	-14.9	103
RLLC0215	11/2/23 14:51	60.7	39.2	0	0.1	-19.3	91	-20	92
RLLC0217	11/14/23 14:20	61.7	38.2	0	0.1	-25.8	87	-26.7	88
RLLC0221	11/17/23 15:57	60.2	35.9	0	3.9	-6.5	86	-5.8	87
RLLC0222	11/17/23 17:12	59.9	38.6	0.4	1.1	-16.7	70	-16	70
RLLC0223	11/17/23 16:28	54.8	45.1	0	0.1	-13	111	-14.3	111
RLLC0225	11/17/23 16:22	57.8	42.1	0	0.1	-2.4	87	-2.7	87
RLLC0226	11/2/23 15:04	57	38.3	0.6	4.1	-16	87	-15.6	87
RLLC0227	11/13/23 14:18	50	35.3	0	14.7	-7	85	-7	85
RLLC0229	11/17/23 16:09	64.7	35.2	0	0.1	-0.2	78	-0.3	81
RLLC0230	11/8/23 18:29	57.4	41.5	0	1.1	-4.9	102	-6.6	103
RLLC0231	11/9/23 15:00	45.7	35.5	0	18.8	-6	98	-5.4	98
RLLC0232	11/9/23 18:08	56	37.1	0	6.9	-1.2	92	-1.4	92
RLLC0233	11/16/23 18:37	59.4	40.5	0	0.1	-1.1	104	-1.5	104
RLLC0234	11/13/23 18:42	48.3	36.9	0	14.8	-14.4	110	-13.1	110
RLLC0235	11/13/23 18:36	51.2	39.1	0	9.7	-8	106	-8.4	106
RLLC0236	11/13/23 18:32	48.7	37	0	14.3	-9	104	-8.1	104
RLLC0237	11/16/23 18:18	53.3	40.7	0	6	-19.8	91	-20.6	91
RLLC0239	11/16/23 18:11	37.9	33.7	0	28.4	-0.2	91	-0.1	91
RLLC0240	11/16/23 18:06	48.7	36.9	0	14.4	-1.1	101	-1	102
RLLC0241	11/13/23 18:25	60.2	39.7	0	0.1	-34.8	97	-34.3	98
RLLC0242	11/13/23 18:20	58	41.9	0	0.1	-18.8	108	-20.8	109
RLLC0243	11/2/23 13:23	50.7	37.4	0	11.9	-0.4	110	-0.4	111
RLLC0244	11/2/23 13:27	52.1	38.4	0	9.5	-1.9	115	-2.3	115
RLLC0245	11/2/23 13:32	48	38.2	0	13.8	-1.5	107	-1.3	107
RLLC0246	11/8/23 17:07	52.2	42.8	0	5	-3.7	106	-4	107
RLLC0247	11/14/23 15:58	47.2	35.6	0	17.2	-4.2	99	-3.8	99

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 2, 6, 7, 8, 9, 10, 13, 14, 16, 17, and 20, 2023

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	11/16/23 18:01	60.2	39.2	0	0.6	-0.3	98	-0.5	100
RLI00003	11/13/23 19:06	46.8	34.2	1.3	17.7	-4.2	73	-3.8	73
RLLC0248	11/14/23 16:03	52.2	39.8	0	8	-8.8	99	-9.3	100
RLLC0249	11/6/23 14:43	51.4	38.8	0	9.8	-12.7	116	-12.1	116
RLLC0250	11/6/23 13:57	47.4	38.6	0	14	-2.7	112	-2.2	113
RLLC0251	11/6/23 14:24	46.6	37.7	0.7	15	-1.5	109	-1.3	109
RLLC0252	11/13/23 16:01	53.2	41.6	0	5.2	-9.8	110	-10.7	110
RLLC0253	11/16/23 18:47	54.2	43	0	2.8	-21.4	107	-21.7	107
RLLC0254	11/13/23 15:55	55.1	42.1	0	2.8	-21.2	106	-21.3	107
RLLC0255	11/8/23 17:49	59	40.9	0	0.1	-6.3	101	-7.5	102
RLLC0256	11/8/23 17:42	57.2	39.6	0	3.2	-10.9	102	-12.2	102
RLLC0257	11/13/23 19:15	46.7	31.2	3.2	18.9	-10.9	70	-1.8	71
RLLC0258	11/13/23 19:20	70.6	25.2	0.5	3.7	-14.3	72	-15.3	72
RLLC0259	11/13/23 19:24	52.5	37.2	0	10.3	-10.3	82	-10.6	82
RLLC0260	11/10/23 17:19	50.8	39.3	0	9.9	-0.9	93	-0.9	93
RLLC0261	11/13/23 18:53	48.9	37	0	14.1	-2.6	98	-2.3	98
RLLC0262	11/10/23 14:33	43.9	34.9	0	21.2	-5.2	86	-4.5	86
RLLC0263	11/6/23 15:20	57	42.9	0	0.1	-7.2	114	-7.8	114
RLLC0263	11/7/23 17:59	57.3	42.5	0	0.2	-7.3	114	-8.1	114
RLLC0264	11/7/23 18:34	50.7	40.1	0	9.2	-6.4	108	-6.5	108
RLLC0265	11/8/23 17:04	55.7	43	0	1.3	-2.3	105	-2.5	105
RLLC0266	11/8/23 16:55	53.3	39.6	0.1	7	-0.8	96	-1	103
RLLC0266	11/8/23 18:07	55.6	44.3	0	0.1	-3.4	106	-3.8	107
RLLC0267	11/2/23 14:42	50.9	40.6	0.2	8.3	-11.3	109	-10.8	109
RLLC0268	11/8/23 16:59	56.3	41.8	0	1.9	-3.9	115	-4.3	115
RLLC0269	11/17/23 17:04	55.3	43.8	0	0.9	-3.7	109	-4.2	110
RLLC0270	11/8/23 18:01	56.3	43.6	0	0.1	-3.8	110	-4.3	110
RLLC0271	11/13/23 15:13	54.2	37.5	0	8.3	-18.1	97	-19.4	97
RLLC0272	11/8/23 17:32	37.4	35.8	0	26.8	-4.8	112	-4.3	113
RLLC0273	11/9/23 13:55	60.2	39.7	0	0.1	-26.7	107	-26.3	107
RLLC0274	11/7/23 18:59	52.4	41.1	0	6.5	-1.6	110	-1.8	111

There are 137 total collectors; 132 vertical wells and 5 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 4, 6, 7, 8, 11, 12, 13, 14, 18, and 19, 2023

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	12/13/23 12:04	55.9	38.4	0	5.7	-0.59	101.3	-0.68	101.8
RLI00003	12/7/23 10:07	52.4	36.7	1.5	9.4	-4.29	65.3	-4.27	65.3
RLI00008	12/14/23 11:49	63.2	35.1	0.4	1.3	-26.15	75.6	-26.18	74.9
RLI00016	12/14/23 12:10	29.8	26	0.2	44	-18.3	66.6	-18.23	66.4
RLI00017	12/14/23 12:06	45.8	32.6	0.4	21.2	-18	69.1	-16.57	68.9
RLI00018	12/14/23 12:00	23.6	25.3	0.7	50.4	-19.83	67.3	-18.02	66.7
RLI00019	12/14/23 11:54	56.1	34	1	8.9	-25.52	64	-25.69	65.4
RLI00034	12/7/23 10:19	59.1	40.5	0	0.4	-26.47	80.5	-26.46	80.5
RLI00035	12/18/23 11:04	56.7	37.9	0	5.4	-24.21	73.5	-24.18	74.4
RLI00045	12/7/23 10:35	43.4	32.5	0	24.1	-1.28	69.2	-1.25	69.2
RLI00047	12/7/23 10:32	44.8	34.9	0	20.3	-1.95	78	-1.93	78.1
RLI00065	12/4/23 12:46	54	44.5	0	1.5	-5.8	97.2	-8.74	97.6
RLI00083	12/4/23 10:57	61.8	38.1	0	0.1	-24.24	94.3	-24.6	94.3
RLI00095	12/4/23 10:26	52.1	35	0	12.9	-1.37	104.4	-1.57	104.7
RLI00132	12/6/23 14:17	60.6	39.4	0	0	-24.98	84.2	-25	84.1
RLI00134	12/18/23 10:50	40.5	35.2	0	24.3	-5.5	126.8	-4.87	126.8
RLI00135	12/13/23 10:24	50.8	39.4	0	9.8	-4.28	107.3	-4.89	108
RLI00137	12/18/23 10:15	56.6	31.7	2.1	9.6	-26.88	57.8	-23.43	58.1
RLI00140	12/13/23 14:47	47.3	39.6	0	13.1	-17.94	107.3	-16.01	107.4
RLI00141	12/13/23 14:17	42.3	38.9	0.1	18.7	-0.46	101.1	-0.4	101.1
RLI00142	12/13/23 14:54	55.4	41	0	3.6	-16.79	101.3	-18.07	102.2
RLI00220	12/18/23 11:34	52.5	37.3	0.9	9.3	-9.1	83	-9.62	83.1
RLI00275	12/4/23 11:04	45.2	35.9	0	18.9	-16.14	96.7	-14.67	96.8
RLI00276	12/4/23 12:15	56.4	40.7	0	2.9	-26.01	89	-26.05	88.8
RLI00277	12/13/23 11:38	51.8	39.8	0	8.4	-0.66	110.1	-0.89	110.7
RLI00278	12/13/23 11:52	49.2	39.2	0	11.6	-3.24	109.3	-2.94	109.3
RLI00279	12/13/23 11:29	55.5	43	0	1.5	-1.21	130.3	-1.37	130.4
RLI00280	12/11/23 11:18	47.7	36.5	0	15.8	-5.17	111.4	-4.6	111.4
RLI00281	12/13/23 11:17	49.3	39.5	0	11.2	-3.29	115.1	-3.21	115.1
RLI00282	12/14/23 10:25	55.4	42.3	0	2.3	-15.56	111.4	-16.4	111.3
RLI00283	12/14/23 10:45	54.6	45.2	0	0.2	-10.03	118.5	-10.75	118.5
RLI00284	12/18/23 9:49	49.3	34.2	2.1	14.4	-30.82	54.3	-29.19	54.1
RLI00285	12/4/23 10:43	57.1	37.5	0.3	5.1	-24.03	78.4	-24.03	78.7
RLI00286	12/18/23 14:03	45.6	39.3	0	15.1	-0.29	97.8	-0.24	97.8
RLI00287	12/18/23 14:07	53	41.9	0	5.1	-20.22	102.2	-18.53	102.6
RLI0100C	12/7/23 10:14	58.7	39.5	0.3	1.5	-25.28	72.7	-25.32	72.8
RLI0102C	12/7/23 10:00	61.2	38.8	0	0	-14.15	88.2	-15.12	88.2
RLI0103C	12/13/23 10:19	56.6	40.5	0.1	2.8	-23.59	89.3	-23.75	89.6
RLI0105C	12/13/23 11:02	27.2	28.2	4.2	40.4	-1.13	60.9	-1.09	60.8
RLI0106C	12/13/23 11:12	54.8	42	0	3.2	-5.85	97.6	-6.37	97.8
RLI0107C	12/8/23 11:14	49.7	37.5	0.8	12	-0.22	113.3	-0.22	113.7
RLI0114A	12/18/23 10:22	61.7	32	1.4	4.9	-3.78	55	-4.52	55
RLI0115E	12/6/23 13:38	61.8	36	0.9	1.3	-17.41	87.6	-17.44	88.1
RLI0116E	12/18/23 10:03	56.2	35.1	1.6	7.1	-13.15	54.6	-15.6	54.7
RLI0117D	12/18/23 9:57	52.9	35	1.6	10.5	-24.64	51.8	-26.86	52
RLI0124G	12/8/23 14:36	61.2	38.2	0	0.6	-23.52	76.8	-23.6	77
RLI0126C	12/8/23 10:43	66.7	33.1	0.2	0	-1.21	86.4	-2.28	86.3
RLI0127B	12/6/23 14:07	53.6	36.8	0.2	9.4	-17.3	102.9	-17.31	102.8
RLI0128A	12/13/23 11:24	48.8	40.7	0	10.5	-2.13	115.5	-1.9	115.4
RLI0129E	12/7/23 11:46	53.6	20.6	4.9	20.9	-6.46	56.6	-5.84	56.6
RLI0130E	12/7/23 14:03	52.9	32.8	0.1	14.2	-12.39	72.4	-12.48	72.7
RLIHC101	12/8/23 14:26	59.1	40.8	0	0.1	-14.87	107.2	-15	107.6
RLIHC102	12/8/23 14:30	58.5	41	0	0.5	-24.63	107.3	-23.58	107.3
RLLC0176	12/12/23 14:31	33	32	0.2	34.8	-15.48	73.9	-12.43	71.8
RLLC0177	12/12/23 14:51	58.6	40.8	0	0.6	-18.94	106.1	-17.72	106.2
RLLC0179	12/4/23 10:37	60.3	36.9	0	2.8	-27.37	72.6	-27.4	72.5

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 4, 6, 7, 8, 11, 12, 13, 14, 18, and 19, 2023

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (^{o}F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (^{o}F)
RLHC0153	12/13/23 12:04	55.9	38.4	0	5.7	-0.59	101.3	-0.68	101.8
RLI00003	12/7/23 10:07	52.4	36.7	1.5	9.4	-4.29	65.3	-4.27	65.3
RLLC0180	12/13/23 10:47	56.6	39.7	0	3.7	-17.13	108.9	-21.88	108.9
RLLC0181	12/13/23 10:54	59.5	39.9	0	0.6	-6.38	93.8	-7.08	92.8
RLLC0183	12/6/23 14:13	43.1	33.4	0	23.5	-1.77	64.4	-1.78	64.4
RLLC0184	12/6/23 14:00	58.4	39.6	0	2	-20.17	101.9	-20.16	101.9
RLLC0185	12/12/23 14:46	53.8	40.4	0	5.8	-0.15	88.5	-1.69	102.6
RLLC0186	12/12/23 15:02	59.9	39.7	0	0.4	-20.94	62.4	-20.79	62.2
RLLC0187	12/12/23 15:09	58.5	39.8	0.2	1.5	-20.48	80.6	-21.2	81.1
RLLC0188	12/12/23 15:13	58	42	0	0	-18.48	99.9	-18.44	100
RLLC0189	12/13/23 10:33	37.4	33.7	1.1	27.8	-2.17	121.7	-1.56	121.6
RLLC0190	12/13/23 10:43	41.9	36.1	0.6	21.4	-16.37	116.5	-15.76	116.6
RLLC0191	12/8/23 14:06	60.8	39.2	0	0	-26.11	95.3	-25.96	95.3
RLLC0193	12/18/23 10:27	60.3	39.7	0	0	-7.74	101	-9.11	100.7
RLLC0194	12/13/23 11:33	49.1	39.7	0	11.2	-5.66	107.8	-5.72	107.6
RLLC0195	12/13/23 11:43	55.6	43.4	0	1	-0.91	102.3	-1.28	102.5
RLLC0196	12/13/23 11:47	62.2	37.2	0	0.6	-6.02	93.3	-5.68	93.4
RLLC0198	12/18/23 15:04	55.6	37.3	0	7.1	-2.38	82.6	-2.48	82.9
RLLC0199	12/8/23 11:35	58	36.7	0	5.3	-5.62	104.7	-6.37	105
RLLC0200	12/8/23 11:49	60.9	38.9	0	0.2	-1.93	76.2	-2.54	79.1
RLLC0201	12/18/23 14:53	42	56.1	0	1.9	-0.84	90	-0.7	89.8
RLLC0202	12/8/23 11:23	58.6	36.8	0.5	4.1	-5.94	60.2	-5.94	60.2
RLLC0204	12/8/23 11:08	53.7	37.8	0	8.5	-1.13	104.5	-1.26	104.5
RLLC0205	12/8/23 10:58	39.9	32	0	28.1	-0.07	83.8	-0.05	83.7
RLLC0206	12/8/23 10:38	56.3	37.4	0	6.3	-2.28	64.7	-2.44	63.3
RLLC0209	12/8/23 10:34	52.5	35.7	0	11.8	-0.48	85.7	-0.48	86.3
RLLC0210	12/8/23 11:03	42.1	33.4	0	24.5	-0.24	80.6	-0.19	80.2
RLLC0212	12/18/23 14:24	50.7	38.9	0	10.4	-6.18	110.5	-6.04	110.6
RLLC0214	12/18/23 14:19	57	39.9	0	3.1	-15.16	104.9	-15.82	104.9
RLLC0215	12/18/23 14:15	59.6	40.4	0	0	-24	55	-22.96	54.9
RLLC0217	12/4/23 11:59	61.7	38.3	0	0	-21.62	87.8	-23.05	87.8
RLLC0221	12/8/23 11:28	59.8	35.7	0	4.5	-5.99	79	-6.72	79.7
RLLC0223	12/18/23 14:42	56.9	43.1	0	0	-23.68	107.9	-23.4	107.9
RLLC0224	12/18/23 14:47	58.1	41.9	0	0	-6.07	102.9	-7.23	102.8
RLLC0225	12/18/23 14:58	62.3	37.7	0	0	-2.14	74.9	-2.3	74.9
RLLC0226	12/18/23 14:30	53.1	36.9	1.7	8.3	-22.52	57.2	-24.66	54.5
RLLC0227	12/4/23 10:18	50.3	35	0	14.7	-6.17	87	-6.17	87
RLLC0229	12/8/23 11:55	60.6	37.2	0	2.2	-1.54	83.2	-1.69	83.7
RLLC0230	12/14/23 10:50	48.9	48.7	0	2.4	-23.59	99.8	-21.37	99.3
RLLC0231	12/6/23 13:45	50.8	37.2	0	12	-4.64	98	-4.61	98
RLLC0232	12/6/23 13:53	54.1	37.4	0	8.5	-1.05	89.7	-1.24	90.3
RLLC0233	12/11/23 14:29	56.2	43.1	0.1	0.6	-0.63	101.2	-0.75	101.6
RLLC0233	12/18/23 11:06	56.1	38.5	0	5.4	-23.94	75.1	-23.96	74.9
RLLC0234	12/4/23 12:25	49.8	36.6	0	13.6	-11.96	112.1	-11.92	112.1
RLLC0235	12/4/23 12:30	48.5	38.8	0	12.7	-7.54	107.4	-7.55	107.4
RLLC0236	12/4/23 12:42	50.6	37.5	0	11.9	-6.8	105.7	-6.79	105.7
RLLC0237	12/18/23 10:09	49.1	44.5	0	6.4	-20.95	92.8	-17.88	92.8
RLLC0239	12/11/23 14:36	47.3	35.7	0	17	-0.19	91.7	-0.17	91.6
RLLC0240	12/11/23 14:32	49.2	39.9	0	10.9	-0.96	102.9	-0.89	102.9
RLLC0241	12/4/23 12:52	57	41.5	0	1.5	-17.45	110.5	-17.91	110.5
RLLC0242	12/4/23 12:57	59.4	39.4	0	1.2	-26.17	100.1	-26.15	100.1
RLLC0243	12/7/23 14:12	50.4	39.5	0	10.1	-11.16	100.5	-12.52	100.8
RLLC0243	12/8/23 14:11	46.2	36.2	0	17.6	-0.53	111.3	-0.47	111.7
RLLC0244	12/8/23 14:16	46	36.7	0	17.3	-3.21	115.6	-2.91	115.7
RLLC0245	12/8/23 14:20	44.1	36.7	0	19.2	-1.79	107.3	-1.79	107.3
RLLC0246	12/13/23 14:42	49.6	41.4	0	9	-5.84	106.1	-5.94	106

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 4, 6, 7, 8, 11, 12, 13, 14, 18, and 19, 2023

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	12/13/23 12:04	55.9	38.4	0	5.7	-0.59	101.3	-0.68	101.8
RLI00003	12/7/23 10:07	52.4	36.7	1.5	9.4	-4.29	65.3	-4.27	65.3
RLLC0247	12/7/23 14:15	47.4	36.3	0	16.3	-4.63	100.2	-4.19	100.2
RLLC0248	12/19/23 10:15	49.6	39.1	0	11.3	-8.67	101.1	-10.6	101.1
RLLC0249	12/12/23 14:55	48.4	38.1	0	13.5	-15.91	116.4	-14.2	116.5
RLLC0250	12/12/23 14:23	50.1	39.5	0	10.4	-2.44	113.5	-2.4	113.5
RLLC0251	12/12/23 14:41	47.5	39.4	0	13.1	-1.66	111.6	-1.56	111.5
RLLC0252	12/4/23 12:11	52.5	41.2	0	6.3	-8.69	111.9	-9.12	111.8
RLLC0253	12/18/23 9:39	55.9	42.2	0	1.9	-20.63	107.4	-21.26	107.4
RLLC0255	12/14/23 11:02	59.2	40.8	0	0	-7.12	100.8	-8.57	101.1
RLLC0256	12/14/23 11:09	59.8	39.4	0	0.8	-26.41	87.2	-26.41	87.3
RLLC0257	12/4/23 12:05	54.2	42	0	3.8	-17.52	108.4	-17.53	108.4
RLLC0257	12/7/23 10:48	57.9	36.9	0	5.2	-18.56	62.4	-19	61.9
RLLC0258	12/7/23 10:52	69.5	25.7	0.8	4	-18.19	62.7	-18.79	62.6
RLLC0259	12/7/23 10:57	53.6	37.6	0	8.8	-12.07	82.9	-13.1	82.4
RLLC0260	12/8/23 10:47	47.6	38.5	0	13.9	-0.66	90.3	-0.63	90.4
RLLC0261	12/8/23 10:52	53.9	38	0	8.1	-2.83	97.3	-3.35	97.7
RLLC0262	12/18/23 10:58	49.5	35.2	0	15.3	-2.93	82.8	-2.53	82.5
RLLC0263	12/12/23 15:18	49.6	40.7	0	9.7	-8.66	115.8	-8.51	115.9
RLLC0264	12/13/23 10:37	41.8	37.8	0	20.4	-7.52	110.5	-6.29	110.5
RLLC0265	12/14/23 10:21	53.3	42.2	0	4.5	-3.78	105.2	-3.84	105.2
RLLC0266	12/13/23 14:24	35.2	29.3	4.9	30.6	-2.73	101.7	-1.96	101
RLLC0267	12/18/23 14:10	50.3	40.6	0	9.1	-14.33	109.5	-14.09	109.5
RLLC0268	12/13/23 14:28	53.6	40.9	0	5.5	-8.42	113.8	-9.15	113.7
RLLC0269	12/14/23 10:35	48.9	41.2	0.8	9.1	-5.44	113.9	-4.94	114.1
RLLC0270	12/14/23 10:30	55.2	43.8	0	1	-5.61	111	-6.13	111.1
RLLC0271	12/4/23 10:51	51	37.6	0	11.4	-17.35	99.1	-17.55	99.1
RLLC0272	12/13/23 14:51	46.4	38.1	0	15.5	-3.47	73.7	-3.53	73.4
RLLC0273	12/6/23 13:33	59.3	40.6	0.1	0	-16.64	108.7	-19.27	108.7
RLLC0274	12/13/23 11:06	52.5	40.9	0	6.6	-0.78	111.3	-1.31	111.4

There are 137 total collectors; 132 vertical wells and 5 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 5, 8, 12, 16, 18, 19, 22, 23, and 24, 2024

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	1/12/24 14:22	53.3	37.7	0	9	-2.77	102.3	-2.78	102.4
RLI00003	1/18/24 12:25	52	34	2	12	-7.95	59.4	-7.92	59.5
RLI00008	1/12/24 10:56	52.9	30.5	3.1	13.5	-33.37	67.9	-32.75	68.8
RLI00016	1/23/24 14:19	66.9	32	0.5	0.6	-42.24	67.2	-42.97	66.8
RLI00017	1/12/24 11:16	62.1	35.1	0.4	2.4	-23.42	68.1	-25.01	68.4
RLI00018	1/12/24 11:10	51.8	31.5	1.3	15.4	-26.5	60.8	-26.52	60.9
RLI00019	1/12/24 11:04	51.8	30.8	2.3	15.1	-32.89	61.3	-33.19	61.4
RLI00034	1/18/24 11:37	59	39.8	0	1.2	-32.99	79.1	-33.04	79.1
RLI00035	1/18/24 11:42	57.9	38.4	0	3.7	-34.37	75.8	-34.37	75.8
RLI00045	1/18/24 11:52	51.3	33.6	0	15.1	-3.53	66	-3.52	66
RLI00047	1/18/24 11:48	47.3	34.3	0	18.4	-5.34	76.1	-5.33	76.2
RLI00065	1/5/24 14:23	56	43.4	0	0.6	-12.29	96	-14.6	96.1
RLI00083	1/5/24 11:38	61.5	38.5	0	0	-32.65	89.7	-33.55	89.8
RLI00095	1/5/24 10:54	52.5	34.5	0	13	-2.16	104.2	-2.57	104.3
RLI00132	1/22/24 11:24	60.8	39.1	0.1	0	-31.08	69.6	-34.64	69.9
RLI00134	1/24/24 10:17	31.8	32.3	0	35.9	-2.25	126.8	-0.99	126.2
RLI00135	1/16/24 10:09	54.6	39.6	0	5.8	-6.68	102.7	-7.29	103.4
RLI00137	1/23/24 12:05	47.8	25.5	4.8	21.9	-17.42	76.9	-17.97	76.9
RLI00140	1/8/24 11:52	54.4	42	0	3.6	-28.28	83.6	-27.68	83.7
RLI00141	1/8/24 10:17	47.9	41.3	0.2	10.6	-0.44	84.8	-0.4	84.8
RLI00142	1/8/24 11:45	57.1	42.6	0	0.3	-20.27	80.8	-20.61	81.3
RLI00220	1/23/24 11:04	46.8	33.6	3.1	16.5	-27.27	77.9	-23.72	77.9
RLI00275	1/5/24 11:34	43.2	35.1	0	21.7	-18.47	98.5	-17.53	98.4
RLI00276	1/5/24 13:50	52.1	40.3	0.1	7.5	-36.32	81.9	-37.15	82.2
RLI00277	1/12/24 14:06	50.2	39.6	0	10.2	-1	110.2	-0.88	110.1
RLI00278	1/12/24 14:11	48.1	38.9	0	13	-4.07	109.4	-2.79	108.9
RLI00279	1/12/24 14:38	56.2	42.9	0	0.9	-4.49	113.2	-4.88	113.8
RLI00280	1/12/24 10:39	46.7	35.7	0	17.6	-6.73	110.3	-5.27	110.3
RLI00281	1/16/24 9:26	49.3	39.7	0	11	-3.66	114.4	-2.75	114.3
RLI00282	1/8/24 13:42	57.6	42.3	0.1	0	-14.93	110.9	-15.31	110.8
RLI00283	1/8/24 14:13	56.7	43.3	0	0	-10.49	118.9	-11.46	118.8
RLI00284	1/5/24 11:47	48.3	31.6	1.8	18.3	-32.09	71.9	-31.09	72
RLI00285	1/5/24 11:29	57	35.1	1.1	6.8	-25.07	82.4	-25.13	82.6
RLI00286	1/19/24 10:29	47.5	40.4	0	12.1	-0.43	98.6	-0.32	98.2
RLI00287	1/19/24 10:35	53.8	41.8	0	4.4	-28.49	103.7	-34	103.9
RLI0100C	1/18/24 11:32	59	39.1	0.1	1.8	-32.39	71.8	-32.99	72.2
RLI0102C	1/18/24 11:22	60.1	37.4	0	2.5	-25.21	85.5	-25.64	85.5
RLI0103C	1/16/24 10:18	58.2	41.5	0	0.3	-31.81	82.6	-31.97	82.8
RLI0105C	1/16/24 9:33	29.4	31.1	0.8	38.7	-9.94	67.5	-8.96	67.3
RLI0106C	1/16/24 9:21	54.2	41.3	0.2	4.3	-14.51	91	-15.58	91.1
RLI0107C	1/18/24 10:38	39.1	29.9	3.6	27.4	-0.2	106.3	-0.11	104.9
RLI0114A	1/12/24 10:21	46.5	25.6	4.7	23.2	-37.25	55.2	-40.31	55.7
RLI0115E	1/12/24 10:05	60.3	35.5	0.8	3.4	-34.55	86.7	-36.82	86.4
RLI0116E	1/12/24 9:10	45.7	29.9	4.8	19.6	-21.45	44.4	-19.08	45
RLI0117D	1/23/24 12:21	60.1	37.8	0.1	2	-37.58	82.7	-38.41	82.6
RLI0124G	1/19/24 11:53	61.9	38.1	0	0	-40.07	63.1	-40.03	63.1
RLI0126C	1/18/24 11:11	64.5	32.1	0.1	3.3	-17.67	71.2	-18.29	70.1
RLI0127B	1/22/24 11:15	50.5	35.6	0.7	13.2	-25.65	103.1	-25.57	103.1
RLI0128A	1/12/24 13:55	51.5	41	0	7.5	-2	115.6	-1.99	115.7
RLI0129E	1/23/24 15:08	47.8	28.9	3.1	20.2	-19.48	60.8	-19.02	60.4
RLI0130E	1/18/24 12:49	72.4	27.6	0	0	-2.36	57	-3.87	60
RLIHC101	1/19/24 11:46	58.6	41.4	0	0	-35.19	106.6	-36.49	106.4
RLIHC102	1/19/24 11:49	58.5	41.5	0	0	-43.45	107.1	-40.56	107.1
RLLC0176	1/16/24 12:42	19.9	23.7	4.5	51.9	-2.57	53.8	-2.6	53.8
RLLC0177	1/16/24 12:08	59	41	0	0	-26.6	109.3	-28.05	109.3
RLLC0179	1/5/24 11:22	53.8	32	1	13.2	-35.05	68.4	-35.57	68.4

