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May 27, 2021

Director of Compliance and Enforcement
Bay Area Air Quality Management District
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Attn: Title V Reports
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Director of the Air Division
USEPA, Region IX
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SUBJECT: Combined Title V Semi-Annual and Partial 8-34 Annual Report 40 CFR 63 Subpart AAAA Semi-Annual Report
Redwood Landfill, Inc.
8950 Redwood Highway, Novato, CA 94948
Facility Number A1179

TV Tracking #: 235

1. ☐ RECEIVED IN ENFORCEMENT: 05/27/2021

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, 2020 to April 30, 2021, to the Bay Area Air Quality Management District (BAAQMD) and the United States Environmental Protection Agency (USEPA), Region IX. The Semi-Annual Startup, Shutdown and Malfunction (SSM) Report is also enclosed, as required by 40 Code of Federal Regulations (CFR) Part 63 Subpart AAAA. The Combined Title V Semi-Annual and Partial 8-34 Annual Report satisfies the requirements of the Title V Permit listed in Condition Number 19867 Part 32 and Standard Condition I.F.

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

Sincerely,
Redwood Landfill, Inc.

Ramin A. Khany

Ramin Khany
District Manager

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

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

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

November 1, 2020 to April 30, 2021

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

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

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

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

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1 INTRODUCTION

1.1 Purpose

This document is a Title V Combined Semi-Annual Report and Partial 8-34 Annual Report for Redwood Landfill, Inc. (RLI) pursuant to Title V Permit Standard Condition I.F and Condition Number 19867, Part 32. This Combined Report satisfies the requirements of Bay Area Air Quality Management District's (BAAQMD) Regulation 8, Rule 34, Section 411 and Title 40 Code of Federal Regulations (CFR) Part 60 Subpart WWW (40 CFR §60.757[f]), New Source Performance Standards (NSPS) for municipal solid waste (MSW) landfills, and the RLI Title V Standard Condition I.F. This report covers compliance activities conducted from November 1, 2020 to April 30, 2021. 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, 2020 to April 30, 2021. 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 2020	721.00	0.33
December 2020	743.40	2.07
January 2021	738.43	6.53
February 2021	672.00	0.17
March 2021	743.00	0.40
April 2021	720.00	0.00
Total Hours:	**4,337.83**	**9.50**

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 2020	5.33	16.67
December 2020	17.67	6.17
January 2021	18.33	17.00
February 2021	33.50	81.83
March 2021	68.83	81.92
April 2021	27.00	67.17
Total Hours:	**170.67**	**270.75**

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

2.1.3 WELL DISCONNECTION LOG

A Wellfield SSM Log that lists dates, times, and lengths of disconnections for the reporting period is included in Appendix D. In addition, 1 well (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 2020 Downtime:	13.20
November 1, 2020 through April 30, 2021 Downtime:	3.57
January 1, 2021 through April 30, 2021 Total Downtime:	1.63
Total 2021 Downtime:	1.63

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	1/22/2020	3/16/2020	1,419	1,400
A-51	1/14/2021	3/10/2021	1,538	1,488
A-60 Zone A	7/22/2020	9/15/2020	1,601	1,551
A-60 Zone B	7/17/2018	9/14/2018	1,605	1,555

The three-hour minimum temperature applies upon submittal of the source test report. Operating records for the flares indicate all flares operated in compliance with the applicable three-hour average minimum temperatures from November 1, 2020 to April 30, 2021.

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 2020. Zone B was tested in July 2018, meeting the obligation to test each zone every five years.

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

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

- November 12, 2020
- December 9, 2020
- January 5, 2021
- February 11, 2021
- March 16, 2021
- April 26, 2021

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 2020 SEM event was conducted by Roberts Environmental Services (RES) personnel on November 10 and 17, 2020. Thirty exceedances were identified. Corrective action and re-monitoring are described below:

- 10-day re-monitoring was completed on November 17, 18, and 19, 2020 with all locations cleared.

- 1-month remonitoring was completed on December 7 and 8, 2020. All locations cleared.

The First Quarter 2021 SEM was conducted by RES on January 18 and 20, 2021. Twenty-one exceedances were identified. Corrective action and re-monitoring are described below:

- 10-day re-monitoring was completed on January 28, 2021. All locations cleared.

- 1-month remonitoring was completed February 16, 2021. All locations cleared.

Per the Compliance Agreement between RLI and BAAQMD, the SEM frequency was increased to bi-monthly. In the First Quarter 2021, the bi-monthly Instantaneous SEM was performed on March 16 and 17, 2021. 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 2020 – November 10, 2020
First Quarter 2021 – January 20, 2021

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, 2020 to April 30, 2021. 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, 2020 to April 30, 2021)	118,618 tons
Current Waste In Place as of May 1, 2021	14.65 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, 2020 to April 30, 2021 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 4, 16, 20, 23, 24, and 25, 2020
- December 1, 2, 3, 4, 14, 15, and 24, 2020
- January 11, 12, 18, 19, 20, 21, and 22, 2021
- February 1, 2, 3, 4, 5, 8, 9, and 10, 2021
- March 2, 3, 4, 5, and 8, 2021
- April 5, 6, 7, and 8, 2021

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

A total of fourteen (14) deviations from the wellhead standards in 8-34-305 occurred during the reporting period. All exceedances were addressed prior to issuance of this report.

The Wellfield Deviation Log is included in Appendix J.

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

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

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

Table 2-7 Total LFG Flow

Emission Control Device	Total Runtime (hours)	Average Flow Rate (scfm)	Average Methane (%)[1]	Total LFG Flow (scf)	12-Month Total LFG Flow (scf) Corrected to 500 BTU/scf	Max Daily Flow (scf) Corrected to 500 BTU/scf
A-51	6	780	48.8	288,526	1,269,313	184,391
A-60	4,335	892	51.1	231,854,449	606,378,159	2,843,643
S-64	4,173	669	53.0	167,627,422	297,632,730	1,084,732
S-65	4,073	628	53.0	153,478,402	278,573,266	1,038,527
Total	4,339	2,125	52.2	553,248,799	1,183,853,467	--

[1]Methane content was determined from the 7/17/18, 7/21/20, 7/22/20, and 1/14/21 Source Tests. Heating value of methane used in heat input calculations is 1,013 BTU/scf
scfm = standard cubic feet per minute
scf= standard cubic feet
MMBTU = million British thermal units

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

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

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

2.12 COMPLIANCE WITH §60.757(f)(6)

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

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

Zero (0) wells were added to and one (1) well was removed from the collection system during the reporting period (November 1, 2020 to April 30, 2021).

As of the end of this reporting period, 112 total collectors (105 vertical wells and 7 horizontal collectors) were in service at RLI. A map of the LFG collection system showing the positioning of all vertical wells, horizontal collectors, and other LFG extraction devices is included in Appendix A.

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

The S-34 Compost Facility Operations and S-39 Screening Operations were utilized during the reporting period. The total amount of material processed did not exceed 160,368 tons during any consecutive 12-month period during the reporting period of November 1, 2020 to April 30, 2021. 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-2020	11,276	138,197
December-2020	12,611	138,790
January-2021	11,272	138,714
February-2021	10,174	139,022
March-2021	11,709	140,429
April-2021	11,509	139,771

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, 2020 to April 30, 2021.

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-2020	289	1,973
December-2020	245	2,082
January-2021	146	2,159
February-2021	238	2,215
March-2021	286	2,347
April-2021	264	2,511

Pursuant to Title V Permit Condition Number 16516, the Static Pressure Performance Test (Leak Test) for S-55 was performed on April 22, 2021. S-55 also passed the 2020 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-2020	11,276	138,197
December-2020	12,611	138,790
January-2021	11,272	138,714
February-2021	10,174	139,022
March-2021	11,709	140,429
April-2021	11,509	139,771

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 14.02 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 15.10 tons, which is less than the permit limit of 16.63 tons.
- The mean vehicle fleet weight for all on-site landfilling and construction related vehicles was 12.3 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. 2020 calendar year VMT on gravel roads was 27,003 VMT, below the limit of 87,080 VMT. 2021 partial calendar year VMT on gravel roads was 8,642 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. 2020 calendar year VMT on dirt roads was 127,075 VMT, below the limit of 198,650 VMT. 2021 partial calendar year VMT on dirt roads was 40,667 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. 2020 calendar year VMT on paved roads was 84,927 VMT, below the limit of 205,880 VMT. 2021 partial calendar year VMT on paved roads was 25,417 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. 2020 calendar year VMT on dirt roads is 15,890 VMT, below the limit of 19,080 VMT. 2021 partial calendar year VMT on dirt roads is 5,549 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, 2020 to April 30, 2021) is 0.00 lbs. The VOC soil log is included in Appendix L.

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

WEEKLY H_2S MONITORING

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

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

QUARTERLY H_2S CHARACTERIZATION

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

Table 2-11 LFG Characterization Results

Compound	Fourth Quarter 2020 Result (ppm_v)	First Quarter 2021 Result (ppm_v)
Hydrogen Sulfide	650	1,400
Carbonyl Sulfide	ND	1.20
Methyl Mercaptan	1.00	2.20
Ethyl Mercaptan	0.18	0.47
Dimethyl Sulfide	0.22	0.42
Carbon Disulfide	ND	ND
Total Reduced Sulfur	**658**	**1,417**

ND = not detected
N/A = not applicable

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

Compound	Fourth Quarter 2020 Result (ppm_v)	First Quarter 2021 Result (ppm_v)
Hydrogen Sulfide	200	790
Carbonyl Sulfide	ND	0.62
Methyl Mercaptan	0.51	1.20
Ethyl Mercaptan	0.10	0.21
Dimethyl Sulfide	0.37	0.64
Carbon Disulfide	0.21	0.12
Total Reduced Sulfur	**203**	**798**

ND = not detected
N/A = not applicable

ROLLING 4-QUARTER TRS LIMIT

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

Table 2-13 Rolling 4-Quarter TRS Concentration

Quarter	Calculated TRS (ppmv)	Rolling Quarterly Average Annual TRS (ppmv)
2020 Q2	668	784
2020 Q3	762	740
2020 Q4	1,103	822
2021 Q1	1,158	923

ANNUAL LFG CHARACTERIZATION

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

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

Table 2-14 Annual LFG Characterization: Toxic Air Contaminants

Compound	Result (ppb_v)	Concentration Limit* (ppb_v)
Acrylonitrile	<SRL	300
Benzene	542	1,500
Benzyl Chloride	<SRL	500
Carbon Tetrachloride	<SRL	200
Chlorobenzene	<SRL	200
Chloroethane	174	500
Chloroform	<SRL	200
1,4-Dichlorobenzene	144	1,000
Ethylbenzene	2,153	4,000
Ethylene Dibromide	<SRL	200
Ethylene Dichloride	145	200
Ethylidene Dichloride	<SRL	500
Hexane	496	2,000
Isopropyl Alcohol	2,583	10,000
Methyl Alcohol	3,457	300,000
Methyl Ethyl Ketone	4,837	15,000
Methylene Chloride	<SRL	1,000
Methyl tert-Butyl Ether	<SRL	500
Perchloroethylene	<SRL	1,000
Styrene	150	500
1,1,2,2-Tetrachloroethane	<SRL	200
Toluene	4,640	20,000
1,1,1-Trichloroethane	<SRL	200
Trichloroethylene	<SRL	500
Vinyl Chloride	<SRL	2,000
Vinylidene Chloride	<SRL	500
Xylenes	4,507	20,000

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

Per the Compliance Agreement, quarterly samples were collected and analyzed for ethylbenzene and 1,4-Dichlorobenzene on November 14, 2019 and February 18, 2020 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 2020 Flare (ppb$_v$)**	**4th Quarter 2020 Engine Inlet (ppb$_v$)**	**1st Quarter 2021 Flare (ppb$_v$)**	**1st Quarter 2021 Engine Inlet (ppb$_v$)**	**Limit (ppb$_v$)**
Ethylbenzene	1,900	2,000	1,700	480	4,000
1,4-Dichlorobenzene	150	190	160	46	1,000

GROUND LEVEL H_2S MONITORING

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

- November 12, 2020
- December 11, 2020
- January 20, 2021
- February 12, 2021
- March 12, 2021
- April 9, 2021

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 2020	883,280	18,190,500
December 2020	883,280	16,366,020
January 2021	1,017,220	14,936,120
February 2021	1,053,420	13,918,900
March 2021	930,340	12,456,420
April 2021	767,440	11,743,280

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)	
	GR-7R	GR-9R	GR-7R	GR-9R	GR-7R	GR-9R	GR-7R	GR-9R
6/9/2020	2.3	2.8	5.3	4.3	ND<0.50	ND<0.50	14	26.7
Average	2.6		4.8		ND<0.5		24.6	
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, 2020 to April 30, 2021 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 2020	0	0	0
December 2020	0	0	0
January 2021	0	0	0
February 2021	0	0	0
March 2021	0	0	0
April 2021	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)
2020	2	1,428	36.02	58.12
2020	3	1,325	30.77	50.61
2020	4	1,271	29.99	49.05
2021	1	1,184	28.24	47.57
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 2021 Annual Compliance Demonstration Test (Source Test) was conducted on January 14, 2021. The Test Report was submitted to BAAQMD on March 10, 2021. A summary of the source test report is presented in Appendix N.

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

Table 3-2 A-51 Flare Source Test Results

Condition	Flare (A-51) Average Results	Permit Limit	8-34-301.3 limit	Compliance Status
NO_x (ppm_v @ 15% O_2)	12.7	15	---	In Compliance
CO (ppm_v @ 15% O_2)	27.6	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	<11.3	---	30	In Compliance
NMOC Inlet (ppm_v)	243	360	---	In Compliance

3.1.2 FLARE (A-60) SOURCE TEST RESULTS

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

The 2020 Source Test was performed on by Blue Sky Environmental, LLC on July 22, 2020 with the flare operating in Zone A. The Test Report was submitted to BAAQMD on September 15, 2020. 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)	12.8	15	---	In Compliance
CO (ppm_v @ 15% O_2)	40.8	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	6.7	---	30	In Compliance
NMOC Inlet (ppm_v)	213	360	---	In Compliance

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

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

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

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

3.3 COMPLIANCE WITH §60.757(G)(1)

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

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

3.4 COMPLIANCE WITH §60.757(g)(2)

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

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

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

DEMONSTRATING COMPLIANCE WITH §60.757(g)(2)

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

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

3.6 COMPLIANCE WITH §60.757(g)(3)

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

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

3.7 COMPLIANCE WITH §60.757(g)(4)

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

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

3.8 COMPLIANCE WITH §60.757(g)(5)

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

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

Zero (0) wells were added to and one (1) well was removed to the collection system during the reporting period (November 1, 2020 to April 30, 2021).

As of the end of this reporting period, 112 total collectors (105 vertical wells and 7 horizontal collectors) were in service at RLI.

3.9 COMPLIANCE WITH §60.757(g)(6)

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

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

DEMONSTRATING COMPLIANCE WITH §60.757(g)(6)

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

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

3.10 COMPLIANCE AGREEMENT SUMMARY

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

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

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

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

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

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

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

- December 7, 2020
- January 8, 2021
- February 5, 2021
- March 5, 2021
- April 8, 2021
- May 14, 2021

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, 2020 to April 30, 2021) are noted in this section and included in Appendix B. The following information is included as required:

- During the reporting period, 6 A-51 Flare SSM events, 18 A-60 Flare Zone A SSM events, and 1 A-60 Flare Zone B SSM events occurred. The time, duration, and cause of each event are included in Appendix B, Flare and Engine SSM Logs.

- During the reporting period, 12 wellfield SSM events occurred. The time and duration of these events are included in Appendix D, Wellfield SSM Log.

- During the reporting period, 45 S-64 Engine (#1) SSM events, 57 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 139 flare, wellfield, and engine SSM events, automatic systems and operator actions were consistent with the standard operating procedures contained in the SSM Plan.

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

I certify the following:

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

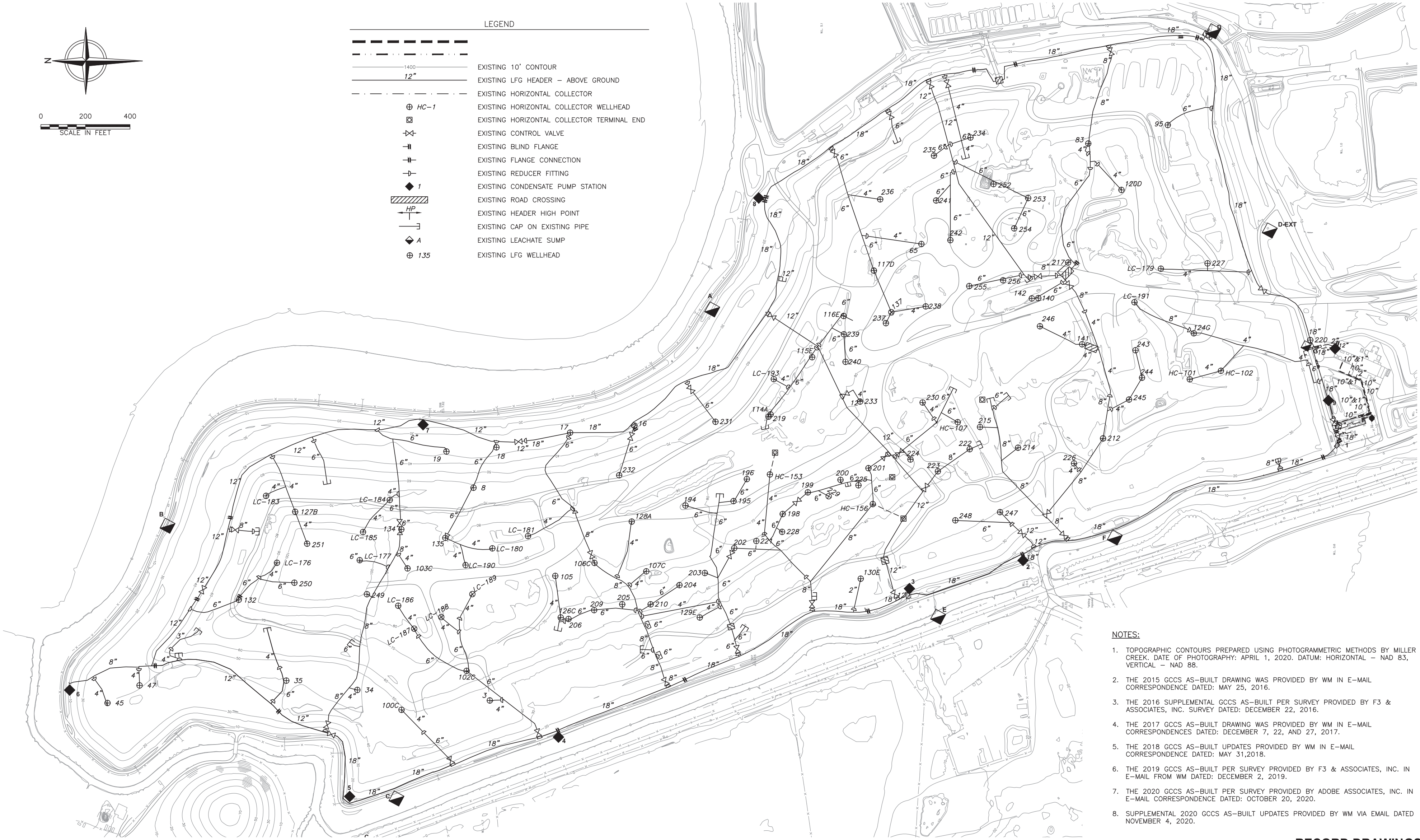
Signature of Responsible Official — **May 27, 2021** **Date**

Ramin Khany

Name of Responsible Official

APPENDIX A

SITE MAP



LEGEND

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

0 200 400
SCALE IN FEET

NOTES:

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

RECORD DRAWINGS

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 11/20/20
DRAWN BY GVP
DESIGNED BY DHK
CHECKED BY AMN
APPROVED BY HLV

TETRA TECH

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

GCCS RECORD LAYOUT

AS-BUILT SITE PLAN

SHEET NO. 1

PROJECT NO. 200129

1" 1/2" 0" 1"

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	10/1/20 11:48	10/1/20 11:50	0.03	1701.60	After A60 maintenance, operate system with A60 only.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/11/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/11/20 9:24	12/11/20 9:26	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		A-51 Flare	12/11/20 9:50	12/11/20 9:52	0.03	1.30	After A51 maintenance, operate system with A60 only.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/11/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/11/20 11:08	12/11/20 11:10	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-51 Flare	12/11/20 11:16	12/11/20 11:18	0.03	790.13	After A51 maintenance, operate system with A60 only.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	1/13/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/13/21 9:24	1/13/21 9:26	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		A-51 Flare	1/13/21 9:48	1/13/21 9:50	0.03	0.43	After A51 maintenance, operate system with A60 only.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	1/13/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/13/21 10:14	1/13/21 10:16	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		A-51 Flare	1/13/21 11:10	1/13/21 11:12	0.03	20.77	After A51 maintenance, operate system with A60 only. A51 Source Testing on January 14, 2021	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	1/14/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/14/21 7:56	1/14/21 7:58	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
6		A-51 Flare	1/14/21 12:08	1/14/21 12:10	0.03	2555.87	A51 Source Testing on January 14, 2021. After test, operate system with A60 only.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	5/1/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		A-51 shut down as of May 1, 2021					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	11/14/20 8:54	11/14/20 8:56	0.03	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 9:00	11/14/20 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	x Automatic (Go to 9)		No	x No			
2		A-60 Zone A	11/14/20 19:26	11/14/20 19:28	0.03	0.13	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 19:34	11/14/20 19:36	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	x Automatic (Go to 9)		No	x No			
3		A-60 Zone A	11/30/20 14:52	11/30/20 14:54	0.03	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/30/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/30/20 14:58	11/30/20 15:00	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	12/11/20 9:04	12/11/20 9:06	0.03	1.63	Manual shutdown for A51 maintenance.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/11/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/11/20 10:42	12/11/20 10:44	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	12/11/20 12:20	12/11/20 12:22	0.03	0.10	Manual shutdown for A51 maintenance.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/11/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/11/20 12:26	12/11/20 12:28	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	12/19/20 18:18	12/19/20 18:20	0.03	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 18:24	12/19/20 18:26	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	12/19/20 20:12	12/19/20 20:14	0.03	0.17	All control devices were shutdown due to a site-wide power outage. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 20:22	12/19/20 20:24	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	12/19/20 20:38	12/19/20 20:40	0.03	0.07	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 20:42	12/19/20 20:44	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			
9		A-60 Zone A	1/13/21 9:08	1/13/21 9:10	0.03	0.77	Manual Shutdown for maintenance.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	1/13/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/13/21 9:54	1/13/21 9:56	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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
10	x Shutdown x Startup Malfunction	A-60 Zone A	1/13/21 10:10 1/13/21 11:14	1/13/21 10:12 1/13/21 11:16	0.03 0.03	1.07	Manual Shutdown for maintenance.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	1/13/2021
11	x Shutdown x Startup Malfunction	A-60 Zone A	1/14/21 1:34 1/14/21 1:42	1/14/21 1:36 1/14/21 1:44	0.03 0.03	0.13	High temperature alarm shutdown. System inspected after restart.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	1/14/2021
12	x Shutdown x Startup Malfunction	A-60 Zone A	1/14/21 4:16 1/14/21 4:28	1/14/21 4:18 1/14/21 4:30	0.03 0.03	0.20	High temperature alarm shutdown. System inspected after restart.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	1/14/2021
13	x Shutdown x Startup Malfunction	A-60 Zone A	1/14/21 7:48 1/14/21 12:12	1/14/21 7:50 1/14/21 12:14	0.03 0.03	4.40	Shutdown for A51 Source Testing.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	1/14/2021
14	x Shutdown x Startup Malfunction	A-60 Zone A	2/10/21 18:02 2/10/21 18:08	2/10/21 18:04 2/10/21 18:10	0.03 0.03	0.10	Flame alarm shutdown. WMRE engine starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	2/10/2021
15	x Shutdown x Startup Malfunction	A-60 Zone A	2/10/21 18:56 2/10/21 19:00	2/10/21 18:58 2/10/21 19:02	0.03 0.03	0.07	Flame alarm shutdown. WMRE engine starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	2/10/2021
16	x Shutdown x Startup Malfunction	A-60 Zone A	3/9/21 9:20 3/9/21 9:28	3/9/21 9:22 3/9/21 9:30	0.03 0.03	0.13	Manual Shutdown for maintenance.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	3/9/2021
17	x Shutdown x Startup Malfunction	A-60 Zone A	3/11/21 13:38 3/11/21 13:44	3/11/21 13:40 3/11/21 13:46	0.03 0.03	0.10	Low temperature alarm shutdown. System inspected after restarted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	3/11/2021
18	x Shutdown x Startup Malfunction	A-60 Zone A	3/27/21 18:32 3/27/21 18:44	3/27/21 18:34 3/27/21 18:46	0.03 0.03	0.20	Flame alarm shutdown. WMRE engine starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	3/27/2021

No A-60 Zone A SSM events in April 2021

REDWOOD LANDFILL, INC.