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 5, 8, 12, 16, 18, 19, 22, 23, and 24, 2024

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	1/12/24 14:22	53.3	37.7	0	9	-2.77	102.3	-2.78	102.4
RLI00003	1/18/24 12:25	52	34	2	12	-7.95	59.4	-7.92	59.5
RLLC0180	1/16/24 9:55	55.2	40	0	4.8	-30.26	107.3	-24.51	107.3
RLLC0181	1/16/24 9:44	59.7	40.3	0	0	-11.47	106.9	-11.77	106.7
RLLC0183	1/22/24 11:08	42.2	32.4	0.1	25.3	-3	62.4	-2.6	61.9
RLLC0184	1/22/24 10:54	59.4	39.3	0.1	1.2	-25.77	101	-26.5	101.1
RLLC0185	1/16/24 12:13	49.3	38.3	0	12.4	-0.28	89.4	-0.14	85.8
RLLC0186	1/16/24 10:24	60.3	39.7	0	0	-31.88	65.4	-31.23	65.8
RLLC0187	1/16/24 11:50	60.6	39.4	0	0	-32.27	86.9	-32.39	86.7
RLLC0188	1/16/24 11:46	59.1	40.8	0	0.1	-27.62	102	-27.1	101.9
RLLC0189	1/16/24 12:00	36.1	32.7	1.5	29.7	-0.27	71	-0.27	70.9
RLLC0190	1/16/24 10:04	51.3	40.1	0	8.6	-24.88	117.4	-23.35	117.4
RLLC0191	1/8/24 10:12	60.7	39.3	0	0	-28.86	93.7	-28.94	93.8
RLLC0193	1/12/24 10:12	61.6	38.4	0	0	-39.98	80.4	-39.04	79.9
RLLC0194	1/12/24 14:00	50.1	39.6	0	10.3	-7.21	106.9	-5.24	106.9
RLLC0195	1/12/24 14:27	50.7	40.9	0.4	8	-4.23	103.4	-2.96	103.4
RLLC0196	1/12/24 14:14	61.3	37.4	0	1.3	-17.13	96.2	-17.29	96.2
RLLC0198	1/23/24 14:38	65.3	32.8	0.5	1.4	-11.01	62.5	-12.14	62.6
RLLC0199	1/18/24 9:45	62.3	37.7	0	0	-19.9	54.2	-19.17	55.1
RLLC0200	1/18/24 9:35	59.9	35.5	0	4.6	-19.3	63	-20.62	63.2
RLLC0201	1/22/24 10:29	49.2	50.7	0	0.1	-3.04	93.9	-1.49	93.6
RLLC0202	1/18/24 10:23	62.1	35.8	0.3	1.8	-18.02	53.8	-20.12	53.7
RLLC0204	1/18/24 10:28	38.4	32.6	0	29	-3.35	104.7	-2.89	104.6
RLLC0205	1/18/24 10:54	26.3	27.6	0	46.1	-0.26	88.3	-0.17	85.1
RLLC0206	1/18/24 11:04	41.2	33.9	0	24.9	-9.03	93.9	-7.38	90.2
RLLC0209	1/18/24 11:00	27.1	29.1	0	43.8	-1.91	89.5	-1.62	87.2
RLLC0210	1/18/24 10:46	34.9	31	0	34.1	-0.67	84.5	-0.38	81
RLLC0212	1/19/24 11:14	51.5	39.5	0	9	-9.25	88.7	-6.81	88.7
RLLC0214	1/19/24 11:10	57.2	40.7	0	2.1	-25.63	100.7	-25.01	100.7
RLLC0215	1/19/24 11:04	58.3	41.7	0	0	-33.88	58.4	-33.92	58.4
RLLC0217	1/5/24 11:51	62.2	37.8	0	0	-29.89	83.9	-28.82	83.9
RLLC0221	1/23/24 14:43	65.4	25.2	1.7	7.7	-17.24	62.4	-17.84	62.3
RLLC0223	1/8/24 14:20	57.3	42.7	0	0	-19.88	108.1	-21.54	108.1
RLLC0224	1/8/24 14:25	58	42	0	0	-7.34	103.4	-7.87	103.4
RLLC0225	1/23/24 15:17	48.4	51.2	0.2	0.2	-1.29	91.8	-1.26	92.2
RLLC0226	1/19/24 11:21	49.4	35.8	2.9	11.9	-33.14	61.4	-32.91	61.4
RLLC0227	1/5/24 10:39	46.7	34.3	0	19	-8.54	85.9	-7.67	85.9
RLLC0229	1/18/24 9:39	35.4	32.6	0	32	-10.76	87.2	-7.79	83.1
RLLC0230	1/23/24 15:32	56.2	43.7	0.1	0	-17.68	118.5	-17.72	118.6
RLLC0231	1/12/24 10:35	53.5	37.4	0	9.1	-4.37	97.5	-3.69	97.5
RLLC0232	1/12/24 10:46	49.8	35.9	0	14.3	-2.29	90.9	-1.85	89.9
RLLC0234	1/5/24 13:56	50.6	35.6	0	13.8	-24.12	110	-23.41	110.1
RLLC0234	1/12/24 9:48	50.9	35.9	0	13.2	-25.89	109.6	-22.71	109.5
RLLC0235	1/5/24 14:03	46.9	37.8	0	15.3	-8.84	105.4	-8.13	107
RLLC0235	1/12/24 9:42	49.9	38.6	0	11.5	-8.03	106.1	-6.5	106.1
RLLC0236	1/5/24 14:08	51.8	38	0	10.2	-8.92	105.1	-9.21	105.1
RLLC0236	1/12/24 9:37	50.9	38.2	0	10.9	-10.54	104.7	-10.52	104.7
RLLC0237	1/23/24 12:07	52.3	45.8	0	1.9	-17.99	92	-19.84	92.1
RLLC0239	1/12/24 9:16	43.2	44.8	0	12	-0.21	88.3	-0.24	88.2
RLLC0240	1/12/24 9:21	49.9	46.5	0	3.6	-1.28	102.1	-0.82	101.9
RLLC0241	1/5/24 14:18	59.5	40.5	0	0	-36.87	96.5	-36.39	96.5
RLLC0242	1/5/24 14:27	56.8	42	0	1.2	-24.16	109.2	-26.71	109.1
RLLC0243	1/19/24 11:41	48.4	36.9	0	14.7	-1.25	110.7	-0.72	110.6
RLLC0244	1/19/24 11:35	43.7	35.6	0	20.7	-6.79	116.3	-4.17	115.8
RLLC0245	1/19/24 11:30	41.4	35.4	0	23.2	-2.22	104.8	-1.39	103.3
RLLC0246	1/8/24 11:40	54.3	42.1	0	3.6	-6.17	102.3	-6.86	102.3

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 5, 8, 12, 16, 18, 19, 22, 23, and 24, 2024

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	1/12/24 14:22	53.3	37.7	0	9	-2.77	102.3	-2.78	102.4
RLI00003	1/18/24 12:25	52	34	2	12	-7.95	59.4	-7.92	59.5
RLLC0247	1/18/24 13:01	48.2	35.8	0	16	-5.17	99.3	-3.62	99.2
RLLC0248	1/18/24 12:56	48.2	38.5	0	13.3	-14.07	100.8	-8.05	101.1
RLLC0249	1/16/24 12:23	58.6	40.7	0	0.7	-35.18	112.1	-35.94	112.2
RLLC0250	1/16/24 12:35	52.4	39.9	0	7.7	-2.93	113.2	-2.9	113.3
RLLC0251	1/16/24 12:32	51.9	40.2	0	7.9	-1.47	111.3	-1.44	111.3
RLLC0252	1/5/24 13:46	52.8	41.4	0	5.8	-12.22	111.5	-12.86	111.5
RLLC0253	1/5/24 13:42	54.6	42.1	0.1	3.2	-23.19	107.6	-23.7	107.6
RLLC0255	1/23/24 11:13	59.4	40.6	0	0	-13.06	101.1	-16.04	101.3
RLLC0256	1/23/24 15:49	44.4	31.2	4.5	19.9	-45.39	66.7	-44.92	66.7
RLLC0257	1/18/24 12:30	58.4	36.5	0.2	4.9	-23.06	56.6	-24.16	56.6
RLLC0258	1/18/24 12:33	71.4	27.6	0	1	-30.77	57.4	-30.81	57.4
RLLC0259	1/18/24 12:36	53.2	36	0	10.8	-23.3	81.3	-23.28	81.3
RLLC0260	1/18/24 11:15	40.6	34.4	0	25	-2.28	94.6	-1.63	94.4
RLLC0261	1/18/24 11:18	50.1	35.7	0	14.2	-4.7	97.7	-4.06	97.7
RLLC0262	1/18/24 11:27	51	34.6	0	14.4	-4.6	84.2	-3.34	84
RLLC0263	1/16/24 11:43	52.5	39.5	0	8	-12	115.4	-11.15	115.5
RLLC0264	1/16/24 9:50	40.6	37.5	0	21.9	-9.03	110.5	-6.67	110.3
RLLC0265	1/8/24 13:48	56.6	42.8	0	0.6	-3.71	103.8	-3.76	104.6
RLLC0266	1/8/24 11:20	44	34.3	3.1	18.6	-2.8	96	-2.75	95.8
RLLC0267	1/19/24 10:58	52.1	41.9	0	6	-15.16	109.5	-15.07	109.5
RLLC0268	1/8/24 11:29	57.3	42.1	0	0.6	-10.03	112.5	-11	112.4
RLLC0269	1/8/24 13:56	54.8	43.1	0	2.1	-4.66	112.7	-5.13	112.6
RLLC0270	1/8/24 13:52	56	44	0	0	-4.54	109.5	-5.05	109.5
RLLC0271	1/5/24 11:42	49	37.1	0	13.9	-23.03	98.4	-22.08	98.4
RLLC0272	1/8/24 11:58	53.1	41.8	0	5.1	-5.18	106.2	-5.3	106.4
RLLC0273	1/12/24 9:58	59.8	39.6	0	0.6	-32.05	108.2	-29.87	108.2
RLLC0274	1/16/24 9:37	36.3	35	0	28.7	-3.9	112.7	-1.71	111.6

There are 137 total collectors; 132 vertical wells and 5 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 5, 6, 9, 13, 15, 21, 22, and 23, 2024

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	2/13/24 10:12	61.4	36.6	0	2	-20.84	74.3	-22.12	74.4
RLI00003	2/15/24 12:09	53.8	33.9	1.7	10.6	-8.25	62.4	-9.64	62.2
RLI00008	2/23/24 10:28	46.6	26.5	4.6	22.3	-43.07	64.9	-37.05	64.4
RLI00016	2/23/24 11:07	60.5	29.2	1.4	8.9	-45.39	61.8	-46.64	61.6
RLI00017	2/23/24 11:03	58.4	32.6	1.8	7.2	-29.27	65.2	-32.59	65.4
RLI00018	2/23/24 10:56	61.6	32.9	1	4.5	-32.05	63.2	-34.26	63.5
RLI00019	2/23/24 10:54	51.4	26.6	3.5	18.5	-31.37	63	-31.34	62.9
RLI00034	2/23/24 11:47	59.9	40.1	0	0	-39.31	77.6	-39.07	77.6
RLI00035	2/23/24 11:51	60.4	38.6	0	1	-38.55	75.3	-39.42	75.2
RLI00045	2/23/24 12:03	43.9	32.7	0	23.4	-11.48	68.2	-10.77	66.5
RLI00047	2/23/24 12:00	53.9	35.8	0	10.3	-22.65	72.8	-23.34	74
RLI00065	2/6/24 11:47	56.1	43.3	0	0.6	-17.9	96.2	-20.92	96.3
RLI00083	2/22/24 12:37	61.9	38.1	0	0	-46.95	87	-46.21	87
RLI00095	2/5/24 10:19	53.5	34.6	0	11.9	-3.54	103.8	-3.91	103.8
RLI00132	2/9/24 11:04	61.9	38	0	0.1	-34.93	77.2	-37.77	77.6
RLI00134	2/9/24 10:38	48.7	45.1	0	6.2	-0.28	95.3	-0.35	99.2
RLI00135	2/13/24 15:11	58.2	39.3	0.2	2.3	-17.9	85.6	-21.38	85.7
RLI00137	2/6/24 12:22	63.8	31.6	0.8	3.8	-37.77	66.4	-41.03	66.4
RLI00140	2/21/24 11:24	50	39.7	0.6	9.7	-35.01	59.5	-39.15	59.4
RLI00141	2/5/24 10:26	53.6	45.2	0	1.2	-0.38	60.4	-0.6	60.3
RLI00142	2/21/24 11:16	57.5	41.9	0.2	0.4	-30.7	66	-31.38	66.1
RLI00220	2/13/24 14:39	48.6	33.2	3.2	15	-28.15	79.6	-27.49	79.3
RLI00275	2/22/24 12:31	58.9	39.2	0	1.9	-13.46	96	-15.77	96.4
RLI00276	2/6/24 11:32	57.4	40.7	0.2	1.7	-46.7	70.4	-47.77	70.7
RLI00277	2/13/24 9:57	46.4	38	0	15.6	-1.94	109.9	-1.39	109.1
RLI00278	2/13/24 10:03	56.3	40.2	0	3.5	-2.85	109.3	-3.31	109.8
RLI00279	2/13/24 9:47	51.9	40.4	0	7.7	-6.01	130.8	-6.15	130.8
RLI00280	2/9/24 10:27	56.9	36.9	0	6.2	-4.42	109.7	-5.29	109.8
RLI00281	2/13/24 10:28	54.1	41.8	0	4.1	-2.35	114.9	-2.62	114.9
RLI00282	2/21/24 11:50	56.8	41.8	0.1	1.3	-23.16	109.3	-23.79	109.3
RLI00283	2/22/24 11:56	55.6	44.3	0.1	0	-19.03	118.6	-20.85	118.5
RLI00284	2/22/24 12:57	62.1	37.9	0	0	-32.41	89.8	-35.99	89.9
RLI00285	2/22/24 12:27	62.9	37.1	0	0	-2.81	82.8	-2.99	82.7
RLI00286	2/5/24 10:39	54	44.1	0	1.9	-0.33	96.8	-0.38	97.5
RLI00287	2/5/24 10:42	55.1	41.9	0	3	-39.5	103.1	-34.09	102.8
RLI0100C	2/23/24 11:42	60.3	39.7	0	0	-34.39	76.3	-34.76	76.4
RLI0102C	2/9/24 11:19	61.1	36.9	0	2	-25.36	87	-25.75	87
RLI0103C	2/13/24 15:31	57.5	41.4	0	1.1	-30.98	78.5	-30.08	78.6
RLI0105C	2/23/24 12:15	55.7	33.3	1.3	9.7	-22.81	62.1	-27.13	62.2
RLI0106C	2/13/24 10:24	54.1	41.1	0.1	4.7	-24.01	71.1	-23.92	71.2
RLI0107C	2/15/24 10:54	45.6	34.6	1.1	18.7	-0.08	93.3	-0.12	94.1
RLI0114A	2/15/24 10:32	57.1	28.6	2.6	11.7	-21.44	62.2	-20.41	62.4
RLI0115E	2/15/24 10:15	54.8	34	1.6	9.6	-29.95	85	-38.26	85.2
RLI0116E	2/6/24 12:45	45.4	29.2	4.6	20.8	-30.06	64.4	-28.81	64.2
RLI0117D	2/6/24 12:25	55.3	36.6	0	8.1	-39	74	-41.31	74.5
RLI0124G	2/5/24 12:00	61.8	38.2	0	0	-41.76	63.6	-42.16	63.6
RLI0126C	2/9/24 11:38	53.8	28	2.4	15.8	-23.76	74.5	-24.43	74.8
RLI0127B	2/9/24 10:53	48.6	34	0.8	16.6	-24.33	101.6	-22.07	101.2
RLI0128A	2/13/24 9:42	52.1	40.7	0	7.2	-2.53	116	-2.7	116
RLI0129E	2/15/24 11:54	73.9	25.7	0	0.4	-21.72	63.2	-22.35	62.2
RLI0130E	2/15/24 11:47	59	30.4	0	10.6	-33.59	66.6	-33.59	66.6
RLIHC101	2/5/24 11:53	58.3	41.7	0	0	-44.1	99.5	-40.21	100.9
RLIHC102	2/5/24 11:56	57.4	42.6	0	0	-44.2	109.8	-43.32	109.9
RLLC0176	2/13/24 15:58	56.3	40	0	3.7	-5.56	62.5	-7.09	61
RLLC0177	2/13/24 15:37	60.1	39.9	0	0	-23.49	107.1	-25.34	107.2
RLLC0179	2/22/24 12:20	56.7	34.6	1.7	7	-10.41	62.1	-11.35	62.1

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 5, 6, 9, 13, 15, 21, 22, and 23, 2024

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	2/13/24 10:12	61.4	36.6	0	2	-20.84	74.3	-22.12	74.4
RLI00003	2/15/24 12:09	53.8	33.9	1.7	10.6	-8.25	62.4	-9.64	62.2
RLLC0180	2/13/24 14:55	57.1	39	0	3.9	-33.38	104.7	-33.01	104.8
RLLC0181	2/13/24 14:52	57.6	38.7	0	3.7	-12.29	107.6	-13.3	106.8
RLLC0183	2/9/24 10:57	53.3	33.2	0	13.5	-2.35	64.8	-3.65	63
RLLC0184	2/9/24 10:44	59.6	38.9	0	1.5	-27.43	100.3	-27.4	100.3
RLLC0185	2/13/24 15:41	56.9	41.9	0	1.2	-0.61	68.1	-3.27	80.5
RLLC0186	2/13/24 15:26	61.3	38.6	0	0.1	-28.36	59.4	-28.37	59.5
RLLC0187	2/13/24 15:21	61.2	38.8	0	0	-28.1	75.9	-29.11	76.2
RLLC0188	2/13/24 15:18	58.7	40.3	0	1	-25.61	98.5	-25.08	98.6
RLLC0189	2/13/24 14:59	53.9	41.7	0	4.4	-0.03	69	-2.73	88.7
RLLC0190	2/13/24 15:07	55	41	0	4	-22.9	116	-23.51	116.1
RLLC0191	2/5/24 12:05	60	40	0	0	-44.51	90.9	-44.83	90.9
RLLC0193	2/15/24 10:22	48.4	31.3	2.8	17.5	-22.73	66.5	-20.58	66.1
RLLC0194	2/13/24 9:53	48.3	38.3	0	13.4	-4.79	105.5	-3.35	105.1
RLLC0195	2/13/24 10:18	56.4	41.5	0	2.1	-2.69	95.5	-3.37	95.8
RLLC0196	2/13/24 10:06	63.5	36.4	0	0.1	-20.41	86.9	-20.88	87.1
RLLC0198	2/15/24 11:18	70	25	0	5	-16.89	58.4	-17.39	58.4
RLLC0199	2/15/24 11:34	30.7	19.6	4.3	45.4	-3.59	76.5	-2.59	77.6
RLLC0200	2/15/24 11:40	29.5	27.5	2.6	40.4	-22.06	61.6	-15.72	61.6
RLLC0201	2/23/24 12:29	58.2	41.8	0	0	-21.05	75.1	-23.2	75.1
RLLC0202	2/15/24 11:09	61.8	34.3	0.6	3.3	-21.21	58.7	-21.84	58.8
RLLC0204	2/5/24 11:08	48.5	51.5	0	0	-0.78	89.6	-0.63	89.4
RLLC0204	2/15/24 11:01	32.7	29.6	0	37.7	-6.44	104.8	-5.82	104.8
RLLC0205	2/15/24 10:42	35.3	28.5	0	36.2	-0.15	78.8	-0.12	78.5
RLLC0206	2/9/24 11:32	53.4	35.7	0	10.9	-8.39	89.9	-9.09	89.9
RLLC0209	2/9/24 11:28	40	29.4	0	30.6	-1.73	88	-1.72	88
RLLC0210	2/15/24 10:47	55.4	36.6	0	8	-11.1	59.6	-16.49	59.7
RLLC0212	2/5/24 11:27	57.7	42.3	0	0	-6.49	88.5	-7.73	88.2
RLLC0214	2/5/24 11:23	57.6	42.4	0	0	-32.62	81.2	-31.91	81.2
RLLC0215	2/5/24 10:50	57.5	42.5	0	0	-39.81	64.4	-39.19	64.3
RLLC0217	2/22/24 13:13	62.2	36.9	0.6	0.3	-37.87	74	-45.88	74.4
RLLC0221	2/15/24 11:13	60.3	29	0	10.7	-2.2	60.6	-3.14	60.4
RLLC0223	2/5/24 10:59	56.1	43.9	0	0	-37.92	107.2	-27.41	107.3
RLLC0224	2/5/24 11:03	56.2	43.8	0	0	-12.34	103.4	-13.88	103.2
RLLC0225	2/5/24 11:36	49.6	35.7	2.1	12.6	-4.96	60	-5.41	60
RLLC0226	2/5/24 11:31	52.7	36.8	2.1	8.4	-33.49	62.7	-32.8	62.5
RLLC0227	2/5/24 10:13	58.1	35.7	0	6.2	-6.12	84.5	-7.6	84.5
RLLC0229	2/15/24 11:36	30.5	20.4	3.8	45.3	-2.02	78.9	-1.98	78.9
RLLC0230	2/22/24 12:00	53.6	43.9	2.5	0	-9.09	108.9	-9.55	109.8
RLLC0231	2/9/24 10:21	61.1	38.9	0	0	-3.64	97.1	-4.7	97.5
RLLC0232	2/9/24 10:31	61.1	38.3	0	0.6	-2.12	80.7	-3.07	81.1
RLLC0234	2/6/24 12:08	61.2	36.4	0	2.4	-43.41	102.7	-47.32	103.4
RLLC0235	2/6/24 12:04	58.7	40.5	0	0.8	-5.57	107.3	-6.85	107.4
RLLC0236	2/6/24 11:59	58.6	39.7	0	1.7	-25.99	102.9	-28.25	102.8
RLLC0237	2/6/24 12:15	55.1	44.2	0	0.7	-37.37	88.1	-38.75	88
RLLC0239	2/6/24 12:53	55.7	42.7	0	1.6	-0.01	93.6	-0.32	94.7
RLLC0240	2/6/24 12:56	51.7	47	0	1.3	-0.48	101.6	-0.47	101.7
RLLC0241	2/6/24 11:54	59	40.6	0	0.4	-47.02	90.4	-47.94	90.5
RLLC0242	2/6/24 11:50	57.6	41.8	0	0.6	-34.7	108.5	-37.26	108.5
RLLC0243	2/5/24 10:33	59.5	39.2	0	1.3	-33.18	75.1	-33.26	75.3
RLLC0244	2/5/24 11:48	56	40.7	0.1	3.2	-41.24	93.9	-42.39	103.3
RLLC0245	2/5/24 11:41	56.7	40	0	3.3	-1.61	102.2	-1.59	102.2
RLLC0246	2/21/24 10:42	56.7	43.3	0	0	-27.79	97.2	-30.22	97.1
RLLC0247	2/23/24 12:38	59.7	39.2	0	1.1	-3.61	99.8	-4.51	99.8
RLLC0248	2/23/24 12:35	59.1	39.9	0	1	-8.8	101.3	-9.98	101.3

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 5, 6, 9, 13, 15, 21, 22, and 23, 2024

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	2/13/24 10:12	61.4	36.6	0	2	-20.84	74.3	-22.12	74.4
RLI00003	2/15/24 12:09	53.8	33.9	1.7	10.6	-8.25	62.4	-9.64	62.2
RLLC0249	2/13/24 15:46	58.2	41.2	0	0.6	-31.36	108.3	-32.07	108.3
RLLC0250	2/13/24 15:54	56.2	41.7	0	2.1	-3.3	112.4	-4.18	112.6
RLLC0251	2/13/24 15:51	54.8	43	0	2.2	-1.47	111.9	-1.73	112.2
RLLC0252	2/6/24 11:27	56.7	43.3	0	0	-8.48	110.7	-9.51	110.7
RLLC0253	2/6/24 11:38	57.1	42.4	0	0.5	-25.12	106.8	-26.01	106.8
RLLC0255	2/21/24 11:47	60.5	39.5	0.1	-0.1	-38.12	96.9	-42.08	97
RLLC0256	2/21/24 11:54	54.3	38.5	3	4.2	-30.3	93	-31.47	94.2
RLLC0257	2/15/24 12:05	57.9	38.1	0	4	-28.83	62.5	-29.25	62.4
RLLC0258	2/15/24 12:03	70.2	29.7	0	0.1	-34.92	60.6	-34.88	60.6
RLLC0259	2/15/24 11:59	49.8	33.3	2.1	14.8	-35.94	61.4	-35.39	61.3
RLLC0260	2/9/24 11:43	47.9	35.1	0	17	-1.27	93.1	-0.75	93
RLLC0261	2/9/24 11:23	55.5	36.4	0	8.1	-8.69	96.3	-9.83	96.5
RLLC0262	2/9/24 11:15	57	32.1	1	9.9	-12.45	61.5	-16.71	61.6
RLLC0263	2/13/24 15:15	53.9	41.5	0	4.6	-9.71	115.6	-10.5	115.6
RLLC0264	2/13/24 14:47	50.4	41.2	0	8.4	-6.23	110.4	-6.25	110.4
RLLC0265	2/21/24 10:47	56.8	43.2	0	0	-6.65	104.4	-6.64	104.5
RLLC0266	2/21/24 10:56	52.8	40.7	1	5.5	-2.79	60.2	-3.93	60.4
RLLC0267	2/5/24 10:45	54	45.5	0	0.5	-32.98	111.1	-33.28	111.1
RLLC0268	2/21/24 11:02	51.5	41.1	0.2	7.2	-13.94	98	-13.92	98
RLLC0269	2/22/24 11:10	56	44	0	0	-10.98	106.7	-11.91	106.7
RLLC0270	2/22/24 11:06	55.1	44.9	0	0	-7.93	109.4	-8.98	109.3
RLLC0271	2/22/24 12:49	60.2	39.1	0	0.7	-20.17	97.6	-23.86	98
RLLC0272	2/21/24 11:28	56.3	41.7	0	2	-9.48	92.9	-10.16	93
RLLC0273	2/15/24 10:34	60.9	39.1	0	0	-4.08	97.2	-5.32	97.3
RLLC0274	2/13/24 10:33	52.5	41.5	0	6	-4.1	111.1	-4.47	111.1

There are 137 total collectors; 132 vertical wells and 5 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - **March 5, 6, 8, 13, 14, 15, 26, 27, and 28, 2024**