A-60 ZONE B CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1	x Shutdown Startup Malfunction	A-60 Zone B	12/18/19 13:28	12/18/19 13:30	0.03	11986.53	Manual shutdown. Running on A60A only.	x 113: Inspection/Maintenance 116: Well Raising	x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3	Yes (Go to 9) x No	Yes (Go to 10) No		Mike Chan	5/1/2021
			Zone B shut down as of May 1, 2021					117: Gas Collection 118: Construction Activities	Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 4	Yes (Go to 9) No	Yes (Go to 10) No			

(a) **STANDARD OPERATING PROCEDURES**

Shutdown

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

Startup

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

Malfunction

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

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

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

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		Engine #1 (S-64)	11/14/20 8:55	11/14/20 8:57	0.03	0.58	Power outage	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 9:30	11/14/20 9:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		Engine #1 (S-64)	11/14/20 9:30	11/14/20 9:32	0.03	1.33	Air inlet duct repairs	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 10:50	11/14/20 10:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		Engine #1 (S-64)	11/14/20 11:10	11/14/20 11:12	0.03	0.17	Air inlet duct repairs	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 11:20	11/14/20 11:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		Engine #1 (S-64)	11/14/20 19:25	11/14/20 19:27	0.03	0.42	Power Outage	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 19:50	11/14/20 19:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		Engine #1 (S-64)	11/24/20 17:40	11/24/20 17:42	0.03	0.25	Coolant leak repair	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/24/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/24/20 17:55	11/24/20 17:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
6		Engine #1 (S-64)	11/25/20 13:40	11/25/20 13:42	0.03	0.67	Oil & filter service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/25/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/25/20 14:20	11/25/20 14:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
7		Engine #1 (S-64)	11/30/20 14:55	11/30/20 14:57	0.03	0.92	Power outage	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/30/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/30/20 15:50	11/30/20 15:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
8		Engine #1 (S-64)	12/3/20 10:00	12/3/20 10:02	0.03	2.50	Willexa PLC Fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/3/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/3/20 12:30	12/3/20 12:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
9		Engine #1 (S-64)	12/7/20 13:50	12/7/20 13:52	0.03	0.17	Cyl. 6 ex. Temp deviating low	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/7/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/7/20 14:00	12/7/20 14:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
10		Engine #1 (S-64)	12/7/20 14:20	12/7/20 14:22	0.03	1.92	Cyl. 6 ex. Temp deviating low	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/7/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/7/20 16:15	12/7/20 16:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
11		Engine #1 (S-64)	12/11/20 10:00	12/11/20 10:02	0.03	2.00	Flare testing	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/11/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/11/20 12:00	12/11/20 12:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
12		Engine #1 (S-64)	12/11/20 14:55	12/11/20 14:57	0.03	2.75	Low exhaust temp cyls. 11 & 13	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/11/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/11/20 17:40	12/11/20 17:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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)	12/12/20 8:35	12/12/20 8:37	0.03	0.50	Oil leak repair	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/12/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/12/20 9:05	12/12/20 9:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
14		Engine #1 (S-64)	12/17/20 8:50	12/17/20 8:52	0.03	4.08	Valve recession & valve lash service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/17/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/17/20 12:55	12/17/20 12:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
15		Engine #1 (S-64)	12/17/20 13:25	12/17/20 13:27	0.03	0.83	Failed coolant pressure sensor	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/17/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/17/20 14:15	12/17/20 14:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
16		Engine #1 (S-64)	12/17/20 14:45	12/17/20 14:47	0.03	0.50	Replace even side ignition harness	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/17/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/17/20 15:15	12/17/20 15:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
17		Engine #1 (S-64)	12/19/20 18:20	12/19/20 18:22	0.03	1.00	Power outage	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 19:20	12/19/20 19:22	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			
18		Engine #1 (S-64)	12/19/20 19:40	12/19/20 19:42	0.03	0.25	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 19:55	12/19/20 19:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
19		Engine #1 (S-64)	12/19/20 20:50	12/19/20 20:52	0.03	1.17	Air compressors faulted	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 22:00	12/19/20 22:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
20		Engine #1 (S-64)	1/5/21 14:45	1/5/21 14:47	0.03	0.50	oil & filter service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/5/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/5/21 15:15	1/5/21 15:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
21		Engine #1 (S-64)	1/10/21 12:10	1/10/21 12:12	0.03	1.25	Remote estop, detonation	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/10/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/10/21 13:25	1/10/21 13:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
22		Engine #1 (S-64)	1/14/21 1:40	1/14/21 1:42	0.03	1.92	Loss of air pressure	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/14/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/14/21 3:35	1/14/21 3:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
23		Engine #1 (S-64)	1/17/21 10:30	1/17/21 10:32	0.03	1.00	High voltage testing	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/17/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/17/21 11:30	1/17/21 11:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
24		Engine #1 (S-64)	1/18/21 9:15	1/18/21 9:17	0.03	5.33	High voltage testing	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/18/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/18/21 14:35	1/18/21 14:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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)	1/19/21 0:00	1/19/21 0:02	0.03	2.75	Detonation	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/19/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/19/21 2:45	1/19/21 2:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
26		Engine #1 (S-64)	1/19/21 12:30	1/19/21 12:32	0.03	2.00	Detonation	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/19/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/19/21 14:30	1/19/21 14:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
27		Engine #1 (S-64)	1/19/21 23:15	1/19/21 23:17	0.03	2.08	Detonation	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/20/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/20/21 1:20	1/20/21 1:22	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			
28		Engine #1 (S-64)	1/20/21 16:15	1/20/21 16:17	0.03	1.33	Detonation	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/20/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/20/21 17:35	1/20/21 17:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
29		Engine #1 (S-64)	1/20/21 17:50	1/20/21 17:52	0.03	0.17	Johnson-Matthey flow fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/20/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/20/21 18:00	1/20/21 18:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
30		Engine #1 (S-64)	2/6/21 14:15	2/6/21 14:17	0.03	2.67	Speed sensor fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/6/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/6/21 16:55	2/6/21 16:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
31		Engine #1 (S-64)	2/9/21 8:20	2/9/21 8:22	0.03	8.58	Intake Air Duct Replacement	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/9/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/9/21 16:55	2/9/21 16:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
32		Engine #1 (S-64)	2/11/21 12:20	2/11/21 12:22	0.03	0.50	Oil & Filter service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/11/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/11/21 12:50	2/11/21 12:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
33		Engine #1 (S-64)	2/22/21 8:40	2/22/21 8:42	0.03	2.75	Valve Lash Service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/22/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/22/21 11:25	2/22/21 11:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
34		Engine #1 (S-64)	2/22/21 13:55	2/22/21 13:57	0.03	18.75	Condensate pump failure	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/23/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/23/21 8:40	2/23/21 8:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
35		Engine #1 (S-64)	2/23/21 9:10	2/23/21 9:12	0.03	0.25	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/23/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/23/21 9:25	2/23/21 9:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
36		Engine #1 (S-64)	3/19/21 9:30	3/19/21 9:32	0.03	0.33	oil change	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/19/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/19/21 9:50	3/19/21 9:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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
37		Engine #1 (S-64)	3/24/21 4:45	3/24/21 4:47	0.03	12.83	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/24/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/24/21 17:35	3/24/21 17:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
38		Engine #1 (S-64)	3/24/21 18:25	3/24/21 18:27	0.03	22.92	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/25/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/25/21 17:20	3/25/21 17:22	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			
39		Engine #1 (S-64)	3/26/21 6:05	3/26/21 6:07	0.03	10.50	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/26/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/26/21 16:35	3/26/21 16:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
40		Engine #1 (S-64)	3/27/21 5:50	3/27/21 5:52	0.03	11.33	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/27/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/27/21 17:10	3/27/21 17:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
41		Engine #1 (S-64)	3/28/21 6:00	3/28/21 6:02	0.03	10.92	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/28/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/28/21 16:55	3/28/21 16:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
42		Engine #1 (S-64)	4/14/21 8:50	4/14/21 8:52	0.03	4.33	Repair exhaust elbow	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/14/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/14/21 13:10	4/14/21 13:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
43		Engine #1 (S-64)	4/15/21 9:30	4/15/21 9:32	0.03	4.42	Valve recession & valve lash service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/15/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/15/21 13:55	4/15/21 13:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
44		Engine #1 (S-64)	4/26/21 14:15	4/26/21 14:17	0.03	17.75	Johnson Matthey float switch malfunction	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/27/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/27/21 8:00	4/27/21 8:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
45		Engine #1 (S-64)	4/28/21 8:55	4/28/21 8:57	0.03	0.50	Oil Change service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/28/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/28/21 9:25	4/28/21 9:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		Engine #2 (S-65)	11/1/20 1:55	11/1/20 1:57	0.03	0.08	Throttle repair	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/1/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/1/20 2:00	11/1/20 2:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		Engine #2 (S-65)	11/12/20 7:20	11/12/20 7:22	0.03	8.75	Engine service & exhaust repairs	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/12/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/12/20 16:05	11/12/20 16:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		Engine #2 (S-65)	11/14/20 8:55	11/14/20 8:57	0.03	0.58	Power outage	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 9:30	11/14/20 9:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		Engine #2 (S-65)	11/14/20 9:30	11/14/20 9:32	0.03	3.75	Air inlet duct repairs	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 13:15	11/14/20 13:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		Engine #2 (S-65)	11/14/20 19:25	11/14/20 19:27	0.03	0.33	Power outage	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 19:45	11/14/20 19:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
6		Engine #2 (S-65)	11/14/20 21:20	11/14/20 21:22	0.03	1.83	Exhaust repairs	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/14/20 23:10	11/14/20 23:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
7		Engine #2 (S-65)	11/30/20 14:55	11/30/20 14:57	0.03	0.33	Power outage	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/30/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/30/20 15:15	11/30/20 15:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
8		Engine #2 (S-65)	12/3/20 10:00	12/3/20 10:02	0.03	2.58	Wilexa PLC Fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/3/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/3/20 12:35	12/3/20 12:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
9		Engine #2 (S-65)	12/11/20 10:00	12/11/20 10:02	0.03	1.92	Flare Testing	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/11/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/11/20 11:55	12/11/20 11:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
10		Engine #2 (S-65)	12/19/20 19:10	12/19/20 19:12	0.03	0.50	Loss of utility	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 19:40	12/19/20 19:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
11		Engine #2 (S-65)	12/19/20 20:50	12/19/20 20:52	0.03	0.75	Air compressors faulted	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 21:35	12/19/20 21:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
12		Engine #2 (S-65)	12/26/20 13:10	12/26/20 13:12	0.03	0.42	Oil change service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/26/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/26/20 13:35	12/26/20 13:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13		Engine #2 (S-65)	1/14/21 1:40	1/14/21 1:42	0.03	1.50	Loss of air pressure	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/14/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/14/21 3:10	1/14/21 3:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
14		Engine #2 (S-65)	1/14/21 3:40	1/14/21 3:42	0.03	0.17	Johnson_Matthey high pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/14/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/14/21 3:50	1/14/21 3:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
15		Engine #2 (S-65)	1/15/21 9:10	1/15/21 9:12	0.03	1.67	VFD replacement	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/15/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/15/21 10:50	1/15/21 10:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
16		Engine #2 (S-65)	1/15/21 11:20	1/15/21 11:22	0.03	2.17	VFD replacement	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/15/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/15/21 13:30	1/15/21 13:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
17		Engine #2 (S-65)	1/17/21 9:05	1/17/21 9:07	0.03	1.33	High Voltage Testing	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/17/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/17/21 10:25	1/17/21 10:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
18		Engine #2 (S-65)	1/18/21 9:15	1/18/21 9:17	0.03	5.33	High Voltage Testing	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/18/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/18/21 14:35	1/18/21 14:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
19		Engine #2 (S-65)	1/18/21 14:55	1/18/21 14:57	0.03	0.17	ION meter to HMI communication fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/18/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/18/21 15:05	1/18/21 15:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
20		Engine #2 (S-65)	1/19/21 12:00	1/19/21 12:02	0.03	0.17	ION meter to HMI communication fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/19/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/19/21 12:10	1/19/21 12:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
21		Engine #2 (S-65)	1/28/21 4:00	1/28/21 4:02	0.03	4.50	Cylinders 8 & 11 exhaust temp deviating low	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/28/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		1/28/21 8:30	1/28/21 8:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
22		Engine #2 (S-65)	2/3/21 10:45	2/3/21 10:47	0.03	0.58	Oil Change service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/3/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/3/21 11:20	2/3/21 11:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
23		Engine #2 (S-65)	2/8/21 9:00	2/8/21 9:02	0.03	3.58	Valve recession & lash service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/8/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/8/21 12:35	2/8/21 12:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
24		Engine #2 (S-65)	2/10/21 8:10	2/10/21 8:12	0.03	8.17	Intake Air Duct Replacement	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/10/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/10/21 16:20	2/10/21 16:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
25		Engine #2 (S-65)	2/10/21 19:05	2/10/21 19:07	0.03	0.25	Throttle Acuator harness	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/10/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/10/21 19:20	2/10/21 19:22	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			
26		Engine #2 (S-65)	2/10/21 19:50	2/10/21 19:52	0.03	14.33	Throttle Acuator harness	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/11/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/11/21 10:10	2/11/21 10:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
27		Engine #2 (S-65)	2/12/21 8:35	2/12/21 8:37	0.03	2.92	Exhaust leak	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/12/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/12/21 11:30	2/12/21 11:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
28		Engine #2 (S-65)	2/15/21 9:15	2/15/21 9:17	0.03	30.75	Exhaust leak	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/16/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/16/21 16:00	2/16/21 16:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
29		Engine #2 (S-65)	2/22/21 13:55	2/22/21 13:57	0.03	18.92	Condensate pump failure	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/23/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/23/21 8:50	2/23/21 8:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
30		Engine #2 (S-65)	2/23/21 9:10	2/23/21 9:12	0.03	0.58	Vibration switch	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/23/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/23/21 9:45	2/23/21 9:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
31		Engine #2 (S-65)	2/25/21 8:40	2/25/21 8:42	0.03	1.75	Repaired exhaust leak	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/25/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		2/25/21 10:25	2/25/21 10:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
32		Engine #1 (S-64)	3/15/21 12:25	3/15/21 12:27	0.03	0.42	Oil Change	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/15/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/15/21 12:50	3/15/21 12:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
33		Engine #1 (S-64)	3/24/21 4:45	3/24/21 4:47	0.03	13.25	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/24/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/24/21 18:00	3/24/21 18:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
34		Engine #1 (S-64)	3/24/21 18:25	3/24/21 18:27	0.03	23.25	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/25/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/25/21 17:40	3/25/21 17:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
35		Engine #1 (S-64)	3/25/21 18:25	3/25/21 18:27	0.03	0.25	Johnson Matthey High pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/25/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/25/21 18:40	3/25/21 18:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
36		Engine #1 (S-64)	3/25/21 18:55	3/25/21 18:57	0.03	21.92	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/26/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/26/21 16:50	3/26/21 16:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
37		Engine #1 (S-64)	3/27/21 6:00	3/27/21 6:02	0.03	11.25	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/27/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/27/21 17:15	3/27/21 17:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
38		Engine #1 (S-64)	3/27/21 17:50	3/27/21 17:52	0.03	0.33	Johnson Matthey High pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/27/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/27/21 18:10	3/27/21 18:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
39		Engine #1 (S-64)	3/28/21 5:50	3/28/21 5:52	0.03	10.92	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/28/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/28/21 16:45	3/28/21 16:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
40		Engine #1 (S-64)	3/28/21 17:10	3/28/21 17:12	0.03	0.17	Johnson Matthey High pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/28/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/28/21 17:20	3/28/21 17:22	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			
41		Engine #1 (S-64)	3/28/21 17:30	3/28/21 17:32	0.03	0.17	Johnson Matthey High pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/28/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/28/21 17:40	3/28/21 17:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
42		Engine #2 (S-65)	4/1/21 8:50	4/1/21 8:52	0.03	3.25	Valve lash service	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/1/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/1/21 12:05	4/1/21 12:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
43		Engine #2 (S-65)	4/1/21 14:25	4/1/21 14:27	0.03	0.33	Johnson Matthey high pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/1/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/1/21 14:45	4/1/21 14:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
44		Engine #2 (S-65)	4/1/21 18:00	4/1/21 18:02	0.03	14.25	High load fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/2/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/2/21 8:15	4/2/21 8:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
45		Engine #2 (S-65)	4/2/21 9:10	4/2/21 9:12	0.03	4.75	Replace main engine harness	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/2/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/2/21 13:55	4/2/21 13:57	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
46		Engine #2 (S-65)	4/2/21 13:55	4/2/21 13:57	0.03	0.17	High load fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/2/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/2/21 14:05	4/2/21 14:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
47		Engine #2 (S-65)	4/2/21 15:00	4/2/21 15:02	0.03	0.17	J-M high pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/2/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/2/21 15:10	4/2/21 15:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
48		Engine #2 (S-65)	4/2/21 15:30	4/2/21 15:32	0.03	1.00	High load fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/2/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/2/21 16:30	4/2/21 16:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
49		Engine #2 (S-65)	4/2/21 17:00	4/2/21 17:02	0.03	14.83	High load fault	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/3/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/3/21 7:50	4/3/21 7:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
50		Engine #2 (S-65)	4/3/21 15:50	4/3/21 15:52	0.03	1.33	High load fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/3/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/3/21 17:10	4/3/21 17:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
51		Engine #2 (S-65)	4/5/21 11:00	4/5/21 11:02	0.03	0.25	Replaced detonation sensor on cylinder 9 & 11, Replaced intake air filters	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/5/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/5/21 11:15	4/5/21 11:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
52		Engine #2 (S-65)	4/5/21 15:15	4/5/21 15:17	0.03	22.08	High load fault, throttle 100%	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/6/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/6/21 13:20	4/6/21 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			
53		Engine #2 (S-65)	4/6/21 14:05	4/6/21 14:07	0.03	0.25	JM High pressure fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/6/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/6/21 14:20	4/6/21 14:22	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			
54		Engine #2 (S-65)	4/13/21 8:25	4/13/21 8:27	0.03	1.67	Repaired exhaust leak	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/13/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/13/21 10:05	4/13/21 10:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
55		Engine #2 (S-65)	4/27/21 13:30	4/27/21 13:32	0.03	0.58	oil & filter change	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/27/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/27/21 14:05	4/27/21 14:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
56		Engine #2 (S-65)	4/27/21 14:50	4/27/21 14:52	0.03	0.42	High oil temp	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/27/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/27/21 15:15	4/27/21 15:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
57		Engine #2 (S-65)	4/29/21 10:00	4/29/21 10:02	0.03	1.83	Replaced coolant pipe	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/29/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		4/29/21 11:50	4/29/21 11:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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)	11/14/20 8:55	11/14/20 8:57	0.03	0.33	Loss of utility	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 9:15	11/14/20 9:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		Treatment System (S-71)	11/14/20 19:25	11/14/20 19:27	0.03	0.17	Loss of utility	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/14/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/14/20 19:35	11/14/20 19:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		Treatment System (S-71)	11/30/20 14:55	11/30/20 14:57	0.03	0.17	Loss of utility	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	11/30/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/30/20 15:05	11/30/20 15:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		Treatment System (S-71)	12/19/20 19:10	12/19/20 19:12	0.03	0.50	Loss of utility	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	12/19/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		12/19/20 19:40	12/19/20 19:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		Treatment System (S-71)	1/18/21 10:00	1/18/21 10:02	0.03	4.00	High voltage testing	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	1/18/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		1/18/21 14:00	1/18/21 14:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
6		Treatment System (S-71)	2/22/21 13:55	2/22/21 13:57	0.03	18.75	Condensate pump failure	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/22/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/23/21 8:40	2/23/21 8:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
7		Treatment System (S-71)	2/23/21 9:10	2/23/21 9:12	0.03	0.58	Vibration switch failure	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	2/23/2021
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		2/23/21 9:45	2/23/21 9:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
8		Treatment System (S-71)	3/24/21 5:00	3/24/21 5:02	0.03	12.00	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/24/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/24/21 17:00	3/24/21 17:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
9		Treatment System (S-71)	3/24/21 18:50	3/24/21 18:52	0.03	22.83	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/24/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/25/21 17:40	3/25/21 17:42	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
10		Treatment System (S-71)	3/26/21 6:20	3/26/21 6:22	0.03	8.67	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/26/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/26/21 15:00	3/26/21 15:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
11		Treatment System (S-71)	3/27/21 6:10	3/27/21 6:12	0.03	8.83	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/27/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/27/21 15:00	3/27/21 15:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
12		Treatment System (S-71)	3/28/21 6:20	3/28/21 6:22	0.03	9.17	Requested Utility Curtailments	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/28/2021
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/28/21 15:30	3/28/21 15:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

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

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
No S-71 SSM events in April 2021															

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

Redwood Landfill, Novato, CA GCCS DOWNTIME REPORT Period:		November 1, 2020 to April 30, 2021	
SHUTDOWN DATE/TIME	**START-UP DATE/TIME**	**TOTAL DOWNTIME (hours)**	**COMMENTS/ACTION TAKEN**
11/14/20 08:54	11/14/20 09:00	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
11/14/20 19:26	11/14/20 19:34	0.13	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
11/30/20 14:52	11/30/20 14:58	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
12/11/20 09:04	12/11/20 09:22	0.30	Manual shutdown for A51 maintenance.
12/11/20 09:50	12/11/20 10:42	0.87	Manual shutdown for A51 maintenance.
12/11/20 12:20	12/11/20 12:26	0.10	Manual shutdown for A51 maintenance.
12/19/20 18:18	12/19/20 18:24	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
12/19/20 20:12	12/19/20 20:22	0.17	All control devices were shutdown due to a site-wide power outage. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
12/19/20 20:38	12/19/20 20:42	0.07	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
01/13/21 09:08	01/13/21 09:24	0.27	Manual Shutdown for maintenance.
01/13/21 09:48	01/13/21 09:54	0.10	Manual Shutdown for maintenance.
01/13/21 10:10	01/13/21 10:14	0.07	Manual Shutdown for maintenance.
01/13/21 11:10	01/13/21 11:14	0.07	Manual Shutdown for maintenance.
01/14/21 01:34	01/14/21 01:42	0.13	High temperature alarm shutdown. System inspected after restart.
01/14/21 04:16	01/14/21 04:28	0.20	High temperature alarm shutdown. System inspected after restart.
01/14/21 07:48	01/14/21 07:56	0.13	Shutdown for A51 Source Testing.
01/14/21 12:08	01/14/21 12:12	0.07	Shutdown for A51 Source Testing.
02/10/21 18:02	02/10/21 18:08	0.10	Flame alarm shutdown. WMRE engine starting up.
02/10/21 18:56	02/10/21 19:00	0.07	Flame alarm shutdown. WMRE engine starting up.
03/09/21 09:20	03/09/21 09:28	0.13	Manual Shutdown for maintenance.
03/11/21 13:38	03/11/21 13:44	0.10	Low temperature alarm shutdown. System inspected after restarted.
03/27/21 18:32	03/27/21 18:44	0.20	Flame alarm shutdown. WMRE engine starting up.
		0.00	No GCCS Downtime in April 2021

Combined Emission Control Devices	
Total 2020 Downtime:	**13.20**
November 1, 2020 through April 30, 2021 Downtime:	**3.57**
January 1, 2021 through April 30, 2021 Total Downtime:	**1.63**
Total 2021 Downtime:	**1.63**

GCCS Downtime is when emission control devices (flares only) are not operating.

APPENDIX C

BAAQMD CORRESPONDENCE

WASTE MANAGEMENT

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

February 24, 2021

Ms. Simrun Dhoot
Senior Air Quality Engineer
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105
sdhoot@baaqmd.gov

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

Dear Ms. Dhoot:

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

- Vertical well RLI0120D was decommissioned on 2/24/2021.

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 September 10, 2020 Well Actions Letter, prior to the completion of this well action, RLI had 113 total collectors (106 vertical wells and 7 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	23	19	0	2	-
Actions Remaining Under AN 30065	77	31	50	13	Unlimited
Active Collector Count after Actions in this Letter	112 Total Collectors: 105 Vertical LFG Wells and 7 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
Environmental Protection Specialist

Chan, Michael

From: Chan, Michael
Sent: Wednesday, February 24, 2021 1:52 PM
To: 'Simrun Dhoot'
Cc: McCutcheon, Alisha
Subject: Redwood Landfill Well Actions Notification February 2021
Attachments: 2021.02.24 - RLI Well Actions Letter Decom RLI0120D.pdf

Tracking:

Recipient	Delivery
'Simrun Dhoot'	
McCutcheon, Alisha	Delivered: 2/24/2021 1:52 PM

Hi Simrun,

Attached is the Well Actions Notification letter that Redwood Landfill has decommissioned a well.

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

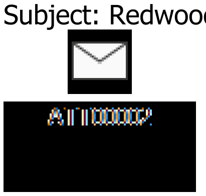
Chan, Michael

From: Microsoft Outlook <MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@wm.com>
To: 'Simrun Dhoot'
Sent: Wednesday, February 24, 2021 1:52 PM
Subject: Relayed: Redwood Landfill Well Actions Notification February 2021

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

'Simrun Dhoot' (sdhoot@baaqmd.gov)

Subject: Redwood Landfill Well Actions Notification February 2021



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		RLLC0189	8/14/20 9:45	8/14/20 9:47	0.03	1,966.87	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/4/2020
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		11/4/20 8:37	11/4/20 8:39	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		RLIHC101	10/28/20 11:00	10/28/20 11:02	0.03	457.25	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/16/2020
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/16/20 12:15	11/16/20 12:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		RLI0105C	10/31/20 10:30	10/31/20 10:32	0.03	1,294.00	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/24/2020
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/24/20 8:30	12/24/20 8:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		RLI0126C	10/31/20 11:00	10/31/20 11:02	0.03	573.25	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/24/2020
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/24/20 8:15	11/24/20 8:17	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
5		RLLC0206	10/31/20 11:30	10/31/20 11:32	0.03	479.25	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/20/2020
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/20/20 10:45	11/20/20 10:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
6		RLLC0209	11/16/20 12:00	11/16/20 12:02	0.03	95.00	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/20/2020
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/20/20 11:00	11/20/20 11:02	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
7		RLIHC102	11/23/20 13:45	11/23/20 13:47	0.03	3,802.25	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	5/1/2021
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		Well offline as of May 1, 2021					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		RLIHC101	11/23/20 14:00	11/23/20 14:02	0.03	3,802.00	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	5/1/2021
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		Well offline as of May 1, 2021					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		RLLC0246	1/19/21 8:45	1/19/21 8:47	0.03	985.00	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	3/1/2021
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		3/1/21 9:45	3/1/21 9:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
10		RLI0120D	2/24/21 8:05	2/24/21 8:07	0.03	N/A	Well decommissioned pursuant to AN #30065 on 2/24/21	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	N/A
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		N/A					117: Gas Collection	N/A						
	Malfunction							118: Construction Activities							
11		RLLC0215	3/9/21 8:00	3/9/21 8:02	0.03	1,264.00	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	5/1/2021
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		Well offline as of May 1, 2021					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		RLLC0214	3/24/21 14:00	3/24/21 14:02	0.03	898.00	Well raising, well located in active fill area	113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	5/1/2021
	x Shutdown							x 116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		Well offline as of May 1, 2021					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-out -Interruption in service (e.g. blown service fuse -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	17. Check/reset breaker 18. Check/repair electrical panel components 19. Check/repair transformer 20. Check/repair motor starter 21. Check/repair electrical line 22. Test amperage to various equipment 23. Contact electricity supplier 24. Contact/contract electrician 25.Provide auxiliary power (if necessary
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature -monitoring equipment -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	26. Check/repair temperature monitoring equipment 27. Check/repair thermocouple and/or wiring 28. Follow procedures for loss of flow/blower malfunction 29. Check/adjust louvers 30. Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	31. Check/repair temperature monitoring equipment 32. Check/repair thermocouple 33. Follow procedures for loss of flow/blower malfunction 34. Check/adjust air/fuel controls 35. Check/adjust/repair flame sensor 36. Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	37. Check/adjust/repair flow measuring device and/or wiring 38. Check/repair chart recorder 39. Replace paper in chart recorder
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	40. Check/adjust/repair thermocouple 41. Check/adjust/repair controller and/or wiring 42. Check/adjust/repair electrical panel components 43. Check/repair chart recorder 44. Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	45. Site-specific diagnosis procedures 46. Site-specific responses actions based on diagnosis 47. Open manual louvers 48. Clean pitot orifice 49. Clean/drain flame arrestor 50. Refill propane supply 51. Check/repair pilot sparking system

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

APPENDIX E

A-51 AND A-60 FLARE TEMPERATURE REPORTS

Redwood Landfill, Novato, CA

A-51 Flare TEMPERATURE DEVIATION/ INOPERATIVE MONITOR REPORT **November 1, 2020 to April 30, 2021**

REPORT PREPARED BY:	Michael Chan	**DATE:**	May 24, 2021
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 2020					
No deviations or inoperative monitors during the month of December 2020					
No deviations or inoperative monitors during the month of January 2021					
No deviations or inoperative monitors during the month of February 2021					
No deviations or inoperative monitors during the month of March 2021					
No deviations or inoperative monitors during the month of April 2021					

COMMENTS:

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

2 The A-51 Flare combustion zone 3-hour average temperature did not drop below the 1,400°F (3/16/20 to 3/9/21) or 1,488°F (3/10/2021 to current) limits established during the January 22, 2020 and January 14, 2021 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, 2020 to April 30, 2021**

REPORT PREPARED BY:	Michael Chan	**DATE:**	May 24, 2021
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 2020					
No deviations or inoperative monitors during the month of December 2020					
No deviations or inoperative monitors during the month of January 2021					
No deviations or inoperative monitors during the month of February 2021					
No deviations or inoperative monitors during the month of March 2021					
No deviations or inoperative monitors during the month of April 2021					

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 1,535°F (9/20/2019 to 9/14/20) or 1,551°F (9/15/20 - current) limits established during the July 25, 2019 and July 22 & 23, 2020 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 1,497°F (1/1/2018 to 9/13/18) or 1,555°F (9/14/18 to current) limits established in the July 24, 2017 and July 17, 2018 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, 2020 to April 30, 2021

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2020				
There was no missing data for December 2020				
There was no missing data for January 2021				
There was no missing data for February 2021				
There was no missing data for March 2021				
There was no missing data for April 2021				