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	3/6/24 8:37	61.4	37.6	0.2	0.8	-13.22	60.2	-13.44	60.5
RLI00003	3/6/24 10:42	56.6	35.3	1.4	6.7	-12.41	64.1	-12.42	63.8
RLI00003	3/14/24 13:53	50.9	32.8	3	13.3	-8.96	69.9	-8.95	69.9
RLI00008	3/8/24 8:19	37.1	22.2	7.8	32.9	-40.04	60.3	-39.84	59.6
RLI00008	3/8/24 8:22	44.1	25.9	4.7	25.3	-37.83	58	-36.98	57.8
RLI00016	3/27/24 9:04	59.2	30.4	0.9	9.5	-40.63	58.3	-41.39	58.2
RLI00017	3/27/24 9:08	63	34.9	0.9	1.2	-28.41	65.5	-29.51	65.7
RLI00018	3/27/24 9:12	59.2	31.9	2	6.9	-27.39	60.3	-27.34	60.3
RLI00019	3/27/24 9:18	37.9	21.6	8.5	32	-34.57	55.4	-31.43	55.4
RLI00019	3/27/24 9:22	38.3	21.8	8.3	31.6	-31.05	55.3	-31.89	55.3
RLI00034	3/14/24 14:11	44.6	29.6	4.9	20.9	-33.4	75.4	-28.73	75.5
RLI00035	3/14/24 14:20	60.6	39.3	0.1	0	-40.18	75	-39.83	75.1
RLI00045	3/14/24 14:28	29.1	27.8	0.1	43	-6.56	71.5	-6.55	71.3
RLI00047	3/14/24 14:33	29.5	27.4	0.1	43	-11.75	76.5	-11.7	76.5
RLI00065	3/8/24 8:59	55.9	41.7	0.5	1.9	-15.75	92.5	-21.87	92.7
RLI00083	3/5/24 10:35	61.5	38.5	0	0	-39.08	85.8	-38.29	85.9
RLI00095	3/5/24 10:23	45.3	32.4	0.1	22.2	-4.89	104.4	-4.64	104.2
RLI00132	3/6/24 11:05	45.4	29.6	4.8	20.2	-35.71	66.5	-35.71	66.5
RLI00134	3/27/24 9:48	59.2	40.8	0	0	-0.1	95.8	-0.26	105.3
RLI00135	3/27/24 9:55	58.1	41.9	0	0	-12.28	83.6	-15.68	85.2
RLI00137	3/27/24 8:44	10.5	8.7	16.1	64.7	-34.95	61.1	-27.79	61.1
RLI00137	3/27/24 8:52	40.2	24.1	7.6	28.1	-30.08	60.3	-31.85	60.3
RLI00140	3/13/24 15:05	53.5	40.3	0.1	6.1	-45.51	67.3	-44.09	67.4
RLI00140	3/14/24 11:41	41.8	34.1	2	22.1	-43.73	65	-37.96	65.3
RLI00141	3/14/24 10:13	53.9	45.5	0	0.6	-0.29	80.8	-0.51	80.8
RLI00142	3/13/24 15:00	54.2	39.9	0.6	5.3	-14.13	73.8	-15.74	73.7
RLI00142	3/14/24 10:35	52.9	40	0.8	6.3	-21.29	76	-21.34	76
RLI00220	3/5/24 9:43	27.5	21.1	10.3	41.1	-23.79	56.1	-5.09	56
RLI00220	3/5/24 9:48	28.5	21.9	10.1	39.5	-2.96	55.8	-3.06	55.8
RLI00220	3/15/24 8:25	59.6	40.4	0	0	1.84	71.5	-1.59	74
RLI00275	3/5/24 10:30	57.9	41	0.1	1	-15.88	91.8	-18.57	93
RLI00276	3/14/24 15:08	56.2	42.3	0.6	0.9	-42.37	74	-43.51	74.1
RLI00277	3/6/24 13:28	57.4	41.7	0.1	0.8	-1.05	107.6	-1.42	108.3
RLI00278	3/26/24 16:09	58.2	41.8	0	0	-2.73	110.1	-2.9	110.3
RLI00279	3/6/24 13:18	54.9	41.8	0	3.3	-5.61	130	-5.62	130.2
RLI00280	3/8/24 7:51	57.6	38.8	0.2	3.4	-5.63	109.2	-7.31	109.5
RLI00281	3/6/24 13:03	55.7	42.6	0	1.7	-2.57	113.3	-2.81	113.4
RLI00282	3/8/24 9:22	55.9	41.8	0.1	2.2	-24.3	109.3	-24.33	109.3
RLI00283	3/26/24 15:20	56.1	43.9	0	0	-16.68	119.4	-17.88	119.4
RLI00284	3/5/24 11:01	61.9	38.1	0	0	-16.66	77.1	-20.02	77.6
RLI00285	3/5/24 10:52	61.5	38.4	0.1	0	-22.1	77.7	-22.05	77.7
RLI00286	3/27/24 13:35	56.3	43.7	0	0	-0.17	101.7	-0.19	101.9
RLI00287	3/27/24 13:32	56.7	42.9	0.3	0.1	-25	102.3	-30.7	102.5
RLI0100C	3/14/24 14:03	34.2	28.1	2.3	35.4	-40.79	72.1	-40.8	71.4
RLI0102C	3/6/24 10:46	62.7	37.2	0.1	0	-29.18	84.5	-29.22	84.5
RLI0103C	3/6/24 12:00	55.9	42.8	0.1	1.2	-31.81	78.1	-30.83	78.1
RLI0105C	3/6/24 12:45	56.1	43.8	0.1	0	-6.17	71.5	-6.03	71.4
RLI0106C	3/6/24 12:59	55.9	42.6	0.1	1.4	-17.8	68.3	-17.63	68.1
RLI0107C	3/6/24 9:37	58.4	40.8	0.1	0.7	-0.06	96.3	-0.06	96.1
RLI0114A	3/26/24 15:47	40.1	21.9	7.2	30.8	-27.37	77.6	-26.2	78.1
RLI0114A	3/26/24 15:49	38.5	21	7.8	32.7	-26.43	78.2	-26.28	78.2
RLI0115E	3/26/24 15:35	57.2	39	0.7	3.1	-6.57	89	-6.55	89
RLI0116E	3/6/24 8:12	61.2	38.5	0.3	0	-3.97	53	-3.96	53
RLI0117D	3/14/24 14:53	52.5	33.6	2.8	11.1	-36.18	80.7	-38.32	80.6
RLI0124G	3/14/24 10:03	58	32	1.6	8.4	-48.99	68.4	-49.65	68.6
RLI0126C	3/6/24 10:13	58.9	29.8	2.2	9.1	-22.36	70.9	-22.81	70.9

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 5, 6, 8, 13, 14, 15, 26, 27, and 28, 2024

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	3/6/24 8:37	61.4	37.6	0.2	0.8	-13.22	60.2	-13.44	60.5
RLI00003	3/6/24 10:42	56.6	35.3	1.4	6.7	-12.41	64.1	-12.42	63.8
RLI0127B	3/6/24 11:18	53.1	36	0.7	10.2	-13.15	100.1	-13.32	101
RLI0128A	3/6/24 13:13	54.9	42.7	0	2.4	-3.3	115.1	-3.28	115.1
RLI0129E	3/14/24 13:22	0	0.5	20.4	79.1	-26.84	69.7	-26.3	70.5
RLI0129E	3/14/24 13:29	0	0.3	20.4	79.3	-26.04	73.9	-26.21	74.2
RLI0129E	3/27/24 14:52	0	0.2	20.9	78.9	-19.8	62.6	-19.34	63.1
RLI0129E	3/27/24 14:54	0	0.2	20.9	78.9	-19.81	63.8	-19.79	63.8
RLI0130E	3/14/24 12:51	66.9	31.8	0.1	1.2	-32.92	71.5	-32.86	71.5
RLIHC101	3/14/24 9:51	59.7	40.1	0	0.2	-41.31	103.8	-42.24	101.5
RLIHC102	3/14/24 9:57	58.9	40.8	0	0.3	-46.94	110	-46.72	110.2
RLLC0176	3/6/24 11:27	57.6	41.3	0.2	0.9	-2.33	70.1	-4.52	68.3
RLLC0177	3/6/24 11:50	59.1	40.4	0.1	0.4	-28.59	101.5	-28.53	101.5
RLLC0179	3/26/24 14:21	60.2	39.1	0.3	0.4	-7.37	71.9	-11.07	71.4
RLLC0180	3/27/24 10:03	59.2	40.5	0.3	0	-29.95	95.3	-32.2	95.3
RLLC0181	3/28/24 9:04	56.2	38.1	1.3	4.4	-12.84	105.4	-11.97	105.4
RLLC0183	3/6/24 11:08	53.2	33.3	0	13.5	-1.89	65.5	-3.17	64.6
RLLC0184	3/8/24 8:31	55.7	37.3	1	6	-32.81	98	-32.95	98.1
RLLC0185	3/6/24 11:46	57.8	41.4	0.1	0.7	-3.81	96.3	-3.76	96.3
RLLC0186	3/6/24 12:13	55.1	44.3	0.1	0.5	-33.92	77.6	-34.04	77.6
RLLC0187	3/6/24 12:17	58.2	40.1	0.1	1.6	-34.18	75.7	-34.21	75.7
RLLC0188	3/6/24 12:22	57.9	41.1	0	1	-32.03	96.3	-32.07	96.2
RLLC0189	3/6/24 12:29	54.8	41.5	0.1	3.6	-3.46	112	-3.86	112.1
RLLC0190	3/27/24 9:59	57.3	42.7	0	0	-23.21	116	-24.49	115.9
RLLC0191	3/14/24 9:06	60.9	37.7	0.4	1	3.84	59	-22.99	66.6
RLLC0193	3/26/24 15:43	57.8	32.1	1.8	8.3	-26.89	76	-26.88	76
RLLC0194	3/6/24 13:22	57.1	41.4	0.1	1.4	-2.74	101.9	-2.88	101.9
RLLC0195	3/6/24 13:34	56.7	42.5	0.1	0.7	-3.1	92.3	-3.46	92.4
RLLC0196	3/6/24 13:39	61.6	38.4	0	0	-18.45	77.3	-18.82	77.2
RLLC0198	3/6/24 9:11	20.7	8.1	14.5	56.7	-8.58	57.1	-2.34	57.1
RLLC0198	3/6/24 9:15	21.4	8.4	14.2	56	-3.43	57.7	-1.54	57.6
RLLC0198	3/27/24 14:12	28.5	23.4	7.7	40.4	-14.29	64.4	-14.29	64.4
RLLC0198	3/27/24 14:15	17.2	13.7	12.9	56.2	-10.85	64.9	-10.85	64.9
RLLC0199	3/6/24 8:54	12.4	8.2	16.1	63.3	-13.28	56.3	-11.69	55.6
RLLC0199	3/6/24 9:04	10.8	7.1	16.7	65.4	-10.27	56.4	-7.87	56.7
RLLC0199	3/27/24 14:18	3.6	9.6	17.2	69.6	-20.56	65	-20.55	65
RLLC0199	3/27/24 14:20	2.8	7.8	18	71.4	-20.74	65.3	-20.74	65.3
RLLC0200	3/6/24 8:42	53.4	34.8	0.1	11.7	-9.96	57.2	-10.24	56.6
RLLC0201	3/27/24 14:29	22.5	10.3	18	49.2	-0.26	88.3	-0.12	87.7
RLLC0201	3/27/24 14:31	54.4	45.5	0.1	0	-0.16	86.7	-0.14	86.7
RLLC0202	3/6/24 9:25	64.7	34.9	0.3	0.1	-13.25	57.2	-13.26	57.2
RLLC0204	3/27/24 14:58	42.4	33.5	0.1	24	-4.43	105	-4.31	105
RLLC0205	3/6/24 9:53	55.1	36.4	0.1	8.4	-0.07	73	-0.06	73.6
RLLC0206	3/6/24 10:08	59.7	38.7	0.1	1.5	-18.25	87	-18.07	86.9
RLLC0209	3/6/24 10:04	56.7	33.8	0	9.5	-1.47	87.3	-1.5	87.2
RLLC0210	3/6/24 9:42	0.4	0.7	20.9	78	-26.47	58.8	-24.48	58.6
RLLC0210	3/6/24 9:48	61	38.8	0.1	0.1	-1.62	57.7	-2.22	57.5
RLLC0212	3/27/24 13:42	58.1	41.9	0	0	-4.81	101.8	-5.24	101.8
RLLC0214	3/14/24 11:22	58.1	41.6	0	0.3	-34.06	92	-34.41	92
RLLC0215	3/14/24 11:15	59.9	40.1	0	0	-36.84	72.8	-37.53	73.1
RLLC0217	3/26/24 14:30	69.1	30.9	0	0	-0.16	72.6	-1.41	72.6
RLLC0221	3/6/24 9:21	72.1	27	0.1	0.8	-8.34	57.5	-8.24	57.3
RLLC0223	3/27/24 14:36	57.9	42.1	0	0	-28.8	109.2	-29.77	109.3
RLLC0224	3/27/24 14:34	57.4	42.6	0	0	-11.52	104.7	-11.84	104.8
RLLC0225	3/27/24 14:25	16.7	13.3	13.8	56.2	-20.49	65	-20.43	65
RLLC0225	3/27/24 14:26	10.9	8.6	16.3	64.2	-20.64	64.9	-20.62	64.9

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 5, 6, 8, 13, 14, 15, 26, 27, and 28, 2024

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	3/6/24 8:37	61.4	37.6	0.2	0.8	-13.22	60.2	-13.44	60.5
RLI00003	3/6/24 10:42	56.6	35.3	1.4	6.7	-12.41	64.1	-12.42	63.8
RLLC0226	3/27/24 13:47	55.6	36.2	1.8	6.4	-27.79	71.1	-26.11	71.2
RLLC0227	3/5/24 9:56	58.5	36.7	0.1	4.7	-19.36	78.6	-20.44	78.7
RLLC0229	3/6/24 8:47	68.4	31.4	0.2	0	-0.21	58.1	-0.4	56.6
RLLC0230	3/26/24 15:14	9.7	7.3	17.3	65.7	-26.34	75.8	-26.86	76.1
RLLC0230	3/26/24 15:18	6	4.5	18.6	70.9	-26.93	78.3	-26.93	78.4
RLLC0231	3/8/24 7:45	60	39.8	0.2	0	-5.48	96.5	-8.16	97
RLLC0232	3/8/24 7:59	60.7	39.1	0.1	0.1	-3.47	87.1	-5.01	88.9
RLLC0232	3/8/24 8:05	59.1	38.3	0.4	2.2	-5.66	90.3	-5.73	90.4
RLLC0234	3/14/24 15:38	60	39.8	0.2	0	-46.96	92	-48.24	92.6
RLLC0235	3/26/24 14:51	59.3	40.7	0	0	-3.37	105.7	-3.97	105.9
RLLC0236	3/14/24 15:47	59.3	40.5	0.2	0	-30.69	100.5	-32.43	100.5
RLLC0237	3/26/24 14:59	56.2	41.4	0.6	1.8	-30.01	85.6	-30.69	85.6
RLLC0239	3/6/24 8:17	55	44.9	0.1	0	-0.71	93.6	-0.66	93.6
RLLC0240	3/6/24 8:23	54.9	45	0.1	0	-0.67	100.3	-0.71	100.5
RLLC0241	3/8/24 9:08	54.3	38.5	1.1	6.1	-44.22	83.6	-46.86	83.7
RLLC0242	3/8/24 9:04	58.2	41.1	0.1	0.6	-35.53	107.4	-38.42	107.3
RLLC0243	3/14/24 9:15	58.3	41.7	0	0	-33.6	78.4	-34.32	78.4
RLLC0244	3/14/24 9:30	53.7	36.1	1.1	9.1	-37.57	62.6	-42.83	65.7
RLLC0245	3/14/24 9:43	57.9	42.1	0	0	-0.73	104.4	-1.72	104.9
RLLC0246	3/14/24 10:24	53.7	41.7	0.6	4	-29.29	96.6	-28.86	96.6
RLLC0247	3/14/24 13:08	58.3	40	0	1.7	-5.35	99.3	-6	99.3
RLLC0248	3/14/24 12:59	59	40.5	0	0.5	-10.44	100	-11.12	100
RLLC0249	3/6/24 11:54	57.6	41.6	0.1	0.7	-37.93	103.3	-37.9	103.3
RLLC0250	3/6/24 11:33	57.1	42.2	0.1	0.6	-4.9	112.1	-5.02	112.1
RLLC0251	3/6/24 11:38	56.7	42.7	0	0.6	-2.25	113	-2.41	113.1
RLLC0252	3/14/24 15:13	56.3	43.7	0	0	-10.15	110.2	-12.06	110.4
RLLC0253	3/14/24 15:18	56.7	43.2	0.1	0	-24.53	106.5	-24.01	106.6
RLLC0255	3/8/24 9:16	60	39.5	0	0.5	-38.87	95.8	-40.01	96.3
RLLC0256	3/26/24 14:38	1.2	1.3	19.5	78	-41.62	73.2	-36.36	73.7
RLLC0256	3/26/24 14:43	0.7	0.7	20	78.6	-24.86	73.4	-24.86	73.4
RLLC0257	3/6/24 10:37	58.4	40.5	0	1.1	-28.69	63.4	-28.53	63.4
RLLC0258	3/6/24 10:33	60	39.1	0.1	0.8	-27.67	63.2	-27.72	63.2
RLLC0259	3/6/24 10:29	48.6	33.6	2.8	15	-33.71	67.7	-34.29	67.1
RLLC0260	3/6/24 10:18	56.8	37.9	0.3	5	-0.59	88.3	-0.93	89.5
RLLC0261	3/6/24 10:22	58.7	39	0	2.3	-9.58	96.7	-10.29	96.8
RLLC0262	3/6/24 10:52	55.7	34.1	1.6	8.6	-23.43	62.8	-23.34	62.8
RLLC0263	3/6/24 12:07	55.3	43.4	0.1	1.2	-12.1	114.9	-12.08	114.9
RLLC0264	3/6/24 12:36	53.7	42.7	0.4	3.2	-6.73	110.9	-6.72	110.9
RLLC0265	3/14/24 10:45	57.3	42.5	0	0.2	-6.85	104.5	-6.84	104.6
RLLC0265	3/14/24 10:58	57.2	42.7	0	0.1	-6.96	107	-7.29	107.1
RLLC0266	3/13/24 15:18	54.7	45.3	0	0	-2.69	72	-2.64	72
RLLC0266	3/14/24 11:37	54	44.8	0	1.2	-4.09	69.6	-4.05	69.6
RLLC0267	3/28/24 8:51	57.5	42.5	0	0	-26.94	103.7	-27.57	103.9
RLLC0268	3/8/24 9:40	50.6	40.5	0.2	8.7	-14.66	99.3	-14.67	99.3
RLLC0268	3/14/24 11:09	54.3	42.5	0	3.2	-15.07	100.7	-15.05	100.7
RLLC0269	3/8/24 9:33	56.2	42.5	0.1	1.2	-12.54	106.7	-13.94	106.7
RLLC0270	3/8/24 9:28	54.4	44.1	0.1	1.4	-9.91	110.9	-10.06	110.9
RLLC0271	3/5/24 10:43	60.4	39.5	0	0.1	-21.87	96	-21.73	96
RLLC0272	3/13/24 15:10	57.6	42.4	0	0	-9.63	93	-17.1	93.3
RLLC0272	3/14/24 11:46	54	41.1	0.1	4.8	-18.25	94	-19.56	94
RLLC0272	3/14/24 11:50	53.7	41.1	0	5.2	-18.91	93.9	-22.11	93.9
RLLC0273	3/26/24 15:29	5.1	3.7	18.5	72.7	-41.87	72.1	-43.24	72.4
RLLC0273	3/26/24 15:31	3.9	2.8	19	74.3	-43.54	72.5	-42.42	72.5
RLLC0274	3/6/24 12:49	55.5	42.6	0.1	1.8	-4.9	110.5	-5.23	110.5

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 5, 6, 8, 13, 14, 15, 26, 27, and 28, 2024

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	3/6/24 8:37	61.4	37.6	0.2	0.8	-13.22	60.2	-13.44	60.5
RLI00003	3/6/24 10:42	56.6	35.3	1.4	6.7	-12.41	64.1	-12.42	63.8

There are 137 total collectors; 132 vertical wells and 5 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 2, 3, 5, 10, 16, 17, and 18, 2024

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	4/3/24 15:08	58.5	38.5	0.3	2.7	-21.92	70.7	-21.95	70.7
RLI00003	4/2/24 14:30	51.6	33	2.8	12.6	-5.63	74.5	-5.62	74.4
RLI00008	4/2/24 13:08	61.4	34	1.1	3.5	-21.96	87.3	-23.99	88.2
RLI00016	4/5/24 9:59	61.7	30.6	0.9	6.8	-45.9	60.2	-45.88	60.3
RLI00017	4/5/24 10:06	62.6	34.7	0.5	2.2	-27.07	65.5	-27.3	65.6
RLI00018	4/5/24 10:13	52.3	29.2	3.4	15.1	-31.36	62.9	-31.36	62.9
RLI00019	4/5/24 10:20	53.3	26.2	2.4	18.1	-34.29	58.1	-33.65	58.1
RLI00034	4/2/24 14:02	60.1	39.8	0.1	0	-24.76	79.2	-24.83	78.6
RLI00035	4/2/24 14:11	61	38.8	0.2	0	-37.76	77.4	-36.9	77.3
RLI00045	4/2/24 14:18	31.5	27.1	0.1	41.3	-3.36	79.2	-3.34	79
RLI00047	4/2/24 14:23	28.1	26.8	0.1	45	-6.42	78.8	-6.38	78.6
RLI00065	4/5/24 9:16	55.5	41.4	0.5	2.6	-22.28	93.6	-25.5	94
RLI00083	4/3/24 11:37	61.5	37.5	0.1	0.9	-45.69	87	-45.14	87.2
RLI00095	4/3/24 9:50	46.6	31.9	0.4	21.1	-4.66	103.1	-4.32	103.1
RLI00132	4/2/24 13:36	52.5	33.6	2.7	11.2	-30.53	81.2	-32.85	81.4
RLI00134	4/16/24 14:10	50	42	0	8	-0.54	115.1	-0.56	115.4
RLI00135	4/16/24 11:48	55.9	41.1	0.2	2.8	-19.68	94.9	-22.56	95.3
RLI00137	4/16/24 10:19	13.7	9.1	15.3	61.9	-37.79	70.2	-39.09	70.2
RLI00137	4/16/24 10:25	37.4	22.3	7.5	32.8	-43.17	70.2	-38.88	70.2
RLI00137	4/16/24 12:16	57.4	42.5	0.1	0	-36.75	115.6	-35.06	115.6
RLI00140	4/3/24 12:25	40.5	33.8	2.3	23.4	-39.22	73.9	-44.6	73.8
RLI00141	4/3/24 12:11	54	43.3	0.2	2.5	-0.34	85	-0.37	85
RLI00142	4/3/24 12:17	54.8	41	0.4	3.8	-25.08	85.5	-27.55	85.5
RLI00220	4/2/24 9:20	60	39.9	0.1	0	0.13	82.8	-0.06	83
RLI00275	4/3/24 11:42	57.5	39.1	0.1	3.3	-23.49	96.7	-26.42	97.2
RLI00276	4/5/24 8:44	54.3	40.1	0.7	4.9	-47.29	62.9	-47.5	62.7
RLI00276	4/10/24 11:03	54.6	40	0.7	4.7	-56.86	80.7	-56.87	80.7
RLI00277	4/5/24 10:55	49.5	38.6	0.1	11.8	-2.41	109.9	-2.39	109.8
RLI00278	4/5/24 10:51	56.9	40.6	0.1	2.4	-4.37	109.7	-5.23	109.9
RLI00279	4/5/24 11:07	53.7	41.1	0.1	5.1	-6.72	129.7	-6.73	129.8
RLI00280	4/2/24 12:42	55.8	37.1	0.2	6.9	-7.73	109.9	-8.73	110
RLI00281	4/16/24 10:52	54.6	42.3	0.1	3	-4.02	113.8	-4.37	113.9
RLI00282	4/3/24 13:54	54.6	39.9	0.2	5.3	-21.74	108.8	-21.71	108.8
RLI00283	4/3/24 14:54	56.3	42	0.1	1.6	-18.92	118.1	-20.19	118.1
RLI00284	4/3/24 11:23	62.6	36.7	0.1	0.6	-24.54	84.7	-26.25	84.9
RLI00285	4/3/24 11:49	60.3	38.4	0.2	1.1	-21.5	78.8	-21.39	79.2
RLI00286	4/17/24 12:55	55	44.8	0.2	0	-0.55	104.4	-0.66	104.3
RLI00287	4/18/24 8:59	56.4	43.1	0.4	0.1	-42.15	103.2	-43.13	103.1
RLI0100C	4/2/24 13:55	7.6	19.8	1.8	70.8	-35.41	82.4	-38.5	82.1
RLI0102C	4/17/24 10:44	61.2	37.7	0	1.1	-41.95	85.2	-41.92	85.3
RLI0103C	4/16/24 13:02	57.1	42.9	0	0	-39.42	83	-41.88	83.4
RLI0103C	4/16/24 13:27	56.2	43.4	0.3	0.1	-46.7	87.1	-34.27	87.7
RLI0105C	4/16/24 11:07	48.6	40.7	0.8	9.9	-17.82	77.8	-18.57	78
RLI0106C	4/16/24 10:46	50.8	39.5	1.7	8	-24.21	84	-24.36	84
RLI0107C	4/17/24 12:25	54.6	39.5	0.1	5.8	-0.09	111.1	-0.08	111.3
RLI0114A	4/2/24 10:45	29.1	16.7	8.8	45.4	-46.74	71.4	-46.86	71.5
RLI0114A	4/2/24 10:50	36.3	19.4	7.7	36.6	-47.73	71.7	-47.73	71.7
RLI0115E	4/2/24 10:29	56.2	36.8	1	6	-8.66	84.7	-8.67	84.6
RLI0116E	4/2/24 9:45	46.2	30.4	4.2	19.2	-5.41	61.1	-5.33	60.9
RLI0117D	4/2/24 9:59	52.5	32.9	2.8	11.8	-42.99	68.7	-40.32	68.6
RLI0124G	4/3/24 10:45	54.9	32.3	2.5	10.3	-49.63	63.9	-48.47	64.1
RLI0126C	4/17/24 11:35	46.6	25.3	4.9	23.2	-30.91	87.9	-31.81	87.7
RLI0127B	4/2/24 13:26	54.6	35.7	1.1	8.6	-10.69	103.1	-10.99	103.3
RLI0128A	4/5/24 11:13	52.1	40.5	0	7.4	-3.83	115.3	-3.32	115.3
RLI0129E	4/2/24 14:52	0	7.6	13.1	79.3	-21.67	86.2	-21.52	86
RLI0129E	4/2/24 14:57	0	5.9	15.8	78.3	-21.74	85.8	-21.19	86.5

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 2, 3, 5, 10, 16, 17, and 18, 2024

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	4/3/24 15:08	58.5	38.5	0.3	2.7	-21.92	70.7	-21.95	70.7
RLI00003	4/2/24 14:30	51.6	33	2.8	12.6	-5.63	74.5	-5.62	74.4
RLI0130E	4/17/24 9:55	52.6	31.8	0.1	15.5	-20.76	73.3	-20.63	73.3
RLIHC101	4/3/24 10:55	59.2	39.9	0.2	0.7	-36.67	102.8	-36.49	103.7
RLIHC102	4/3/24 10:50	57	41.1	0.2	1.7	-50.09	102.2	-47.5	103.3
RLLC0176	4/16/24 13:50	40.4	34.5	2.7	22.4	-11.34	84.9	-11.21	84.9
RLLC0177	4/16/24 14:21	58.6	41.4	0	0	-36.12	103.9	-39.48	104.7
RLLC0179	4/3/24 10:07	58.5	37.6	0.9	3	-11.09	58.8	-13.31	57.9
RLLC0180	4/16/24 11:26	57.8	40.3	0.5	1.4	-48.5	99.5	-50.2	99.8
RLLC0181	4/16/24 11:34	58	39.5	0.6	1.9	-19.49	105.9	-17.72	106
RLLC0183	4/2/24 13:30	54.5	33.5	0.1	11.9	-2.54	78	-4.13	77
RLLC0184	4/2/24 13:15	60	38.7	0.2	1.1	-26.29	100.4	-25.88	100.3
RLLC0185	4/16/24 14:06	52.2	39.9	0.2	7.7	-3.9	104.4	-3.65	104.4
RLLC0186	4/16/24 13:08	53.6	44.2	0.1	2.1	-38.35	86.6	-37.79	86.6
RLLC0187	4/16/24 13:14	43.8	38.1	0	18.1	-39.57	81.6	-39.78	81.8
RLLC0188	4/16/24 12:28	57.9	42	0.1	0	-37.15	91.4	-37.12	91.5
RLLC0189	4/16/24 12:24	41.1	37.1	0.7	21.1	-3.22	113.2	-3.08	113.2
RLLC0190	4/18/24 10:08	56.1	42.6	0.2	1.1	-36.78	115.7	-38.79	115.7
RLLC0191	4/3/24 10:36	0	0.2	20.4	79.4	-48.68	57.5	-51.97	57.5
RLLC0191	4/3/24 10:40	0	0.3	20.4	79.3	-50.7	58.4	-48.5	58
RLLC0193	4/2/24 10:36	46.6	26.2	4.9	22.3	-47.53	68.2	-47.38	68.3
RLLC0194	4/5/24 11:01	54.2	40.3	0.1	5.4	-2.93	100.8	-3.28	100.8
RLLC0195	4/5/24 10:42	51.1	39.3	0.6	9	-4.21	92.8	-3.76	92.7
RLLC0196	4/5/24 10:46	61	37.8	0.2	1	-23.11	67.1	-23.38	67.2
RLLC0198	4/17/24 9:43	42.2	26.6	4.8	26.4	-22.46	74.5	-22.31	74.6
RLLC0199	4/18/24 9:16	57.7	36.2	1	5.1	-26.94	71.3	-27.49	71.1
RLLC0200	4/10/24 10:37	30.4	25.9	3.7	40	-10.64	94.1	-18.11	94.6
RLLC0200	4/18/24 9:30	55.7	31	1.8	11.5	-31.2	91.7	-31.31	91.5
RLLC0201	4/10/24 10:40	56	44	0	0	-0.29	90.3	-0.49	91
RLLC0201	4/17/24 13:56	54.1	45.7	0.2	0	-1.12	92.5	-1.78	92.5
RLLC0201	4/18/24 9:38	54.8	45.1	0.2	-0.1	-2.25	91.9	-3.34	91.9
RLLC0202	4/18/24 9:54	59	33.2	1.6	6.2	-29.09	76	-31	75.9
RLLC0204	4/17/24 12:01	38.7	33.5	0	27.8	-3.9	105.5	-3.13	105.5
RLLC0205	4/17/24 11:47	41.3	33.9	0	24.8	-0.2	85.8	-0.2	85.8
RLLC0206	4/17/24 11:30	52.4	38.4	0.2	9	-18.23	96.2	-18.24	96.1
RLLC0209	4/17/24 11:41	43.4	34.5	0.1	22	-1.89	92.3	-1.9	92.7
RLLC0210	4/17/24 11:52	48.1	36.7	0.1	15.1	-4.87	79.6	-4.83	79.2
RLLC0212	4/17/24 13:03	57.1	42.9	0	0	-7.72	102.2	-8.53	102.2
RLLC0214	4/3/24 13:20	57.5	40.6	0	1.9	-30.37	96.7	-30.73	96.6
RLLC0214	4/17/24 13:22	57.3	42.5	0.2	0	-42.4	98.6	-42.17	98.6
RLLC0215	4/17/24 13:31	58.1	41.7	0.1	0.1	-47.43	89.4	-46.77	89.4
RLLC0217	4/17/24 14:35	57.2	29.4	2.7	10.7	-35.08	88	-32.65	88
RLLC0221	4/18/24 9:48	55.4	31.4	0.5	12.7	-2.5	76	-2.63	75.5
RLLC0223	4/17/24 14:09	56.8	43.1	0.1	0	-46.15	108.5	-46.64	108.5
RLLC0224	4/17/24 14:06	55.6	44.4	0.1	-0.1	-18.53	104.6	-8.93	105.9
RLLC0225	4/17/24 13:46	26.3	16.6	10.1	47	-26.73	85.2	-28.42	84.8
RLLC0225	4/17/24 13:50	16.5	11.1	14.5	57.9	-27.28	82.1	-27.45	81.9
RLLC0226	4/17/24 13:12	53.8	36.1	2.1	8	-40.12	82.8	-39.9	82.9
RLLC0227	4/3/24 9:42	61.9	38	0.2	-0.1	-33.3	74.7	-33.31	74.7
RLLC0229	4/10/24 10:50	53.1	31	0.5	15.4	-0.86	72.9	-2.66	73
RLLC0229	4/18/24 9:23	48.8	30.6	1.2	19.4	-8.08	74.7	-8.1	74.6
RLLC0230	4/3/24 14:44	1.1	1.2	20.2	77.5	-32.23	75	-32.1	74.8
RLLC0230	4/3/24 14:48	2.3	1.9	19.8	76	-32.02	72.9	-32.11	72.7
RLLC0231	4/2/24 10:57	59.9	38.3	0.1	1.7	-8.27	97.9	-8.99	98
RLLC0232	4/2/24 13:00	61.4	38.5	0.1	0	-7.24	95.1	-10.19	96.3
RLLC0234	4/5/24 8:52	59.1	38.7	0.1	2.1	-45.03	96.4	-45.16	97

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 2, 3, 5, 10, 16, 17, and 18, 2024

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	4/3/24 15:08	58.5	38.5	0.3	2.7	-21.92	70.7	-21.95	70.7
RLI00003	4/2/24 14:30	51.6	33	2.8	12.6	-5.63	74.5	-5.62	74.4
RLLC0235	4/5/24 9:34	59.9	39.5	0.4	0.2	-3.97	105.5	-4.89	106.1
RLLC0236	4/2/24 10:07	55.1	38.5	0.1	6.3	-15.33	103.4	-16.19	103.4
RLLC0236	4/5/24 9:40	56.2	38.8	0.2	4.8	-22.3	102.9	-21.68	102.8
RLLC0237	4/2/24 9:52	57.6	40.5	0.3	1.6	-32.33	85.2	-31.28	85.3
RLLC0239	4/2/24 9:37	57.5	42.1	0.1	0.3	-1.03	93.9	-1.19	94
RLLC0240	4/2/24 9:29	52.3	38	1.9	7.8	-0.93	98.1	-1.01	98.3
RLLC0241	4/5/24 9:26	59.5	40	0.2	0.3	-46.91	94.5	-46.73	94.5
RLLC0241	4/10/24 10:56	59.6	40.4	0	0	-42.32	98	-42.32	98
RLLC0242	4/5/24 9:21	57.8	41.2	0.1	0.9	-37.38	107.3	-37.82	107.3
RLLC0243	4/3/24 11:12	58.2	40.3	0.1	1.4	-31.36	79.5	-31.87	79.5
RLLC0244	4/3/24 11:08	57.5	40.8	0.2	1.5	-39.07	63.6	-39.04	66.4
RLLC0245	4/3/24 11:03	57.8	41.2	0.1	0.9	-2.79	104.1	-4.29	104.6
RLLC0246	4/3/24 13:48	53.9	41.1	0.6	4.4	-29.05	98.7	-27.36	98.7
RLLC0247	4/17/24 10:19	50.8	37.9	0.2	11.1	-7.39	99.8	-6.76	99.8
RLLC0248	4/17/24 10:09	50.8	39.8	0.1	9.3	-11.82	99.8	-11.16	99.8
RLLC0249	4/16/24 13:36	57.5	42.4	0	0.1	-48.51	108.3	-50.32	108.2
RLLC0250	4/16/24 13:41	56.2	42.2	0.1	1.5	-5.64	112.1	-5.73	112.1
RLLC0251	4/16/24 13:56	55.2	42.6	0	2.2	-2.88	113.2	-3.81	113.4
RLLC0252	4/5/24 8:38	58	42	0	0	-14.03	111.7	-15.5	111.7
RLLC0252	4/10/24 11:00	57.7	42.3	0	0	-15.79	112.3	-17.36	112.4
RLLC0253	4/5/24 8:29	57.8	42	0.2	0	-29.93	106.7	-29.96	106.7
RLLC0255	4/3/24 13:59	57.8	37.8	0.6	3.8	-37.87	95.8	-36.85	95.8
RLLC0256	4/3/24 14:06	0.4	0.6	20.2	78.8	-25.35	74.9	-25.4	74.9
RLLC0256	4/3/24 14:10	0.4	0.7	20	78.9	-25.22	74.3	-25.16	74.2
RLLC0257	4/2/24 14:36	60	39.7	0.3	0	-27.34	73.4	-27.27	73.4
RLLC0258	4/2/24 14:40	60.7	39.2	0.1	0	-27.2	72.3	-27.18	72.4
RLLC0259	4/2/24 14:44	65.2	34.6	0.2	0	-31.63	78.6	-31.62	78.4
RLLC0260	4/17/24 11:00	57.5	40.5	0.1	1.9	-1.32	91.9	-2.45	93
RLLC0261	4/17/24 10:51	49.1	37.7	1	12.2	-7.09	96.7	-7.1	96.7
RLLC0262	4/2/24 13:48	47.8	29.8	3.9	18.5	-30.54	78.2	-29.92	78
RLLC0263	4/16/24 12:37	56.4	43.6	0	0	-13.45	114.4	-13.75	114.6
RLLC0264	4/16/24 11:19	52.4	42.1	0.3	5.2	-8.39	110.6	-8.1	110.6
RLLC0265	4/3/24 12:45	55	41	0.3	3.7	-6.78	107.3	-7.41	108
RLLC0266	4/3/24 13:02	53.6	41.4	0.4	4.6	-20.16	98.6	-21.11	98.6
RLLC0266	4/10/24 10:20	53	40.6	1.1	5.3	-5.83	69.6	-8.4	69.5
RLLC0267	4/3/24 13:27	55.9	41.2	0.1	2.8	-31.7	103.8	-31.8	103.9
RLLC0267	4/10/24 10:34	57.6	42.2	0	0.2	-32.04	104.3	-33.04	104.6
RLLC0268	4/3/24 13:15	53.4	40.3	0.2	6.1	-20.64	104.4	-20.71	104.4
RLLC0268	4/10/24 10:26	51.4	40.1	0.2	8.3	-22.78	106.7	-23.42	106.7
RLLC0269	4/3/24 14:33	56.1	42.4	0	1.5	-13.16	106.8	-14.29	106.8
RLLC0270	4/3/24 14:19	54.4	43.7	0.2	1.7	-9.96	111	-10.19	111.1
RLLC0271	4/3/24 11:31	60	38.7	0.1	1.2	-29.39	95.4	-29.99	95.4
RLLC0272	4/3/24 12:21	52.8	39.8	0.5	6.9	-25.93	96.3	-26.34	96.3
RLLC0273	4/2/24 10:16	22.4	16.1	10.7	50.8	-46.64	65.2	-46.38	65.3
RLLC0273	4/2/24 10:21	4.9	3.9	18.1	73.1	-46.2	65.3	-46.9	65.5
RLLC0274	4/16/24 10:59	53.1	42.5	0.2	4.2	-5.74	112.3	-5.92	112.3

There are 136 total collectors; 132 vertical wells and 4 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: J. Dutra, R. Lindberg
UPDATED DATE: 05/30/24
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 2023											
No well exceedances in December 2023											
No well exceedances in January 2024											
No well exceedances in February 2024											
RLI00008	3/8/24 8:19	37.1	22.2	7.8	32.9	-40.04	60.3	-39.84	59.6	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00008	3/8/24 8:22	44.1	25.9	4.7	25.3	-37.83	58	-36.98	57.8	No Adj. Made	
RLI00008 was monitored on 3/8/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 3/8/24											0
RLI00019	3/27/24 9:18	37.9	21.6	8.5	32	-34.57	55.4	-31.43	55.4	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00019	3/27/24 9:22	38.3	21.8	8.3	31.6	-31.05	55.3	-31.89	55.3	NSPS/EG CAI;No Adj. Made	
RLI00019	4/5/24 10:20	53.3	26.2	2.4	18.1	-34.29	58.1	-33.65	58.1	No Adj. Made	
RLI00019 was monitored on 3/27/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 4/5/24											9
RLI00137	3/27/24 8:44	10.5	8.7	16.1	64.7	-34.95	61.1	-27.79	61.1	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00137	3/27/24 8:52	40.2	24.1	7.6	28.1	-30.08	60.3	-31.85	60.3	No Adj. Made	
RLI00137	4/16/24 10:19	13.7	9.1	15.3	61.9	-37.79	70.2	-39.09	70.2	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00137	4/16/24 10:25	37.4	22.3	7.5	32.8	-43.17	70.2	-38.88	70.2	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00137	4/16/24 12:16	57.4	42.5	0.1	0	-36.75	115.6	-35.06	115.6	Inc. Flow/Vac.	
RLI00137 was monitored on 3/27/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 4/16/24											20
RLI00220	3/5/24 9:43	27.5	21.1	10.3	41.1	-23.79	56.1	-5.09	56	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00220	3/5/24 9:48	28.5	21.9	10.1	39.5	-2.96	55.8	-3.06	55.8	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00220	3/15/24 8:25	59.6	40.4	0	0	1.84	71.5	-1.59	74	NSPS/EG CAI;Inc. Flow/Vac.	
RLI00220 was monitored on 3/5/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 3/15/24											10
RLI00220 was monitored on 3/15/2024 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 3/15/2024											
RLI0114A	3/26/24 15:47	40.1	21.9	7.2	30.8	-27.37	77.6	-26.2	78.1	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0114A	3/26/24 15:49	38.5	21	7.8	32.7	-26.43	78.2	-26.28	78.2	NSPS/EG CAI	
RLI0114A	4/2/24 10:45	29.1	16.7	8.8	45.4	-46.74	71.4	-46.86	71.5	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0114A	4/2/24 10:50	36.3	19.4	7.7	36.6	-47.73	71.7	-47.73	71.7	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0114A was monitored on 3/26/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. Repairs are in progress as of 5/1/2024											35
RLI0129E	3/14/24 13:22	0	0.5	20.4	79.1	-26.84	69.7	-26.3	70.5	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0129E	3/14/24 13:29	0	0.3	20.4	79.3	-26.04	73.9	-26.21	74.2	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0129E	3/27/24 14:52	0	0.2	20.9	78.9	-19.8	62.6	-19.34	63.1	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0129E	3/27/24 14:54	0	0.2	20.9	78.9	-19.81	63.8	-19.79	63.8	NSPS/EG CAI;Barely Open	
RLI0129E	4/2/24 14:52	0	7.6	13.1	79.3	-21.67	86.2	-21.52	86	NSPS/EG CAI;Inc. Flow/Vac.	
RLI0129E	4/2/24 14:57	0	5.9	15.8	78.3	-21.74	85.8	-21.19	86.5	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLI0129E was monitored on 3/14/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. Repairs are in progress as of 5/1/2024											47
RLLC0191	3/14/24 9:06	60.9	37.7	0.4	1	3.84	59	-22.99	66.6	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0191 was monitored on 3/14/2024 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 3/14/2024											
RLLC0198	3/6/24 9:11	20.7	8.1	14.5	56.7	-8.58	57.1	-2.34	57.1	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0198	3/6/24 9:15	21.4	8.4	14.2	56	-3.43	57.7	-1.54	57.6	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0198	3/27/24 14:12	28.5	23.4	7.7	40.4	-14.29	64.4	-14.29	64.4	NSPS/EG CAI;Barely Open	
RLLC0198	3/27/24 14:15	17.2	13.7	12.9	56.2	-10.85	64.9	-10.85	64.9	No Adj. Made;NSPS/EG CAI	
RLLC0198	4/17/24 9:43	42.2	26.6	4.8	26.4	-22.46	74.5	-22.31	74.6	Barely Open;No Adj. Made	
RLLC0198 was monitored on 3/6/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 4/17/24											42
RLLC0199	3/6/24 8:54	12.4	8.2	16.1	63.3	-13.28	56.3	-11.69	55.6	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0199	3/6/24 9:04	10.8	7.1	16.7	65.4	-10.27	56.4	-7.87	56.7	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0199	3/27/24 14:18	3.6	9.6	17.2	69.6	-20.56	65	-20.55	65	NSPS/EG CAI;Barely Open	
RLLC0199	3/27/24 14:20	2.8	7.8	18	71.4	-20.74	65.3	-20.74	65.3	NSPS/EG CAI;No Adj. Made	
RLLC0199	4/18/24 9:16	57.7	36.2	1	5.1	-26.94	71.3	-27.49	71.1	Barely Open;No Adj. Made	
RLLC0199 was monitored on 3/6/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 4/17/24											43
RLLC0201	3/27/24 14:29	22.5	10.3	18	49.2	-0.26	88.3	-0.12	87.7	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0201	3/27/24 14:31	54.4	45.5	0.1	0	-0.16	86.7	-0.14	86.7	No Adj. Made	
RLLC0201 was monitored on 3/27/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 3/27/24											0
RLLC0210	3/6/24 9:42	0.4	0.7	20.9	78	-26.47	58.8	-24.48	58.6	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLLC0210	3/6/24 9:48	61	38.8	0.1	0.1	-1.62	57.7	-2.22	57.5		
RLLC0210 was monitored on 3/6/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. The well was re-monitored and cleared on 3/6/24											0
RLLC0225	3/27/24 14:25	16.7	13.3	13.8	56.2	-20.49	65	-20.43	65	NSPS/EG CAI;Barely Open	
RLLC0225	3/27/24 14:26	10.9	8.6	16.3	64.2	-20.64	64.9	-20.62	64.9	NSPS/EG CAI;No Adj. Made	
RLLC0225	4/17/24 13:46	26.3	16.6	10.1	47	-26.73	85.2	-28.42	84.8	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLLC0225	4/17/24 13:50	16.5	11.1	14.5	57.9	-27.28	82.1	-27.45	81.9	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLLC0225 was monitored on 3/27/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. Repairs are in progress as of 5/1/2024											34
RLLC0230	3/26/24 15:14	9.7	7.3	17.3	65.7	-26.34	75.8	-26.86	76.1	NSPS/EG CAI;Barely Open	
RLLC0230	3/26/24 15:18	6	4.5	18.6	70.9	-26.93	78.3	-26.93	78.4	NSPS/EG CAI	
RLLC0230	4/3/24 14:44	1.1	1.2	20.2	77.5	-32.23	75	-32.1	74.8	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0230	4/3/24 14:48	2.3	1.9	19.8	76	-32.02	72.9	-32.11	72.7	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLLC0230 was monitored on 3/26/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. Repairs are in progress as of 5/1/2024											35
RLLC0256	3/26/24 14:38	1.2	1.3	19.5	78	-41.62	73.2	-36.36	73.7	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0256	3/26/24 14:43	0.7	0.7	20	78.6	-24.86	73.4	-24.86	73.4	NSPS/EG CAI	
RLLC0256	4/3/24 14:06	0.4	0.6	20.2	78.8	-25.35	74.9	-25.4	74.9	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0256	4/3/24 14:10	0.4	0.7	20	78.9	-25.22	74.3	-25.16	74.2	NSPS/EG CAI;Dec. Flow/Vac.	

RLLC0256 was monitored on 3/26/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. Repairs are in progress as of 5/1/2024											35
RLLC0273	3/26/24 15:29	5.1	3.7	18.5	72.7	-41.87	72.1	-43.24	72.4	NSPS/EG CAI;Barely Open	
RLLC0273	3/26/24 15:31	3.9	2.8	19	74.3	-43.54	72.5	-42.42	72.5	NSPS/EG CAI;Barely Open	
RLLC0273	4/2/24 10:16	22.4	16.1	10.7	50.8	-46.64	65.2	-46.38	65.3	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0273	4/2/24 10:21	4.9	3.9	18.1	73.1	-46.2	65.3	-46.9	65.5	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0273 was monitored on 3/26/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. Repairs are in progress as of 5/1/2024											35
RLI00220	4/2/24 9:20	60	39.9	0.1	0	0.13	82.8	-0.06	83	NSPS/EG CAI;Inc. Flow/Vac.	
RLI00220 was monitored on 4/2/2024 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored and cleared on 4/2/2024											
RLLC0191	4/3/24 10:36	0	0.2	20.4	79.4	-48.68	57.5	-51.97	57.5	No Adj. Made;NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0191	4/3/24 10:40	0	0.3	20.4	79.3	-50.7	58.4	-48.5	58	NSPS/EG CAI;Dec. Flow/Vac.	
RLLC0191 was monitored on 4/3/2024 and was found to be in exceedance for Oxygen. Corrective actions were initiated. Repairs are in progress as of 5/1/2024											28

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-23	48,755,971	62,167,805	47,369	10,785,210	121,756,355	116,995,160	604,661,175	170,108,573	189,275,617	1,081,040,524
Jun-23	52,201,446	61,797,576	0	0	113,999,022	169,196,606	621,127,866	152,793,691	177,865,760	1,120,983,922
Jul-23	55,079,323	57,554,770	0	0	112,634,093	224,275,929	628,510,762	145,920,486	160,433,100	1,159,140,276
Aug-23	48,961,062	56,194,185	0	0	105,155,247	273,236,991	634,378,701	126,013,121	156,347,651	1,189,976,464
Sep-23	21,634,661	67,634,013	0	0	89,268,674	294,871,652	658,372,305	108,698,684	139,400,248	1,201,342,889
Oct-23	0	95,196,445	0	0	95,196,445	291,768,959	706,426,918	89,390,335	122,492,969	1,210,079,181
Nov-23	0	94,322,025	0	0	94,322,025	291,768,959	760,411,344	67,152,182	102,069,396	1,221,401,881
Dec-23	193,176	99,007,388	0	0	99,200,564	291,904,975	817,992,603	45,441,233	81,957,922	1,237,296,732
Jan-24	37,088,307	70,782,473	0	0	107,870,780	327,394,271	847,686,609	24,996,616	62,843,700	1,262,921,196
Feb-24	48,183,426	50,304,208	0	0	98,487,634	375,577,697	840,749,244	713,920	39,181,922	1,256,222,783
Mar-24	55,174,366	51,858,639	0	0	107,033,005	411,135,405	821,286,387	47,369	22,299,103	1,254,768,264
Apr-24	13,486,696	59,997,633	16,670,500	17,766,980	107,921,810	380,758,434	826,817,160	16,717,869	28,552,190	1,252,845,654

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-23	721.00	721.00	0.00	0		0	0	0	0	0.071	0.00	55.53	0.00
December-23	744.00	740.37	3.63	843	51.9	183,680	193,176	95,348	97	0.071	0.00	55.53	0.01
January-24	744.00	201.37	542.63	1,083	51.9	35,265,215	37,088,307	18,306,173	18,544	0.071	0.66	55.04	0.97
February-24	696.00	0.00	696.00	1,097	51.9	45,814,949	48,183,426	23,782,540	24,092	0.071	0.86	55.04	1.26
March-24	743.00	2.73	740.27	1,176	52.1	52,232,734	55,174,366	27,233,152	27,587	0.008	0.11	55.04	1.44
April-24	720.00	542.40	177.60	1,197	52.2	12,752,509	13,486,696	6,656,810	6,743	0.008	0.03	TBD	TBD
TOTAL/ AVG:	**4,368.00**	**2,207.87**	**2,160.13**	**1,128**	**52.0**	**146,249,087**	**154,125,971**	**76,074,023**	**77,062.99**	**--**	**--**	**--**	**--**

NOTES:

The A-51 Flare commenced operation on June 21, 2005.

[1] CH_4 content and CO emission factor was determined from the January 12, 2023 (March 9, 2023 - March 7, 2024) and January 10, 2024 (March 8, 2024 - 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-23

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
11/1/2023	0.00	51.9	0	0	0	1,013	0	0
11/2/2023	0.00	51.9	0	0	0	1,013	0	0
11/3/2023	0.00	51.9	0	0	0	1,013	0	0
11/4/2023	0.00	51.9	0	0	0	1,013	0	0
11/5/2023	0.00	51.9	0	0	0	1,013	0	0
11/6/2023	0.00	51.9	0	0	0	1,013	0	0
11/7/2023	0.00	51.9	0	0	0	1,013	0	0
11/8/2023	0.00	51.9	0	0	0	1,013	0	0
11/9/2023	0.00	51.9	0	0	0	1,013	0	0
11/10/2023	0.00	51.9	0	0	0	1,013	0	0
11/11/2023	0.00	51.9	0	0	0	1,013	0	0
11/12/2023	0.00	51.9	0	0	0	1,013	0	0
11/13/2023	0.00	51.9	0	0	0	1,013	0	0
11/14/2023	0.00	51.9	0	0	0	1,013	0	0
11/15/2023	0.00	51.9	0	0	0	1,013	0	0
11/16/2023	0.00	51.9	0	0	0	1,013	0	0
11/17/2023	0.00	51.9	0	0	0	1,013	0	0
11/18/2023	0.00	51.9	0	0	0	1,013	0	0
11/19/2023	0.00	51.9	0	0	0	1,013	0	0
11/20/2023	0.00	51.9	0	0	0	1,013	0	0
11/21/2023	0.00	51.9	0	0	0	1,013	0	0
11/22/2023	0.00	51.9	0	0	0	1,013	0	0
11/23/2023	0.00	51.9	0	0	0	1,013	0	0
11/24/2023	0.00	51.9	0	0	0	1,013	0	0
11/25/2023	0.00	51.9	0	0	0	1,013	0	0
11/26/2023	0.00	51.9	0	0	0	1,013	0	0
11/27/2023	0.00	51.9	0	0	0	1,013	0	0
11/28/2023	0.00	51.9	0	0	0	1,013	0	0
11/29/2023	0.00	51.9	0	0	0	1,013	0	0
11/30/2023	0.00	51.9	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 12, 2022 (March 11, 2022 - March 8, 2023) and January 12, 2023 (March 9, 2023 - 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-23

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
12/1/2023	0.00	51.9	0	0	0	1,013	0	0
12/2/2023	0.00	51.9	0	0	0	1,013	0	0
12/3/2023	0.00	51.9	0	0	0	1,013	0	0
12/4/2023	0.00	51.9	0	0	0	1,013	0	0
12/5/2023	0.00	51.9	0	0	0	1,013	0	0
12/6/2023	0.00	51.9	0	0	0	1,013	0	0
12/7/2023	0.00	51.9	0	0	0	1,013	0	0
12/8/2023	0.00	51.9	0	0	0	1,013	0	0
12/9/2023	0.00	51.9	0	0	0	1,013	0	0
12/10/2023	0.00	51.9	0	0	0	1,013	0	0
12/11/2023	0.00	51.9	0	0	0	1,013	0	0
12/12/2023	0.00	51.9	0	0	0	1,013	0	0
12/13/2023	0.00	51.9	0	0	0	1,013	0	0
12/14/2023	0.00	51.9	0	0	0	1,013	0	0
12/15/2023	0.00	51.9	0	0	0	1,013	0	0
12/16/2023	0.00	51.9	0	0	0	1,013	0	0
12/17/2023	0.00	51.9	0	0	0	1,013	0	0
12/18/2023	0.00	51.9	0	0	0	1,013	0	0
12/19/2023	0.00	51.9	0	0	0	1,013	0	0
12/20/2023	0.00	51.9	0	0	0	1,013	0	0
12/21/2023	3.63	51.9	843	183,680	95,348	1,013	97	193,176
12/22/2023	0.00	51.9	0	0	0	1,013	0	0
12/23/2023	0.00	51.9	0	0	0	1,013	0	0
12/24/2023	0.00	51.9	0	0	0	1,013	0	0
12/25/2023	0.00	51.9	0	0	0	1,013	0	0
12/26/2023	0.00	51.9	0	0	0	1,013	0	0
12/27/2023	0.00	51.9	0	0	0	1,013	0	0
12/28/2023	0.00	51.9	0	0	0	1,013	0	0
12/29/2023	0.00	51.9	0	0	0	1,013	0	0
12/30/2023	0.00	51.9	0	0	0	1,013	0	0
12/31/2023	0.00	51.9	0	0	0	1,013	0	0
Totals/ Average:	**3.63**	**51.9**	**843**	**183,680.0**	**95,348**	**1,013**	**97**	**193,176**
						Maximum:	**97**	**193,176**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 12, 2022 (March 11, 2022 - March 8, 2023) and January 12, 2023 (March 9, 2023 - 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-24