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

Emission Control Devices

A-60 Flare Missing Data Summary

Redwood Landfill, Novato, CA

FLARE MISSING DATA REPORT November 1, 2020 to April 30, 2021

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2020				
There was no missing data for December 2020				
There was no missing data for January 2021				
There was no missing data for February 2021				
There was no missing data for March 2021				
There was no missing data for April 2021				

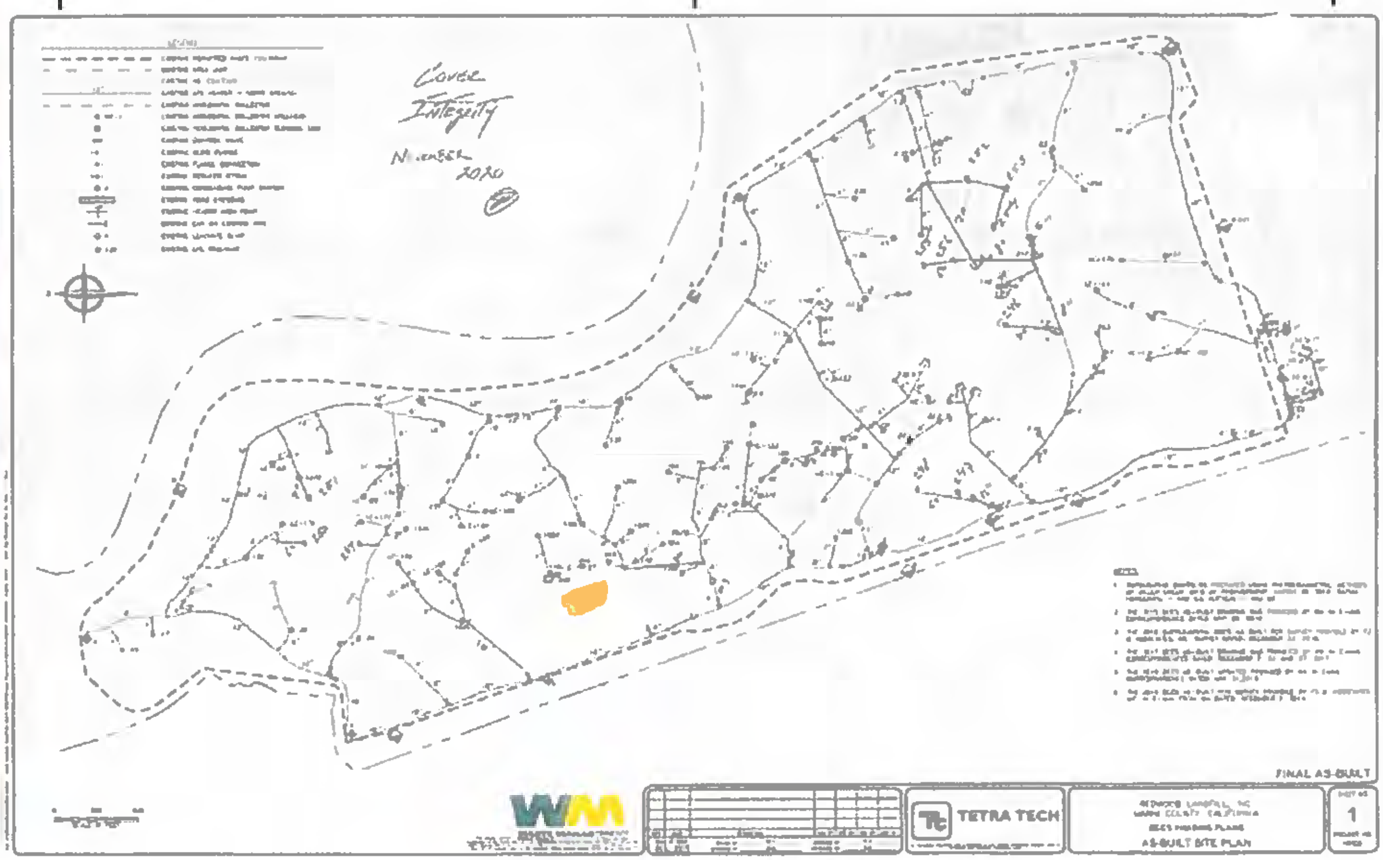
Flare A-60	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,343.00	180.96
Missing Data Percentage:	0.00%	0.00%

APPENDIX G

COVER INTEGRITY MONITORING REPORTS

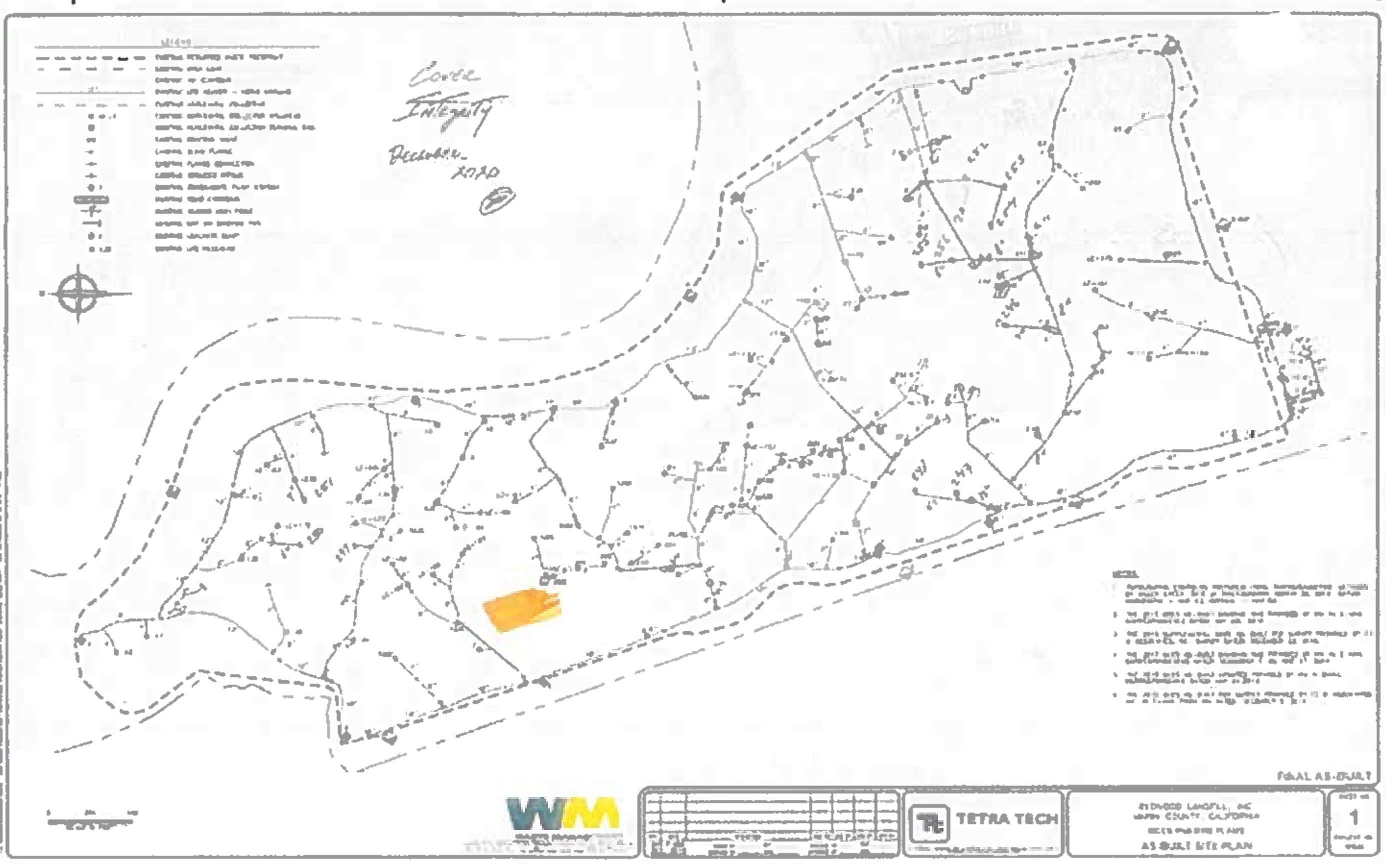
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	11/12/2020	Received		Manager	Ramin Khany	Date	11/12/2020
Technician	S. King	Repairs Complete		Manager	[signature]	Date	
Cell/Pad	Area C, West Bench			Cell/Pad	415 850 3791		
Description of finding and corrective action: Area C West of Wells 126, 209 and 205. Bench needs cover.				Description of finding and corrective action: corrected RK			
Date Identified	11/12/2020	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:			



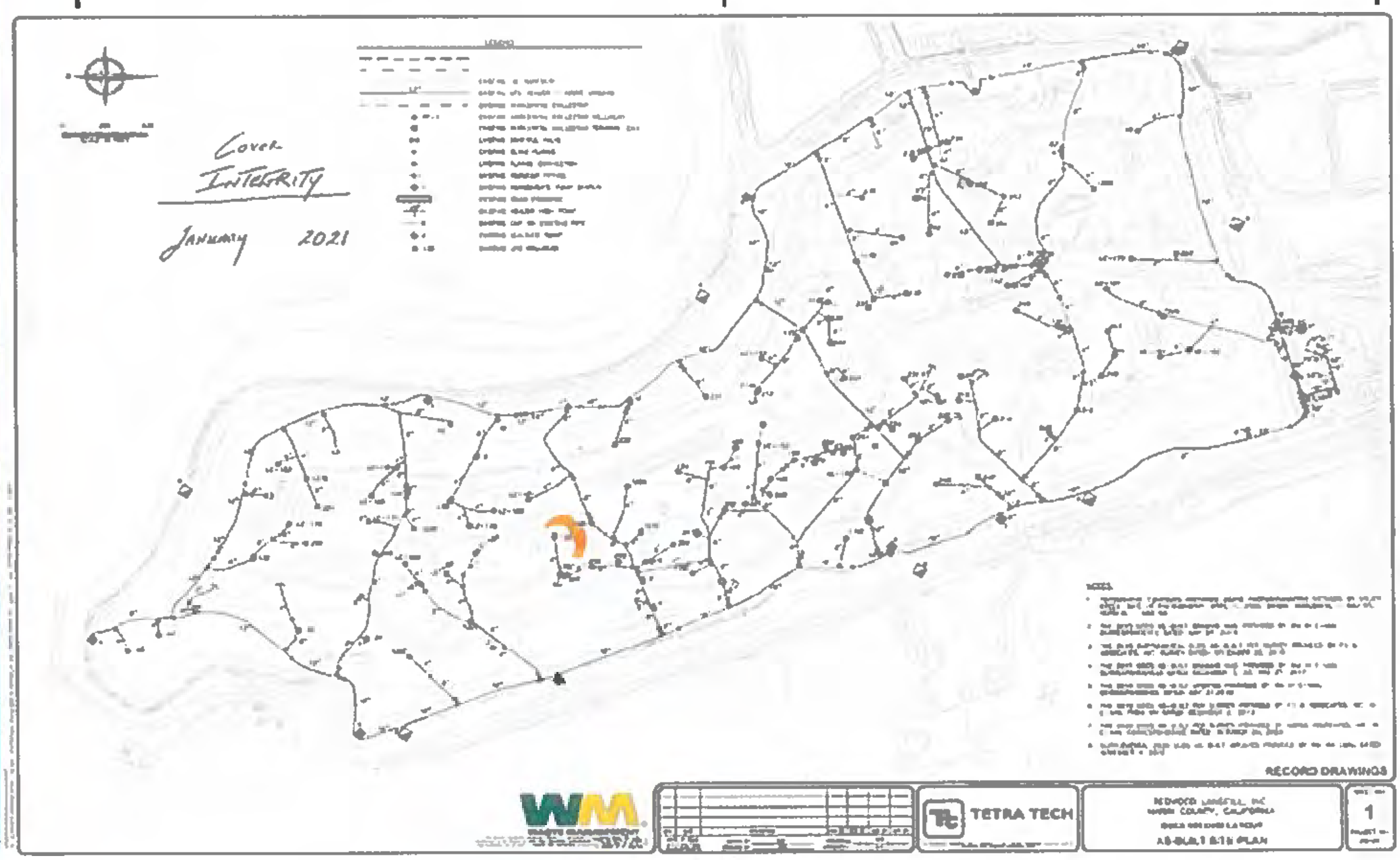
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	12/9/2020	Received		Manager	Ramin Khany	Date	12/9/2020
Technician	S. King	Repairs Complete		Manager		Date	
Cell/Pad	Area C, West Bench			Cell/Pad	415 850 3791		
Description of finding and corrective action: In Area C, Additional cover is needed south West of Well 189, East of well 126. See attached map for details. Corrective Action:				Description of finding and corrective action: corrected			
Date Identified	12/9/2020	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:			



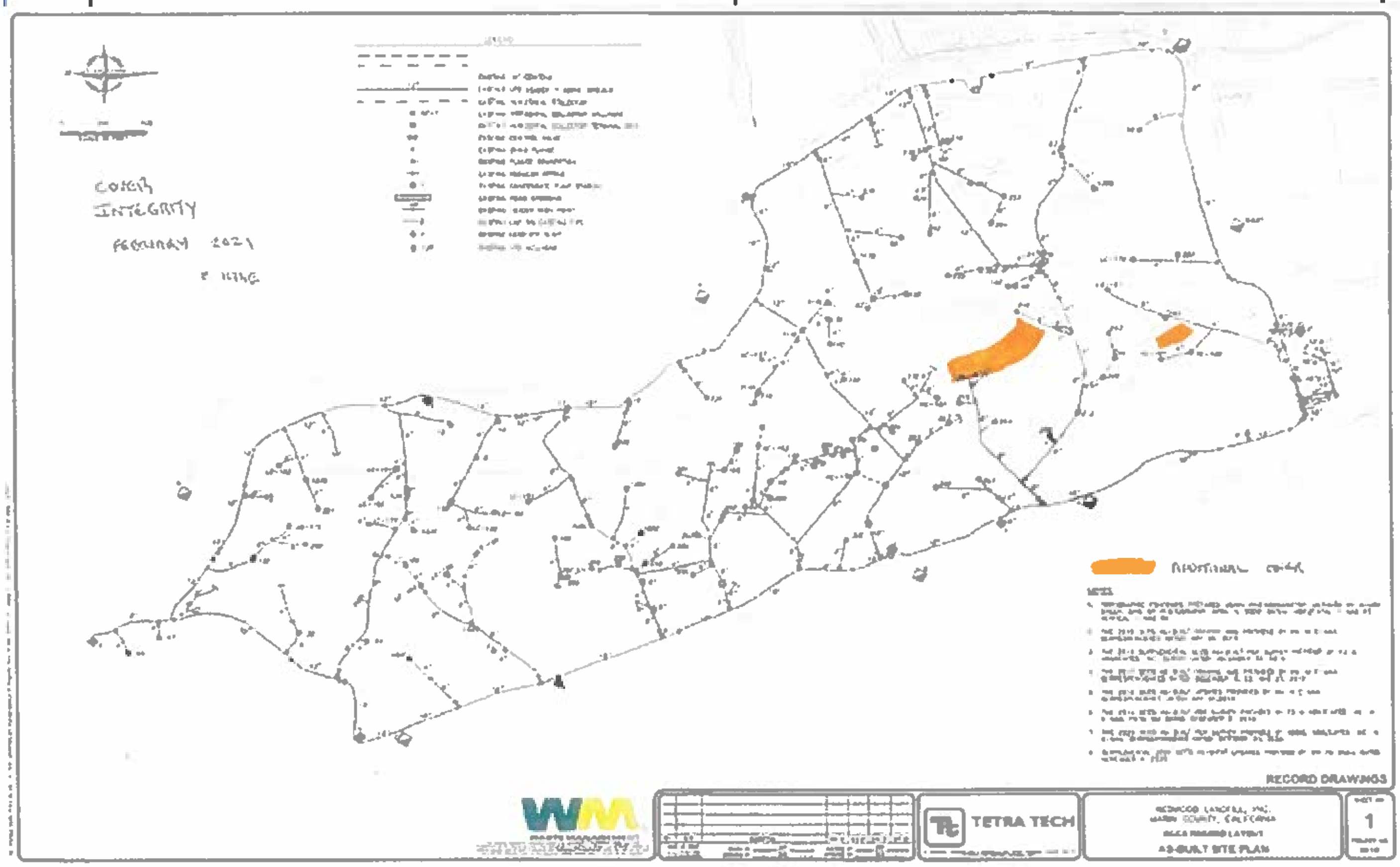
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	1/5/2021	Received		Manager	Ramin Khany	Date	1/5/2021
Technician	S. King	Repairs Complete		Manager		Date	
Cell/Pad	Area C			Cell/Pad	415 850 3791		
Description of finding and corrective action: In Area C, Additional cover is needed south West of Well 105, East of well 106. See attached map for details. Corrective Action:				Description of finding and corrective action: completed — corrected			
Date Identified	1/5/2021	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:			



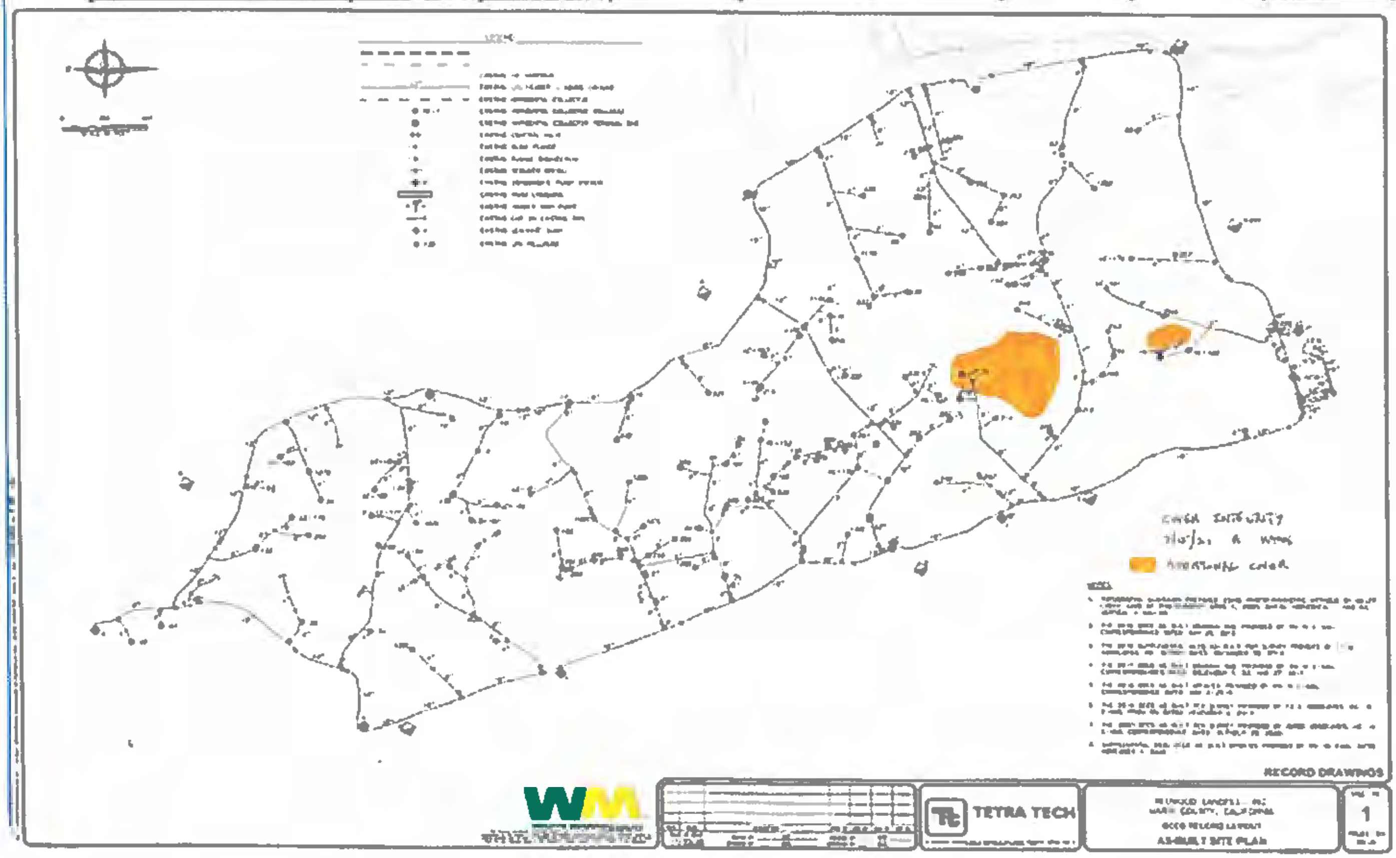
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	2/11/2021	**Received**		**Manager**	Ramin Khany	**Date**	2/11/2021
Technician	E. Kane	**Repairs Complete**		**Manager**		**Date**	
Cell/Pad	**Area D**			**Cell/Pad**	415 8503291		
Description of finding and corrective action: In Area D, additional cover is needed on a side slope below a recently filled deck to the east of wells HC-101 and HC-102. Inclement weather- Area will be covered ASAP when weather conditions permit.				**Description of finding and corrective action:** Corrected ✓ RK			
Date Identified	2/11/2021	**Repaired**	TBD	**Date Identified**		**Repaired**	
Cell/Pad	**Area F**			**Cell/Pad**			
Description of finding and corrective action: In Area F, additional cover is needed on a side slope below a recently filled deck to northeast of wells 141 and 215. Inclement weather – Area will be covered ASAP when conditions permit.				**Description of finding and corrective action:**			
Date Identified	2/11/2021	**Repaired**	TBD	**Date Identified**		**Repaired**	
Cell/Pad				**Cell/Pad**			
Description of finding and corrective action:				**Description of finding and corrective action:**			



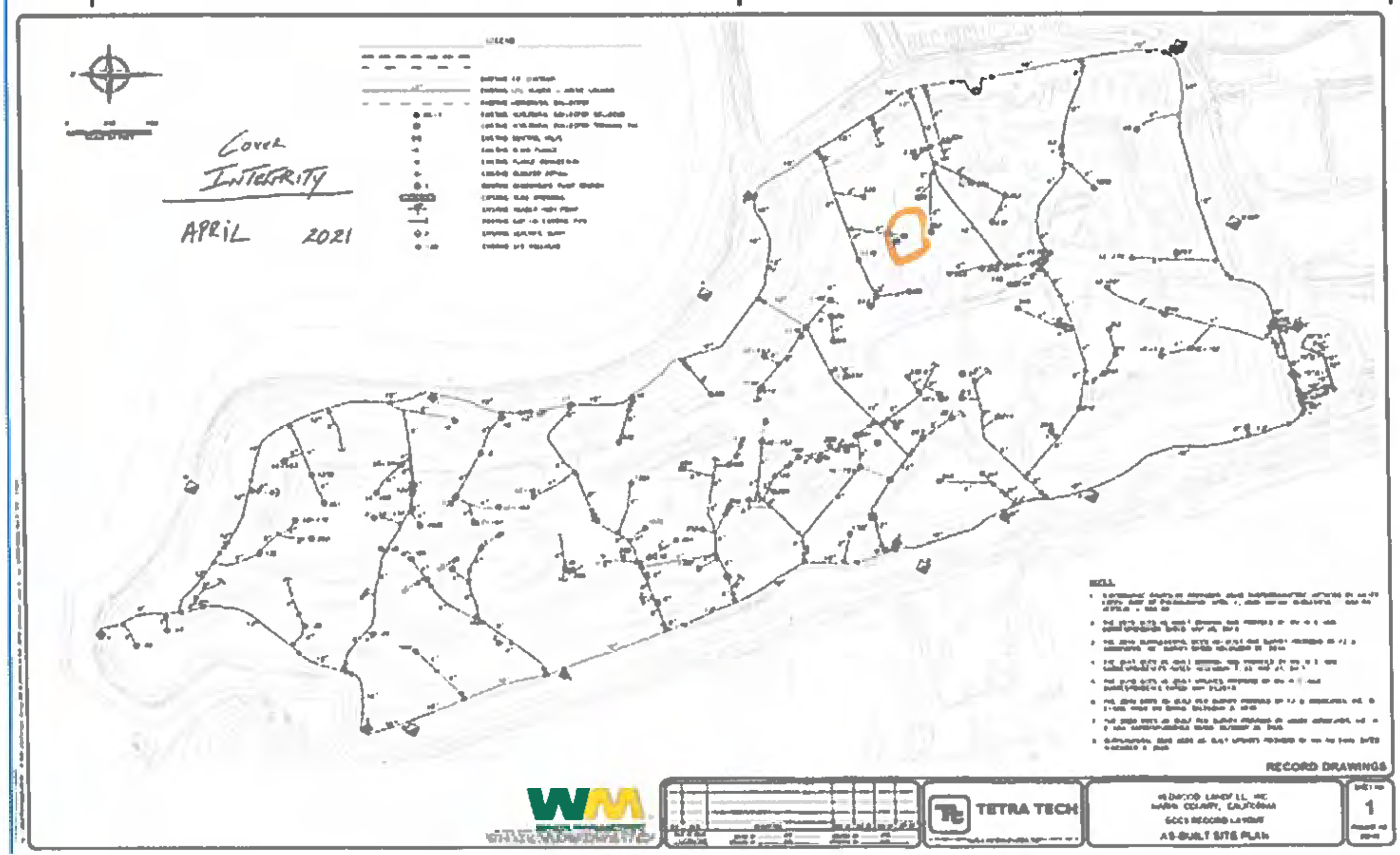
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	3/15/2021	Received		Manager	Ramin Khany	Date	3/16/2021
Technician	E. Kane	Repairs Complete		Manager		Date	
Cell/Pad	Area D			Cell/Pad	415 850 3791		
Description of finding and corrective action: In Area D, additional cover is needed on a side slope below a recently filled deck to the east of wells HC-101 and HC-102.				Description of finding and corrective action: Corrected RK			
Date Identified	3/15/2021	Repaired	TBD	Date Identified		Repaired	
Cell/Pad	Area F			Cell/Pad			
Description of finding and corrective action: In Area F, additional fill and cover are needed on a side slope below a recently filled deck to north and east of wells 141, 214, and 215.				Description of finding and corrective action:			
Date Identified	3/15/2021	Repaired	TBD	Date Identified		Repaired	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	4/26/2021	Received		Manager	Ramin Khany	Date	4/26/2021
Technician	S. King	Repairs Complete		Manager	[illegible]	Date	
Cell/Pad	Area D			Cell/Pad	415 8503291		
Description of finding and corrective action: In Area D, Additional cover is needed south of Well 117D, Near well 65. See attached map for details. Corrective Action:				Description of finding and corrective action: [illegible]			
Date Identified	3/15/2021	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:			



APPENDIX H

SURFACE EMISSIONS MONITORING / COMPONENT LEAK

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

December 23, 2020

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

Re: Fourth Quarter 2020 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 2020 Integrated and Instantaneous Surface Emissions Monitoring (SEM) and Component Leak Monitoring. Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES). Re-monitoring of surface emissions and site-wide component leak monitoring was conducted by RES and/or Waste Management (WM) personnel.

APPLICABLE REQUIREMENTS

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

Surface Emission Monitoring (SEM)

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

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

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

Component Leak

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

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

RLI Plan and Alternative Compliance Measures

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

PROCEDURES

General

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

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

Instantaneous Surface Emissions Monitoring

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

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

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

- Corrective actions must be initiated within 5 days of the initial exceedance and re-monitoring shall be conducted within 10 days of the initial exceedance.

    - If the re-monitoring event shows the exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance.

    - If the 1-month re-monitoring event shows the location is still corrected, all re-monitoring requirements have been completed.

- If either the first 10-day or 1-month re-monitoring events show a second exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.