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
1/1/2024	0.00	51.9	0	0	0	1,013	0	0
1/2/2024	0.00	51.9	0	0	0	1,013	0	0
1/3/2024	0.00	51.9	0	0	0	1,013	0	0
1/4/2024	0.00	51.9	0	0	0	1,013	0	0
1/5/2024	0.00	51.9	0	0	0	1,013	0	0
1/6/2024	0.00	51.9	0	0	0	1,013	0	0
1/7/2024	0.00	51.9	0	0	0	1,013	0	0
1/8/2024	0.03	51.9	835	1,669	866	1,013	1	1,755
1/9/2024	14.60	51.9	797	698,597	362,642	1,013	367	734,712
1/10/2024	24.00	51.9	958	1,379,799	716,254	1,013	726	1,451,130
1/11/2024	24.00	51.9	1,097	1,579,873	820,112	1,013	831	1,661,547
1/12/2024	24.00	51.9	1,096	1,577,581	818,922	1,013	830	1,659,137
1/13/2024	24.00	51.9	1,096	1,578,613	819,458	1,013	830	1,660,222
1/14/2024	24.00	51.9	1,097	1,579,081	819,701	1,013	830	1,660,714
1/15/2024	24.00	51.9	1,095	1,576,877	818,557	1,013	829	1,658,396
1/16/2024	24.00	51.9	1,097	1,579,726	820,036	1,013	831	1,661,392
1/17/2024	24.00	51.9	1,098	1,580,646	820,513	1,013	831	1,662,360
1/18/2024	24.00	51.9	1,098	1,581,642	821,030	1,013	832	1,663,408
1/19/2024	24.00	51.9	1,099	1,581,862	821,145	1,013	832	1,663,639
1/20/2024	24.00	51.9	1,098	1,581,748	821,085	1,013	832	1,663,519
1/21/2024	24.00	51.9	1,098	1,581,202	820,802	1,013	831	1,662,945
1/22/2024	24.00	51.9	1,098	1,580,487	820,431	1,013	831	1,662,193
1/23/2024	24.00	51.9	1,096	1,578,764	819,536	1,013	830	1,660,381
1/24/2024	24.00	51.9	1,099	1,581,904	821,166	1,013	832	1,663,683
1/25/2024	24.00	51.9	1,100	1,583,447	821,967	1,013	833	1,665,306
1/26/2024	24.00	51.9	1,098	1,581,415	820,913	1,013	832	1,663,169
1/27/2024	24.00	51.9	1,098	1,580,800	820,593	1,013	831	1,662,522
1/28/2024	24.00	51.9	1,097	1,580,236	820,301	1,013	831	1,661,929
1/29/2024	24.00	51.9	1,097	1,579,309	819,819	1,013	830	1,660,954
1/30/2024	24.00	51.9	1,097	1,579,256	819,792	1,013	830	1,660,898
1/31/2024	24.00	51.9	1,098	1,580,681	820,532	1,013	831	1,662,397
Totals/ Average:	**542.63**	**51.9**	**1,083**	**35,265,215.0**	**18,306,173**	**1,013**	**18,544**	**37,088,307**
						Maximum:	**833**	**1,665,306**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 12, 2022 (March 11, 2022 - March 8, 2023) and January 12, 2023 (March 9, 2023 - 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-24

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
2/1/2024	24.00	51.9	1,098	1,581,170	820,785	1,013	831	1,662,911
2/2/2024	24.00	51.9	1,097	1,579,884	820,118	1,013	831	1,661,559
2/3/2024	24.00	51.9	1,095	1,577,062	818,653	1,013	829	1,658,591
2/4/2024	24.00	51.9	1,095	1,577,087	818,666	1,013	829	1,658,617
2/5/2024	24.00	51.9	1,097	1,580,157	820,259	1,013	831	1,661,845
2/6/2024	24.00	51.9	1,098	1,580,682	820,532	1,013	831	1,662,398
2/7/2024	24.00	51.9	1,098	1,581,255	820,829	1,013	832	1,663,001
2/8/2024	24.00	51.9	1,098	1,580,872	820,631	1,013	831	1,662,598
2/9/2024	24.00	51.9	1,096	1,578,694	819,500	1,013	830	1,660,307
2/10/2024	24.00	51.9	1,097	1,579,210	819,768	1,013	830	1,660,850
2/11/2024	24.00	51.9	1,096	1,578,791	819,550	1,013	830	1,660,409
2/12/2024	24.00	51.9	1,096	1,578,200	819,244	1,013	830	1,659,788
2/13/2024	24.00	51.9	1,097	1,579,546	819,942	1,013	831	1,661,203
2/14/2024	24.00	51.9	1,098	1,581,227	820,815	1,013	831	1,662,971
2/15/2024	24.00	51.9	1,098	1,580,568	820,473	1,013	831	1,662,278
2/16/2024	24.00	51.9	1,098	1,580,784	820,585	1,013	831	1,662,505
2/17/2024	24.00	51.9	1,098	1,580,650	820,515	1,013	831	1,662,364
2/18/2024	24.00	51.9	1,097	1,578,960	819,638	1,013	830	1,660,587
2/19/2024	24.00	51.9	1,097	1,579,274	819,801	1,013	830	1,660,917
2/20/2024	24.00	51.9	1,098	1,580,674	820,528	1,013	831	1,662,389
2/21/2024	24.00	51.9	1,098	1,580,908	820,649	1,013	831	1,662,636
2/22/2024	24.00	51.9	1,098	1,580,907	820,649	1,013	831	1,662,635
2/23/2024	24.00	51.9	1,098	1,580,772	820,579	1,013	831	1,662,493
2/24/2024	24.00	51.9	1,096	1,578,470	819,384	1,013	830	1,660,072
2/25/2024	24.00	51.9	1,095	1,577,125	818,686	1,013	829	1,658,657
2/26/2024	24.00	51.9	1,098	1,581,163	820,782	1,013	831	1,662,904
2/27/2024	24.00	51.9	1,097	1,580,058	820,208	1,013	831	1,661,742
2/28/2024	24.00	51.9	1,098	1,580,692	820,537	1,013	831	1,662,408
2/29/2024	24.00	51.9	1,097	1,580,108	820,234	1,013	831	1,661,794
Totals/ Average:	**696.00**	**51.9**	**1,097**	**45,814,949.0**	**23,782,540**	**1,013**	**24,092**	**48,183,426**
						Maximum:	**832**	**1,663,001**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 12, 2022 (March 11, 2022 - March 8, 2023) and January 12, 2023 (March 9, 2023 - 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-24

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
3/1/2024	24.00	51.9	1,097	1,580,041	820,199	1,013	831	1,661,724
3/2/2024	24.00	51.9	1,097	1,579,305	819,817	1,013	830	1,660,950
3/3/2024	24.00	51.9	1,097	1,579,791	820,070	1,013	831	1,661,461
3/4/2024	24.00	51.9	1,098	1,580,420	820,396	1,013	831	1,662,122
3/5/2024	24.00	51.9	1,098	1,580,629	820,505	1,013	831	1,662,342
3/6/2024	24.00	51.9	1,097	1,580,135	820,248	1,013	831	1,661,823
3/7/2024	24.00	51.9	1,159	1,669,659	866,720	1,013	878	1,755,975
3/8/2024	24.00	52.2	1,197	1,723,224	899,523	1,013	911	1,822,433
3/9/2024	24.00	52.2	1,197	1,723,117	899,467	1,013	911	1,822,320
3/10/2024	23.00	52.2	1,195	1,649,594	861,088	1,013	872	1,744,564
3/11/2024	24.00	52.2	1,197	1,723,024	899,419	1,013	911	1,822,222
3/12/2024	24.00	52.2	1,198	1,725,166	900,537	1,013	912	1,824,487
3/13/2024	24.00	52.2	1,197	1,724,252	900,060	1,013	912	1,823,521
3/14/2024	24.00	52.2	1,197	1,723,080	899,448	1,013	911	1,822,281
3/15/2024	24.00	52.2	1,195	1,721,317	898,527	1,013	910	1,820,417
3/16/2024	24.00	52.2	1,196	1,722,407	899,096	1,013	911	1,821,569
3/17/2024	24.00	52.2	1,196	1,721,648	898,700	1,013	910	1,820,767
3/18/2024	24.00	52.2	1,196	1,722,126	898,950	1,013	911	1,821,272
3/19/2024	24.00	52.2	1,197	1,723,373	899,601	1,013	911	1,822,591
3/20/2024	24.00	52.2	1,196	1,722,902	899,355	1,013	911	1,822,093
3/21/2024	24.00	52.2	1,196	1,722,609	899,202	1,013	911	1,821,783
3/22/2024	24.00	52.2	1,197	1,723,318	899,572	1,013	911	1,822,533
3/23/2024	24.00	52.2	1,196	1,722,455	899,122	1,013	911	1,821,620
3/24/2024	24.00	52.2	1,195	1,721,457	898,601	1,013	910	1,820,565
3/25/2024	21.27	52.2	1,196	1,526,550	796,859	1,013	807	1,614,437
3/26/2024	24.00	52.2	1,196	1,722,434	899,111	1,013	911	1,821,598
3/27/2024	24.00	52.2	1,197	1,723,742	899,793	1,013	911	1,822,981
3/28/2024	24.00	52.2	1,196	1,722,782	899,292	1,013	911	1,821,966
3/29/2024	24.00	52.2	1,197	1,723,619	899,729	1,013	911	1,822,851
3/30/2024	24.00	52.2	1,197	1,724,337	900,104	1,013	912	1,823,611
3/31/2024	24.00	52.2	1,197	1,724,221	900,043	1,013	912	1,823,488
Totals/ Average:	**740.27**	**52.1**	**1,176**	**52,232,734.0**	**27,233,152**	**1,013**	**27,587**	**55,174,366**
						Maximum:	**912**	**1,824,487**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 12, 2023 (March 9, 2023 - March 7, 2024) and January 10, 2024 (March 8, 2024 - 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-24

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
4/1/2024	24.00	52.2	1,197	1,723,947	899,900	1,013	912	1,823,198
4/2/2024	24.00	52.2	1,197	1,723,776	899,811	1,013	912	1,823,017
4/3/2024	24.00	52.2	1,197	1,723,177	899,498	1,013	911	1,822,384
4/4/2024	24.00	52.2	1,197	1,723,019	899,416	1,013	911	1,822,217
4/5/2024	24.00	52.2	1,197	1,722,993	899,402	1,013	911	1,822,189
4/6/2024	24.00	52.2	1,197	1,723,662	899,752	1,013	911	1,822,897
4/7/2024	24.00	52.2	1,196	1,722,665	899,231	1,013	911	1,821,842
4/8/2024	9.60	52.2	1,197	689,270	359,799	1,013	364	728,953
4/9/2024	0.00	52.2	0	0	0	1,013	0	0
4/10/2024	0.00	52.2	0	0	0	1,013	0	0
4/11/2024	0.00	52.2	0	0	0	1,013	0	0
4/12/2024	0.00	52.2	0	0	0	1,013	0	0
4/13/2024	0.00	52.2	0	0	0	1,013	0	0
4/14/2024	0.00	52.2	0	0	0	1,013	0	0
4/15/2024	0.00	52.2	0	0	0	1,013	0	0
4/16/2024	0.00	52.2	0	0	0	1,013	0	0
4/17/2024	0.00	52.2	0	0	0	1,013	0	0
4/18/2024	0.00	52.2	0	0	0	1,013	0	0
4/19/2024	0.00	52.2	0	0	0	1,013	0	0
4/20/2024	0.00	52.2	0	0	0	1,013	0	0
4/21/2024	0.00	52.2	0	0	0	1,013	0	0
4/22/2024	0.00	52.2	0	0	0	1,013	0	0
4/23/2024	0.00	52.2	0	0	0	1,013	0	0
4/24/2024	0.00	52.2	0	0	0	1,013	0	0
4/25/2024	0.00	52.2	0	0	0	1,013	0	0
4/26/2024	0.00	52.2	0	0	0	1,013	0	0
4/27/2024	0.00	52.2	0	0	0	1,013	0	0
4/28/2024	0.00	52.2	0	0	0	1,013	0	0
4/29/2024	0.00	52.2	0	0	0	1,013	0	0
4/30/2024	0.00	52.2	0	0	0	1,013	0	0
Totals/ Average:	**177.60**	**52.2**	**1,197**	**12,752,509.0**	**6,656,810**	**1,013**	**6,743**	**13,486,696**
						Maximum:	**912**	**1,823,198**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 12, 2023 (March 9, 2023 - March 7, 2024) and January 10, 2024 (March 8, 2024 - 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-23	721.00	0.63	720.37	2,252	47.8	97,329,240	94,322,025	46,555,787	47,161	0.084	1.99	55.53	2.70
December-23	744.00	0.00	744.00	2,289	47.8	102,163,984	99,007,388	48,868,405	49,504	0.084	2.08	55.53	2.84
January-24	744.00	0.77	743.23	1,638	47.8	73,039,190	70,782,473	34,937,055	35,391	0.084	1.49	55.04	2.01
February-24	696.00	5.73	690.27	1,253	47.8	51,908,028	50,304,208	24,829,323	25,152	0.084	1.06	55.04	1.43
March-24	743.00	1.50	741.50	1,203	47.8	53,512,018	51,858,639	25,596,564	25,929	0.084	1.09	55.04	1.47
April-24	720.00	0.50	719.50	1,434	47.8	61,910,503	59,997,633	29,613,837	29,999	0.084	1.26	TBD	TBD
TOTAL/ AVG:	**4,368.00**	**9.13**	**4,358.87**	**1,682**	**47.8**	**439,862,963**	**426,272,367**	**210,400,971**	**213,136.18**	**--**	**--**	**--**	**--**

NOTES:

The A-60 Flare commenced operation on April 1, 2009.

[1] CH_4 content and CO emission factor was determined from the July 13, 2021 (9/10/21 - 9/10/22) and July 13, 2022 (9/11/22 - 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-23

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
11/1/2023	24.00	47.8	2,200	3,167,706	1,515,218	1,013	1,535	3,069,832
11/2/2023	24.00	47.8	2,200	3,168,170	1,515,440	1,013	1,535	3,070,282
11/3/2023	24.00	47.8	2,203	3,172,197	1,517,367	1,013	1,537	3,074,185
11/4/2023	24.00	47.8	2,203	3,172,475	1,517,499	1,013	1,537	3,074,454
11/5/2023	25.00	47.8	2,203	3,304,648	1,580,722	1,013	1,601	3,202,543
11/6/2023	24.00	47.8	2,203	3,172,489	1,517,506	1,013	1,537	3,074,468
11/7/2023	24.00	47.8	2,226	3,205,665	1,533,375	1,013	1,553	3,106,618
11/8/2023	24.00	47.8	2,282	3,285,385	1,571,508	1,013	1,592	3,183,875
11/9/2023	24.00	47.8	2,298	3,309,272	1,582,934	1,013	1,604	3,207,024
11/10/2023	24.00	47.8	2,300	3,312,632	1,584,541	1,013	1,605	3,210,280
11/11/2023	24.00	47.8	2,303	3,315,810	1,586,061	1,013	1,607	3,213,360
11/12/2023	24.00	47.8	2,303	3,316,214	1,586,255	1,013	1,607	3,213,752
11/13/2023	24.00	47.8	2,302	3,314,940	1,585,645	1,013	1,606	3,212,517
11/14/2023	24.00	47.8	2,302	3,314,788	1,585,572	1,013	1,606	3,212,370
11/15/2023	23.90	47.8	2,298	3,294,946	1,576,081	1,013	1,597	3,193,141
11/16/2023	24.00	47.8	2,301	3,313,529	1,584,970	1,013	1,606	3,211,150
11/17/2023	24.00	47.8	2,301	3,314,019	1,585,205	1,013	1,606	3,211,625
11/18/2023	24.00	47.8	2,303	3,316,562	1,586,421	1,013	1,607	3,214,089
11/19/2023	24.00	47.8	2,305	3,318,580	1,587,386	1,013	1,608	3,216,045
11/20/2023	24.00	47.8	2,303	3,317,034	1,586,647	1,013	1,607	3,214,546
11/21/2023	23.47	47.8	2,305	3,245,128	1,552,252	1,013	1,572	3,144,862
11/22/2023	24.00	47.8	2,304	3,318,237	1,587,222	1,013	1,608	3,215,712
11/23/2023	24.00	47.8	2,302	3,315,241	1,585,789	1,013	1,606	3,212,809
11/24/2023	24.00	47.8	2,303	3,316,737	1,586,505	1,013	1,607	3,214,259
11/25/2023	24.00	47.8	2,304	3,317,939	1,587,080	1,013	1,608	3,215,424
11/26/2023	24.00	47.8	2,305	3,318,793	1,587,488	1,013	1,608	3,216,251
11/27/2023	24.00	47.8	2,305	3,318,548	1,587,371	1,013	1,608	3,216,014
11/28/2023	24.00	47.8	2,305	3,319,824	1,587,981	1,013	1,609	3,217,250
11/29/2023	24.00	47.8	1,985	2,857,858	1,367,008	1,013	1,385	2,769,558
11/30/2023	24.00	47.8	1,801	2,593,874	1,240,736	1,013	1,257	2,513,730
Totals/ Average:	**720.37**	**47.8**	**2,252**	**97,329,240.0**	**46,555,787**	**1,013**	**47,161**	**94,322,025**
						Maximum:	**1,609**	**3,217,250**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 13, 2022 (9/11/22 - 9/7/23) and July 12, 2023 (9/8/23 - current) source tests.

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-23

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
12/1/2023	24.00	47.8	2,009	2,892,935	1,383,786	1,013	1,402	2,803,551
12/2/2023	24.00	47.8	2,303	3,316,112	1,586,206	1,013	1,607	3,213,653
12/3/2023	24.00	47.8	2,303	3,316,392	1,586,340	1,013	1,607	3,213,924
12/4/2023	24.00	47.8	2,303	3,316,287	1,586,290	1,013	1,607	3,213,823
12/5/2023	24.00	47.8	2,303	3,316,469	1,586,377	1,013	1,607	3,213,999
12/6/2023	24.00	47.8	2,303	3,316,183	1,586,240	1,013	1,607	3,213,722
12/7/2023	24.00	47.8	2,303	3,316,195	1,586,246	1,013	1,607	3,213,733
12/8/2023	24.00	47.8	2,303	3,315,799	1,586,056	1,013	1,607	3,213,350
12/9/2023	24.00	47.8	2,303	3,315,617	1,585,969	1,013	1,607	3,213,173
12/10/2023	24.00	47.8	2,302	3,315,599	1,585,960	1,013	1,607	3,213,156
12/11/2023	24.00	47.8	2,302	3,315,467	1,585,897	1,013	1,607	3,213,028
12/12/2023	24.00	47.8	2,303	3,316,445	1,586,365	1,013	1,607	3,213,976
12/13/2023	24.00	47.8	2,303	3,315,966	1,586,136	1,013	1,607	3,213,511
12/14/2023	24.00	47.8	2,303	3,315,926	1,586,117	1,013	1,607	3,213,473
12/15/2023	24.00	47.8	2,303	3,316,027	1,586,165	1,013	1,607	3,213,571
12/16/2023	24.00	47.8	2,303	3,315,693	1,586,005	1,013	1,607	3,213,247
12/17/2023	24.00	47.8	2,303	3,315,974	1,586,140	1,013	1,607	3,213,519
12/18/2023	24.00	47.8	2,302	3,315,581	1,585,952	1,013	1,607	3,213,138
12/19/2023	24.00	47.8	2,301	3,313,010	1,584,722	1,013	1,605	3,210,647
12/20/2023	24.00	47.8	2,304	3,317,246	1,586,748	1,013	1,607	3,214,752
12/21/2023	24.00	47.8	2,151	3,097,206	1,481,496	1,013	1,501	3,001,511
12/22/2023	24.00	47.8	2,300	3,312,426	1,584,443	1,013	1,605	3,210,081
12/23/2023	24.00	47.8	2,304	3,317,169	1,586,711	1,013	1,607	3,214,677
12/24/2023	24.00	47.8	2,305	3,319,818	1,587,979	1,013	1,609	3,217,244
12/25/2023	24.00	47.8	2,303	3,316,366	1,586,327	1,013	1,607	3,213,899
12/26/2023	24.00	47.8	2,305	3,319,186	1,587,676	1,013	1,608	3,216,632
12/27/2023	24.00	47.8	2,305	3,319,447	1,587,801	1,013	1,608	3,216,885
12/28/2023	24.00	47.8	2,304	3,317,544	1,586,891	1,013	1,608	3,215,041
12/29/2023	24.00	47.8	2,303	3,316,523	1,586,402	1,013	1,607	3,214,051
12/30/2023	24.00	47.8	2,304	3,317,118	1,586,687	1,013	1,607	3,214,628
12/31/2023	24.00	47.8	2,303	3,316,258	1,586,276	1,013	1,607	3,213,794
Totals/ Average:	**744.00**	**47.8**	**2,289**	**102,163,984.0**	**48,868,405**	**1,013**	**49,504**	**99,007,388**
						Maximum:	**1,609**	**3,217,244**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 13, 2022 (9/11/22 - 9/7/23) and July 12, 2023 (9/8/23 - current) source tests.

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-24

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
1/1/2024	24.00	47.8	2,303	3,316,636	1,586,456	1,013	1,607	3,214,161
1/2/2024	24.00	47.8	2,304	3,317,135	1,586,695	1,013	1,607	3,214,644
1/3/2024	24.00	47.8	2,303	3,316,580	1,586,430	1,013	1,607	3,214,106
1/4/2024	24.00	47.8	2,302	3,315,226	1,585,782	1,013	1,606	3,212,794
1/5/2024	24.00	47.8	2,302	3,315,274	1,585,805	1,013	1,606	3,212,841
1/6/2024	24.00	47.8	2,307	3,321,980	1,589,013	1,013	1,610	3,219,340
1/7/2024	24.00	47.8	2,305	3,319,680	1,587,912	1,013	1,609	3,217,111
1/8/2024	24.00	47.8	2,301	3,313,610	1,585,009	1,013	1,606	3,211,228
1/9/2024	24.00	47.8	1,847	2,659,112	1,271,941	1,013	1,288	2,576,953
1/10/2024	24.00	47.8	1,584	2,281,340	1,091,240	1,013	1,105	2,210,853
1/11/2024	24.00	47.8	1,604	2,310,126	1,105,009	1,013	1,119	2,238,749
1/12/2024	24.00	47.8	1,572	2,263,958	1,082,926	1,013	1,097	2,194,008
1/13/2024	24.00	47.8	1,550	2,231,427	1,067,365	1,013	1,081	2,162,482
1/14/2024	24.00	47.8	1,500	2,160,281	1,033,334	1,013	1,047	2,093,534
1/15/2024	24.00	47.8	1,461	2,103,325	1,006,090	1,013	1,019	2,038,338
1/16/2024	24.00	47.8	1,500	2,160,032	1,033,215	1,013	1,047	2,093,293
1/17/2024	24.00	47.8	1,488	2,142,201	1,024,685	1,013	1,038	2,076,013
1/18/2024	24.00	47.8	1,479	2,130,053	1,018,875	1,013	1,032	2,064,240
1/19/2024	24.00	47.8	1,434	2,064,756	987,641	1,013	1,000	2,000,961
1/20/2024	24.00	47.8	1,385	1,994,781	954,170	1,013	967	1,933,148
1/21/2024	24.00	47.8	1,383	1,991,818	952,752	1,013	965	1,930,276
1/22/2024	24.00	47.8	1,365	1,966,291	940,542	1,013	953	1,905,538
1/23/2024	24.00	47.8	1,284	1,849,032	884,453	1,013	896	1,791,902
1/24/2024	24.00	47.8	1,225	1,763,769	843,669	1,013	855	1,709,273
1/25/2024	23.23	47.8	1,241	1,729,651	827,349	1,013	838	1,676,209
1/26/2024	24.00	47.8	1,253	1,804,199	863,008	1,013	874	1,748,454
1/27/2024	24.00	47.8	1,250	1,799,391	860,708	1,013	872	1,743,795
1/28/2024	24.00	47.8	1,237	1,781,667	852,230	1,013	863	1,726,618
1/29/2024	24.00	47.8	1,226	1,765,029	844,272	1,013	855	1,710,494
1/30/2024	24.00	47.8	1,234	1,777,425	850,201	1,013	861	1,722,507
1/31/2024	24.00	47.8	1,232	1,773,405	848,278	1,013	859	1,718,611
Totals/ Average:	**743.23**	**47.8**	**1,638**	**73,039,190.0**	**34,937,055**	**1,013**	**35,391**	**70,782,473**
						Maximum:	**1,610**	**3,219,340**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 13, 2022 (9/11/22 - 9/7/23) and July 12, 2023 (9/8/23 - current) source tests.

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-24

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
2/1/2024	22.67	47.8	1,234	1,678,128	802,704	1,013	813	1,626,278
2/2/2024	24.00	47.8	1,227	1,767,223	845,321	1,013	856	1,712,621
2/3/2024	24.00	47.8	1,193	1,718,486	822,009	1,013	833	1,665,389
2/4/2024	24.00	47.8	1,129	1,625,572	777,565	1,013	788	1,575,346
2/5/2024	23.63	47.8	1,154	1,637,067	783,063	1,013	793	1,586,486
2/6/2024	24.00	47.8	1,227	1,766,217	844,840	1,013	856	1,711,646
2/7/2024	24.00	47.8	1,184	1,704,482	815,310	1,013	826	1,651,818
2/8/2024	24.00	47.8	1,085	1,563,086	747,676	1,013	757	1,514,791
2/9/2024	24.00	47.8	1,080	1,554,728	743,678	1,013	753	1,506,691
2/10/2024	24.00	47.8	1,065	1,533,620	733,581	1,013	743	1,486,235
2/11/2024	24.00	47.8	1,078	1,552,081	742,412	1,013	752	1,504,126
2/12/2024	24.00	47.8	1,087	1,564,660	748,429	1,013	758	1,516,316
2/13/2024	24.00	47.8	1,090	1,569,340	750,667	1,013	760	1,520,852
2/14/2024	20.37	47.8	1,236	1,510,877	722,702	1,013	732	1,464,195
2/15/2024	24.00	47.8	1,283	1,846,868	883,418	1,013	895	1,789,805
2/16/2024	24.00	47.8	1,280	1,843,549	881,830	1,013	893	1,786,588
2/17/2024	24.00	47.8	1,260	1,814,508	867,939	1,013	879	1,758,445
2/18/2024	24.00	47.8	1,236	1,780,254	851,554	1,013	863	1,725,249
2/19/2024	24.00	47.8	1,226	1,764,748	844,137	1,013	855	1,710,222
2/20/2024	24.00	47.8	1,230	1,770,806	847,035	1,013	858	1,716,093
2/21/2024	24.00	47.8	1,224	1,762,733	843,173	1,013	854	1,708,269
2/22/2024	24.00	47.8	1,222	1,758,963	841,370	1,013	852	1,704,616
2/23/2024	24.00	47.8	1,219	1,755,316	839,626	1,013	851	1,701,081
2/24/2024	24.00	47.8	1,208	1,739,962	832,281	1,013	843	1,686,202
2/25/2024	24.00	47.8	1,178	1,696,363	811,426	1,013	822	1,643,950
2/26/2024	23.60	47.8	1,524	2,158,572	1,032,516	1,013	1,046	2,091,878
2/27/2024	24.00	47.8	1,722	2,479,495	1,186,024	1,013	1,201	2,402,885
2/28/2024	24.00	47.8	1,706	2,456,774	1,175,156	1,013	1,190	2,380,866
2/29/2024	24.00	47.8	1,759	2,533,550	1,211,881	1,013	1,228	2,455,270
Totals/ Average:	**690.27**	**47.8**	**1,253**	**51,908,028.0**	**24,829,323**	**1,013**	**25,152**	**50,304,208**
						Maximum:	**1,228**	**2,455,270**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 13, 2022 (9/11/22 - 9/7/23) and July 12, 2023 (9/8/23 - current) source tests.

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-24

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
3/1/2024	24.00	47.8	1,813	2,610,230	1,248,559	1,013	1,265	2,529,581
3/2/2024	24.00	47.8	1,814	2,612,873	1,249,823	1,013	1,266	2,532,142
3/3/2024	24.00	47.8	1,809	2,605,308	1,246,205	1,013	1,262	2,524,811
3/4/2024	24.00	47.8	1,805	2,599,232	1,243,298	1,013	1,259	2,518,923
3/5/2024	24.00	47.8	1,846	2,657,953	1,271,387	1,013	1,288	2,575,829
3/6/2024	24.00	47.8	1,795	2,584,295	1,236,154	1,013	1,252	2,504,447
3/7/2024	24.00	47.8	1,573	2,265,385	1,083,608	1,013	1,098	2,195,391
3/8/2024	24.00	47.8	1,105	1,591,447	761,242	1,013	771	1,542,276
3/9/2024	24.00	47.8	1,130	1,627,508	778,491	1,013	789	1,577,222
3/10/2024	23.00	47.8	1,121	1,547,029	739,995	1,013	750	1,499,230
3/11/2024	23.67	47.8	1,147	1,628,153	778,799	1,013	789	1,577,847
3/12/2024	23.83	47.8	1,118	1,598,449	764,591	1,013	775	1,549,061
3/13/2024	24.00	47.8	1,134	1,632,471	780,865	1,013	791	1,582,032
3/14/2024	23.90	47.8	1,144	1,641,205	785,043	1,013	795	1,590,496
3/15/2024	23.87	47.8	1,101	1,576,908	754,287	1,013	764	1,528,186
3/16/2024	24.00	47.8	857	1,234,611	590,555	1,013	598	1,196,465
3/17/2024	24.00	47.8	767	1,104,868	528,495	1,013	535	1,070,731
3/18/2024	24.00	47.8	936	1,348,402	644,985	1,013	653	1,306,740
3/19/2024	23.87	47.8	1,011	1,447,777	692,520	1,013	702	1,403,045
3/20/2024	23.90	47.8	1,007	1,443,974	690,700	1,013	700	1,399,359
3/21/2024	24.00	47.8	1,014	1,460,124	698,425	1,013	708	1,415,010
3/22/2024	24.00	47.8	977	1,407,032	673,030	1,013	682	1,363,558
3/23/2024	24.00	47.8	847	1,219,741	583,442	1,013	591	1,182,054
3/24/2024	24.00	47.8	752	1,082,753	517,916	1,013	525	1,049,299
3/25/2024	24.00	47.8	917	1,320,176	631,484	1,013	640	1,279,386
3/26/2024	24.00	47.8	900	1,295,639	619,747	1,013	628	1,255,607
3/27/2024	24.00	47.8	981	1,412,820	675,798	1,013	685	1,369,168
3/28/2024	23.47	47.8	1,094	1,539,730	736,504	1,013	746	1,492,156
3/29/2024	24.00	47.8	1,222	1,760,395	842,055	1,013	853	1,706,003
3/30/2024	24.00	47.8	1,273	1,832,912	876,742	1,013	888	1,776,280
3/31/2024	24.00	47.8	1,266	1,822,618	871,818	1,013	883	1,766,304
Totals/ Average:	**741.50**	**47.8**	**1,203**	**53,512,018.0**	**25,596,564**	**1,013**	**25,929**	**51,858,639**
						Maximum:	**1,288**	**2,575,829**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 13, 2022 (9/11/22 - 9/7/23) and July 12, 2023 (9/8/23 - current) source tests.

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-24

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
4/1/2024	24.00	47.8	1,212	1,745,194	834,784	1,013	846	1,691,272
4/2/2024	24.00	47.8	1,196	1,722,256	823,812	1,013	835	1,669,043
4/3/2024	24.00	47.8	1,203	1,732,132	828,536	1,013	839	1,678,614
4/4/2024	24.00	47.8	1,184	1,705,286	815,695	1,013	826	1,652,597
4/5/2024	24.00	47.8	1,194	1,719,416	822,453	1,013	833	1,666,291
4/6/2024	24.00	47.8	1,209	1,740,787	832,676	1,013	844	1,687,001
4/7/2024	24.00	47.8	1,209	1,741,677	833,102	1,013	844	1,687,864
4/8/2024	23.90	47.8	1,312	1,882,089	900,265	1,013	912	1,823,937
4/9/2024	24.00	47.8	1,408	2,028,076	970,096	1,013	983	1,965,414
4/10/2024	23.87	47.8	1,384	1,982,339	948,218	1,013	961	1,921,090
4/11/2024	24.00	47.8	1,289	1,855,986	887,779	1,013	899	1,798,641
4/12/2024	23.73	47.8	1,444	2,055,865	983,388	1,013	996	1,992,344
4/13/2024	24.00	47.8	1,521	2,190,751	1,047,908	1,013	1,062	2,123,063
4/14/2024	24.00	47.8	1,531	2,204,097	1,054,292	1,013	1,068	2,135,996
4/15/2024	24.00	47.8	1,553	2,236,571	1,069,826	1,013	1,084	2,167,467
4/16/2024	24.00	47.8	1,571	2,262,019	1,081,998	1,013	1,096	2,192,129
4/17/2024	24.00	47.8	1,537	2,212,968	1,058,536	1,013	1,072	2,144,593
4/18/2024	24.00	47.8	1,558	2,244,022	1,073,390	1,013	1,087	2,174,688
4/19/2024	24.00	47.8	1,727	2,486,733	1,189,486	1,013	1,205	2,409,900
4/20/2024	24.00	47.8	1,597	2,299,739	1,100,041	1,013	1,114	2,228,683
4/21/2024	24.00	47.8	1,628	2,343,957	1,121,192	1,013	1,136	2,271,535
4/22/2024	24.00	47.8	1,625	2,339,466	1,119,044	1,013	1,134	2,267,183
4/23/2024	24.00	47.8	1,491	2,147,687	1,027,310	1,013	1,041	2,081,329
4/24/2024	24.00	47.8	1,508	2,172,179	1,039,025	1,013	1,053	2,105,064
4/25/2024	24.00	47.8	1,518	2,185,728	1,045,506	1,013	1,059	2,118,195
4/26/2024	24.00	47.8	1,455	2,095,844	1,002,511	1,013	1,016	2,031,088
4/27/2024	24.00	47.8	1,447	2,084,180	996,932	1,013	1,010	2,019,784
4/28/2024	24.00	47.8	1,450	2,088,689	999,089	1,013	1,012	2,024,154
4/29/2024	24.00	47.8	1,510	2,175,037	1,040,392	1,013	1,054	2,107,834
4/30/2024	24.00	47.8	1,548	2,229,733	1,066,555	1,013	1,080	2,160,840
Totals/ Average:	**719.50**	**47.8**	**1,434**	**61,910,503.0**	**29,613,837**	**1,013**	**29,999**	**59,997,633**
						Maximum:	**1,205**	**2,409,900**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 13, 2022 (9/11/22 - 9/7/23) and July 12, 2023 (9/8/23 - current) source tests.

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-23	721.00	721.00	0.00	0		0	0	0	0	0.111	0.00	0.50	0.00E+00
December-23	744.00	744.00	0.00	0		0	0	0	0	0.111	0.00	0.50	0.00E+00
January-24	744.00	744.00	0.00	0		0	0	0	0	0.111	0.00	0.50	0.00E+00
February-24	696.00	696.00	0.00	0		0	0	0	0	0.111	0.00	0.50	0.00E+00
March-24	743.00	743.00	0.00	0		0	0	0	0	0.111	0.00	0.50	0.00E+00
April-24	720.00	212.75	507.25	547	49.4	16,645,221	16,670,500	8,228,282	8,335	0.111	0.46	0.50	4.13E-03
TOTAL/ AVG:	**4,368.00**	**3,860.75**	**507.25**	**547**	**49.4**	**16,645,221**	**16,670,500**	**8,228,282**	**8,335**	**--**	**--**	**--**	**--**

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 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Nov-23

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
11/01/2023	0.00							
11/02/2023	0.00							
11/03/2023	0.00							
11/04/2023	0.00							
11/05/2023	0.00							
11/06/2023	0.00							
11/07/2023	0.00							
11/08/2023	0.00							
11/09/2023	0.00							
11/10/2023	0.00							
11/11/2023	0.00							
11/12/2023	0.00							
11/13/2023	0.00							
11/14/2023	0.00							
11/15/2023	0.00							
11/16/2023	0.00							
11/17/2023	0.00							
11/18/2023	0.00							
11/19/2023	0.00							
11/20/2023	0.00							
11/21/2023	0.00							
11/22/2023	0.00							
11/23/2023	0.00							
11/24/2023	0.00							
11/25/2023	0.00							
11/26/2023	0.00							
11/27/2023	0.00							
11/28/2023	0.00							
11/29/2023	0.00							
11/30/2023	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Dec-23

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
12/01/2023	0.00							
12/02/2023	0.00							
12/03/2023	0.00							
12/04/2023	0.00							
12/05/2023	0.00							
12/06/2023	0.00							
12/07/2023	0.00							
12/08/2023	0.00							
12/09/2023	0.00							
12/10/2023	0.00							
12/11/2023	0.00							
12/12/2023	0.00							
12/13/2023	0.00							
12/14/2023	0.00							
12/15/2023	0.00							
12/16/2023	0.00							
12/17/2023	0.00							
12/18/2023	0.00							
12/19/2023	0.00							
12/20/2023	0.00							
12/21/2023	0.00							
12/22/2023	0.00							
12/23/2023	0.00							
12/24/2023	0.00							
12/25/2023	0.00							
12/26/2023	0.00							
12/27/2023	0.00							
12/28/2023	0.00							
12/29/2023	0.00							
12/30/2023	0.00							
12/31/2023	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Jan-24

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
1/01/2024	0.00							
1/02/2024	0.00							
1/03/2024	0.00							
1/04/2024	0.00							
1/05/2024	0.00							
1/06/2024	0.00							
1/07/2024	0.00							
1/08/2024	0.00							
1/09/2024	0.00							
1/10/2024	0.00							
1/11/2024	0.00							
1/12/2024	0.00							
1/13/2024	0.00							
1/14/2024	0.00							
1/15/2024	0.00							
1/16/2024	0.00							
1/17/2024	0.00							
1/18/2024	0.00							
1/19/2024	0.00							
1/20/2024	0.00							
1/21/2024	0.00							
1/22/2024	0.00							
1/23/2024	0.00							
1/24/2024	0.00							
1/25/2024	0.00							
1/26/2024	0.00							
1/27/2024	0.00							
1/28/2024	0.00							
1/29/2024	0.00							
1/30/2024	0.00							
1/31/2024	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Feb-24

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
2/01/2024	0.00							
2/02/2024	0.00							
2/03/2024	0.00							
2/04/2024	0.00							
2/05/2024	0.00							
2/06/2024	0.00							
2/07/2024	0.00							
2/08/2024	0.00							
2/09/2024	0.00							
2/10/2024	0.00							
2/11/2024	0.00							
2/12/2024	0.00							
2/13/2024	0.00							
2/14/2024	0.00							
2/15/2024	0.00							
2/16/2024	0.00							
2/17/2024	0.00							
2/18/2024	0.00							
2/19/2024	0.00							
2/20/2024	0.00							
2/21/2024	0.00							
2/22/2024	0.00							
2/23/2024	0.00							
2/24/2024	0.00							
2/25/2024	0.00							
2/26/2024	0.00							
2/27/2024	0.00							
2/28/2024	0.00							
2/29/2024	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Mar-24

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
3/01/2024	0.00							
3/02/2024	0.00							
3/03/2024	0.00							
3/04/2024	0.00							
3/05/2024	0.00							
3/06/2024	0.00							
3/07/2024	0.00							
3/08/2024	0.00							
3/09/2024	0.00							
3/10/2024	0.00							
3/11/2024	0.00							
3/12/2024	0.00							
3/13/2024	0.00							
3/14/2024	0.00							
3/15/2024	0.00							
3/16/2024	0.00							
3/17/2024	0.00							
3/18/2024	0.00							
3/19/2024	0.00							
3/20/2024	0.00							
3/21/2024	0.00							
3/22/2024	0.00							
3/23/2024	0.00							
3/24/2024	0.00							
3/25/2024	0.00							
3/26/2024	0.00							
3/27/2024	0.00							
3/28/2024	0.00							
3/29/2024	0.00							
3/30/2024	0.00							
3/31/2024	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Apr-24

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
4/01/2024	0.00							
4/02/2024	0.00							
4/03/2024	0.00							
4/04/2024	0.00							
4/05/2024	0.00							
4/06/2024	0.00							
4/07/2024	0.00							
4/08/2024	6.42	49.4	124	178,621	88,298	1,013	89	178,892
4/09/2024	20.92	49.4	428	616,894	304,951	1,013	309	617,831
4/10/2024	22.08	49.4	499	718,078	354,970	1,013	360	719,169
4/11/2024	24.00	49.4	570	821,268	405,980	1,013	411	822,515
4/12/2024	24.00	49.4	528	760,408	375,895	1,013	381	761,563
4/13/2024	23.25	49.4	497	715,884	353,885	1,013	358	716,971
4/14/2024	24.00	49.4	504	725,790	358,782	1,013	363	726,892
4/15/2024	23.08	49.4	482	693,623	342,881	1,013	347	694,676
4/16/2024	24.00	49.4	503	723,741	357,769	1,013	362	724,840
4/17/2024	24.00	49.4	504	725,279	358,529	1,013	363	726,380
4/18/2024	22.17	49.4	503	724,838	358,311	1,013	363	725,939
4/19/2024	15.83	49.4	413	595,082	294,169	1,013	298	595,986
4/20/2024	24.00	49.4	453	652,221	322,414	1,013	327	653,212
4/21/2024	24.00	49.4	398	573,540	283,520	1,013	287	574,411
4/22/2024	17.58	49.4	390	562,180	277,904	1,013	282	563,034
4/23/2024	23.83	49.4	644	927,670	458,578	1,013	465	929,079
4/24/2024	21.33	49.4	514	739,496	365,557	1,013	370	740,619
4/25/2024	23.58	49.4	542	780,207	385,682	1,013	391	781,392
4/26/2024	24.00	49.4	605	871,436	430,780	1,013	436	872,760
4/27/2024	24.00	49.4	627	902,588	446,179	1,013	452	903,959
4/28/2024	24.00	49.4	628	904,860	447,302	1,013	453	906,234
4/29/2024	23.17	49.4	604	869,527	429,836	1,013	435	870,847
4/30/2024	24.00	49.4	599	861,990	426,110	1,013	432	863,299
Totals/ Average:	**507.25**	**49.4**	**547**	**16,645,221.3**	**8,228,282**	**1,013**	**8,335**	**16,670,500**
						Maximum:	**465**	**929,079**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - 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-23	721.00	721.00	0.00	0		0	0	0	0	0.049	0.00	0.4990	0.00E+00
December-23	744.00	744.00	0.00	0		0	0	0	0	0.049	0.00	0.4990	0.00E+00
January-24	744.00	744.00	0.00	0		0	0	0	0	0.049	0.00	0.4990	0.00E+00
February-24	696.00	696.00	0.00	0		0	0	0	0	0.049	0.00	0.4990	0.00E+00
March-24	743.00	743.00	0.00	0		0	0	0	0	0.049	0.00	0.4990	0.00E+00
April-24	720.00	194.17	525.83	559	49.7	17,644,843	17,766,980	8,769,487	8,883	0.049	0.22	0.4990	4.40E-03
TOTAL/ AVG:	**4,368.00**	**3,842.17**	**525.83**	**559**	**49.7**	**17,644,843**	**17,766,980**	**8,769,487**	**8,883**	**--**	**--**	**--**	**--**

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 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Nov-23

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
11/01/2023	0.00							
11/02/2023	0.00							
11/03/2023	0.00							
11/04/2023	0.00							
11/05/2023	0.00							
11/06/2023	0.00							
11/07/2023	0.00							
11/08/2023	0.00							
11/09/2023	0.00							
11/10/2023	0.00							
11/11/2023	0.00							
11/12/2023	0.00							
11/13/2023	0.00							
11/14/2023	0.00							
11/15/2023	0.00							
11/16/2023	0.00							
11/17/2023	0.00							
11/18/2023	0.00							
11/19/2023	0.00							
11/20/2023	0.00							
11/21/2023	0.00							
11/22/2023	0.00							
11/23/2023	0.00							
11/24/2023	0.00							
11/25/2023	0.00							
11/26/2023	0.00							
11/27/2023	0.00							
11/28/2023	0.00							
11/29/2023	0.00							
11/30/2023	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Dec-23

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
12/01/2023	0.00							
12/02/2023	0.00							
12/03/2023	0.00							
12/04/2023	0.00							
12/05/2023	0.00							
12/06/2023	0.00							
12/07/2023	0.00							
12/08/2023	0.00							
12/09/2023	0.00							
12/10/2023	0.00							
12/11/2023	0.00							
12/12/2023	0.00							
12/13/2023	0.00							
12/14/2023	0.00							
12/15/2023	0.00							
12/16/2023	0.00							
12/17/2023	0.00							
12/18/2023	0.00							
12/19/2023	0.00							
12/20/2023	0.00							
12/21/2023	0.00							
12/22/2023	0.00							
12/23/2023	0.00							
12/24/2023	0.00							
12/25/2023	0.00							
12/26/2023	0.00							
12/27/2023	0.00							
12/28/2023	0.00							
12/29/2023	0.00							
12/30/2023	0.00							
12/31/2023	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Jan-24

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
1/01/2024	0.00							
1/02/2024	0.00							
1/03/2024	0.00							
1/04/2024	0.00							
1/05/2024	0.00							
1/06/2024	0.00							
1/07/2024	0.00							
1/08/2024	0.00							
1/09/2024	0.00							
1/10/2024	0.00							
1/11/2024	0.00							
1/12/2024	0.00							
1/13/2024	0.00							
1/14/2024	0.00							
1/15/2024	0.00							
1/16/2024	0.00							
1/17/2024	0.00							
1/18/2024	0.00							
1/19/2024	0.00							
1/20/2024	0.00							
1/21/2024	0.00							
1/22/2024	0.00							
1/23/2024	0.00							
1/24/2024	0.00							
1/25/2024	0.00							
1/26/2024	0.00							
1/27/2024	0.00							
1/28/2024	0.00							
1/29/2024	0.00							
1/30/2024	0.00							
1/31/2024	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Feb-24

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
2/01/2024	0.00							
2/02/2024	0.00							
2/03/2024	0.00							
2/04/2024	0.00							
2/05/2024	0.00							
2/06/2024	0.00							
2/07/2024	0.00							
2/08/2024	0.00							
2/09/2024	0.00							
2/10/2024	0.00							
2/11/2024	0.00							
2/12/2024	0.00							
2/13/2024	0.00							
2/14/2024	0.00							
2/15/2024	0.00							
2/16/2024	0.00							
2/17/2024	0.00							
2/18/2024	0.00							
2/19/2024	0.00							
2/20/2024	0.00							
2/21/2024	0.00							
2/22/2024	0.00							
2/23/2024	0.00							
2/24/2024	0.00							
2/25/2024	0.00							
2/26/2024	0.00							
2/27/2024	0.00							
2/28/2024	0.00							
2/29/2024	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Mar-24

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
3/01/2024	0.00							
3/02/2024	0.00							
3/03/2024	0.00							
3/04/2024	0.00							
3/05/2024	0.00							
3/06/2024	0.00							
3/07/2024	0.00							
3/08/2024	0.00							
3/09/2024	0.00							
3/10/2024	0.00							
3/11/2024	0.00							
3/12/2024	0.00							
3/13/2024	0.00							
3/14/2024	0.00							
3/15/2024	0.00							
3/16/2024	0.00							
3/17/2024	0.00							
3/18/2024	0.00							
3/19/2024	0.00							
3/20/2024	0.00							
3/21/2024	0.00							
3/22/2024	0.00							
3/23/2024	0.00							
3/24/2024	0.00							
3/25/2024	0.00							
3/26/2024	0.00							
3/27/2024	0.00							
3/28/2024	0.00							
3/29/2024	0.00							
3/30/2024	0.00							
3/31/2024	0.00							
Totals/ Average:	**0.00**			**0.0**	**0**		**0**	**0**
						Maximum:	**0**	**0**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Apr-24

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
4/01/2024	0.00							
4/02/2024	0.00							
4/03/2024	0.00							
4/04/2024	0.00							
4/05/2024	0.00							
4/06/2024	0.00							
4/07/2024	0.00							
4/08/2024	14.08	49.7	262	377,025	187,382	1,013	190	379,635
4/09/2024	23.58	49.7	484	697,045	346,431	1,013	351	701,870
4/10/2024	24.00	49.7	523	752,551	374,018	1,013	379	757,760
4/11/2024	24.00	49.7	527	758,817	377,132	1,013	382	764,069
4/12/2024	24.00	49.7	548	789,194	392,229	1,013	397	794,657
4/13/2024	24.00	49.7	559	805,459	400,313	1,013	406	811,034
4/14/2024	24.00	49.7	570	820,876	407,975	1,013	413	826,558
4/15/2024	24.00	49.7	594	854,900	424,885	1,013	430	860,818
4/16/2024	23.17	49.7	578	831,662	413,336	1,013	419	837,419
4/17/2024	24.00	49.7	601	864,845	429,828	1,013	435	870,831
4/18/2024	22.17	49.7	546	786,802	391,041	1,013	396	792,248
4/19/2024	17.00	49.7	411	592,089	294,268	1,013	298	596,188
4/20/2024	24.00	49.7	613	882,886	438,794	1,013	444	888,997
4/21/2024	24.00	49.7	613	882,774	438,738	1,013	444	888,884
4/22/2024	24.00	49.7	612	881,274	437,993	1,013	444	887,375
4/23/2024	22.00	49.7	553	796,897	396,058	1,013	401	802,413
4/24/2024	22.83	49.7	583	839,826	417,394	1,013	423	845,639
4/25/2024	22.42	49.7	486	699,132	347,469	1,013	352	703,971
4/26/2024	24.00	49.7	523	753,302	374,391	1,013	379	758,517
4/27/2024	24.00	49.7	523	753,381	374,430	1,013	379	758,596
4/28/2024	24.00	49.7	525	755,531	375,499	1,013	380	760,761
4/29/2024	22.58	49.7	495	712,700	354,212	1,013	359	717,633
4/30/2024	24.00	49.7	525	755,876	375,670	1,013	381	761,108
Totals/ Average:	**525.83**	**49.7**	**559**	**17,644,842.8**	**8,769,487**	**1,013**	**8,883**	**17,766,980**
						Maximum:	**444**	**888,997**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 14 & 15, 2021 (9/13/21 - 9/11/22) and July 14 & 15, 2022 (9/12/22 - 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-23	0.00	0.00
June-23	0.00	0.00
July-23	0.00	0.00
August-23	0.00	0.00
September-23	0.00	0.00
October-23	0.00	0.00
November-23	0.00	0.00
December-23	0.00	0.00
January-24	0.00	0.00
February-24	0.00	0.00
March-24	0.00	0.00
April-24	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 (Post-treatment Site Average) - Quarter 4 - 2023

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
10/3/23 8:15	300	305
10/5/23 8:05	300	305
10/10/23 8:20	400	406
10/12/23 8:45	300	305
10/17/23 8:30	200	203
10/19/23 8:05	300	305
10/24/23 9:15	300	305
10/27/23 7:45	300	305
11/1/23 11:15	300	305
11/3/23 8:20	300	305
11/7/23 8:45	300	305
11/9/23 9:00	300	305
11/14/23 8:45	300	305
11/16/23 8:50	325	330
11/22/23 9:00	300	305
11/24/23 9:30	300	305
11/28/23 8:35	300	305
11/29/23 10:00	300	305
11/29/23*	220	222
12/5/23 14:55	450	457
12/8/23 8:30	500	508
12/13/23 8:20	500	508
12/15/23 10:50	300	305
12/18/23 8:35	300	305
12/21/23 10:00	475	482
12/27/23 9:55	250	254
12/28/23 10:05	325	330
Quarterly Average:	324	329

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 370 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 (Post-treatment Site Average) - Quarter 1 - 2024

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
1/4/24 8:50	300	305
1/5/24 8:45	300	305
1/9/24 8:30	250	254
1/10/24 11:20	269	273
1/17/24 8:40	243	247
1/19/24 8:45	242	246
1/22/24 14:15	243	247
1/25/24 7:50	244	248
1/30/24 8:00	245	249
2/1/24 9:00	445	452
2/7/24 13:45	249	253
2/9/24 2:00	246	250
2/12/24 8:20	248	252
2/14/24 8:45	249	252
2/20/24 7:45	248	252
2/23/24 8:00	248	251
2/26/24 8:00	343	349
2/28/24 11:00	248	252
3/5/24 16:25	437	444
3/8/24 13:55	261	265
3/13/24 10:30	369	374
3/15/24 13:45	250	254
3/20/24 15:00	486	494
3/21/24 14:00	686	696
3/26/24 15:00	778	790
3/29/24 10:20	249	253
3/29/24*	289	292
Quarterly Average:	321	326

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 370 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 (Post-treatment Site Average) - Quarter 2 - 2024

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
4/1/24 15:02	953	968
4/4/24 14:15	792	804
4/8/24 14:55	276	280
4/9/24 14:00	175	178
4/16/24 16:00	428	434
4/18/24 15:40	453	460
4/24/24 12:50	315	320
4/26/24 9:05	443	450
4/29/24 12:20	173	175
4/30/2024	171	174
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 370 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)
2023	2	1,598	1,133	270.0
2023	3	349	1,075	59.0
2023	4	329	992	55.5
2024	1	326	651	55.0
2023	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 A1179
NST-8970

Annual Compliance Emissions Test Report #24010
Landfill Gas Flare A-51

Located at:
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, CA 94945

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 10, 2024

Final Report Submitted on:
March 7, 2024

Submitted on March 8, 2024

Performed and Reported by:
Blue Sky Environmental, Inc.
2273 Lobert Street
Castro Valley, CA 94546
bluesky@blueskyenvironmental.com
Office (510) 525-1261 / Cell (810) 923-3181

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.

TABLE OF CONTENTS

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 94945
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 10, 2024
Test Objective:	Determine compliance with conditions 19867 and 25634 of Bay Area Air Quality Management District (BAAQMD) permit to operate A1179
Test Performed by:	Blue Sky Environmental, Inc 2273 Lobert Street, Castro Valley, CA 94546 Jaime Rios (925) 482-4504 bluesky@blueskyenvironmental.com
Test Parameters:	Landfill Gas Fuel Analysis O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, sulfur, toxic air contaminants and volumetric flow rate Flare Emissions 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	13.9	15	In Compliance
NO_X, lb/MMBtu	0.0548	0.06	In Compliance
CO, ppmvd @ 15% O_2	3.3	82	In Compliance
CO, lb/MMBtu	0.0079	0.20	In Compliance
NMOC, ppmvd @ 3% O_2 as hexane (C_6H_{14})	<0.91	360	In Compliance
NMOC, ppmvd @ 3% O_2 as CH_4	<5.5	30*	In Compliance
NMOC Destruction Efficiency, %	>87.99%	>98%*	--
CH_4 Destruction Efficiency, %	>99.97%	>99%	In Compliance
Total Reduced Sulfurs in Fuel, ppmv	388	370	Exceeds Limit[1]
SO_2, ppmvd	26.4	300	In Compliance
SO_2, lb/MMBtu	0.1245	1.69	In Compliance

**NMOC permit limits are 30 ppmvd @ 3% O_2 or DE >98%*

[1] *On October 6, 2016, Redwood Landfill proposed a permit modification to increase the peak limit. This modification is still under review by BAAQMD.*

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 Bay Area Air Quality Management District (BAAQMD) Title V permit A1179.

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 Emissions, Stack Gas Molecular Weight
EPA Method 10	CO Emissions
EPA Method 7E	NO_X Emissions and NO_2 Converter Check
EPA Method 4	Stack Moisture
EPA Method 19	Stack Gas Flow Rate Calculation
EPA Method 25C	Analysis of landfill gas for TNMHC (NMOC)
EPA Method ALT-097	THC, CH_4 and NMOC Emissions
ASTM D-1945/3588	Fuel Analysis for BTU, F-Factors and Fixed Gases
ASTM D-5504	Total Reduced Sulfur Compounds (TRS) in Fuel
EPA Method TO-15	Toxic Organic Compounds in Fuel
BAAQMD ST-19A	SO_2 calculated from TRS

2.3. Test Date

Testing was conducted on January 9, 2024.

2.4. Sampling and Observing Personnel

Testing was conducted by Jaime Rios and Timothy Eandi, representing Blue Sky Environmental, Inc.

Ben Tarver of Waste Management was 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 22, 2023. A Source Test Protocol acknowledgement (NST-8970) was received on December 28, 2023. No agency observers from the district 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 with a landfill gas treatment and desorption system (S-71) that is abated by two industrial landfill gas enclosed flares. Flare A-51 is a standby abatement devise that has a 90 MMBtu/hr multiple nozzle burner manufactured by Perennial Energy. The Flare shell is approximately 45 feet high and 136 inches in diameter. Permit Condition 19867 Section 30 does not apply to Flare A-51. Flare A-51 is a standby abatement device that was never connected to the Gas Treatment System, S-71, and therefore was not tested with the desorption process.

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 1,497 °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 800 SCFM.

Landfill gas samples collected at the head of the flare had an average methane content of 52.2%. Oxygen content of the fuel samples averaged 1.0%.