- If the second 10-day re-monitoring event shows the second exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance. If the 1-month re-monitoring event shows the area is still corrected, monitoring requirements have been completed.

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

Integrated Surface Emissions Monitoring

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

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

- Re-monitoring shall be conducted within 10 days of the initial exceedance.

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

- If either the first 10-day re-monitoring event shows a second grid exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.

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

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

Component Leak Monitoring Procedures

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

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

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

FOURTH QUARTER 2020 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the Fourth Quarter 2020.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on November 10 and 17, 2020 in accordance with the NSPS, BAAQMD 8-34, and CCR Title 17 §95469 and ACO. Results and data from the monitoring are presented in Attachment A

Initial Monitoring Event Exceedances of 500 ppm_v

There were thirty (30) exceedances of 500 ppm_v as methane detected on November 10 and 17, 2020. 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 event was completed on November 17, 18, and 19, 2020. All locations were observed at less than 500 ppm_v.

One-Month Re-Monitoring Results

The 1-month re-monitoring event was completed on December 7 and 8, 2020. All locations were observed at less than 500 ppm_v.

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

There was one (1) reading between 200 ppm_v and 499 ppm_v as methane detected during the initial monitoring event on November 17, 2020. 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 10, 11, and 12, 2020 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 10, 2020. No leaks greater than 500 ppm_v were identified. Please see Attachment C, for details.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

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

Precipitation Requirements

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

EQUIPMENT CALIBRATION

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

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

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

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

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

Attachment B – Integrated Surface Emission Monitoring Event Records

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

Attachment C – Component Leak Monitoring Event Records

- Component Leak Exceedances and Monitoring Logs

Attachment D – Weather Station Data

- Strip Chart Data

Attachment E – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Instantaneous Surface Emission Monitoring Event Records

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

2020 QUARTER: 4
PERFORMED BY: RES
LANDFILL NAME: Redwood Landfill, Inc.

Grid Number	Flag Number	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
122	O1	11/10/2020	1,000	Well 225
142	O2	11/10/2020	800	HC 156
85	O3	11/10/2020	1,000	Surface
67	O31	11/10/2020	2,492	Well 246
112	O32	11/10/2020	2,136	Surface
143	O33	11/10/2020	64,612	Well 247
121	O34	11/10/2020	3,334	Well 196
157	O35	11/10/2020	6,199	Well 107
95	O36	11/10/2020	16,632	Black Cap
87	O37	11/10/2020	23,977	White Cap
64	O38	11/10/2020	969	White Cap
43	O39	11/10/2020	730	White Cap
86	O4	11/10/2020	2,000	Black Cap
33	O40	11/10/2020	916	White Cap
78	O41	11/10/2020	1,700	Well 230
90	O42	11/10/2020	20,000	Surface
102	O43	11/10/2020	1,700	Surface
112	O44	11/10/2020	800	Surface
112	O45	11/10/2020	2,000	Surface
172	O46	11/10/2020	1,200	Well 187
172	O47	11/10/2020	1,000	Well 188
184	O48	11/10/2020	800	Black Pipe
136	O49	11/10/2020	4,200	Black Pipe
64	O5	11/10/2020	4,000	Cap Well
83	O50	11/10/2020	1,100	Black Pipe18ve
73	O51	11/10/2020	600	Surface
28	O52	11/10/2020	2,500	Sump 8
48	O6	11/10/2020	10,000	Surface
48	O7	11/10/2020	580	Black Pipe
48	39A	11/17/2020	4,818	Standpipe adjacent to flag 39
28	52A	11/17/2020	232	Valve stem next to flag 52
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)

2020 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Rick Reed/Ben Tarver
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
O1	11/10/2020	1,000	11/11/2020	Increased Vacuum/BECS fully open	11/18/2020	0		12/8/2020	5		Well 225
O2	11/10/2020	800	11/11/2020	Increased Vacuum/BECS	11/18/2020	11		12/8/2020	4		HC 156
O3	11/10/2020	1,000	11/12/2020	Added Soil/Compacted	11/17/2020	147		12/7/2020	109		Surface
O31	11/10/2020	2,492	11/11/2020	Increased Vacuum/BECS	11/18/2020	17		12/8/2020	25		Well 246
O32	11/10/2020	2,136	11/11/2020	Added Soil/Compacted	11/18/2020	0		12/8/2020	9		Surface
O33	11/10/2020	64,612	11/11/2020	Increased Vacuum	11/18/2020	0		12/8/2020	118		Well 247
O34	11/10/2020	3,334	11/11/2020	Increased BECS/Added Soil/Compacted	11/18/2020	0		12/8/2020	4		Well 196
O35	11/10/2020	6,199	11/11/2020	Increased BECS/Added Soil/Compacted	11/18/2020	11		12/8/2020	8		Well 107
O36	11/10/2020	16,632	11/12/2020	Added Soil/Compacted	11/19/2020	293		12/7/2020	263		Black Cap
O37	11/10/2020	23,977	11/12/2020	Added Soil/Compacted	11/19/2020	90		12/7/2020	112		White Cap
O38	11/10/2020	969	11/12/2020	Added Soil/Compacted	11/19/2020	40		12/7/2020	181		White Cap
O39	11/10/2020	730	11/12/2020	Added Soil/Compacted	11/17/2020	269		12/7/2020	0		White Cap
O4	11/10/2020	2,000	11/12/2020	Added Soil/Compacted	11/17/2020	58		12/7/2020	242		Black Cap
O40	11/10/2020	916	11/12/2020	Added Soil/Compacted	11/17/2020	40		12/7/2020	7		White Cap
O41	11/10/2020	1,700	11/11/2020	Added Soil/Compacted	11/18/2020	5		12/8/2020	6		Well 230
O42	11/10/2020	20,000	11/11/2020	Added Soil/Compacted	11/18/2020	20		12/8/2020	10		Surface
O43	11/10/2020	1,700	11/11/2020	Added Soil/Compacted	11/18/2020	89		12/8/2020	6		Surface
O44	11/10/2020	800	11/11/2020	Compost Pile/Added Compost	11/18/2020	0		12/8/2020	5		Surface
O45	11/10/2020	2,000	11/11/2020	Added Soil/Compacted	11/18/2020	0		12/8/2020	10		Surface
O46	11/10/2020	1,200	11/11/2020	Increased Vacuum	11/18/2020	52		12/8/2020	27		Well 187
O47	11/10/2020	1,000	11/11/2020	Increased Vacuum	11/18/2020	5		12/8/2020	18		Well 188
O48	11/10/2020	800	11/12/2020	Added Soil/Compacted	11/19/2020	156		12/7/2020	134		Black Pipe
O49	11/10/2020	4,200	11/12/2020	Added Soil/Compacted	11/19/2020	310		12/7/2020	102		Black Pipe
O5	11/10/2020	4,000	11/12/2020	Added Soil/Compacted	11/19/2020	92		12/7/2020	327		Cap Well
O50	11/10/2020	1,100	11/12/2020	Added Soil/Compacted	11/19/2020	56		12/7/2020	188		Black Pipe18ve
O51	11/10/2020	600	11/11/2020	Added Soil/Compacted	11/18/2020	44		12/8/2020	10		Surface
O52	11/10/2020	2,500	11/12/2020	Added Soil/Compacted	11/17/2020	299		12/7/2020	64		Sump 8
O6	11/10/2020	10,000	11/12/2020	Added Soil/Compacted	11/17/2020	174		12/7/2020	40		Surface

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

2020 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Rick Reed/Ben Tarver
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
O7	11/10/2020	580	11/12/2020	Added Soil/Compacted	11/17/2020	174		12/7/2020	282		Black Pipe
39A	11/17/2020	4,818	11/18/2020	Taped up standpipe	11/19/2020	172		12/8/2020	43		Standpipe adjacent to flag 39

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

2020 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: R. Reed
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Comments
O1	11/10/2020	1,000	11/18/2020	0					Well 225
O2	11/10/2020	800	11/18/2020	11					HC 156
O3	11/10/2020	1,000	11/17/2020	147					Surface
O31	11/10/2020	2,492	11/18/2020	17					Well 246
O32	11/10/2020	2,136	11/18/2020	0					Surface
O33	11/10/2020	64,612	11/18/2020	0					Well 247
O34	11/10/2020	3,334	11/18/2020	0					Well 196
O35	11/10/2020	6,199	11/18/2020	11					Well 107
O36	11/10/2020	16,632	11/19/2020	293					Black Cap
O37	11/10/2020	23,977	11/19/2020	90					White Cap
O38	11/10/2020	969	11/19/2020	40					White Cap
O39	11/10/2020	730	11/17/2020	269					White Cap
O4	11/10/2020	2,000	11/17/2020	58					Black Cap
O40	11/10/2020	916	11/17/2020	40					White Cap
O41	11/10/2020	1,700	11/18/2020	5					Well 230
O42	11/10/2020	20,000	11/18/2020	20					Surface
O43	11/10/2020	1,700	11/18/2020	89					Surface
O44	11/10/2020	800	11/18/2020	0					Surface
O45	11/10/2020	2,000	11/18/2020	0					Surface
O46	11/10/2020	1,200	11/18/2020	52					Well 187
O47	11/10/2020	1,000	11/18/2020	5					Well 188
O48	11/10/2020	800	11/19/2020	156					Black Pipe
O49	11/10/2020	4,200	11/19/2020	310					Black Pipe
O5	11/10/2020	4,000	11/19/2020	92					Cap Well
O50	11/10/2020	1,100	11/19/2020	56					Black Pipe18ve
O51	11/10/2020	600	11/18/2020	44					Surface
O52	11/10/2020	2,500	11/17/2020	299					Sump 8
O6	11/10/2020	10,000	11/17/2020	174					Surface
O7	11/10/2020	580	11/17/2020	174					Black Pipe
39A	11/17/2020	4,818	11/19/2020	172					Standpipe adjacent to flag 39

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

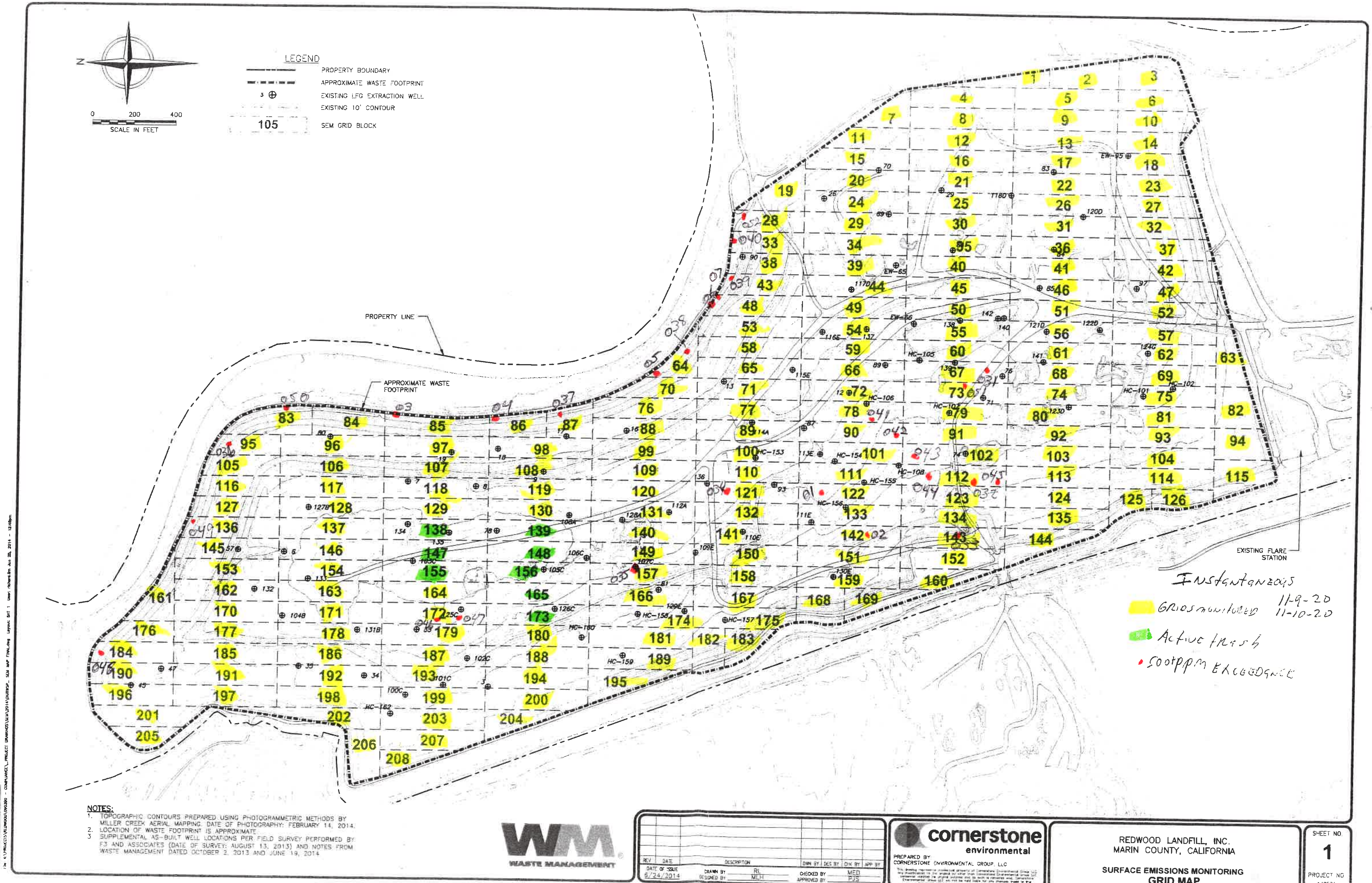
2020 QUARTER: 4

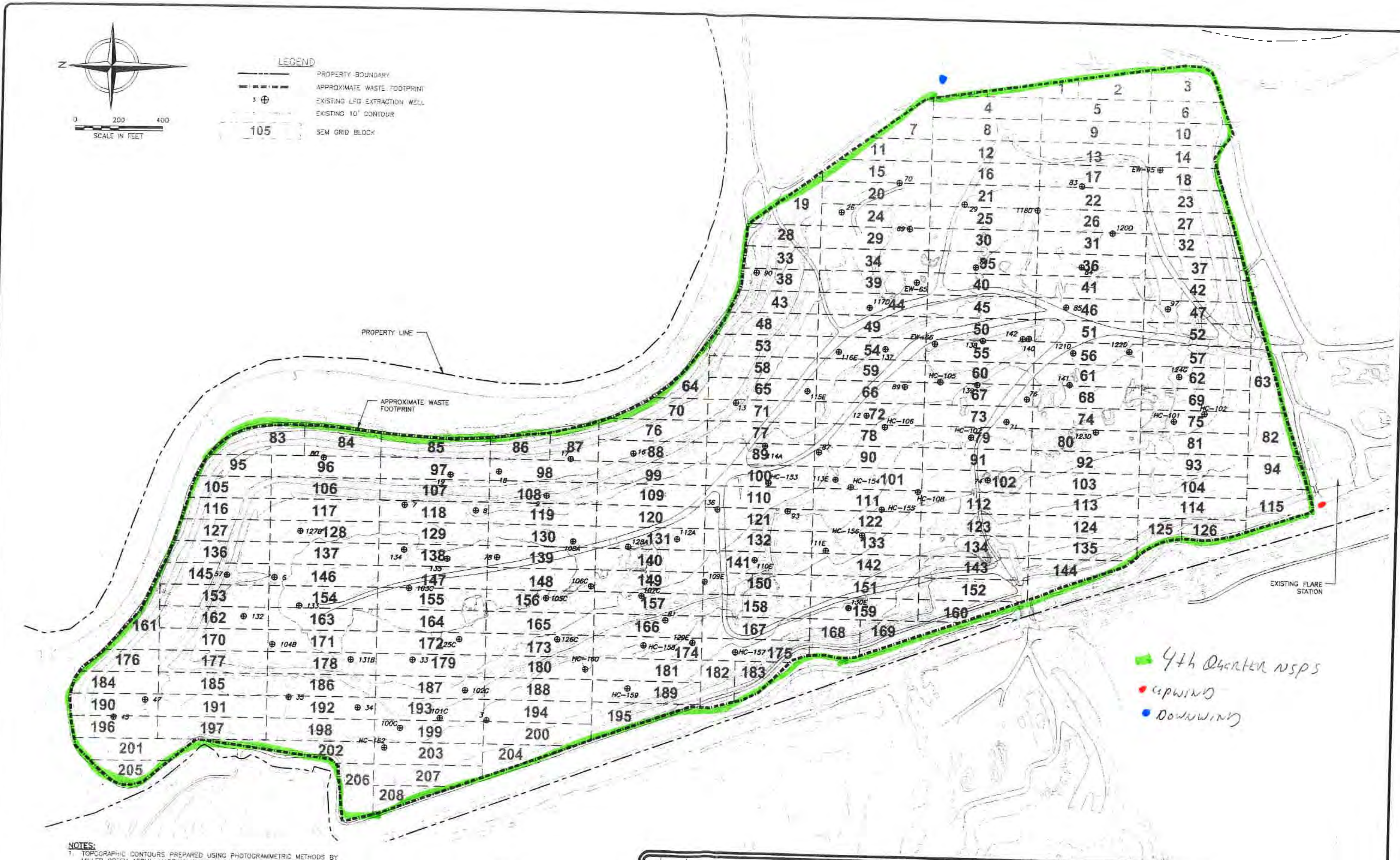
INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: R. Reed

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			Re-mon Event		Comments
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	Reading ppm	
52A	11/17/2020	232	12/7/2020	52	Valve stem next to flag 52


LEGEND
PROPERTY BOUNDARY
APPROXIMATE WASTE FOOTPRINT
EXISTING LFG EXTRACTION WELL
EXISTING 10' CONTOUR
SEM GRID BLOCK
0 200 400
SCALE IN FEET
PROPERTY LINE
APPROXIMATE WASTE FOOTPRINT
EXISTING FLARE STATION
Instantaneous
Grids monitored 11-9-20 11-10-20
Active trash
500ppm Exceedance
NOTES:
1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014.
WM WASTE MANAGEMENT
DATE OF ISSUE 6/24/2014
DRAWN BY RL
DESIGNED BY MLH
CHECKED BY MED
APPROVED BY PJS
cornerstone environmental
PREPARED BY CORNERSTONE ENVIRONMENTAL GROUP, LLC
REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA
SURFACE EMISSIONS MONITORING GRID MAP
SHEET NO. 1
PROJECT NO. 140521



NOTES:
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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

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year:	4th 2020				Page 1 of 2 Pages
Technician:	LEIGH WADE				
Instrument:	TVA1000				
Calibration Standard:	500ppm				

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd >500 ppm	
1	122	1000	11-10-20										WEll 22S
2	142	800											Hc156
3	85	1000											SURFACE
4	86	2,000											Black pipe
5	64	4,000											CAP WEll
6	48	10,000											SURFACE
7	48	580											Black pipe
41	78	1700											WEll 23C
42	90	20,000											SURFACE
43	102	1700											SURFACE
44	112	800											SURFACE
45	112	2,000											SURFACE
46	172	1200											WEll 187
47	172	1,000											WEll 188
48	184	800											Black pipe
49	136	4,200											Black pipe
50	83	1,100											Black pipe 18 VE
31	67	2492											WEll 246
32	112	2136											SURFACE
33	143	64,612											WEll 247
34	121	3334											WEll 196
35	157	6199											WEll 107
36	95	16,632											Black CAP
37	87	23,977											White CAP
38	64	969											White CAP

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year:	4th 2020				Page 2 of 2 Pages
Technician:	LEISHWADE				
Instrument:	TVA1000				
Calibration Standard:	500ppm				

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	
O-39	43	530	11-10-20										WhiteCAP
O-40	33	916											WhiteCAP
O-51	73	600											SURFACE
O-52	28	2500											SUMP 8
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
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O-													
O-													

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Oscar Pereira, Nick Banks

Date: 11-9-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 59 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
1	LW	1230	1245	11	2	4	8	
2	OP	1230	1245	9	2	4	8	
3	NB	1230	1245	16	2	4	8	
4	DA	1230	1245	14	2	4	8	
5	LW	1245	1300	9	2	4	8	
6	OP	1245	1300	11	2	4	8	
7	NB	1245	1300	19	2	4	8	
8	DA	1245	1300	14	2	4	8	
9	LW	1300	1315	12	2	3	8	
10	OP	1300	1315	29	2	3	8	
11	NB	1300	1315	24	2	3	8	
12	DA	1300	1315	146	2	3	8	
13	LW	1315	1330	19	2	3	8	
14	OP	1315	1330	13	2	3	8	
15	NB	1315	1330	71	2	3	8	
16	DA	1315	1330	156	2	3	8	
17	LW	1330	1345	27	2	3	16	
18	OP	1330	1345	15	2	3	16	
19	NB	1330	1345	137	2	3	16	
20	DA	1330	1345	107	2	3	16	
21	LW	1345	1400	82	2	4	16	
22	OP	1345	1400	39	2	4	16	
23	NB	1345	1400	17	2	4	16	
25	DA	1345	1400	45	2	4	16	
26	LW	1400	1415	21	2	4	15	
27	OP	1400	1415	36	2	4	15	
30	NB	1400	1415	59	2	4	15	
31	DA	1400	1415	32	2	4	15	
32	LW	1415	1430	20	2	4	15	
35	OP	1415	1430	21	2	4	15	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leighwror | Dwight Anderson
Brenpenetta
Nick Banks

Date: 11-9-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 61 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.7

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
36	ND	1415	1430	20	2	4	15	
37	DA	1415	1430	14	2	4	15	
40	LV	1430	1445	54	2	3	15	
41	OP	1430	1445	27	2	3	15	
42	NB	1430	1445	19	2	3	15	
45	DA	1430	1445	86	2	3	15	
46	LV	1445	1500	32	2	4	15	
47	OP	1445	1500	12	2	4	15	
51	NB	1445	1500	22	2	4	15	
52	DA	1445	1500	18	2	4	15	
56	LV	1500	1515	27	3	5	12	
57	OP	1500	1515	41	3	5	12	
61	NB	1500	1515	26	3	5	12	
62	DA	1500	1515	19	3	5	12	
63	LV	1515	1530	24	2	3	11	
68	OP	1515	1530	22	2	3	11	
69	NB	1515	1530	35	2	3	11	
74	DA	1515	1530	51	2	3	11	
75	LV	1530	1545	36	2	3	12	
80	OP	1530	1545	129	2	3	12	
81	NB	1530	1545	32	2	3	12	
82	DA	1530	1545	40	2	3	12	
92	LV	1545	1600	71	2	3	12	
93	OP	1545	1600	54	2	3	12	
94	NB	1545	1600	26	2	3	12	
103	DA	1545	1600	45	2	3	12	
104	LV	1600	1615	61	2	3	16	
113	OP	1600	1615	38	2	3	16	
114	NB	1600	1615	27	2	3	16	
115	DA	1600	1615	35	2	3	16	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE ____ ____
____ ____ ____
____ ____ ____

Date: 11-9-20 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	
138								ACTIVE-TRASH
139								
147								
148								
155								
156								
165								
173								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leighwant, Dwight Anderson, Omar Pencler, Nick Banks

Date: 11-10-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 72 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
124	LW	0520	0535	72	2	3	5	
125	OP	0520	0535	49	2	3	5	
126	NB	0520	0535	51	2	3	5	
135	DA	0520	0535	62	2	3	5	
144	LW	0535	0550	38	2	3	6	
49	OP	0535	0550	79	2	3	6	
50	NB	0535	0550	52	2	3	6	
54	DA	0535	0550	107	2	3	6	
55	LW	0550	0605	64	2	3	6	
59	OP	0550	0605	72	2	3	6	
60	NB	0550	0605	55	2	3	6	
66	DA	0550	0605	89	2	3	6	
67	LW	0605	0620	2492	2	3	6	WELL 246
72	OP	0605	0620	57	2	3	6	
73	NB	0605	0620	600	2	3	6	SURFACE
78	DA	0605	0620	1700	2	3	6	WELL 23C
79	LW	0620	0635	86	2	3	4	
90	OP	0620	0635	20,000	2	3	4	SURFACE
91	NB	0620	0635	113	2	3	4	
101	DA	0620	0635	96	2	3	4	
102	LW	0635	0650	1700	2	3	4	SURFACE
111	OP	0635	0650	115	2	3	4	
112	NB	0635	0650	2136	2	3	4	SURFACE
122	DA	0635	0650	1,000	2	3	4	WELL 225
123	LW	0650	0705	64	2	3	4	
133	OP	0650	0705	45	2	3	4	
134	NB	0650	0705	71	2	3	4	
142	DA	0650	0705	800	2	3	4	HC156
143	LW	0705	0720	64,612	2	3	4	WELL 247
151	OP	0705	0720	128	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 5

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Pereltta, Nick Bonks

Date: 11-10-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 36 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
152	NB	0705	0720	49	2	3	4	
159	DA	0705	0720	37	2	3	4	
160	LW	0720	0735	26	2	3	4	
168	OP	0720	0735	41	2	3	4	
169	NB	0720	0735	29	2	3	4	
99	DA	0720	0735	47	2	3	4	
100	LW	0735	0750	32	2	3	4	
109	OP	0735	0750	56	2	3	4	
110	NB	0735	0750	37	2	3	4	
120	DA	0735	0750	84	2	3	4	
121	LW	0750	0805	3334	2	3	4	WELL 196
131	OP	0750	0805	67	2	3	4	
132	NB	0750	0805	55	2	3	4	
140	DA	0750	0805	83	2	3	4	
141	LW	0805	0820	72	2	3	4	
149	OP	0805	0820	113	2	3	4	
150	NB	0805	0820	71	2	3	4	
157	DA	0805	0820	6199	2	3	4	WELL 107
158	LW	0820	0835	94	2	3	4	
166	OP	0820	0835	51	2	3	4	
167	NB	0820	0835	43	2	3	4	
174	DA	0820	0835	39	2	3	4	
175	LW	0835	0850	57	2	3	4	
181	OP	0835	0850	34	2	3	4	
182	NB	0835	0850	46	2	3	4	
183	DA	0835	0850	28	2	3	4	
189	LW	0850	0905	44	2	3	4	
195	OP	0850	0905	60	2	3	4	
204	NB	0850	0805	31	2	3	4	
200	DA	0850	0905	126	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Pereira, Nick Banks

Date: 11-10-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 40 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
194	LW	0905	0920	140	2	3	4	
188	OP	0905	0920	167	2	3	4	
180	ND	0905	0920	92	2	3	4	
163	DA	0905	0920	71	2	3	4	
164	LW	0920	0935	113	2	3	4	
171	OP	0920	0935	126	2	3	4	
172	ND	0920	0935	1200	2	3	4	Well 187
178	DA	0920	0935	72	2	3	4	
179	LW	0935	0950	65	2	3	4	
186	OP	0935	0950	113	2	3	4	
187	ND	0935	0950	71	2	3	4	
192	DA	0935	0950	52	2	3	4	
193	LW	0950	1005	38	2	3	4	
198	OP	0950	1005	27	2	3	4	
199	ND	0950	1005	37	2	3	4	
202	DA	0950	1005	41	2	3	4	
203	LW	1005	1020	26	2	3	4	
206	OP	1005	1020	58	2	3	4	
207	ND	1005	1020	24	2	3	4	
208	DA	1005	1020	37	2	3	4	
205	LW	1020	1035	69	2	3	4	
207	OP	1020	1035	52	2	3	4	
196	ND	1020	1035	37	2	3	4	
197	DA	1020	1035	19	2	3	4	
190	LW	1035	1050	28	2	3	4	
191	OP	1035	1050	65	2	3	4	
184	ND	1035	1050	800	2	3	4	Black pipe
185	DA	1035	1050	42	2	3	4	
176	LW	1050	1105	26	2	3	4	
177	OP	1050	1105	77	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 5