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 two perpendicular 8-point traverses of the stack to check for the presence of stratification. 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), 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 landfill gas samples (one per test run) in 6-liter Silco silanized SUMMA cannisters for analysis of fixed gases by ASTM D-1945. The sampling times and cannister pressures are provided on the laboratory chain-of-custody. The molar composition was used to determine the HHV and F-factor by ASTM D-3588. The samples were also analyzed for non-methane organic compounds (NMOC) by EPA Method 25C and sulfur compounds by ASTM D-5504. Total reduced sulfur (TRS) results were used to calculate the SO_2 emission concentration of the stack gas. The samples were also analyzed for volatile organic compounds by EPA Method TO-15. All samples were analyzed by Atmospheric Analysis & Consulting, Inc (AAC) in Ventura, California.

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 of 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 within 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. No deviations from the protocol or anomalies were observed during testing. The flare did not meet the Total Reduced Sulfurs permit limit, all over measured emissions from the flare comply with the permit limits.

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.

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.

SECTION 4. APPENDICES

A

Tabulated Results

TABLE #1

Redwood Landfill, Inc.

Flare A-51

1,497°F

Parameter	Run 1	Run 2	Run 3	Average Results	Permit Limits
Test Date	1/10/24	1/10/24	1/10/24		
Test Time	0841-0917	0935-1013	1030-1106		
Standard Temperature, °F	70	70	70		
Process Parameters:					
Flare Temperature, °F	1,497	1,499	1,496	1,497	>1,400
Fuel:					
Fuel Flow Rate, SCFM	799	801	800	800	
Fuel Heat Input, MMBtu/hr	24.7	25.1	24.6	24.8	
Total Reduced Sulfurs as H_2S, ppmv in Fuel	362	413	390	388	370
Stack Gas:					
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	11,602	12,029	11,698	11,776	
Oxygen (O_2), % volume dry	13.9	14.1	14.0	14.0	
Carbon Dioxide (CO_2), % volume dry	6.1	6.1	6.1	6.1	
Water Vapor (H_2O), % volume *(EPA Method 4)*	11.8	13.4	5.4	10.2	
NO_X Emissions (reported as NO_2):					
NOx, ppmvd	15.7	16.4	16.4	16.2	
NOx, ppmvd @ 15% O_2	13.3	14.2	14.1	13.9	15
NOx, lb/hr	1.30	1.41	1.37	1.36	
NOx, lb/MMBtu	0.0527	0.0560	0.0559	0.0548	0.06
CO Emissions:					
CO, ppmvd	4.9	3.3	3.3	3.8	
CO, ppmvd @ 15% O_2	4.2	2.8	2.8	3.3	82
CO, lb/hr	0.25	0.17	0.17	0.20	
CO, lb/MMBtu	0.0101	0.0068	0.0068	0.0079	0.20
SO_2 Emissions:					
SO_2, ppmvd *(calculated)*	24.9	27.5	26.7	26.4	300
SO_2, ppmvd @ 15% O_2	21.1	23.8	22.9	22.6	
SO_2, ppmvd @ 3% O_2	64.1	72.2	69.5	68.6	
SO_2, lb/hr	2.88	3.29	3.10	3.09	
SO_2, lb/MMBtu	0.1163	0.1309	0.1263	0.1245	1.69
THC Emissions (reported as CH_4):					
THC, ppmv wet *(EPA Method ALT-097)*	<10.0	<10.0	<10.0	<10.0	
THC, ppmvd	<11.3	<11.5	<10.6	<11.2	
THC, lb/hr	<0.33	<0.34	<0.31	<0.33	
Methane (CH_4) Emissions:					
CH_4, ppmvd *(EPA Method 25A)*	<10.0	<10.0	<10.0	<10.0	
CH_4, lb/hr	<0.288	<0.299	<0.290	<0.292	
NMOC Emissions (reported as CH_4):					
NMOC, ppmvd *(EPA Method 25A)*	<1.0	<1.0	4.3	<2.1	
NMOC, lb/hr	<0.029	<0.030	0.125	<0.061	
NMOC, ppmvd @ 3% O_2 as CH_4	<2.6	<2.6	11.2	<5.5	30*
NMOC, ppmvd @ 3% O_2 as hexane (C_6H_{14})	<0.43	<0.44	1.87	<0.91	360
Inlet Hydrocarbons (reported as CH_4):					
Inlet NMOC, ppmvd *(EPA Method 25C)*	267	262	253	261	
Inlet NMOC, lb/hr	0.53	0.52	0.50	0.52	
NMOC Destruction Efficiency, %	>94.56%	>94.27%	>75.15%	>87.99%	>98%*
Inlet CH_4, % *(ASTM D-1945)*	521,000	528,000	517,000	522,000	
Inlet CH_4, lb/hr	1,033	1,050	1,027	1,037	
CH_4 Destruction Efficiency, %	>99.97%	>99.97%	>99.97%	>99.97%	>99%
Inlet THC (TOC), %	521,267	528,262	517,253	522,261	
Inlet THC (TOC), lb/hr	1,033.9	1,050.4	1,027.2	1,037.2	
THC (TOC) Destruction Efficiency, %	>99.97%	>99.97%	>99.97%	>99.97%	>98%

** NMOC permit limits are 30 ppmvd @ 3% O_2 or DE >98%*

[1] *On October 6, 2016, Redwood Landfill proposed a permit modification to increase the peak limit. This modification is still under review by BAAQMD.*

DEFINITIONS:

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
SO_2, calculated = H_2S · inlet, DSCFM / exhaust, DSCFM

TABLE # 2

Landfill Gas Characterization

Redwood Landfill, Inc.

Flare A-51

Parameter		Run 1	Run 2	Run 3	Average Results	Permit Limits
Sample ID		1-LFG-Flare A-51	2-LFG-Flare A-51	3-LFG-Flare A-51		
Sample Date		1/10/24	1/10/24	1/10/24		
Acrylonitrile	ppb	<44.7	<45.6	<42.8	<45.2	300
Benzene	ppb	93.8	68.4	66.7	81.1	1,500
Benzyl Chloride (Chloromethylbenzene)	ppb	<44.7	<45.6	<42.8	<45.2	500
Carbon Tetrachloride (Tetrachloromethane)	ppb	<44.7	<45.6	<42.8	<45.2	200
Chlorobenzene	ppb	<44.7	<45.6	<42.8	<45.2	200
Chloroethane	ppb	<44.7	<45.6	<42.8	<45.2	500
Chloroform	ppb	<44.7	<45.6	<42.8	<45.2	200
1,1 Dichloroethane (Ethylidene Dichloride)	ppb	<44.7	<45.6	<42.8	<45.2	500
1,1 Dichloroethene (Vinylidene Chloride)	ppb	<44.7	<45.6	<42.8	<45.2	500
1,2 Dichloroethane (Ethylene Dichloride)	ppb	<44.7	<45.6	<42.8	<45.2	200
1,4 Dichlorobenzene	ppb	<44.7	<45.6	<42.8	<45.2	1,000
Ethylbenzene	ppb	322	266	262	294	4,000
Ethlyene Dibromide (1,2 Dibromoethane)	ppb	<44.7	<45.6	<42.8	<45.2	200
Hexane	ppb	50.0	<45.6	<42.8	<47.8	2,000
Isopropyl Alcohol (IPA)	ppb	383	225	216	304	10,000
Methyl Alcohol (Methanol)	ppb	765	725	814	745	300,000
2-Butanone (Methyl Ethyl Ketone) (MEK)	ppb	866	578	577	722	15,000
Methylene Chloride	ppb	<89.3	<91.2	<355.0	<90.3	1,000
Methyl tert Butyl Ether (MTBE)	ppb	<44.7	<45.6	<42.8	<45.2	500
Perchloroethylene (Tetrachloroethene)	ppb	<44.7	<45.6	<42.8	<45.2	1,000
Styrene	ppb	<44.7	<45.6	<42.8	<45.2	500
Toluene	ppb	858	720	737	789	20,000
1,1,1 Trichlororethane	ppb	<44.7	<45.6	<42.8	<45.2	200
1,1,2,2 Tetrachloroethane	ppb	<44.7	<45.6	<42.8	<45.2	200
Trichloroethylene (Trichloroethene)	ppb	<44.7	<45.6	<42.8	<45.2	500
Vinyl Chloride	ppb	<44.7	<45.6	<42.8	<45.2	2,000
Xylenes	ppb	755	641	615	698	20,000
Carbon Disulfide	ppm	<0.089	<0.091	<0.086	<0.089	
Carbonyl Sulfide (COS/SO_2)	ppm	<0.089	<0.091	<0.086	<0.089	
Dimethyl Sulfide	ppm	<0.089	<0.091	<0.086	<0.089	
Ethyl Mercaptan	ppm	<0.089	<0.091	<0.086	<0.089	
Methyl Mercaptan	ppm	0.819	0.749	0.947	0.838	
Hydrogen Sulfide	ppm	359	410	386	385	
Total Reduced Sulfurs as H_2S	ppm	362	413	390	388	370

Redwood Landfill, Inc

BAAQMD Facility # A1179

Annual Compliance Emissions Test Report #22192
Landfill Gas Flare A-60(A) and Gas Treatment System S-71

Located at:
Redwood Landfill
8950 Redwood Highway
Novato, California 94948

Prepared for:
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For Submittal to:
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Testing Performed on:
July 13, 2022

Final Report Submitted on:
September 11, 2022

Performed and Reported by:
Blue Sky Environmental, Inc.
624 San Gabriel Avenue
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Office (510) 525 1261/Cell (810) 923 3181
bluesky@blueskyenvironmental.com

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.

TABLE OF CONTENTS

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:	Michael Chan (510) 613-2852
Source Tested:	Enclosed Landfill Gas Flare A-60 (A) and LFG Treatment & Desorption System (S-71)
Source Test Dates:	July 12 and 13, 2022
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:	**<u>Landfill Gas</u>** O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, Sulfur & VOC Species, Volumetric Flow Rate, Landfill Gas **<u>Flare Emissions</u>** 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	0.0484	0.06	In Compliance
NOx, ppmvd @ 15% O_2	12.2	15	In Compliance
CO, lb/MMBtu	0.0842	0.20	In Compliance
CO, ppmvd @ 15% O_2	34.7	82	In Compliance
SO_2, ppmvd	0.86	300	In Compliance
SO_2, lb/MMBtu	0.0042	1.69	In Compliance
NMOC, ppmvd @ 3% O_2 as CH_4	<2.9	30 or	In Compliance
NMOC Destruction Efficiency, %	>98.7%	>98%	
CH_4 Destruction Efficiency %	>99.97%	>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 12 . Enclosed Landfill Gas Flare A60 (A) was tested on July 13, 2022.

2.4. Sampling and Observing Personnel

Testing was performed by Jeramie Richardson, Wesley Alder, Timothy Eandi and Jeff Mesloh representing Blue Sky Environmental, Inc.

Charles Johnson (WMRE Plant Manager) and Ben Tarver and James Dutra (Operators) of Waste Management, and Jonathan Silva of SCS Engineers was 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 9, 2022 (revised June 17, 2022). A Source Test Protocol acknowledgement was requested and received by SCS Engineers (NST 7487 and 7488); 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 requteire 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 1,582 °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 47.3%. 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, 2022. 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 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			
07/12/22	LFG Gas Sample	Willexa Purge Gas Sample 12”	Willexa Purge Gas Sample 1”
Run 1-Stage 4 1315 - 1330	-		1”-2
Run 2 Stage 6-7-8 1345 - 1545	-	12” - 1	-
Run 3 Stage 9 1545 - 1745	-	12” - 2	-
LFG Gas Samples			
07/13/22	-	-	-
Run 1 0917-1004	R1 LFG	-	-
Run 2 1033-1120	R2 LFG	-	-
Run 3 1145-1231	R3 LFG	-	-

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 a Data Acquisition System (DAS), which can be supported by strip chart recorders.

The instrument response was recorded on 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

B. Calculations

C. Laboratory Reports

D. Field Data Sheets

E. Process Information

F. Calibration Gas Certificates & Equipment Calibrations

G. Sample Train Configuration and Stack Diagrams

H. Related Correspondence (Source Test Plan)

I. Permit to Operate

J. Willexa Purge Gas Characterization Results

  J-1. Summary Tables

  J-2. Calculations

  J-3. Flow Measurements, Field Data Sheets & Calibrations

  J-4. Lab Reports

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	7/13/22	7/13/22	7/13/22		
Test Time	0917-1004	1033-1120	1145-1231		
Standard Temperature, °F	70	70	70		
Process Parameters:					
Flare Temperature, °F	1,582	1,583	1,582	1,582	
Fuel Gas:					
LFG Fuel Flow Rate, SCFM	947	950	955	951	
Total Fuel Heat Input, MMBtu/hr	25.3	27.6	27.5	26.8	
Total Reduced Sulfur Compounds as H_2S, ppmv	399	469	384	417	410
Inlet CH_4, ppmv	448,000	488,000	483,000	473,000	
Inlet CH_4, lb/hr	1,053	1,150	1,145	1,116	
Inlet NMOC, ppmv as CH_4 *(EPA Method 25C)*	1,138	1,156	1,220	1,171	
Inlet NMOC, lb/hr as CH_4	2.68	2.73	2.89	2.76	
Inlet THC, ppmv as CH4	1,056	1,153	1,148	1,119	
Stack Gas:					
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	12,230	13,450	13,181	12,954	
Oxygen (O_2), % volume dry	14.1	14.1	14.0	14.1	
Carbon Dioxide (CO_2), % volume dry	6.18	6.09	6.14	6.14	
Moisture (H_2O), % volume dry	8.04	7.42	8.21	7.89	
NO_X Emissions (reported as NO_2):					
NOx, ppmvd	14.7	13.4	14.1	14.0	
NOx, ppmvd @ 15% O_2	12.7	11.7	12.1	12.2	15
NOx, lb/hr	1.28	1.28	1.33	1.30	
NOx, lb/MMBtu	0.0506	0.0465	0.0482	0.0484	0.06
NO, ppmvd	12.6	10.0	11.3	11.3	
NO_2, ppmvd	2.09	3.41	2.80	2.77	
CO Emissions:					
CO, ppmvd	28.3	51.5	40.4	40.1	
CO, ppmvd @ 15% O_2	24.5	44.9	34.7	34.7	82
CO, lb/hr	1.51	3.01	2.31	2.28	
CO, lb/MMBtu	0.0595	0.109	0.0841	0.0842	0.20
Sulfur Dioxide (SO_2) Emissions:					
SO_2, ppmvd (calculated)	0.83	0.96	0.80	0.86	300
SO_2, lb/hr	0.10	0.13	0.11	0.11	
SO_2, lb/MMBtu	0.0040	0.0047	0.0038	0.0042	1.69
THC Emissions (reported as CH_4):					
THC, ppmvd *(EPA Method ALT 097)*	<12.0	<11.9	<12.0	<11.9	
THC, lb/hr	<0.363	<0.397	<0.392	<0.384	
THC Destruction Efficiency, %	>99.97%	>99.97%	>99.97%	>99.97%	
Methane (CH_4) Emissions:					
CH_4, ppmv wet *(EPA Method ALT 097)*	<10.0	<10.0	<10.0	<10.0	
CH_4, ppmvd	<10.9	<10.8	<10.9	<10.9	
CH_4, lb/hr	<0.330	<0.361	<0.356	<0.349	
CH_4 Destruction Efficiency, %	>99.97%	>99.97%	>99.97%	>99.97%	> 99%
NMOC Emissions (reported as CH_4):					
NMOC, ppmv wet *(EPA Method ALT 097)*	<1.0	<1.0	<1.0	<1.0	
NMOC, ppmvd	<1.1	<1.1	<1.1	<1.1	
NMOC, ppmvd @ 3% O_2	<2.9	<2.9	<2.8	<2.9	30
NMOC, lb/hr	<0.033	<0.036	<0.036	<0.035	
NMOC Destruction Efficiency, %	>98.8%	>98.7%	>98.8%	>98.7%	>98%

Results meet the requirements of the "Compliance Agreement" between the BAAQMD and RLI, which was renewed through January 15, 2023 on June 10, 2022.

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)
ppm dry = ppm wet · 100 / (100 - %H_20)
SO_2 emission ppm = H_2S in fuel · fuel flow rate / stack gas flow rate
Destruction Efficiency, % = (inlet lb/hr- outlet lb/hr) / inlet lb/hr

<Value = 2% of Analyzer Range

TABLE #2

Redwood Landfill, Inc

Landfill Gas Characterization

Parameter		**Units**	**R1 LFG**	**R2 LFG**	**R3 LFG**	**Permit Limits**
Test Date			7/13/22	7/13/22	7/13/22	
Average NMOC as Hexane		ppm	190	193	203	
EPA TO-15 Results:						
Acrylonitrile		ppb	<85.0	<86.7	<104	300
Benzene		ppb	609	609	456	1,500
Benzyl Chloride	Chloromethylbenzene	ppb	<42.5	<43.4	<52.1	500
Carbon Tetrachloride		ppb	<42.5	<43.4	<52.1	200
Chlorobenzene		ppb	<42.5	<43.4	<52.1	200
Chloroethane		ppb	127	150.0	110	500
Chloroform		ppb	<42.5	<43.4	<52.1	200
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<42.5	<43.4	<52.1	500
1,1 Dichloroethene	Vinylidene Chloride	ppb	<42.5	<43.4	<52.1	500
1,2 Dichloroethane	Ethylene Dichloride	ppb	168	171	173	200
1,4 Dichlorobenzene		ppb	178	199	203	1,000
Ethylbenzene		ppb	1,980	2,080	2,200	4,000
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<42.5	<43.4	<52.1	200
Hexane		ppb	521	535	531	2,000
Isopropyl Alcohol	IPA	ppb	2,530	3,040	3,590	10,000
Methyl Alcohol	Methanol	ppb	5,380	6,200	7,110	300,000
Methyl Ethyl Ketone	MEK	ppb	4,960	5,660	6,350	15,000
Methylene Chloride		ppb	<85.0	<86.7	55.22	1,000
Methyl tert Butyl Ether	MTBE	ppb	<42.5	<43.4	<52.1	500
Perchloroethylene	Tetrachloroethylene	ppb	99.4	104	104	1,000
Styrene		ppb	135	145	148	500
Toluene		ppb	3,640	3,820	3,880	20,000
1,1,1 Trichlororethane		ppb	<42.5	<43.4	<52.1	200
1,1,2,2 Tetrachloroethane		ppb	<42.50	<43.4	<52.1	200
Trichloroethylene	Trichloroethene	ppb	80.7	79.8	85.4	500
Vinyl Chloride		ppb	61.2	62.4	64.6	2,000
Xylenes		ppb	4,520	4,740	4,890	20,000
ASTM D-5504 Results:						
Carbon Disulfide		ppm	0.144	0.023	0.171	
Carbonyl Sulfide	COS	ppm	<0.017	<0.017	<0.021	
Dimethyl Sulfide		ppm	0.303	0.439	0.348	
Ethyl Mercaptan		ppm	<0.112	0.147	0.133	
Methyl Mercaptan		ppm	0.643	0.872	0.758	
Hydrogen Sulfide		ppm	395	463	377	
Total Reduced Sulfur Compounds as H_2S		ppm	399	469	384	410

Results meet the requirements of the "Compliance Agreement" between the BAAQMD and RLI, which was renewed through January 15, 2023 on June 10, 2022.

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Willexa Purge Gas Characterization Results

TABLE # 3

REDWOOD LANDFILL

7/13/22

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			7/13/22	7/13/22	7/13/22
Test Time			1315-1330	1345-1545	1545-1745
GAS FLOW VELOCITY, SFPM			2,403	2,046	2,400
GAS MOISTURE, % (WB/DB)			5.2	5.1	5.3
GAS FLOW RATE, SCFM			13	1,607	1,885
GAS FLOW RATE, DSCFM			12	1,525	1,785
O_2		%	0.9	21.8	22.0
N_2		%	11.1	77.5	78.0
CO_2		%	38.9	0.5	<0.2
CH_4		%	49.2%	0.2%	0.005%
TRS as H2S		ppm	0.399	1.46	0.959
NMOC (as Carbon)		ppm	1,154	1,693	1,455
NMOC (as Hexane)		ppm	192	282	243
Acrylonitrile		ppb	<81.2	<92.7	<81.9
Benzene		ppb	498	<46.4	<41.0
Benzyl Chloride	Chloromethylbenzene	ppb	<40.6	<46.4	<41.0
Carbon Tetrachloride		ppb	<40.6	<46.4	<41.0
Chlorobenzene		ppb	44.7	<46.4	<41.0
Chloroethane		ppb	124	<46.4	<41.0
Chloroform		ppb	<40.6	<46.4	<41.0
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<40.6	<46.4	<41.0
1,1 Dichloroethene	Vinylidene Chloride	ppb	<40.6	<46.4	<41.0
1,2 Dichloroethane	Ethylene Dichloride	ppb	127	<46.4	<41.0
1,4 Dichlorobenzene		ppb	49.6	92.7	<41.0
Ethylbenzene		ppb	2,090	1,960	208
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<40.6	<46.4	<41.0
Hexane		ppb	522	<46.4	<41.0
Isopropyl Alcohol	2-propanol(IPA)	ppb	2,500	7,270	6,980
Methyl Alcohol	Methanol	ppb	5,520	12,100	7,130
Methyl Ethyl Ketone	MEK	ppb	3,950	8,780	5,220
Methylene Chloride		ppb	<81.2	<92.7	<81.9
Methyl tert Butyl Ether	MTBE	ppb	<40.6	<46.4	<41.0
Perchloroethylene (PCE)	Tetrachloroethylene	ppb	78.8	<46.4	<41.0
Styrene		ppb	<40.6	<46.4	<41.0
Toluene		ppb	3,500	1,130	53.3
1,1,1 Trichlororethane		ppb	<40.6	<46.4	<41.0
1,1,2,2 Tetrachloroethane		ppb	<40.6	<46.4	<41.0
Trichloroethylene (TCE)	Trichloroethene	ppb	59.3	<46.4	<41.0
Vinyl Chloride		ppb	53.6	<46.4	<41.0
Xylenes		ppb	4,710	5,380	634
Carbon Disulfide		ppm	0.656	0.046	0.016
Carbonyl Sulfide		ppm	0.585	0.026	<0.016
Dimethyl Sulfide		ppm	<0.437	0.028	<0.016
Ethyl Mercaptan		ppm	<0.016	<0.019	<0.016
Methyl Mercaptan		ppm	0.179	0.035	<0.016
Hydrogen Sulfide		ppm	0.093	1.16	0.369
TRS as H2S		ppm	2.29	3.06	1.43

TNMOC= (Ethane (C2) *2) + Propane (C3)*3) + (Isobutane (C4)*4) + Isopentane (C5)*5) + (Hexanes (C6)*6) + (C6*8)

WM
WASTE MANAGEMENT

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

September 7, 2023

Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

Re: Annual Compliance Emissions Source Test of Flare A60(B)
Title V Permit Condition Number 19867, Part 18, Facility A1179
Redwood Landfill, Inc., Novato, California

On behalf of Redwood Landfill, Inc. (RLI), this letter acknowledges that the July 12, 2023 source test of flare A60(B) shows that the inlet landfill gas exceeded the Total Reduced Sulfur (TRS) permit limit of 370 ppm H_2S. Since July 17, 2023, RLI has established sulfur treatment for the A60 flare and subsequent sulfur inlet concentrations have been below the TRS limit.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

Redwood Landfill, Inc.

BAAQMD Facility # A1179

Annual Compliance Emissions Test Report #23204

Landfill Gas Flare A-60(B)

Located at:
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, California 94945

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
Source Test Division
375 Beale Street, Suite 600
San Francisco, CA 94105
Attn: Marco Hernandez and Gloria Espena
mhernandez@baaqmd.gov / gespena@baaqmd.gov
sourcetest@baaqmd.gov

Testing Performed on:
July 12, 2023

Final Report Submitted on:
September 8, 2023

Performed and Reported by:
Blue Sky Environmental, Inc.
624 San Gabriel Avenue
Albany, CA 94706
Office (510) 525 1261/Cell (810) 923 3181
bluesky@blueskyenvironmental.com

TABLE OF CONTENTS

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 (B) is 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 Table 1.2 and Table 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 94945
Source Contact:	Maria Bowen, SCS Engineers (619) 455-9518
Source Tested:	Enclosed Landfill Gas Flare A-60 (B)
Source Test Dates:	July 12, 2023
Test Objective:	Determine compliance with Bay Area Air Quality Management District (BAAQMD) permit condition 19687 and BAAQMD Regulation 8, Rule 34
Test Performed by:	Blue Sky Environmental, Inc. 2273 Lobert Street, Castro Valley, CA 94546 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 (B) Compliance Summary

Emission Parameter	Average Test Result	Permit Limit	Compliance Status
NOx, lb/MMBtu	0.030	0.06	In Compliance
NOx, ppmvd @ 15% O_2	7.6	15	In Compliance
CO, lb/MMBtu	0.051	0.20	In Compliance
CO, ppmvd @ 15% O_2	21.0	82	In Compliance
SO_2, ppmvd	118.0	300	In Compliance
SO_2, lb/MMBtu	0.5938	1.69	In Compliance
NMOC, ppmvd @ 3% O_2 as CH_4	<3.1	30*	In Compliance
NMOC Destruction Efficiency, %	>97.969%	>98%*	
CH_4 Destruction Efficiency %	>99.966%	>99%	In Compliance
NMOC, ppmvd @ 3% O_2 as hexane	<1.1	360	In Compliance

*>98% NMOC Destruction Efficiency or 30 ppmvd NMOC as CH4 @ 3% O2

Table 1.3
Enclosed Landfill Gas Flare A-60 (B) Landfill Gas Characterization

Emission Parameter	Average Test Result	Permit Limit	Compliance Status
Acrylonitrile	<42.9	300	In Compliance
Benzene	372	1,500	In Compliance
Benzyl Chloride, Chloromethylbenzene	<42.9	500	In Compliance
Carbon Tetrachloride	<42.9	200	In Compliance
Chlorobenzene	<42.9	200	In Compliance
Chloroethane	80.1	500	In Compliance
Chloroform	<42.9	200	In Compliance
1,1 Dichloroethane, Ethylidene Dichloride	<42.9	500	In Compliance
1,1 Dichloroethene, Vinylidene Chloride	<42.9	500	In Compliance
1,2 Dichloroethane, Ethylene Dichloride	59.5	200	In Compliance
1,4 Dichlorobenzene	216	1,000	In Compliance
Ethylbenzene	2,037	4,000	In Compliance
Ethlyene Dibromide, 1,2 Dibromoethane	<42.9	200	In Compliance
Hexane	289	2,000	In Compliance
Isopropyl Alcohol (IPA)	1,052	10,000	In Compliance
Methyl Alcohol, Methanol	1,487	300,000	In Compliance
Methyl Ethyl Ketone MEK	3,053	15,000	In Compliance
Methylene Chloride	<85.8	1,000	In Compliance
Methyl tert Butyl Ether MTBE	<42.9	500	In Compliance
Perchloroethylene, Tetrachloroethylene	47.8	1,000	In Compliance
Styrene	97.0	500	In Compliance
Toluene	3,533	20,000	In Compliance
1,1,1 Trichlororethane	<42.9	200	In Compliance
1,1,2,2 Tetrachloroethane	<42.9	200	In Compliance
Trichloroethylene, Trichloroethene	<44.4	500	In Compliance
Vinyl Chloride	<44.4	2,000	In Compliance
Xylenes	4,463	20,000	In Compliance
Total Reduced Sulfur Compounds as H2S	1,728	370	Exceeds Limit

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This performance test was conducted to demonstrate compliance of Enclosed Landfill Gas Flare A-60 (B) with the emission limits specified in Bay Area Air Quality Management District (BAAQMD) Permit Condition 19867. This testing also satisfies the compliance requirements of BAAQMD Regulation 8 Rule 34. The Willexa landfill gas treatment system (S-71) was not in operation at the time of the source test due to PG&E's direction to not operate the landfill gas engines until the landslide/power poles have been repaired by Caltrans/PG&E.

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 July 12, 2023.

2.4. Sampling and Observing Personnel

Testing was performed by Jamie Rios and Timothy Eandi representing Blue Sky Environmental, Inc.

Riley Lindberg of Waste Management, and Michael Flanagan 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 16, 2023. A Source Test Protocol acknowledgement was requested and received by SCS Engineers (NST 8446); Marco Hernadez was to witness 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 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.

2.6. Source Operating Conditions

The A60 (B) flare was operated on landfill gas fuel at an average of 1,618 °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 204 SCFM with an average methane content of 47.8%.

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 (B) 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 (B) 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.

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.

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 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.

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 a Data Acquisition System (DAS), which can be supported by strip chart recorders.

The instrument response was recorded on 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. The total reduced sulfur compounds as H_2S ppm did not meet the permit required limit. All other limits were met.

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. Gas Certificates & Equipment Calibrations

G. Sample Train Configuration and Stack Diagrams

H. Related Correspondence (Source Test Plan)

I. Permit to Operate

A
Tabulated Results

TABLE #1

Redwood Landfill, Inc.
Flare A-60 (B)

Parameter	Run 1	Run 2	Run 3	Average Results	Permit Limits
Test Date	7/12/23	7/12/23	7/12/23		
Test Time	1037-1113	1146-1221	1240-1316		
Standard Temperature, °F	70	70	70		
Process Parameters:					
Flare Temperature, °F	1,618	1,618	1,617	1,618	
Fuel Gas:					
LFG Fuel Flow Rate, SCFM	204	205	202	204	
Total Fuel Heat Input, MMBtu/hr	5.8	5.9	5.9	5.9	
Total Reduced Sulfur Compounds as H_2S, ppm *(ASTM D-5504)*	1,667	1,687	1,829	1,728	370
Inlet CH_4, ppm *(ASTM D-1945)*	472,000	480,000	483,000	478,333	
Inlet CH_4, lb/hr	239	244	242	242	
Inlet NMOC, ppm as CH_4 *(EPA Method 25C)*	703	698	717	706	
Inlet NMOC, lb/hr as CH_4	0.36	0.36	0.36	0.36	
Inlet THC, ppm as CH4	472,703	480,698	483,717	479,039	
Inlet THC, lb/hr as CH4	239.4	244.6	242.6	242.2	
Stack Gas:					
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	2,671	3,099	3,211	2,994	
Oxygen (O_2), % volume dry	13.7	14.6	14.9	14.4	
Carbon Dioxide (CO_2), % volume dry	5.3	5.3	5.2	5.3	
Moisture (H_2O), % volume dry	10.7	11.9	6.3	9.6	
NO_X Emissions (reported as NO_2):					
NOx, ppmvd	9.2	8.8	7.2	8.4	
NOx, ppmvd @ 15% O_2	7.6	8.2	7.0	7.6	15
NOx, lb/hr	0.18	0.19	0.16	0.18	
NOx, lb/MMBtu	0.030	0.033	0.028	0.030	0.06
CO Emissions:					
CO, ppmvd	24.5	23.3	21.6	23.1	
CO, ppmvd @ 15% O_2	20.1	21.7	21.1	21.0	82
CO, lb/hr	0.28	0.31	0.30	0.30	
CO, lb/MMBtu	0.049	0.053	0.051	0.051	0.20
Sulfur Dioxide (SO_2) Emissions:					
SO_2, ppm (calculated)	127.3	111.6	115.0	118.0	300
SO_2, lb/hr	3.38	3.44	3.67	3.50	
SO_2, lb/MMBtu	0.5804	0.5791	0.6219	0.5938	1.69
THC Emissions (reported as CH_4):					
THC, ppmvd *(EPA Method ALT 097)*	<11.2	<11.4	<10.7	<11.1	
THC, lb/hr	<0.074	<0.088	<0.085	<0.082	
THC Destruction Efficiency, %	100.000%	100.000%	100.000%	100.000%	
Methane (CH_4) Emissions:					
CH_4, ppm wet *(EPA Method ALT 097)*	<10.0	<10.0	<10.0	<10.0	
CH_4, ppmvd	<11.2	<11.4	<10.7	<11.1	
CH_4, lb/hr	<0.074	<0.087	<0.085	<0.082	
CH_4 Destruction Efficiency, %	99.969%	99.964%	99.965%	99.966%	> 99%
NMOC Emissions (reported as CH_4):					
NMOC, ppm wet *(EPA Method ALT 097)*	<1.0	<1.0	<1.0	<1.0	
NMOC, ppmvd dry	<1.1	<1.1	<1.1	<1.1	
NMOC, lb/hr as CH_4	<0.007	<0.009	<0.009	<0.008	
NMOC, ppmvd @ 3% O_2	<2.8	<3.2	<3.2	<3.1	30*
NMOC, ppmvd @ 3% O_2 as hexane (C_6H_{14})	<0.466	<0.537	<0.527	<0.510	360
NMOC Destruction Efficiency, %	97.915%	97.541%	97.633%	97.696%	>98%*

** >98% NMOC destruction efficiency or <30 ppm NMOC @ 3% O_2*

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
NMOC, ppm as hexane = NMOC, ppm as CH_4 / 6

TABLE #2

Redwood Landfill, Inc.

Landfill Gas Characterization

Parameter		Units	1-LFG-Flare A-60 (B)	2-LFG-Flare A-60 (B)	3-LFG-Flare A-60 (B)	Average Results	Permit Limits
Test Date			7/12/23	7/12/23	7/12/23		
Average NMOC as Hexane		ppm	117	116	120		
EPA TO-15 Results:							
Acrylonitrile		ppb	<43.9	<36.7	<48.2	<42.9	300
Benzene		ppb	353	385	377	372	1,500
Benzyl Chloride	Chloromethylbenzene	ppb	<43.9	<36.7	<48.2	<42.9	500
Carbon Tetrachloride		ppb	<43.9	<36.7	<48.2	<42.9	200
Chlorobenzene		ppb	<43.9	<36.7	<48.2	<42.9	200
Chloroethane		ppb	80.8	85.2	74.2	80.1	500
Chloroform		ppb	<43.9	<36.7	<48.2	<42.9	200
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<43.9	<36.7	<48.2	<42.9	500
1,1 Dichloroethene	Vinylidene Chloride	ppb	<43.9	<36.7	<48.2	<42.9	500
1,2 Dichloroethane	Ethylene Dichloride	ppb	58.0	61.7	58.7	59.5	200
1,4 Dichlorobenzene		ppb	195	232	222	216	1,000
Ethylbenzene		ppb	1,930	2,100	2,080	2,037	4,000
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<43.9	<36.7	<48.2	<42.9	200
Hexane		ppb	285	295	288	289	2,000
Isopropyl Alcohol	IPA	ppb	836	1,090	1,230	1,052	10,000
Methyl Alcohol	Methanol	ppb	1,160	1,580	1,720	1,487	300,000
Methyl Ethyl Ketone	MEK	ppb	2,760	3,220	3,180	3,053	15,000
Methylene Chloride		ppb	<87.8	<73.4	<96.3	<85.8	1,000
Methyl tert Butyl Ether	MTBE	ppb	<43.9	<36.7	<48.2	<42.9	500
Perchloroethylene	Tetrachloroethylene	ppb	45.7	47.7	50.1	47.8	1,000
Styrene		ppb	86.9	104.0	100.0	97.0	500
Toluene		ppb	3,470	3,530	3,600	3,533	20,000
1,1,1 Trichlororethane		ppb	<43.9	<36.7	<48.2	<42.9	200
1,1,2,2 Tetrachloroethane		ppb	<43.9	<36.7	<48.2	<42.9	200
Trichloroethylene	Trichloroethene	ppb	<43.9	41.1	<48.2	<44.4	500
Vinyl Chloride		ppb	<43.9	41.1	<48.2	<44.4	2,000
Xylenes		ppb	4,230	4,620	4,540	4,463	20,000
ASTM D-5504 Results:							
Carbon Disulfide		ppm	0.177	0.184	0.235	0.199	
Carbonyl Sulfide	COS	ppm	<0.088	<0.073	<0.096	<0.086	
Dimethyl Sulfide		ppm	0.647	0.244	0.362	0.418	
Ethyl Mercaptan		ppm	0.258	0.390	0.274	0.307	
Methyl Mercaptan		ppm	1.10	0.839	0.919	0.953	
Hydrogen Sulfide		ppm	1,655	1,675	1,815	1,715	
Total Reduced Sulfur Compounds as H_2S		ppm	1,667	1,687	1,829	1,728*	370

*Total Reduced Sulfur Compounds as H_2S did not meet the permit limit

Redwood Landfill, Inc.

BAAQMD Facility #1179

Annual Compliance Emissions Test Report #22194
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 14 - 15, 2022

Final Report Submitted on:
September 12, 2022

Performed and Reported by:
Blue Sky Environmental, Inc.
624 San Gabriel Avenue
Albany, CA 94706
Office (510) 525 1261/Cell (810) 923 3181
bluesky@blueskyenvironmental.com

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.

TABLE of CONTENTS

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 LGS0189).
Source Test Date:	July 14th – 15th, 2022
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 Jeramie Richardson (810) 923 - 3181 jrichardson@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-64), NH_3, Formaldehyde (S-64) & 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	0.0119	0.15	In Compliance
CO, g/BHp-hr	0.402	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.1795	9	In Compliance
SO_2, g/BHp-hr	<0.00358	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.04	10	In Compliance
CH_4, ppm @ 15% O_2	933.4	3,000	In Compliance
NMOC, ppm @ 15% O_2 as CH_4	4.1	32	In Compliance
NMOC, g/BHp-hr as CH_4	0.021	0.16	In Compliance
Formaldehyde, lb/hr	0.0373	0.51	In Compliance
Total Particulate, as PM_{10}, g/BHp	0.047	0.10	In Compliance
TRS in fuel, ppm as H_2S	2.99	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	0.086	0.15	In Compliance
CO, g/BHp-hr	0.168	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.1796	9	In Compliance
SO_2, g/BHp-hr	<0.00342	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.47	10	In Compliance
CH_4, ppm @ 15% O_2	781.0	3,000	In Compliance
NMOC, ppm @ 15% O_2 as CH_4	3.4	32	In Compliance
NMOC, g/BHp-hr as CH_4	0.016	0.16	In Compliance
TRS in fuel, ppm as H_2S	3.01	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, 2022.

2.4. Sampling and Observing Personnel

Testing was performed by Jeramie Richardson, Wesley Alder, Zach Sales, Anthony Bomprezzi 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 14th, 2022 and revised June 17th, 2022. Source Test Protocol acknowledgements were received by Blue Sky Environmental (NST #7501 S-64 and NST #7502 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	1,197	1,201
Fuel Consumption Rate, SCFM	442.1	421.2

LFG samples collected at the header of Engine #1 (S-64) showed that the methane quality averaged 49.4% and the Oxygen content was 1.03%. LFG samples collected at the header of Engine #2 (S-65) showed that the Methane quality averaged 49.7% and the Oxygen content was 0.93%. 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: 41,123

Engine #2 (S-65), SN: LGS00189, Hours of Operation: 40,510

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 #1 (S-64).

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	7/15/22	7/15/22	7/15/22	--	
Test Time	0943-1124	1256-1419	1520-1644	--	
Standard Temperature, °F	70	70	70	--	
Process Parameters:					
Generator, kW	1,190	1,194	1,206	1,197	
Engine, BHp	1,658	1,664	1,680	1,667	
Urea Injection Rate, gph	1.2	1.2	1.2	1.2	
Fuel:					
Fuel Flow Rate, SCFM	442.0	443.1	441.2	442.1	
Fuel Gross Calorific Value, Btu/cf @ 68°F	494.6	491.6	492.6	493.0	
Fuel Fd-Factor, DSCF/MMBtu @ 68°F	9,546	9,548	9,554	9,550	
Inlet NMOC, ppmv as CH_4 *(EPA Method 25C)*	732	749	596	692	
Inlet NMOC, lb/hr as CH_4	0.8	0.8	0.7	0.8	
Inlet CH_4, ppmv	496,000	493,000	494,000	494,333	
Inlet CH_4, lb/hr	544.2	542.3	541.1	542.6	
H_2S, ppm *(ASTM D5504)*	0.450	0.222	0.237	0.303	
TRS as H_2S, ppm *(ASTM D5504)*	2.87	3.16	2.95	2.99	150
Stack Gas:					
SCR Temperature, °F	825	825	825	825	
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	3,765	3,754	3,760	3,760	
Oxygen (O_2), % volume dry	9.3	9.3	9.4	9.3	
Carbon Dioxide (CO_2), % volume dry	10.3	10.4	10.3	10.3	
Moisture (H_2O), % volume dry	10.8	15.4	11.4	12.5	
NO_X Emissions (reported as NO_2):					
NO_X, ppm	17.7	15.4	16.0	16.4	
NO_X, ppm @ 15% O_2	9.0	7.9	8.2	8.3	
NOx, lb/hr	0.48	0.41	0.43	0.44	
NOx, g/BHp-hr	0.130	0.113	0.116	0.119	0.15
CO Emissions:					
CO, ppm	94.8	89.5	86.9	90.4	
CO, ppm @ 15% O_2	48.3	45.6	44.4	46.1	
CO, lb/hr	1.55	1.46	1.42	1.48	
CO, g/BHp-hr	0.424	0.398	0.383	0.402	1.8
SO_2 Emissions:					
SO_2, ppm *(calculated emission)*	<0.337	<0.373	<0.346	<0.352	
SO_2, ppm @ 15% O_2	<0.1716	<0.1900	<0.1769	<0.1795	9
SO_2, lb/hr	<0.01262	<0.01393	<0.01295	<0.01316	
SO_2, g/BHp-hr	<0.00345	<0.00380	<0.00350	<0.00358	0.18
Ammonia Emissions:					
Ammonia, ppm	0.05	0.04	0.13	0.07	
Ammonia, ppm @ 15% O_2	0.03	0.02	0.07	0.04	10
Methane (CH_4) Emissions:					
CH_4, ppm wet *(EPA Method ALT 078)*	1,605.1	1,639.3	1,555.3	1,599.9	
CH_4, ppm	1,799.5	1,936.9	1,754.9	1,830.4	
CH_4, ppm @ 15% O_2	916.5	986.8	897.0	933.4	3,000
CH_4, lb/hr	16.82	18.05	16.38	17.1	
CH_4, g/BHp-hr	4.60	4.92	4.42	4.65	
NMOC Emissions (reported as CH_4):					
NMOC, ppm wet *(EPA Method ALT 078)*	7.0	7.5	6.8	7.1	
NMOC, ppm	7.9	8.8	7.6	8.1	
NMOC, ppm @ 15% O_2	4.0	4.5	3.9	4.1	32
NMOC, lb/hr	0.07	0.08	0.07	0.08	
NMOC, g/BHp-hr	0.020	0.022	0.019	0.021	0.16
THC Emissions (reported as CH_4):					
THC, ppm	1,807.4	1,945.7	1,762.5	1,838.5	
THC, lb/hr	16.89	18.13	16.45	17.16	
THC g/BHp-hr	4.62	4.94	4.44	4.67	
CH_4 Destruction Efficiency, %	96.9%	96.7%	97.0%	96.9%	
NMOC Destruction Efficiency, %	>95.5%	>89.9%	>91.9%	>92.4%	

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

Total Particulate Results

Redwood Landfill, Inc
Engine #1 (S-64)

Parameter	Run #1	Run #2	Run #3	Average Results	Permit Limits
Test Date	07/15/22	07/15/22	07/15/22	--	
Test Time	0943-1124	1256-1418	1520-1643	--	
Engine kW	1,190	1,194	1,206	1,197	
Engine BHp	1,658	1,664	1,680	1,667	
Sample Volume, DSCF	31.51	32.58	32.57	32.22	
Isokinetic, %	99.3	99.4	109.1	102.6	
Duct Temperature, °F	911.0	917.7	919.3	916.0	
Stack Gas:					
Velocity, ft/sec	39.2	40.9	41.0	40.4	
Flow Rate, ACFM	10,788	11,259	11,292	11,113	
Flow Rate, DSCFM	3,716	3,839	3,885	3,813	
Water Vapor (H_2O), %	11.00	11.58	10.68	11.08	
Oxygen (O_2), %	9.32	9.32	9.36	9.33	
Carbon Dioxide (CO_2), %	10.29	10.40	10.32	10.34	
Filterable Particulate Emissions:					
Filterable Particulate, mg	22.64	0.72	0.05	7.80	
Filterable Particulate, gr/DSCF	0.01109	0.00034	0.00002	0.00382	
Filterable Particulate, lb/hr	0.3531	0.0112	0.0008	0.1217	
Condensable Particulate Emissions:					
Condensable Particulate, mg	3.37	4.03	2.50	3.30	
Condensable Particulate, gr/DSCF	0.00165	0.00073	0.00080	0.00106	
Condensable Particulate, lb/hr	0.0526	0.0241	0.0265	0.0344	
Total Particulate Emissions:					
Total Particulate as PM_{10}, mg	26.01	4.75	2.55	11.10	
Total Particulate as PM_{10}, gr/DSCF	0.0127	0.00225	0.0012	0.0054	
Total Particulate as PM_{10}, lb/hr	0.406	0.074	0.040	0.173	
Total Particulate as PM_{10}, g/BHp-hr	0.111	0.020	0.011	0.047	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 #3

Formaldehyde Method CARB 323

Redwood Landfill, Inc
Engine #1 (S-64)

Parameter	**Run 1**	**Run 2 B**	**Run 3**	**Average Results**	**Permit Limits**
Test Date	7/15/22	7/15/22	7/15/22		
Test Time	0943-1124	1256-1419	1520-1644		
Sample Duration, minutes	60	60	60	60	
Standard Temperature, °F	70	70	70	70	
Exhaust Flow Rate, DSCFM *(EPA Method 5/202)*	3,716	3,839	3,885	3,813	
Test Parameters:					
Meter Yd	1.0696	1.0696	1.0696	1.0696	
Average Meter Temperature, °C	26.1	32.5	36.1	31.6	
Average Meter Temperature, °F	79.0	90.5	97.0	88.8	
Meter Volume, L	9.372	9.756	9.848	9.659	
Total Corrected Volume, L	9.857	10.046	10.023	9.975	
Formaldehyde Emissions:					
Formaldehyde, ug/sample	13.6	31.5	32.8	26.0	
Formaldehyde, ug/DSCM	1,380	3,135	3,273	2,596	
Formaldehyde, ppb	1,110	2,523	2,633	2,089	
Formaldehyde, g/hr	8.7	20.46	21.6	16.9	
Formaldehyde, lb/hr	0.0192	0.0451	0.0476	0.0373	0.51

WHERE:
ml = milliliter
g = gram
ug = microgram
DSCFM = dry standard cubic feet per minute
DSCM = dry standard cubic meter
L = Liters

CALCULATIONS:
Formaldehyde, ppb = 1,000 · (ug/sample) · 24.14 / (30.0 MW · Vm std liters)
ug/DSCM = (1,000 L/DSCM) · (ug/sample) / (sample volume, L)
g/hr = ug/DSCM · (DSCFM · 60 min-hr / 35.3)/(1,000,000 g/ug)
lb/hr = (g/hr) / 453.6

TABLE #4

Redwood Landfill, Inc
Engine #2 (S-65)

Parameter	Run 1	Run 2	Run 3	Average Results	Permit Limits
Test Date	7/14/22	7/14/22	7/14/22	--	
Test Time	0837-0940	0958-1102	1119-1227	--	
Standard Temperature, °F	70	70	70	--	
Process Parameters:					
Generator, kW	1,199	1,203	1,200	1,201	
Engine, BHp	1,671	1,676	1,672	1,673	
Urea Injection Rate, gph	1.2	1.2	1.2	1.2	
Fuel:					
Fuel Flow Rate, SCFM	421.0	420.0	422.6	421.2	
Fuel Gross Calorific Value, Btu/cf @ 68°F	490.6	499.6	496.6	495.6	
Fuel Fd-Factor, DSCF/MMBtu @ 68°F	9,553	9,539	9,548	9,547	
Inlet NMOC, ppmv as CH_4 *(EPA Method 25C)*	536	570	582	563	
Inlet NMOC, lb/hr as CH_4	0.6	0.6	0.6	0.6	
Inlet CH_4, ppmv	492,000	501,000	498,000	497,000	
Inlet CH_4, lb/hr	514.2	522.4	522.4	519.7	
H_2S, ppm *(ASTM D5504)*	1.32	0.662	0.488	0.823	
TRS as H_2S, ppm *(ASTM D5504)*	3.22	3.19	2.62	3.01	150
Stack Gas:					
SCR Temperature, ˚F	825	825	825	825	
Exhaust Flow Rate, DSCFM *(EPA Method 19)*	4,126	4,214	4,232	4,191	
Oxygen (O_2), % volume dry	10.9	11.0	11.0	11.0	
Carbon Dioxide (CO_2), % volume dry	8.9	8.9	8.9	8.9	
Moisture (H_2O), % volume dry	10.0	10.4	10.1	10.2	
NO_X Emissions (reported as NO_2):					
NO_X, ppm	10.9	10.6	10.5	10.7	
NO_X, ppm @ 15% O_2	6.4	6.3	6.3	6.3	
NOx, lb/hr	0.32	0.32	0.32	0.32	
NOx, g/BHp-hr	0.087	0.086	0.086	0.086	0.15
CO Emissions:					
CO, ppm	32.9	33.4	36.0	34.1	
CO, ppm @ 15% O_2	19.4	19.9	21.5	20.3	
CO, lb/hr	0.59	0.61	0.66	0.62	
CO, g/BHp-hr	0.160	0.166	0.180	0.168	1.8
SO_2 Emissions:					
SO_2, ppm *(calculated emission)*	<0.329	<0.318	<0.262	<0.303	
SO_2, ppm @ 15% O_2	<0.1939	<0.1890	<0.1560	<0.1796	9
SO_2, lb/hr	<0.01348	<0.01333	<0.01101	<0.01261	
SO_2, g/BHp-hr	<0.00366	<0.00361	<0.00299	<0.00342	0.18
Ammonia Emissions:					
Ammonia, ppm	0.64	1.28	0.47	0.80	
Ammonia, ppm @ 15% O_2	0.38	0.76	0.28	0.47	10
Methane (CH_4) Emissions:					
CH_4, ppm wet *(EPA Method ALT 078)*	1,095.2	1,083.7	1,366.4	1,181.8	
CH_4, ppm	1,216.7	1,209.9	1,519.5	1,315.4	
CH_4, ppm @ 15% O_2	718.2	719.0	905.9	781.0	3,000
CH_4, lb/hr	12.46	12.66	15.96	13.7	
CH_4, g/BHp-hr	3.38	3.42	4.33	3.71	
NMOC Emissions (reported as CH_4):					
NMOC, ppm wet *(EPA Method ALT 078)*	4.8	4.6	5.8	5.1	
NMOC, ppm	5.4	5.2	6.5	5.7	
NMOC, ppm @ 15% O_2	3.2	3.1	3.9	3.4	32
NMOC, lb/hr	0.05	0.05	0.07	0.06	
NMOC, g/BHp-hr	0.015	0.015	0.018	0.016	0.16
THC Emissions (reported as CH_4):					
THC, ppm	1,222.1	1,215.1	1,526.0	1,321.0	
THC, lb/hr	12.52	12.71	16.03	13.75	
THC g/BHp-hr	3.40	3.44	4.35	3.73	
CH_4 Destruction Efficiency, %	97.6%	97.6%	96.9%	97.4%	
NMOC Destruction Efficiency, %	>98.9%	>97.8%	>96.2%	>97.6%	

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)

APPENDIX O

S-55 STATIC PRESSURE PERFORMANCE TEST (LEAK TEST)

MBSERVICES

P.O. Box 1299 Suisun City, CA 94585

707-290-7716 Mbservices1@yahoo.com

Letter of Transmittal

Date
03/16/2023

To:
REDWOOD LANDFILL
8950 REDWOOD HIGHWAY
NOVATO, CA 94945

RE:
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	08/03/2023
Date of Test: 3/16/2023		

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			
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)			01/10/2023
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)	733				733
Ullage (gallons)[1]	267				267
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	2:45 pm				
Initial Pressure, inches of water column (in. w.c.)	2.00				
Pressure at one minute, in. w.c.	2.03				
Pressure at two minutes, in. w.c.	2.06				
Pressure at three minutes, in. w.c.	2.11				
Pressure at four minutes, in. w.c.	2.16				
Pressure at five minutes, in. w.c.	2.19				
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: 03/16/2023

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.

MBSERVICES

P.O. Box 1299 Suisun City, CA 94585

707-290-7716 Mbservices1@yahoo.com

Letter of Transmittal

Date
03/07/2024

To:
REDWOOD LANDFILL
8950 REDWOOD HIGHWAY
NOVATO, CA 94945

RE:
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	08/16/2025
Date of Test:0 3/07/2024			

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)			01/10/2024
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	Unleaded				
Actual tank capacity (gallons)	1,000				1,000
Gasoline volume (gallons)	500				500
Ullage (gallons)[1]	500				500
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.	2.05				
Pressure at two minutes, in. w.c.	2.09				
Pressure at three minutes, in. w.c.	2.19				
Pressure at four minutes, in. w.c.	2.16				
Pressure at five minutes, in. w.c.	2.18				
Allowable minimum pressure, in. w.c.	**1.28**				
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: 03/07/2024

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.

Chan, Michael

From: McCutcheon, Alisha
Sent: Tuesday, March 26, 2024 8:40 AM
To: Chan, Michael
Subject: FW: [EXTERNAL] Redwood Landfill Annual Air Quality Test Results
Attachments: Redwood Landfill AQ 3-7-24 Results.pdf

From: Byron Melendez <mbservices1@yahoo.com>
Sent: Monday, March 25, 2024 7:06 PM
To: GDFResults <gdfresults@baaqmd.gov>
Cc: McCutcheon, Alisha <amccutch@wm.com>
Subject: [EXTERNAL] Redwood Landfill Annual Air Quality Test Results

Hi, please open attachment to view the Annual Air Quality Test Results for Redwood Landfill at: 8950 Redwood Highway Novato, CA 94945, if you have any question please let us know.
Thank you, have a great day.

Sincerely,
MB Services
707-290-7716
707-290-1536

APPENDIX P

ROLLING QUARTERLY LFG INPUT, CO, & 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			
2023 Q2	April	41.71	56.84	0.00	11.43	109.98	346.09	1,147
	May	46.36	64.87	0.05	10.71	121.99		
	June	49.64	64.49	0.00	0.00	114.12		
2023 Q3	July	52.37	60.06	0.00	0.00	112.43	308.18	1,214
	August	46.55	58.64	0.00	0.00	105.19		
	September	20.57	69.98	0.00	0.00	90.55		
2023 Q4	October	0.00	98.23	0.00	0.00	98.23	297.91	1,254
	November	0.00	97.33	0.00	0.00	97.33		
	December	0.18	102.16	0.00	0.00	102.35		
2024 Q1	January	35.27	73.04	0.00	0.00	108.30	311.77	1,264
	February	45.81	51.91	0.00	0.00	97.72		
	March	52.23	53.51	0.00	0.00	105.74		
2024 Q2	April	12.75	61.91	16.65	17.64	108.95	108.95	1,027
	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			
2023 Q2	April	0.783	1.15	0.00	0.14	2.07	6.61	22.0
	May	0.870	1.31	0.00	0.13	2.31		
	June	0.932	1.30	0.00	0.00	2.23		
2023 Q3	July	0.983	1.21	0.00	0.00	2.19	6.06	23.9
	August	0.874	1.18	0.00	0.00	2.06		
	September	0.386	1.42	0.00	0.00	1.81		
2023 Q4	October	0.000	2.00	0.00	0.00	2.00	6.08	24.7
	November	0.000	1.99	0.00	0.00	1.99		
	December	0.003	2.08	0.00	0.00	2.09		
2024 Q1	January	0.662	1.49	0.00	0.00	2.15	5.27	24.0
	February	0.860	1.06	0.00	0.00	1.92		
	March	0.109	1.09	0.00	0.00	1.20		
2024 Q2	April	0.027	1.26	0.46	0.22	1.97	1.97	19.4
	May	0.000	0.00			0.00		
	June	0.000	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			
2023 Q2	April	5.63	7.67	0.00	0.00	13.30	43.73	87.3
	May	6.26	8.76	0.00	0.00	15.02		
	June	6.70	8.70	0.00	0.00	15.40		
2023 Q3	July	1.55	1.77	0.00	0.00	3.32	9.10	88.8
	August	1.37	1.73	0.00	0.00	3.11		
	September	0.61	2.07	0.00	0.00	2.67		
2023 Q4	October	0.00	2.73	0.00	0.00	2.73	8.27	89.3
	November	0.00	2.70	0.00	0.00	2.70		
	December	0.01	2.84	0.00	0.00	2.84		
2024 Q1	January	0.97	2.01	0.00	0.00	2.98	8.58	69.7
	February	1.26	1.43	0.00	0.00	2.69		
	March	1.44	1.47	0.00	0.00	2.91		
2024 Q2	April	TBD	TBD	0.00	0.00	TBD	TBD	TBD
	May	0.00	0.00			0.00		
	June	0.00	0.00			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.