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wyatt, Dwight Anderson, Dack Perkell?, Nick Banks

Date: 11-10-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 48 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
170	NB	1050	1105	49	2	3	4	
161	OA	1050	1105	32	2	3	4	
162	LW	1105	1120	38	2	3	4	
153	OP	1105	1120	75	2	3	4	
154	NB	1105	1120	81	2	3	4	
145	OA	1105	1120	50	2	3	4	
146	LW	1150	1205	92	1	2	4	
136	OP	1150	1205	4,200	1	2	4	Blackpipe
137	NB	1150	1205	79	1	2	4	
127	OA	1150	1205	56	1	2	4	
128	LW	1205	1220	115	1	2	4	
129	OP	1205	1220	65	1	2	4	
130	NB	1205	1220	42	1	2	4	
116	OA	1205	1220	71	1	2	4	
117	LW	1220	1235	50	1	2	4	
118	OP	1220	1235	94	1	2	4	
119	NB	1220	1235	65	1	2	4	
105	OA	1220	1235	71	1	2	4	
106	LW	1235	1250	48	1	2	4	
107	OP	1235	1250	113	1	2	4	
108	NB	1235	1250	42	1	2	4	
95	OA	1235	1250	16,632	1	2	4	Black cap
96	LW	1250	1305	72	1	2	4	
97	OP	1250	1305	31	1	2	4	
98	NB	1250	1305	45	1	2	4	
83	OA	1250	1305	1,100	1	2	4	Blk pipe 18UE
84	LW	1305	1320	129	1	2	4	
85	OP	1305	1320	1,000	1	2	4	SURFACE
86	NB	1305	1320	2,000	1	2	4	Blackpipe
87	OA	1305	1320	23977	1	2	4	White cap

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade | Dwight Anderson
Orchpenocha
Nick Benki

Date: 11-10-20 Instrument Used: TVA 1000 Grid Spacing: 25'

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

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
88	LW	1320	1335	125	1	2	4	
89	OP	1320	1335	86	1	2	4	
76	NB	1320	1335	61	1	2	4	
77	DA	1320	1335	92	1	2	4	
70	LW	1335	1350	84	1	2	4	
71	OP	1335	1350	117	1	2	4	
64	NB	1335	1350	4,000	1	2	4	CAP WELL
65	DA	1335	1350	92	1	2	4	
58	LW	1350	1405	64	1	2	4	
53	OP	1350	1405	87	1	2	4	
48	NB	1350	1405	10,000	1	2	4	SURFACE
43	DA	1350	1405	730	1	2	4	white cap
44	LW	1405	1420	77	1	2	4	
38	OP	1405	1420	61	1	2	4	
39	NB	1405	1420	95	1	2	4	
33	DA	1405	1420	916	1	2	4	white CAP
34	LW	1420	1435	136	1	2	4	
28	OP	1420	1435	2500	1	2	4	sump 8
29	NB	1420	1435	150	1	2	4	
24	DA	1420	1435	118	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

Attachment B

Integrated Surface Emission Monitoring Event Records

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

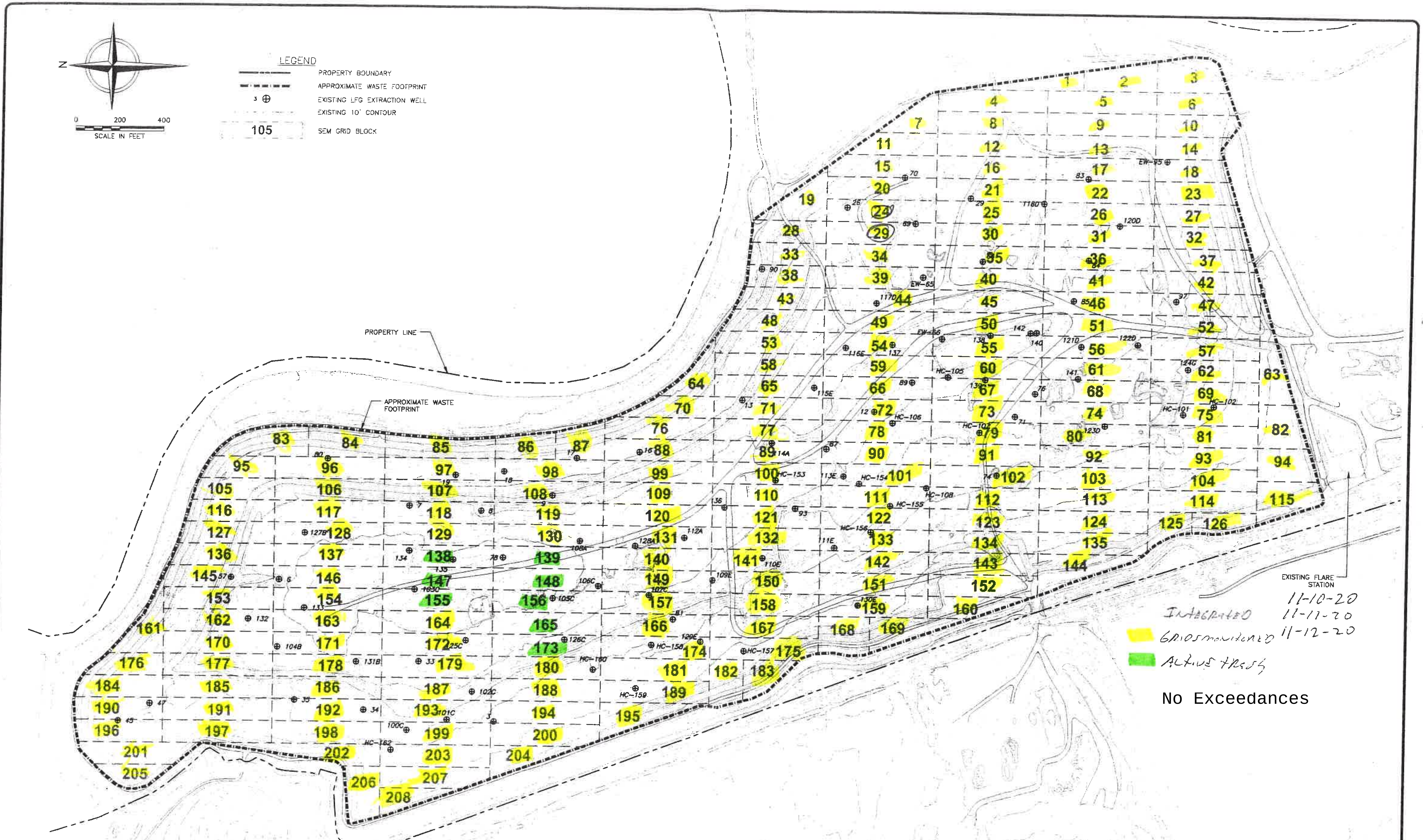
2020 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: R. Reed

LANDFILL NAME: Redwood Landfill, Inc.

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



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

WASTE MANAGEMENT

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

cornerstone environmental
PREPARED BY CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING GRID MAP

SHEET NO 1
PROJECT NO 140521

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE — DWIGHT ANDERSON
OMAR PERALTA
NICK BENICI

Cal. Gas Exp. Date: 9-21-21

Date: 11-10-20 Instrument Used: TVA1000 Grid Spacing: 25'

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

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	1445	1510	4.81	2	3	4	
2	OP	1445	1510	6.12	2	3	4	
3	NB	1445	1510	6.54	2	3	4	
4	DA	1445	1510	5.12	2	3	4	
5	LW	1510	1535	6.07	2	3	4	
6	OP	1510	1535	4.92	2	3	4	
7	NB	1510	1535	8.51	2	3	4	
8	DA	1510	1535	6.22	2	3	4	
9	LW	1535	1600	6.39	2	3	4	
10	OP	1535	1600	5.50	2	3	4	
11	NB	1535	1600	12.75	2	3	4	
12	DA	1535	1600	21.32	2	3	4	
13	LW	1600	1625	5.77	2	3	4	
14	OP	1600	1625	6.38	2	3	4	
15	NB	1600	1625	14.96	2	3	4	
16	DA	1600	1625	22.36	2	3	4	
17	LW	1625	1650	5.89	2	3	4	
18	OP	1625	1650	6.79	2	3	4	
22	NB	1625	1650	6.57	2	3	4	
23	DA	1625	1650	5.43	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

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

Date: 11-10-20 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	
138								Active-Trash
139								
147								
148								
155								
156								
165								
173								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Lois Wadt ___ Dwight Ardonsiv ___ ___
Oren Pencela
Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 11-11-20 Instrument Used: TVA1000 Grid Spacing: 25

Temperature: 47 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
25	LW	0530	0555	11.64	3	4	4	
26	OP	0530	0555	6.31	3	4	4	
27	NB	0530	0555	5.54	3	4	4	
30	DA	0530	0555	13.50	3	4	4	
31	LW	0555	0620	6.70	3	4	4	
32	OP	0555	0620	5.47	3	4	4	
35	NB	0555	0620	8.71	3	4	4	
36	DA	0555	0620	5.32	3	4	4	
37	LW	0620	0645	6.14	3	4	3	
40	OP	0620	0645	5.77	3	4	3	
41	NB	0620	0645	5.94	3	4	3	
42	DA	0620	0645	6.07	3	4	3	
45	LW	0645	0710	5.32	3	5	4	
46	OP	0645	0710	6.81	3	5	4	
47	NB	0645	0710	6.06	3	5	4	
51	DA	0645	0710	5.34	3	5	4	
52	LW	0710	0735	5.10	2	3	4	
56	OP	0710	0735	7.18	2	3	4	
57	NB	0710	0735	6.94	2	3	4	
61	DA	0710	0735	5.40	2	3	4	
62	LW	0735	0800	7.18	2	3	4	
63	OP	0735	0800	6.10	2	3	4	
68	NB	0735	0800	9.33	2	3	4	
69	DA	0735	0800	6.45	2	3	4	
74	LW	0800	0825	8.58	3	5	16	
75	OP	0800	0825	6.27	3	5	16	
80	NB	0800	0825	9.55	3	5	16	
81	DA	0800	0825	6.11	3	5	16	
82	LW	0825	0850	6.36	4	5	16	
92	OP	0825	0850	10.45	4	5	16	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade | Dwight Anderson |
Oren Penalta
Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 11-11-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 51 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
93	NB	0825	0850	6.02	4	5	16	
94	DA	0825	0850	5.45	4	5	16	
103	LW	0850	0915	8.70	4	6	16	
104	OP	0850	0915	6.98	4	6	16	
113	NB	0850	0915	7.54	4	6	16	
114	DA	0850	0915	9.12	4	6	16	
115	LW	0915	0940	8.45	3	4	16	
124	OP	0915	0940	9.70	3	4	16	
125	NB	0915	0940	7.45	3	4	16	
126	DA	0915	0940	7.10	3	4	16	
135	LW	0940	1005	8.65	3	4	16	
144	OP	0940	1005	7.41	3	4	16	
49	NB	0940	1005	9.81	3	4	16	
50	DA	0940	1005	11.60	3	4	16	
54	LW	1005	1030	9.12	3	4	16	
55	OP	1005	1030	10.41	3	4	16	
59	NB	1005	1030	8.65	3	4	16	
60	DA	1005	1030	9.74	3	4	16	
66	LW	1030	1055	6.18	2	3	16	
67	OP	1030	1055	9.40	2	3	16	
72	NB	1030	1055	10.40	2	3	16	
73	DA	1030	1055	8.61	2	3	16	
78	LW	1055	1120	9.45	2	3	8	
79	OP	1055	1120	10.75	2	3	8	
90	NB	1055	1120	10.60	2	3	8	
91	DA	1055	1120	9.98	2	3	8	
101	LW	1120	1145	14.77	2	3	4	
102	OP	1120	1145	11.65	2	3	4	
111	NB	1120	1145	9.48	2	3	4	
112	DA	1120	1145	13.62	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Vanet, Dwight Anderson, Omar Paredes, Nick Banks

Cal. Gas Exp. Date: 9-21-20

Date: 11-11-20 Instrument Used: TVA1000 Grid Spacing: 25'

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

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
152	LV	1145	1210	7.54	2	3	4	
159	OP	1145	1210	6.96	2	3	4	
160	ND	1145	1210	6.14	2	3	4	
168	DA	1145	1210	8.23	2	3	4	
169	LV	1210	1235	6.84	1	2	3	
99	OP	1210	1235	11.16	1	2	3	
100	ND	1210	1235	9.58	1	2	3	
109	DA	1210	1235	7.22	1	2	3	
110	LV	1235	1300	6.40	1	2	3	
120	OP	1235	1300	8.36	1	2	3	
121	ND	1235	1300	8.88	1	2	3	
131	DA	1235	1300	5.60	1	2	3	
132	LV	1300	1325	8.03	1	2	3	
140	OP	1300	1325	7.45	1	2	3	
141	ND	1300	1325	12.72	1	2	3	
149	DA	1300	1325	14.68	1	2	3	
150	LV	1325	1350	16.32	1	3	3	
157	OP	1325	1350	12.11	1	3	3	
158	ND	1325	1350	13.65	1	3	3	
166	DA	1325	1350	9.21	1	3	3	
167	LV	1350	1415	7.35	1	3	4	
174	OP	1350	1415	6.15	1	3	4	
175	ND	1350	1415	6.09	1	3	4	
181	DA	1350	1415	6.24	1	3	4	
182	LV	1415	1440	5.99	1	2	4	
183	OP	1415	1440	6.72	1	2	4	
189	ND	1415	1440	6.34	1	2	4	
195	DA	1415	1440	6.78	1	2	4	
204	LV	1440	1505	5.77	1	2	4	
200	OP	1440	1505	16.32	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Ward | Dwight Atkinson |
Owen Pancitn
Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 11-11-20 Instrument Used: TVA 1000 Grid Spacing: 25'

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

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
194	NB	1440	1505	23.21	1	2	4	
188	DA	1440	1505	21.70	1	2	4	
180	LW	1505	1530	6.18	2	3	4	
163	OP	1505	1530	5.94	2	3	4	
164	NB	1505	1530	6.29	2	3	4	
171	DA	1505	1530	5.92	2	3	4	
172	LW	1530	1555	4.68	2	3	16	
178	OP	1530	1555	8.76	2	3	16	
179	NB	1530	1555	5.64	2	3	16	
186	DA	1530	1555	9.45	2	3	16	
187	LW	1555	1620	5.41	2	3	16	
192	OP	1555	1620	6.98	2	3	16	
193	NB	1555	1620	7.13	2	3	16	
198	DA	1555	1620	6.13	2	3	16	
199	LW	1620	1645	7.51	2	3	16	
202	OP	1620	1645	5.82	2	3	16	
203	NB	1620	1645	8.59	2	3	16	
206	DA	1620	1645	9.62	2	3	16	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade / Dwight Anderson
Orernponcltr
Nick Banks
Cal. Gas Exp. Date: 9-21-21

Date: 11-12-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 30 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
122	LW	0535	0600	10.38	2	3	4	
123	OP	0535	0610	8.60	2	3	4	
133	NB	0535	0600	12.64	2	3	4	
134	DA	0535	0600	9.17	2	3	4	
142	LW	0600	0625	10.77	2	3	4	
143	OP	0600	0625	8.02	2	3	4	
151	NB	0600	0825	14.39	2	3	4	
207	DA	0600	0625	5.64	2	3	4	
208	LW	0625	0650	6.18	2	3	4	
205	OP	0625	0650	5.96	2	3	4	
201	NB	0625	0650	6.30	2	3	4	
198	DA	0625	0650	5.82	2	3	4	
197	LW	0650	0715	4.77	2	3	4	
190	OP	0650	0715	5.66	2	3	4	
191	NB	0650	0715	5.40	2	3	4	
184	DA	0650	0715	8.25	2	3	4	
185	LW	0715	0740	7.11	1	2	4	
176	OP	0715	0740	6.13	1	2	4	
177	NB	0715	0740	7.40	1	2	4	
170	DA	0715	0740	7.06	1	2	4	
161	LW	0740	0805	5.92	1	2	4	
162	OP	0740	0805	7.24	1	2	4	
153	NB	0740	0805	8.57	1	2	4	
154	DA	0740	0805	8.09	1	2	4	
145	LW	0805	0830	5.64	1	2	8	
146	OP	0805	0830	7.32	1	2	8	
136	NB	0805	0830	8.15	1	2	8	
137	DA	0805	0830	10.24	1	2	8	
127	LW	0830	0855	7.08	1	2	4	
128	OP	0830	0855	10.41	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Pereira, Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 11-17-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 45 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
129	NB	0830	0855	7.75	1	2	4	
130	DA	0830	0855	8.16	1	2	4	
116	LW	0855	0920	5.41	1	2	4	
117	OP	0855	0920	6.96	1	2	4	
118	NB	0855	0920	8.14	1	2	4	
119	DA	0855	0920	7.22	1	2	4	
105	LW	0920	0945	7.31	1	2	4	
106	OP	0920	0945	6.84	1	2	4	
107	NB	0920	0945	6.51	1	2	4	
108	DA	0920	0945	7.23	1	2	4	
95	LW	0945	1010	8.55	1	2	4	
96	OP	0945	1010	7.79	1	2	4	
97	NB	0945	1010	9.27	1	2	4	
98	DA	0945	1010	6.84	1	2	4	
83	LW	1010	1035	7.23	1	2	8	
84	OP	1010	1035	7.41	1	2	8	
85	NB	1010	1035	7.38	1	2	8	
86	DA	1010	1035	6.45	1	2	8	
87	LW	1035	1100	7.38	1	2	10	
88	OP	1035	1100	6.92	1	2	10	
89	NB	1035	1100	8.55	1	2	10	
76	DA	1035	1100	8.20	1	2	10	
77	LW	1100	1125	7.94	1	2	8	
70	OP	1100	1125	8.96	1	2	8	
71	NB	1100	1125	8.12	1	2	8	
64	DA	1100	1125	9.71	1	2	8	
65	LW	1125	1150	7.55	1	3	8	
58	OP	1125	1150	6.92	1	3	8	
53	NB	1125	1150	8.31	1	3	8	
48	DA	1125	1150	7.24	1	3	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE; DWIGHT ANDERSON; OMAR PERALTA; NICK BANKS

Cal. Gas Exp. Date: 9-21-20

Date: 11-12-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 2.6 Downwind BG: 3.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
43	LW	1150	1215	8.21	1	2	8	
44	OP	1150	1215	7.94	1	2	8	
38	ND	1150	1215	21.47	1	2	8	
39	DA	1150	1215	13.26	1	2	8	
33	LW	1215	1240	20.17	1	2	8	
34	OP	1215	1240	11.54	1	2	8	
28	ND	1215	1240	15.73	1	2	8	
29	DA	1215	1240	9.77	1	2	8	
24	LW	1240	1305	21.55	1	3	8	
19	OP	1240	1305	23.56	1	3	8	
20	ND	1240	1305	19.28	1	3	8	
21	DA	1240	1305	23.67	1	3	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 3

Attachment C

Component Leak Monitoring Event Records

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

2020 QUARTER: 4
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: R. Reed
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

2020 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: R. Reed

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:
TECHNICIAN: LEIGH WADE

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

ASI FLARE

LANDFILL NAME: REDWOOD
QUARTERLY LFG COMPONENT LEAK MONITORING

INSTRUMENT FID
MAKE: Micro FID
MODEL:
S/N: LZMF340

DATE OF SAMPLING: 12-11-2020
TECHNICIAN: Ben Tarver / Ed Kunp

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)
NONE	N/A	N/A	BEN TARVER	—	—	—	—

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

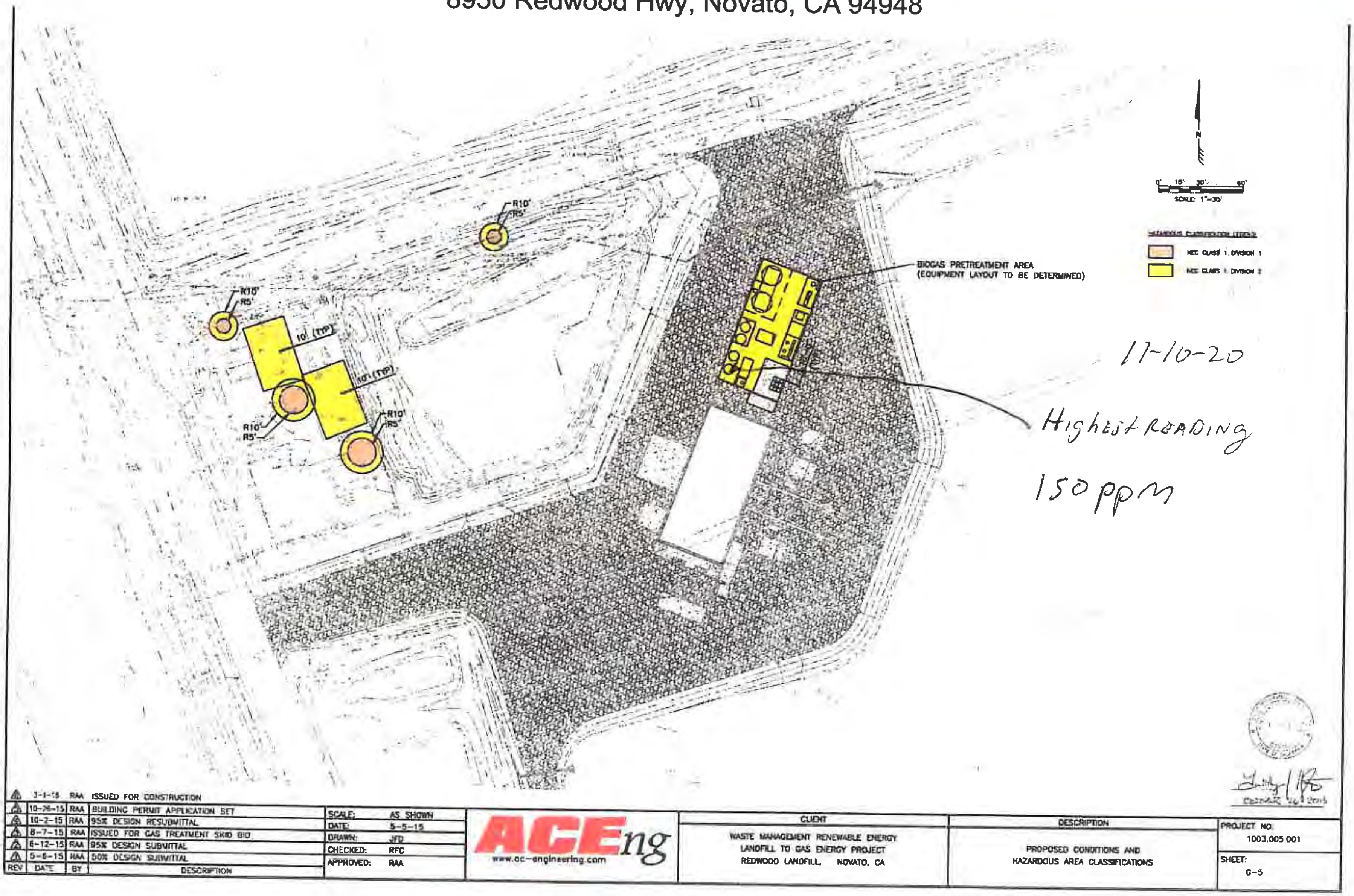
NOTE: Leaks over 500 ppmv methane are exceedances at any component containing landfill gas, pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B).

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

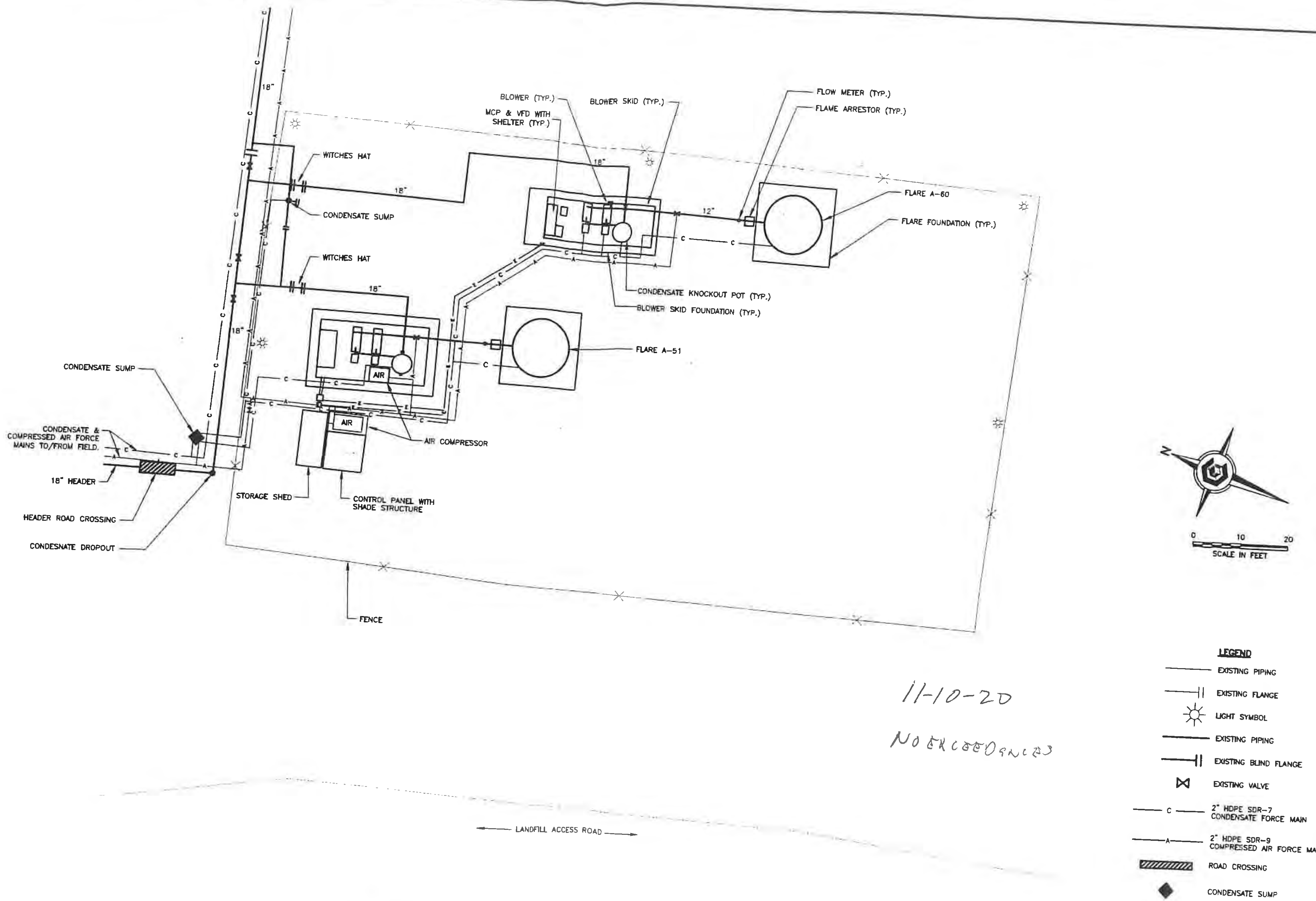
REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948



7/25/2017



11-10-20

NO EXCEEDANCES

DRAFT

WASTE MANAGEMENT

PAUL J. STOUT, P.E

P.E Lic No C52827 Date

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE

DRAWN BY / DESIGNED BY / CHECKED BY / APPROVED BY

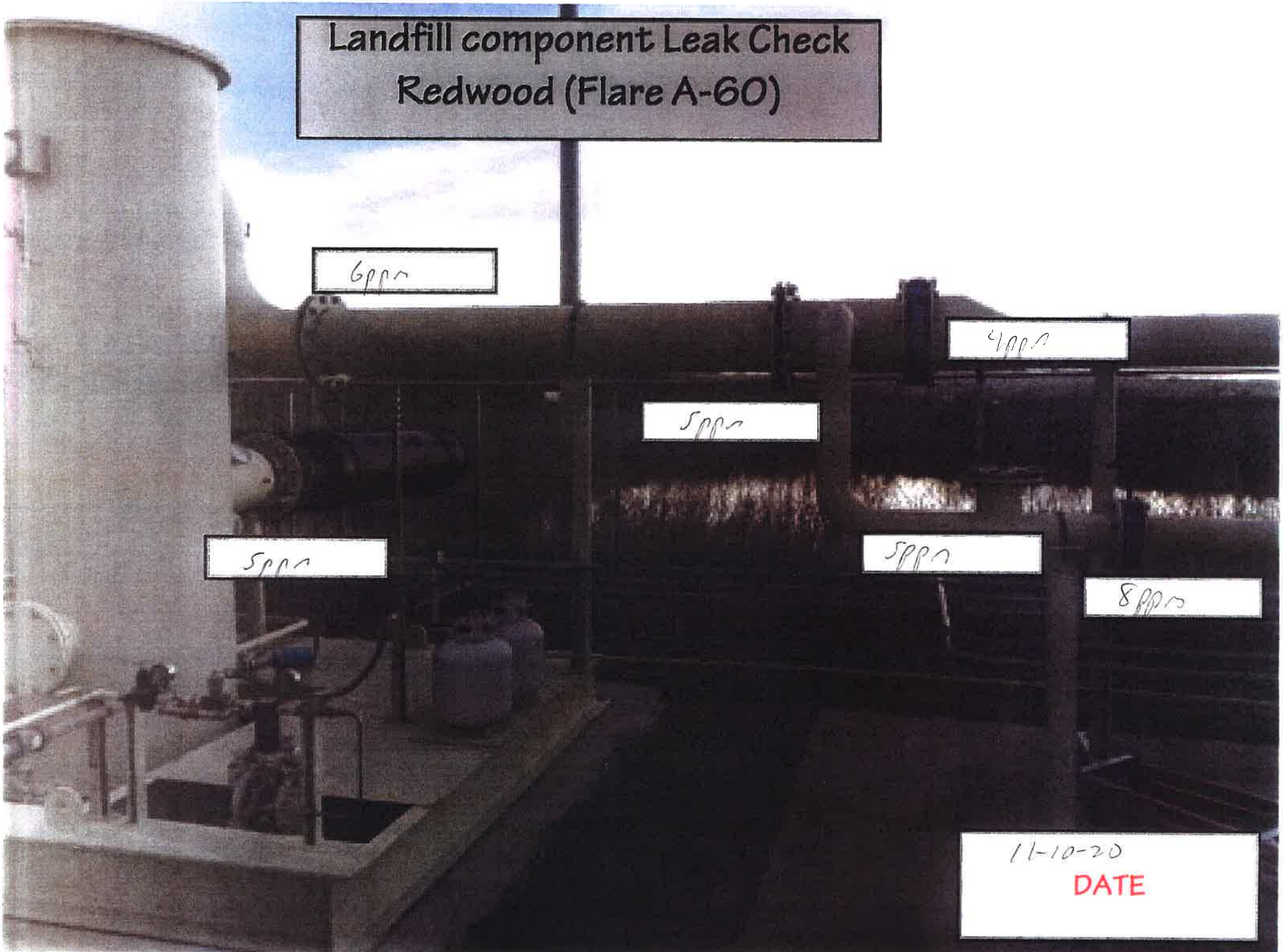
CORNERSTONE Environmental Group, LLC

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

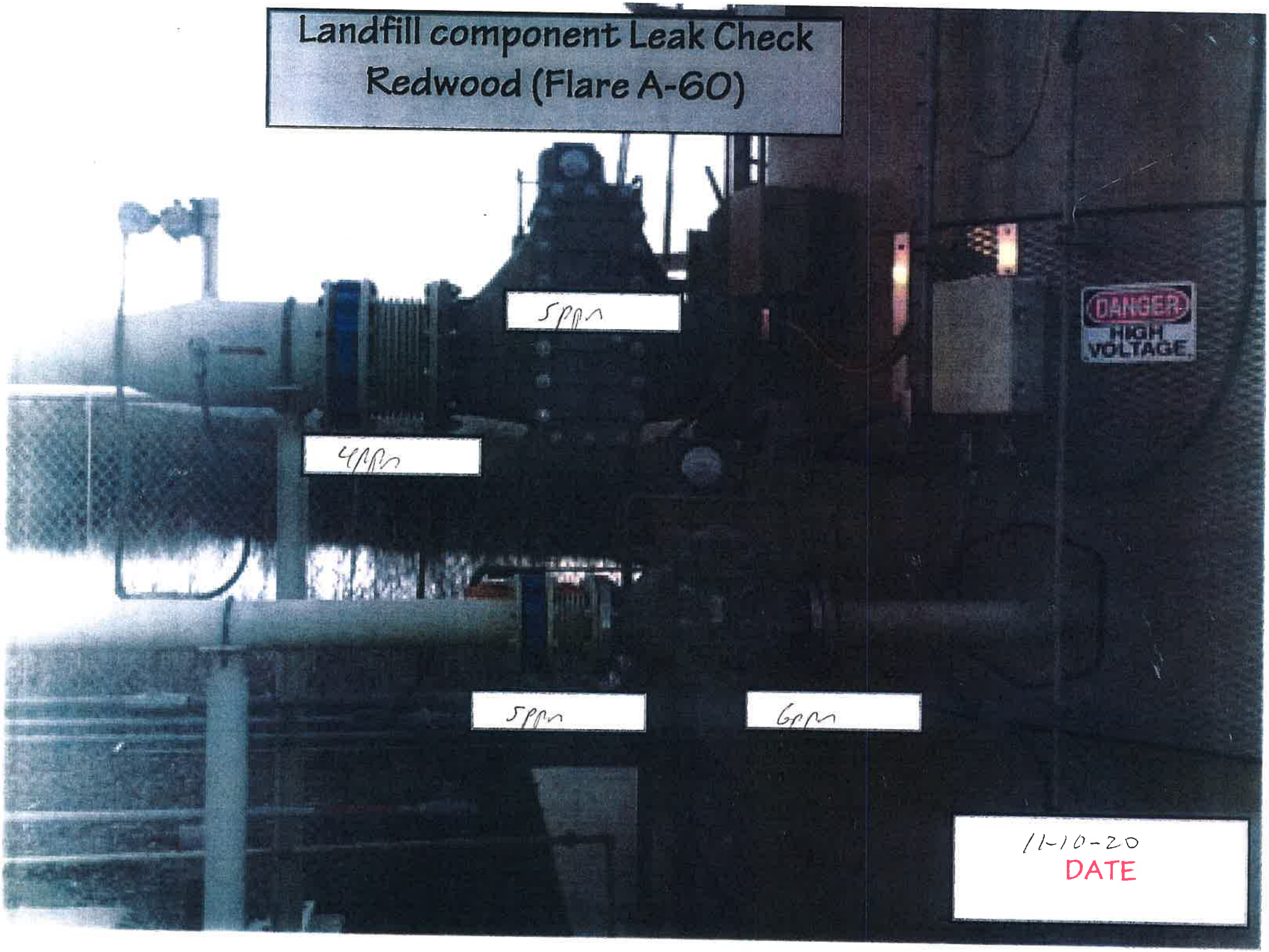
LFG FLARE AND GCCS AS-BUILT FACILITY SITE PLAN

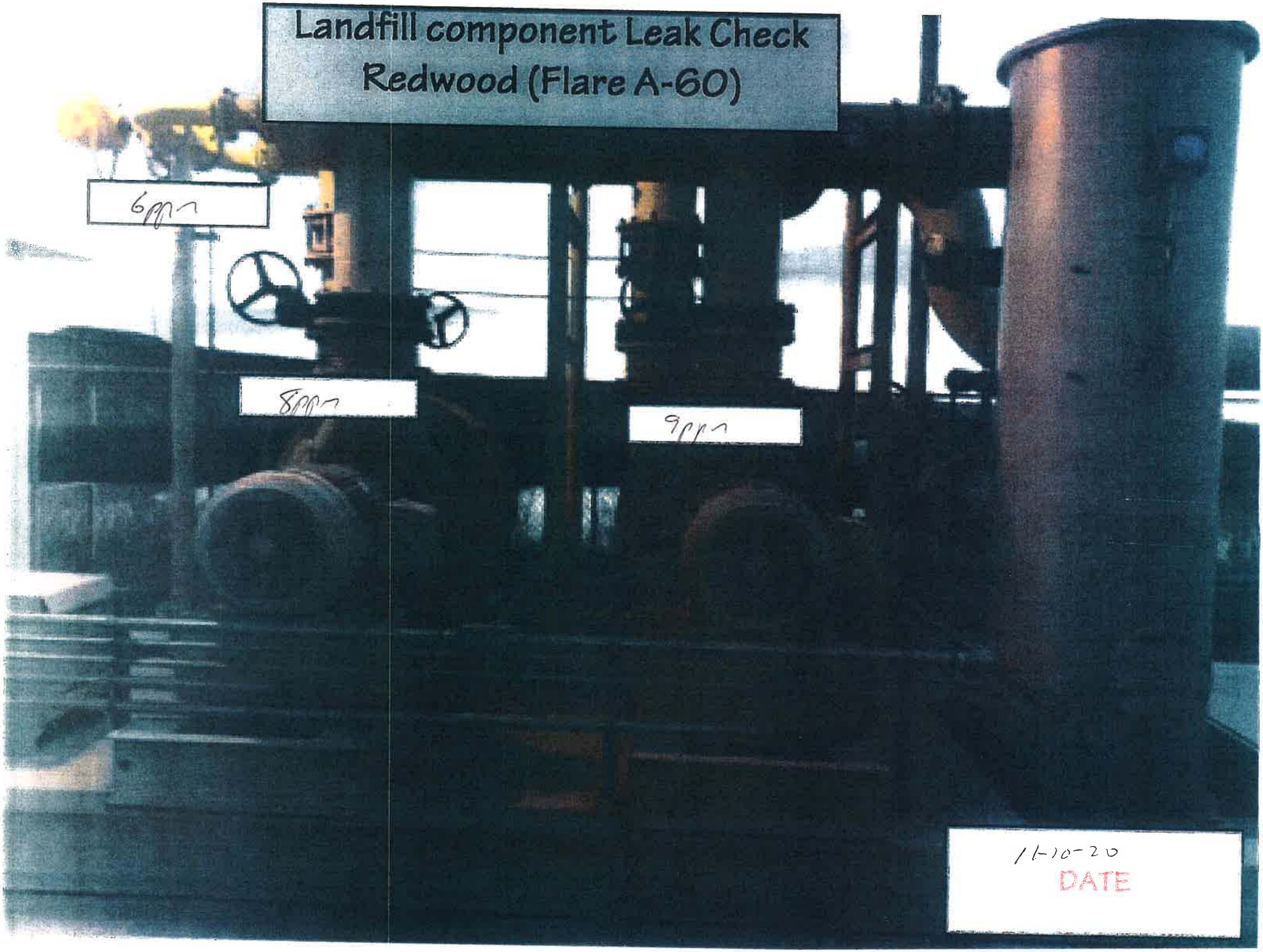
SHEET NO
1

PROJECT NO


Landfill component Leak Check
Redwood (Flare A-60)
6ppm
4ppm
5ppm
5ppm
5ppm
8ppm
11-10-20
DATE

Landfill component Leak Check
Redwood (Flare A-60)

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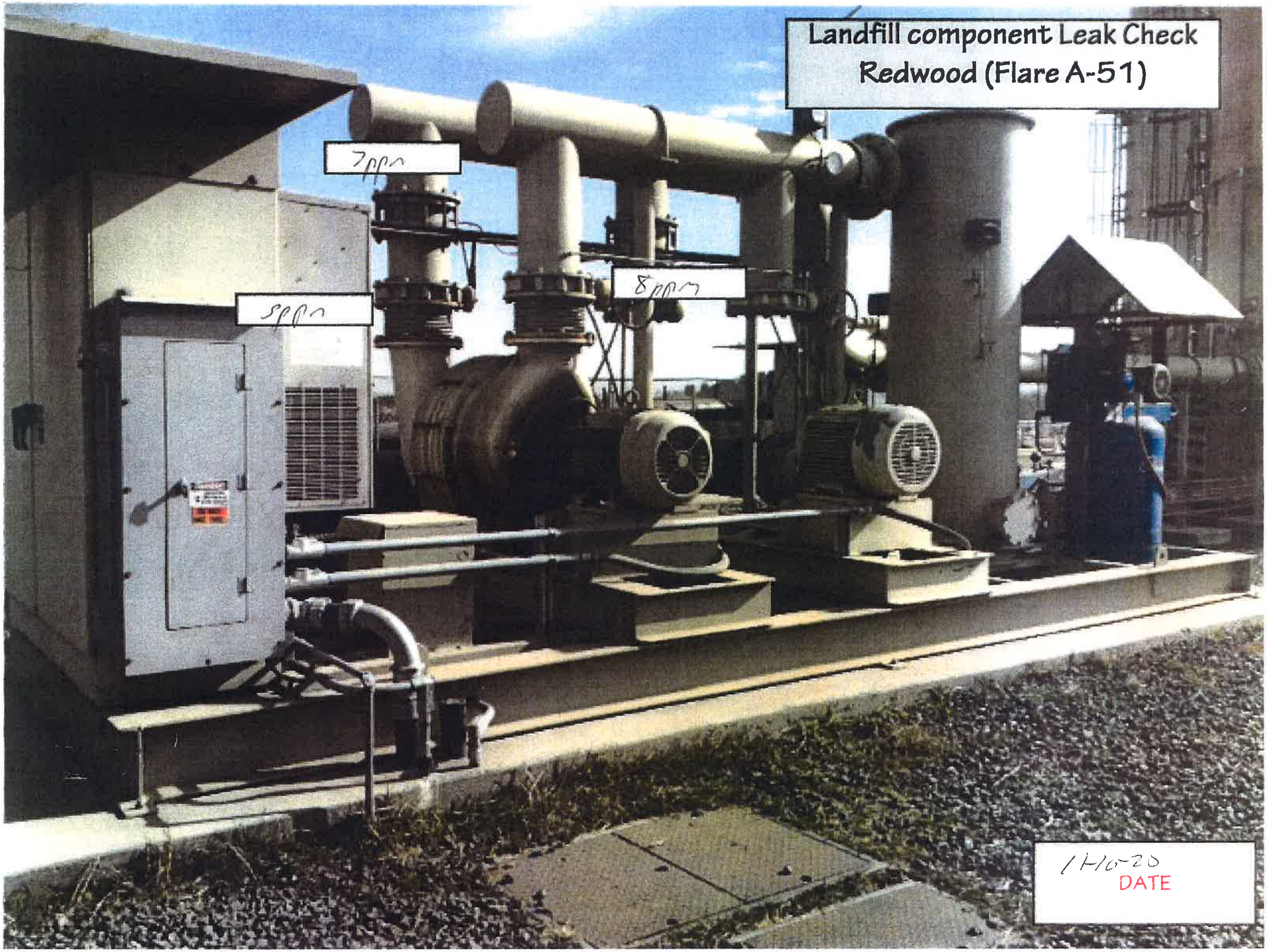
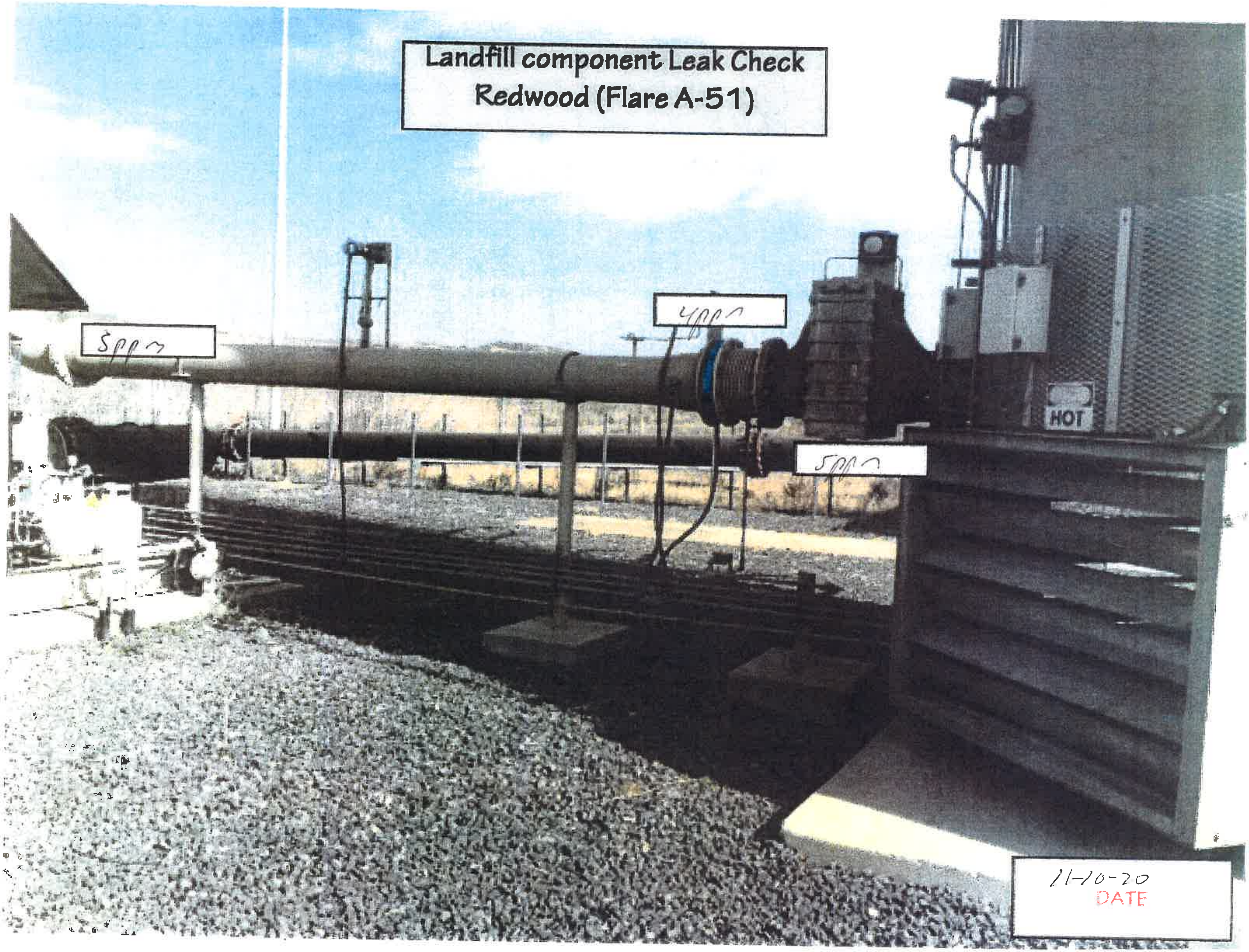
Redwood (Flare A-60)
6ppm
8ppm
9ppm
11-10-20
DATE



Landfill component Leak Check
Redwood (Flare A-51)
7ppm
8ppm
5ppm
1-16-20
DATE


Landfill component Leak Check
Redwood (Flare A-51)
5ppm
4ppm
5ppm
HOT
11-10-20
DATE

Attachment D

Weather Station Data

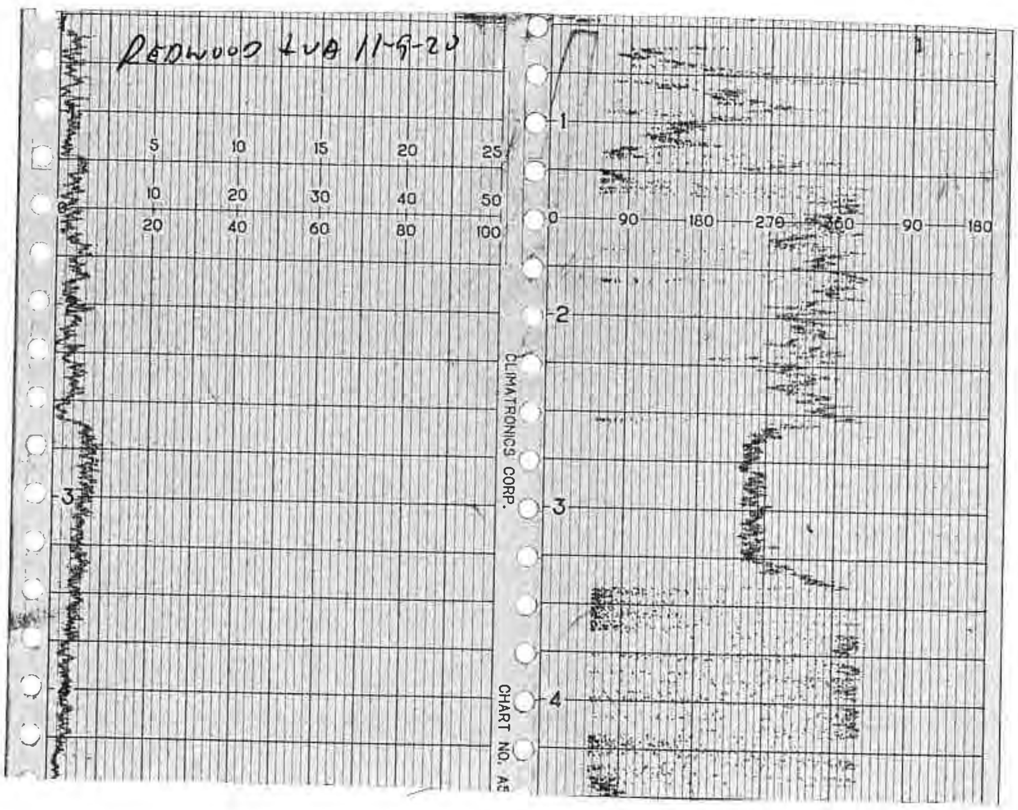
RES Environmental Inc.

16-POINT WIND DIRECTION INDEX

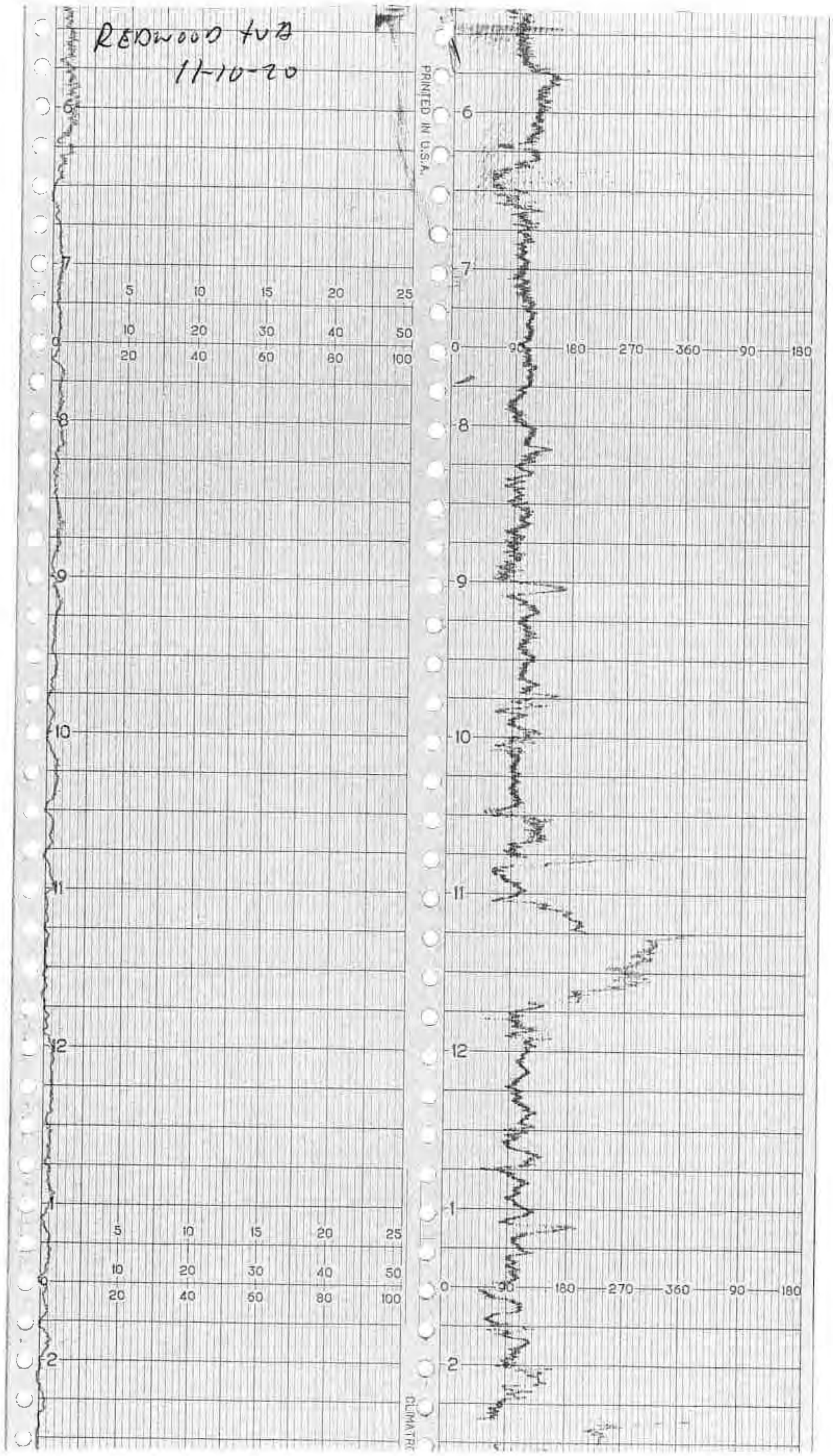
NO	DIRECTION	DEGREES FROM	DEGREES CENTER	DEGREES TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3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

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

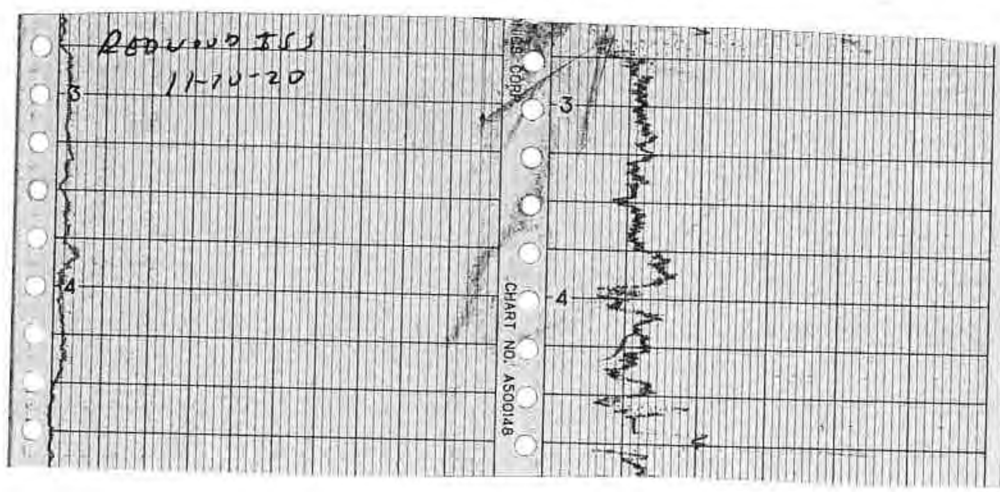
WIND SPEED & DIRECTION CHART ROLL

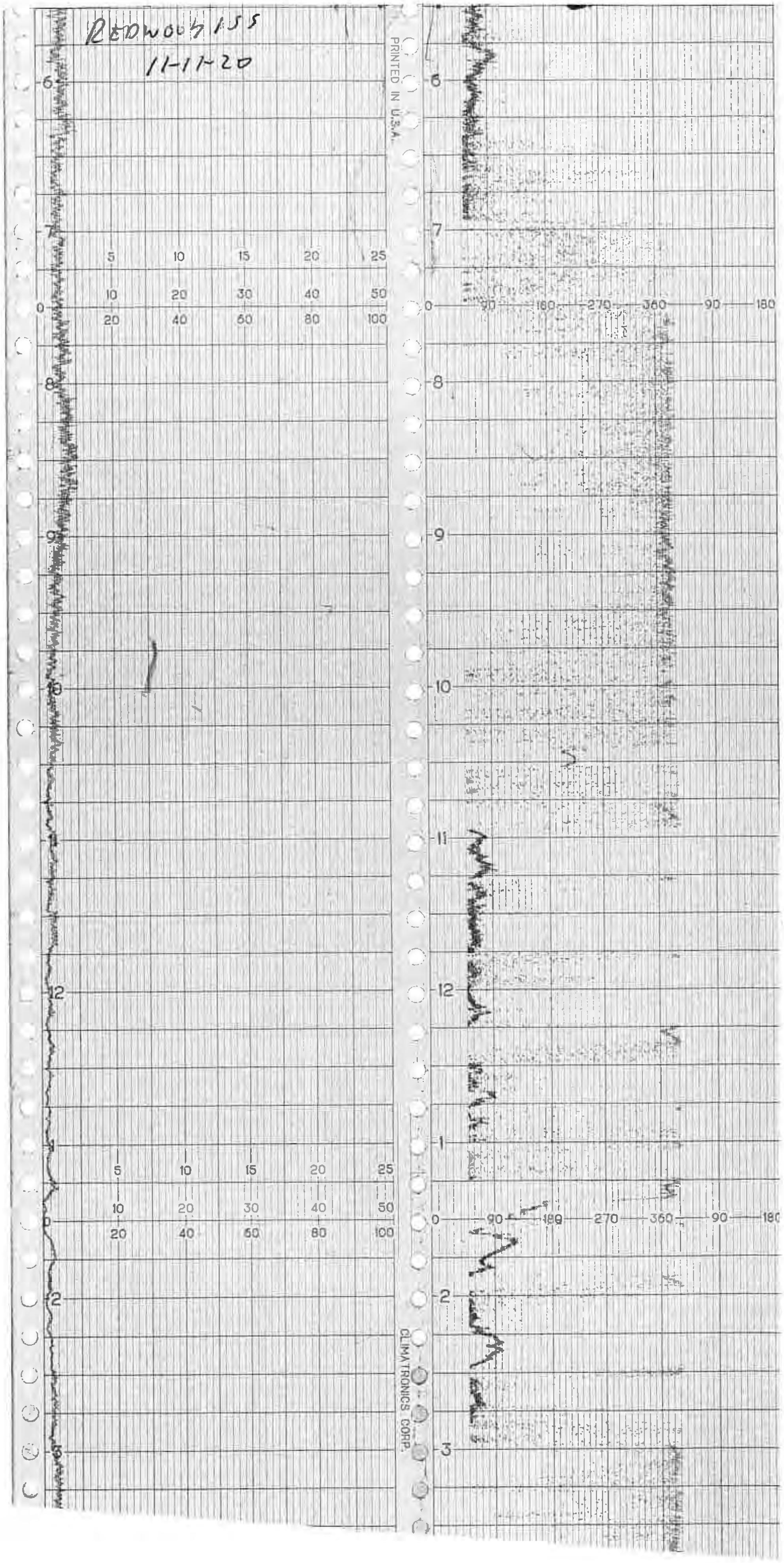


WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL





REDWOOD 155
11-1-20
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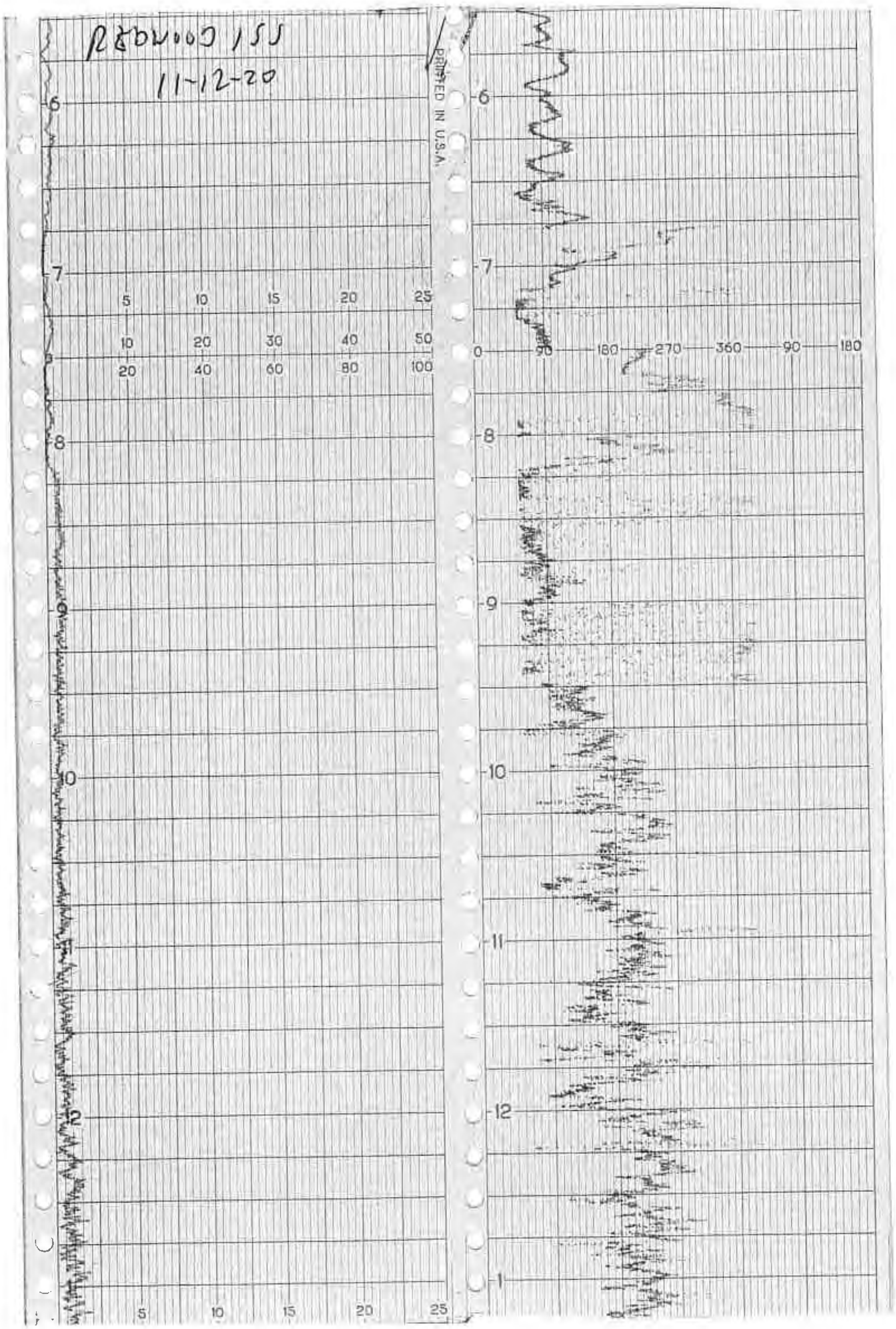
CLIMATRONICS CORP.

WIND SPEED & DIRECTION CHART ROLL



Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 10-30-20

Expiration Date (3 months): 1-30-21

Time: 07:55 AM _______ PM

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

Measurement #1:

Stabilized Reading Using Calibration Gas: 498 ppm
90% of the Stabilized Reading: 448 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 4 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 498 ppm
90% of the Stabilized Reading: 448 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 3 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 497 ppm
90% of the Stabilized Reading: 447 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 4 seconds (c)

Calculate Response Time:

$\frac{(a) + (b) + (c)}{3}$ = 3.6 seconds (must be less than 30 seconds)

Performed By: Rick Reed

CALIBRATION PRECISION TEST RECORD

Date: 10-30-20

Expiration Date (3 months): 1-30-21

Time: 07:55 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: 498 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0.0 ppm (c)

Meter Reading for Calibration Gas: 498 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0.0 ppm (e)

Meter Reading for Calibration Gas: 497 ppm (f)

Calculate Precision:

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

0.46 % (must be < than 10%)

Performed By: Rick Reed

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 11/17/20

Time: ______ AM 12:20 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 = 499 ppm

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: RReed

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill   Date: 11/18/20

Time: 07:55 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 ppm

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: RReed

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: ~~Altamont~~ Redwood Landfill Date: 11-19-20

Time: ______ AM 12:30 PM

Instrument Make: PhotoVac Model: Micro FID 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 = 499 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: [signature]

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 12-7-20

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 ppm

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: [signature]

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 12-08-20

Time: 7:40 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 ppm

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: [signature]

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill   Date: 12-11-2020

Time: 9:30 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 ppm

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: [signature]

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-9-20 TIME: 1225

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	490 ppm	440 ppm	6
#2	501 ppm	451 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	0.25 ppm	490 ppm	10
#2	0.16 ppm	501 ppm	1
#3	0.13 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		0.73 #DIV/0! Must be less than 10%

Performed By: Leigh Warner Date/Time: 11-9-20-1225

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

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

MONITORING DATE: 11-9-20 TIME: ____

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	506 ppm	456 ppm	5
#2	498 ppm	448 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.16 ppm	506 ppm	6
#2	0.11 ppm	498 ppm	2
#3	0.09 ppm	500 ppm	0
Calculate Precision	([STD-B1] + [STD-B2] + [STD-B3]) / 3 X 1/500 X 100/1		0.53 #DIV/0! Must be less than 10%

Performed By: Omar Pineda Date/Time: 11-9-20-1225

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 2000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-9-20 TIME: 1225

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	489 ppm	439 ppm	7
#2	495 ppm	445 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	0.31 ppm	489 ppm	11
#2	0.22 ppm	495 ppm	5
#3	0.15 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		#DIV/0! Must be less than 10%

Performed By: Nick Bevis Date/Time: 11-9-20 1225

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: TI Thermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 11027467?S

MONITORING DATE: 11-9-20 TIME: 1225

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	492 ppm	442 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	0.19 ppm	492 ppm	8
#2	0.15 ppm	500 ppm	0
#3	0.10 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.53 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 11-9-20-1225

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1636346777

MONITORING DATE: 11-10-20 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
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	506 ppm	456 ppm	7
#2	499 ppm	449 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	0.29 ppm	506 ppm	6
#2	0.18 ppm	499 ppm	1
#3	0.14 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: LDU Lwnoz Date/Time: 12-10-20-0515

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL TVA 1000 EQUIPMENT #: 11 SERIAL #: 1026346774
MONITORING DATE: 11-10-20 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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	491 ppm	441 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	0.20 ppm	491 ppm	9
#2	0.14 ppm	500 ppm	0
#3	0.08 ppm	500 ppm	0
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 Omar Penaloza Date/Time 12-10-20 - 0515

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: tHermo

MODEL TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-10-20 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
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	495 ppm	445 ppm	6
#2	501 ppm	451 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	0.34 ppm	495 ppm	5
#2	0.16 ppm	501 ppm	1
#3	0.10 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.40 #DIV/0! Must be less than 10%

Performed By Nick Banks Date/Time 11-10-20 0515

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 11-10-20 TIME: 0515

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 510 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

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

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	489 ppm	439 ppm	7
#2	495 ppm	445 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	0.27 ppm	489 ppm	11
#2	0.21 ppm	455 ppm	5
#3	0.16 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		1.0 #DIV/0! Must be less than 10%

Performed By Dwight Anderson Date/Time 11-10-20 -0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1026346773

MONITORING DATE: 11-10-20 TIME: 1440

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time $\frac{(1+2+3)}{3}$			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	0.24 ppm	24 ppm	1
#2	0.17 ppm	25 ppm	0
#3	0.10 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: LEIGH WADE Date/Time: 11-10-20 1440

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

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

MONITORING DATE: 11-10-20 TIME: 1440

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

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

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.11 ppm	24 ppm	1
#2	0.09 ppm	24 ppm	1
#3	0.06 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: Omar Pereira Date/Time: 11-10-20-1440

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

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

MONITORING DATE: 11-10-20 TIME: 1440

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = ________ ppm

INSTRUMENT RESPONSE TIME RECORD

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

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.25 ppm	23 ppm	2
#2	0.14 ppm	24 ppm	1
#3	0.11 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		.4.0 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 11-10-20-1440.

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: tHermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 11-10-20 TIME: 1440

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	7
#2	25 ppm	22.5 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	0.30 ppm	24 ppm	1
#2	0.16 ppm	25 ppm	0
#3	0.11 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: DWIGHT ANDERSON Date/Time: 11-10-20-1440

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-11-20 TIME: 0525

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

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

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.27 ppm	24 ppm	1
#2	0.16 ppm	25 ppm	0
#3	0.11 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By: Leigh Wade Date/Time: 11-11-20 0525

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

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

MONITORING DATE: 11-11-20 TIME: 0525

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 25 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	0.34 ppm	23 ppm	2
#2	0.19 ppm	25 ppm	0
#3	0.10 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Omar Pardo [illegible] Date/Time: 11-11-20 -0525

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THermo

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-11-20 TIME: 0525

Calibration Procedure:

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

Background Determination Procedure

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

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	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	0.42 ppm	24 ppm	1
#2	0.27 ppm	24 ppm	1
#3	0.18 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: Nick Banks Date/Time: 11-11-20-0525

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 11-11-20 TIME: 0525

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	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	0.20 ppm	24 ppm	1
#2	0.13 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: Dwight Ambrose Date/Time: 11-11-20-0525

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-12-20 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
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

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

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.25 ppm	24 ppm	1
#2	0.14 ppm	25 ppm	0
#3	0.10 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		.1.3 #DIV/0! Must be less than 10%

Performed By: Leigh Wade Date/Time: 11-12-20-0530

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Flirano

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

MONITORING DATE: 11-12-20 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
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	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	0.32 ppm	23 ppm	2
#2	0.19 ppm	24 ppm	1
#3	0.11 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By: Omar Pomacita Date/Time: 11-12-20 -0530

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: thermo

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

MONITORING DATE: 11-12-20 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
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	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	0.26 ppm	24 ppm	1
#2	0.18 ppm	24 ppm	1
#3	0.15 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: Nicole Banks Date/Time: 11-12-20 - 0530

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Runwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 11-12-20 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
2.6 ppm	3.2 ppm	2.9 ppm

Background Value = 2.9 ppm

INSTRUMENT RESPONSE TIME RECORD

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

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.18 ppm	23 ppm	2
#2	0.12 ppm	25 ppm	0
#3	0.09 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 11-12-20 0530

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [illegible signature]

Date: 11-6-20 Time: 0830

Model # TVA 1000B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	2.3 ppm	Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100%
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
		90% of Calibration Gas, ppm: 450
H2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 6 2. 7 3. 7
Date of last factory calibration	10-2-20	Average 6.6
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH4 gas.

Comments: ______

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ____________________

Purpose: ____________________

Operator: [signature]

Date: 11-6-20 Time: 0900

Model # TVA 1000 B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST		**INSTRUMENT CALIBRATION**		
		CALIBRATION CHECK		
Battery test	Pass / Fail	Calibration Gas (ppm)	Actual (ppm)	% Accuracy
Reading following ignition	2.5 ppm	500	500	100%
Leak test	Pass / Fail / NA	RESPONSE TIME		
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm	500	
		90% of Calibration Gas, ppm	450	
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm		
		1.	7	
		2.	6	
Date of last factory calibration	10-2-20	3.	6	
Factory calibration record w/instrument within 3 months	Pass / Fail	Average	6.3	
		Equal to or less than 30 seconds?	Y	N
		Instrument calibrated to	CH_4	gas.

Comments: ____________________

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [illegible]

Date: 11-6-20 Time: 0915

Model # TVA 1000 B

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST		**INSTRUMENT CALIBRATION**
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	2.4 ppm	Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100%
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	10-2-20	Time required to attain 90% of Cal Gas ppm: 1. 7 2. 7 3. 7 Average 7.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH4 gas.

Comments: ______

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [illegible signature]

Date: 11-6-20 Time: 0930

Model # TVA 1000 B

Serial # #13 1102786775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100
Reading following ignition	1.9 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500 90% of Calibration Gas, ppm: 450
H2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 6 2. 6 3. 6
Date of last factory calibration	10-2-20	Average 6.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH4 gas.

Comments: ______

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #10

SERIAL NUMBER: 1036346773

TECHNICIAN: [illegible]   DATE: 10-2-20

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	101	+/- 25
500	500	500	+/- 125
10000	10000	10,026	+/- 2500
< 1	ZERO GAS	0.53	< 3

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

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

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #11

SERIAL NUMBER: 1036346774

TECHNICIAN: [signature] DATE: 10-2-20

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	10,101	+/- 2500
< 1	ZERO GAS	0.49	< 3
PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

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

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #12

SERIAL NUMBER: 1036246741

TECHNICIAN: [signature] DATE: 10-2-20

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	0.59	< 3
PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

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

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #13

SERIAL NUMBER: 1102746775

TECHNICIAN: [signature]

DATE: 10-2-20

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	501	+/- 125
10000	10000	10,003	+/- 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.

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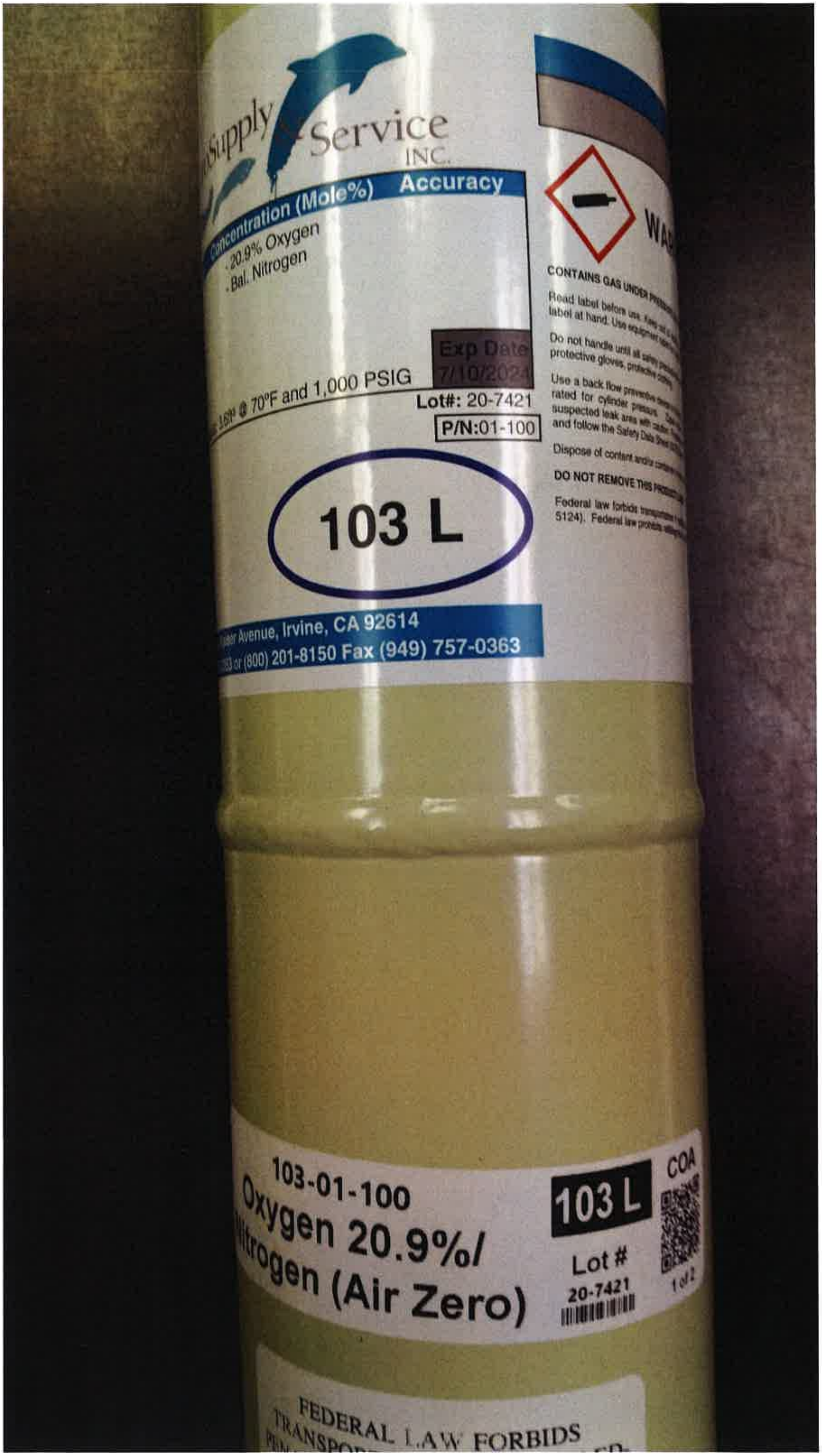
Supply Service INC.
Concentration (Mole%)
Accuracy
20.9% Oxygen
Bal. Nitrogen
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7421
P/N:01-100
103 L
Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
CONTAINS GAS UNDER
Read label before use.
label at hand. Use equipment
Do not handle until all safety
protective gloves, protective
Use a back flow preventive
rated for cylinder pressure.
suspected leak area with caution.
and follow the Safety Data Sheet
Dispose of content and/or
DO NOT REMOVE THIS PRODUCT
Federal law forbids transportation
5124). Federal law prohibits
103-01-100
Oxygen 20.9%/
itrogen (Air Zero)
103 L
Lot #
20-7421
COA
1 of 2
FEDERAL LAW FORBIDS
TRANSPO

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"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

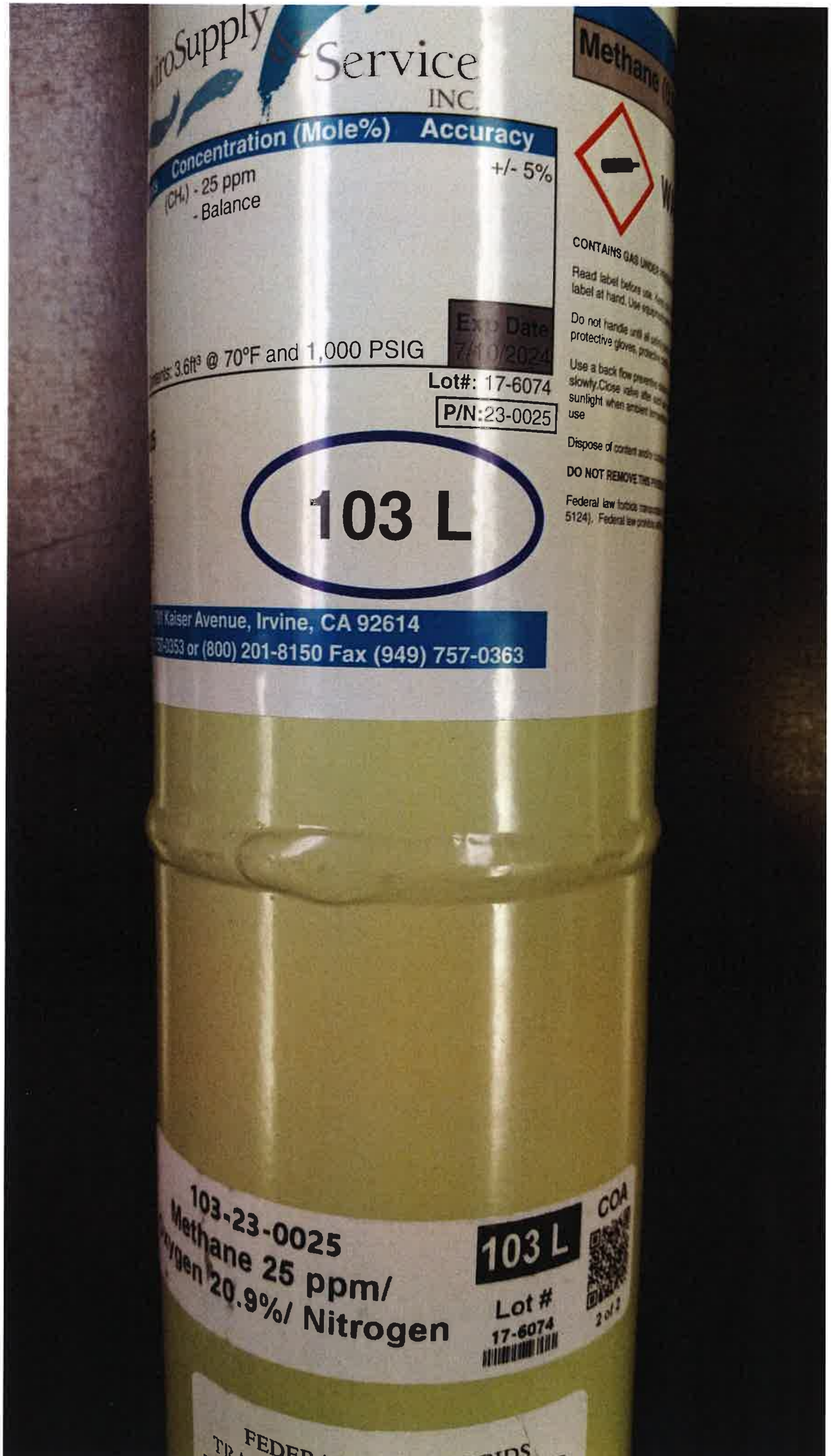
Method of Preparation:

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


Service
INC.
Concentration (Mole%)
Accuracy
+/- 5%
- Balance
Methane
CONTAINS GAS UNDER
Exp Date
7/10/2024
Lot#: 17-6074
P/N:23-0025
Dispose of content
DO NOT REMOVE
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
Methane 25 ppm/
20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
FEDERAL
FORBIDS

INTERMOUNTAIN SPECIALTY GASES

520 N. Kings Road • Nampa • Idaho • 83687

800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

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

Lot # 17-6074

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

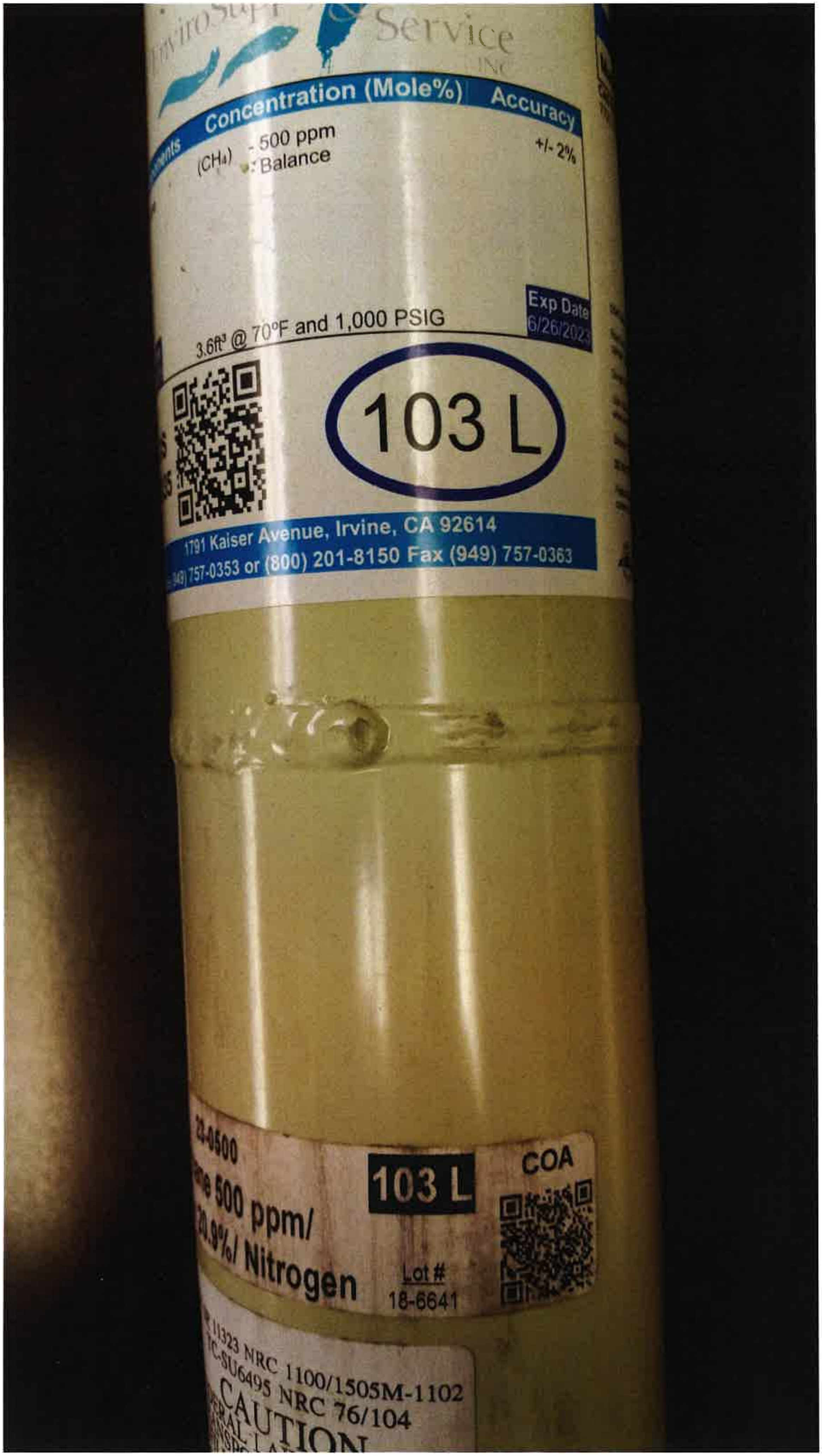
Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

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

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


Service
Concentration (Mole%)
Accuracy
(CH4) - 500 ppm
Balance
+/- 2%
3.6ft³ @ 70°F and 1,000 PSIG
Exp Date
6/26/2023
103 L
1791 Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
23-0500
500 ppm/
20.9%/ Nitrogen
103 L
COA
Lot #
18-6641
NRC 1100/1505M-1102
NRC 76/104
CAUTION

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

INTERMOUNTAIN SPECIALTY GASES
"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

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

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

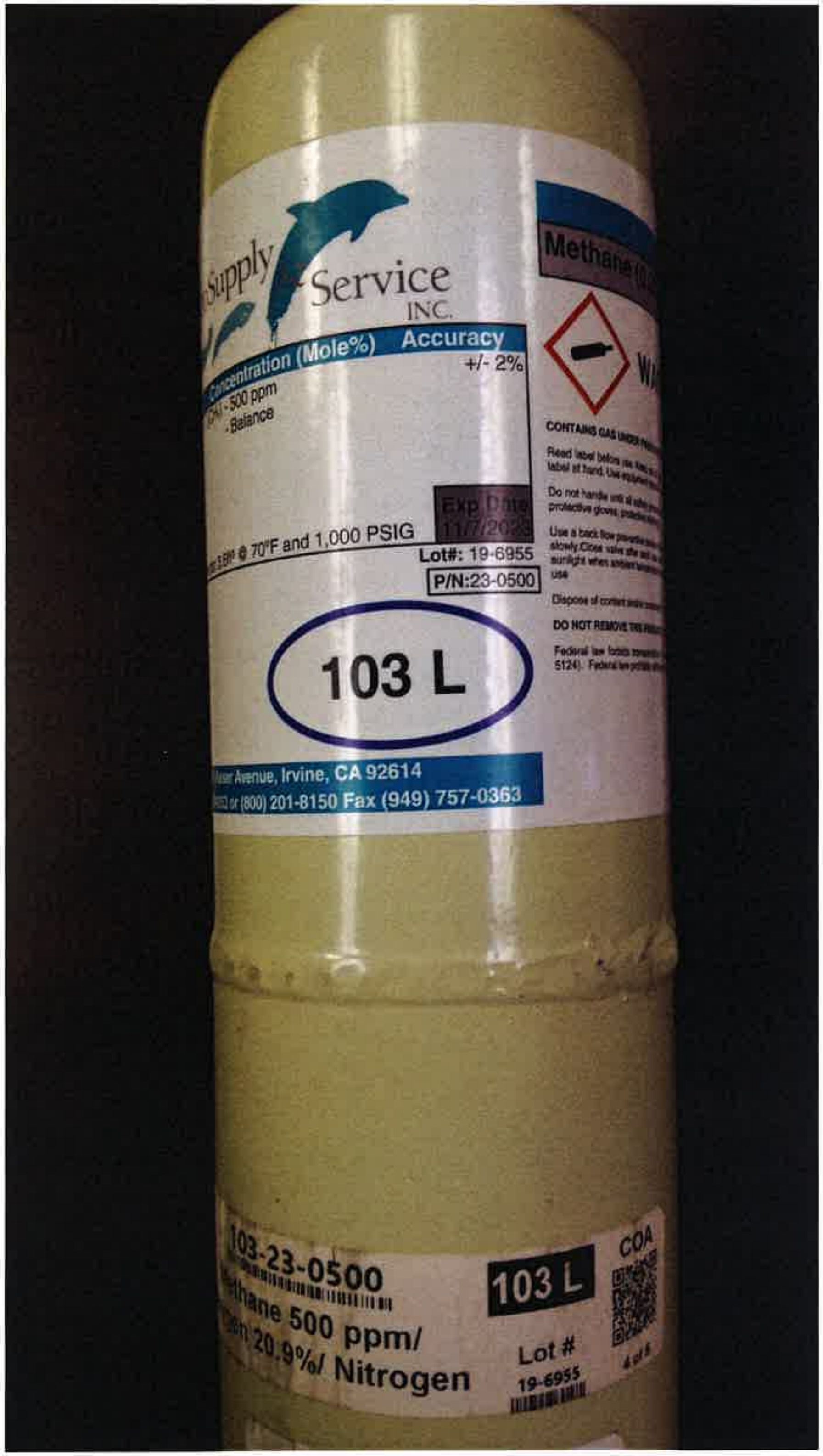
Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

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

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


Service
INC.
Accuracy
+/- 2%
Exp Date
@ 70°F and 1,000 PSIG
Lot#: 19-6955
P/N:23-0500
103 L
Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
CONTAINS GAS UNDER
DO NOT REMOVE THIS
103-23-0500
103 L
COA
Methane 500 ppm/
20.9%/ Nitrogen
Lot #
19-6955

INTERMOUNTAIN SPECIALTY GASES
520 N. Kings Road ● Nampa ● Idaho ● 83687
800-552-5003 ● www.isgases.com

CERTIFICATE OF ANALYSIS

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

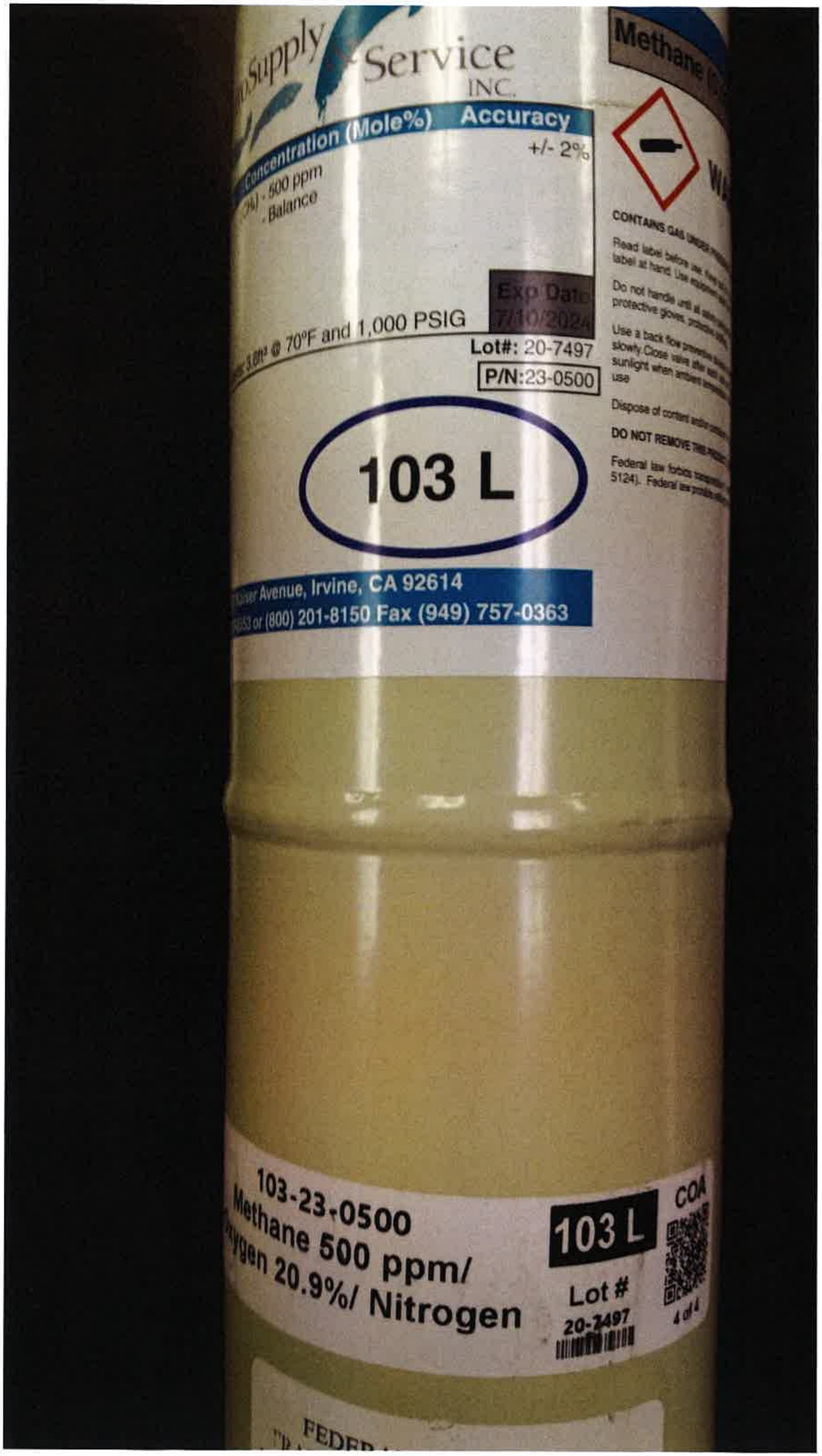
Lot #	19-6955

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

Method of Preparation:
Gravimetric/Pressure Transfilled

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

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


Supply
Service
INC.
Concentration (Mole%)
Accuracy
+/- 2%
- 500 ppm
- Balance
Methane
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
CONTAINS GAS UNDER
Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0500
Methane 500 ppm/
20.9%/ Nitrogen
103 L
Lot #
20-7497
COA
4 of 4

Intermountain Specialty Gases

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Nampa, ID 83687 (USA)
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INTERMOUNTAIN SPECIALTY GASES
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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

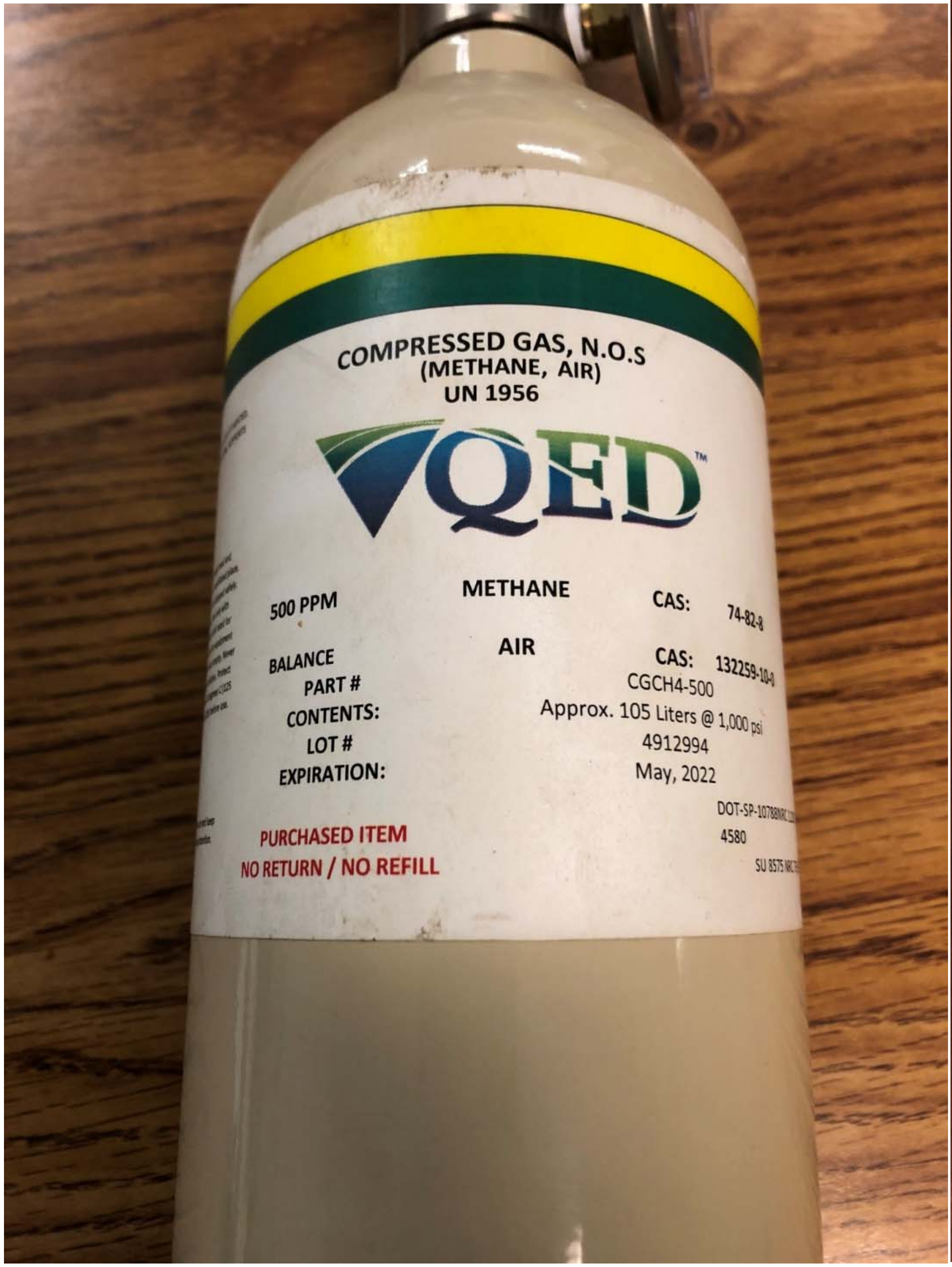
Method of Preparation:

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


COMPRESSED GAS, N.O.S
(METHANE, AIR)
UN 1956
QED™
500 PPM
METHANE
CAS: 74-82-8
BALANCE
AIR
CAS: 132259-10-0
PART #
CGCH4-500
CONTENTS:
Approx. 105 Liters @ 1,000 psi
LOT #
4912994
EXPIRATION:
May, 2022
4580
PURCHASED ITEM
NO RETURN / NO REFILL


AIR
COMPRESSED
UN 1002
QED™
AIR
ULTRA ZERO AIR
CAS:
132259-10-0
Part #
CGAIR-0
Contents:
Approx. 105 Liters @ 1,000 psi
LOT #
4912991
EXPIRATION:
May, 2022

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

March 16, 2021

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

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

Dear Ms. McCutcheon:

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

APPLICABLE REQUIREMENTS

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

Surface Emission Monitoring (SEM)

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

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

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

Component Leak

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

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

RLI Plan and Alternative Compliance Measures

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

PROCEDURES

General

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

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

Instantaneous Surface Emissions Monitoring

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

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

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

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

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

Integrated Surface Emissions Monitoring

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

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

- Re-monitoring shall be conducted within 10 days of the initial exceedance.
- If the 10-day re-monitoring event shows the exceedance is corrected, all re-monitoring requirements have been completed.
- If either the first 10-day re-monitoring event shows a second grid exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, all re-monitoring requirements have been completed.
- The second 10-day re-monitoring event shows a third grid exceedance, an additional well shall be installed within 120 days of the third exceedance.

Component Leak Monitoring Procedures

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

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

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

FIRST QUARTER 2021 SEM AND COMPONENT LEAK RESULTS

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

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on January 18 and 20, 2021 in accordance with the NSPS, BAAQMD 8-34, and CCR Title 17 §95469 and ACO. Results and data from the monitoring are presented in Attachment A

Initial Monitoring Event Exceedances of 500 ppm_v

There were twenty-one (21) exceedances of 500 ppm_v as methane detected on January 18 and 20, 2021. Corrective actions to initiate repairs of the exceedances were completed within five days for all locations.

First Ten-Day Re-Monitoring Results

The first 10-day re-monitoring event was completed on January 28, 2021. All locations were observed at less than 500 ppm_v.

One-Month Re-Monitoring Results

The 1-month re-monitoring event was completed on February 16, 2021. All locations were observed at less than 500 ppm_v.

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

There were no readings between 200 ppm_v and 499 ppm_v as methane detected during the initial monitoring event on January 18 and 20, 2021. Pursuant to CCR Title 17 §95471(c), instantaneous surface emissions exceeding 200 ppm_v but below 500 ppm_v are required to be recorded.

Integrated Surface Emissions Monitoring Results

The Integrated surface sampling (ISS) was performed on January 19, 20, and 21, 2021 in accordance with the ACO and requirements outlined in CCR Title 17 §95469.

Initial Monitoring Event Exceedances of 25 ppm_v

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

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

Component Leak Monitoring Results

Component leak monitoring was conducted per the applicable requirements on January 20, 2021. No leaks greater than 500 ppm_v were identified. Please see Attachment C, for details.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

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

Precipitation Requirements

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

EQUIPMENT CALIBRATION

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

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

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

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

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

Attachment B – Integrated Surface Emission Monitoring Event Records

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

Attachment C – Component Leak Monitoring Event Records

- Component Leak Exceedances and Monitoring Logs

Attachment D – Weather Station Data

- Strip Chart Data

Attachment E – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Instantaneous Surface Emission Monitoring Event Records

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

2021 QUARTER: 1
PERFORMED BY: RES
LANDFILL NAME: Redwood Landfill, Inc.

Grid Number	Flag Number	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
31	O1	1/18/2021	1,100	Cap Well 10
90	O2	1/18/2021	600	Well 230
62	O21	1/18/2021	25,000	Well 124
17	O22	1/18/2021	3,100	Well 83
31	O23	1/18/2021	50,000	Well 120
46	O24	1/18/2021	3,300	Well 217
92	O25	1/18/2021	1,500	Well 245
83	O26	1/20/2021	15,000	Black Pipe 18VE
95	O27	1/20/2021	1,500	Cap Pipe 50
127	O28	1/20/2021	10,000	Black Pipe 52
162	O29	1/20/2021	4,000	Black Pipe 60
162	O30	1/20/2021	4,000	White Cap
197	O31	1/20/2021	9,000	White Pipe 76
162	O32	1/20/2021	1,100	Well 132
128	O33	1/20/2021	800	Well 127
84	O34	1/20/2021	1,300	Black Pipe 43
143	O41	1/18/2021	1,000	Well 247
85	O42	1/20/2021	5,000	Well 39
85	O43	1/20/2021	800	Black Pipe
87	O44	1/20/2021	1,000	White Pipe
136	O61	1/20/2021	90,000	EW 7

Notes: Please refer to field data sheets for details

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

2021 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Ed Kane
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
O1	1/18/2021	1,100	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	45		2/16/2021	16		Cap Well 10
O2	1/18/2021	600	1/20/2021	Added Soil/Compacted	1/28/2021	3		2/16/2021	4		Well 230
O21	1/18/2021	25,000	1/20/2021	Added Soil/Increased vacuum	1/28/2021	4		2/16/2021	0		Well 124
O22	1/18/2021	3,100	1/20/2021	Added Soil/Compacted	1/28/2021	2		2/16/2021	2		Well 83
O23	1/18/2021	50,000	1/22/2021	Compacted soil/Increased vacuum	1/28/2021	0		2/16/2021	0		Well 120
O24	1/18/2021	3,300	1/20/2021	Added Soil/Increased vacuum	1/28/2021	0		2/16/2021	4		Well 217
O25	1/18/2021	1,500	1/20/2021	Added Soil/Compacted	1/28/2021	2		2/16/2021	93		Well 245
O26	1/20/2021	15,000	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	143		2/16/2021	76		Black Pipe 18VE
O27	1/20/2021	1,500	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	371		2/16/2021	45		Cap Pipe 50
O28	1/20/2021	10,000	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	23		2/16/2021	75		Black Pipe 52
O29	1/20/2021	4,000	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	368		2/16/2021	183		Black Pipe 60
O30	1/20/2021	4,000	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	18		2/16/2021	15		White Cap
O31	1/20/2021	9,000	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	26		2/16/2021	87		White Pipe 76
O32	1/20/2021	1,100	1/21/2021	Added Soil/Compacted	1/28/2021	178		2/16/2021	1		Well 132
O33	1/20/2021	800	1/21/2021	Added Soil/Increased vacuum	1/28/2021	243		2/16/2021	211		Well 127
O34	1/20/2021	1,300	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	25		2/16/2021	12		Black Pipe 43
O41	1/18/2021	1,000	1/20/2021	Added Soil/Compacted	1/28/2021	1		2/16/2021	0		Well 247
O42	1/20/2021	5,000	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	35		2/16/2021	3		Well 39
O43	1/20/2021	800	1/22/2021	Added Bentonite/Compacted	1/28/2021	16		2/16/2021	71		Black Pipe
O44	1/20/2021	1,000	1/22/2021	Added Soil/Compacted	1/28/2021	171		2/16/2021	129		White Pipe
O61	1/20/2021	90,000	1/22/2021	Added Soil/Compacted/Bentonite	1/28/2021	491		2/16/2021	279		EW 7

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

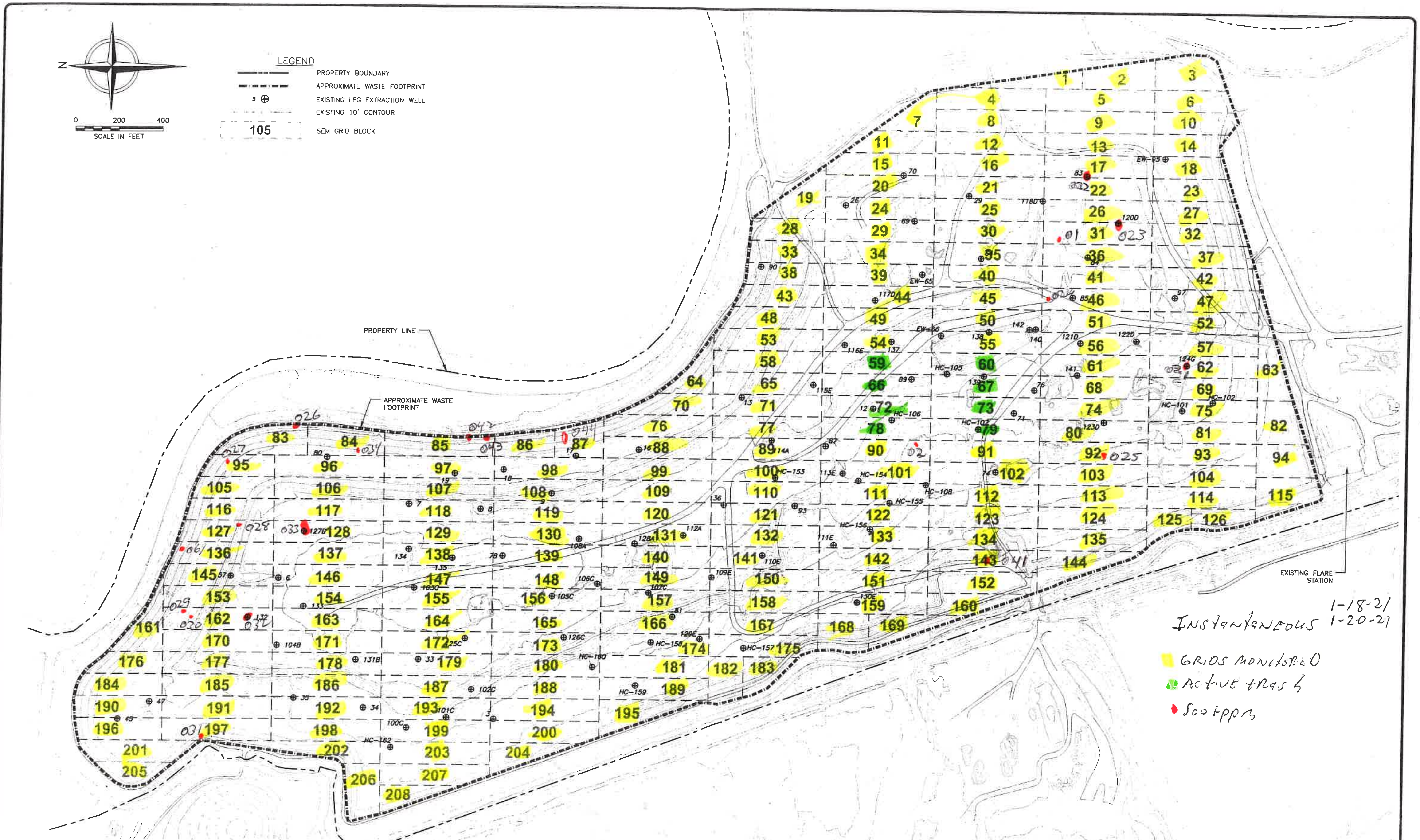
2021 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: Ed Kane
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Comments
O1	1/18/2021	1,100	1/28/2021	45					Cap Well 10
O2	1/18/2021	600	1/28/2021	3					Well 230
O21	1/18/2021	25,000	1/28/2021	4					Well 124
O22	1/18/2021	3,100	1/28/2021	2					Well 83
O23	1/18/2021	50,000	1/28/2021	0					Well 120
O24	1/18/2021	3,300	1/28/2021	0					Well 217
O25	1/18/2021	1,500	1/28/2021	2					Well 245
O26	1/20/2021	15,000	1/28/2021	143					Black Pipe 18VE
O27	1/20/2021	1,500	1/28/2021	371					Cap Pipe 50
O28	1/20/2021	10,000	1/28/2021	23					Black Pipe 52
O29	1/20/2021	4,000	1/28/2021	368					Black Pipe 60
O30	1/20/2021	4,000	1/28/2021	18					White Cap
O31	1/20/2021	9,000	1/28/2021	26					White Pipe 76
O32	1/20/2021	1,100	1/28/2021	178					Well 132
O33	1/20/2021	800	1/28/2021	243					Well 127
O34	1/20/2021	1,300	1/28/2021	25					Black Pipe 43
O41	1/18/2021	1,000	1/28/2021	1					Well 247
O42	1/20/2021	5,000	1/28/2021	35					Well 39
O43	1/20/2021	800	1/28/2021	16					Black Pipe
O44	1/20/2021	1,000	1/28/2021	171					White Pipe
O61	1/20/2021	90,000	1/28/2021	491					EW 7

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

2021 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

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



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

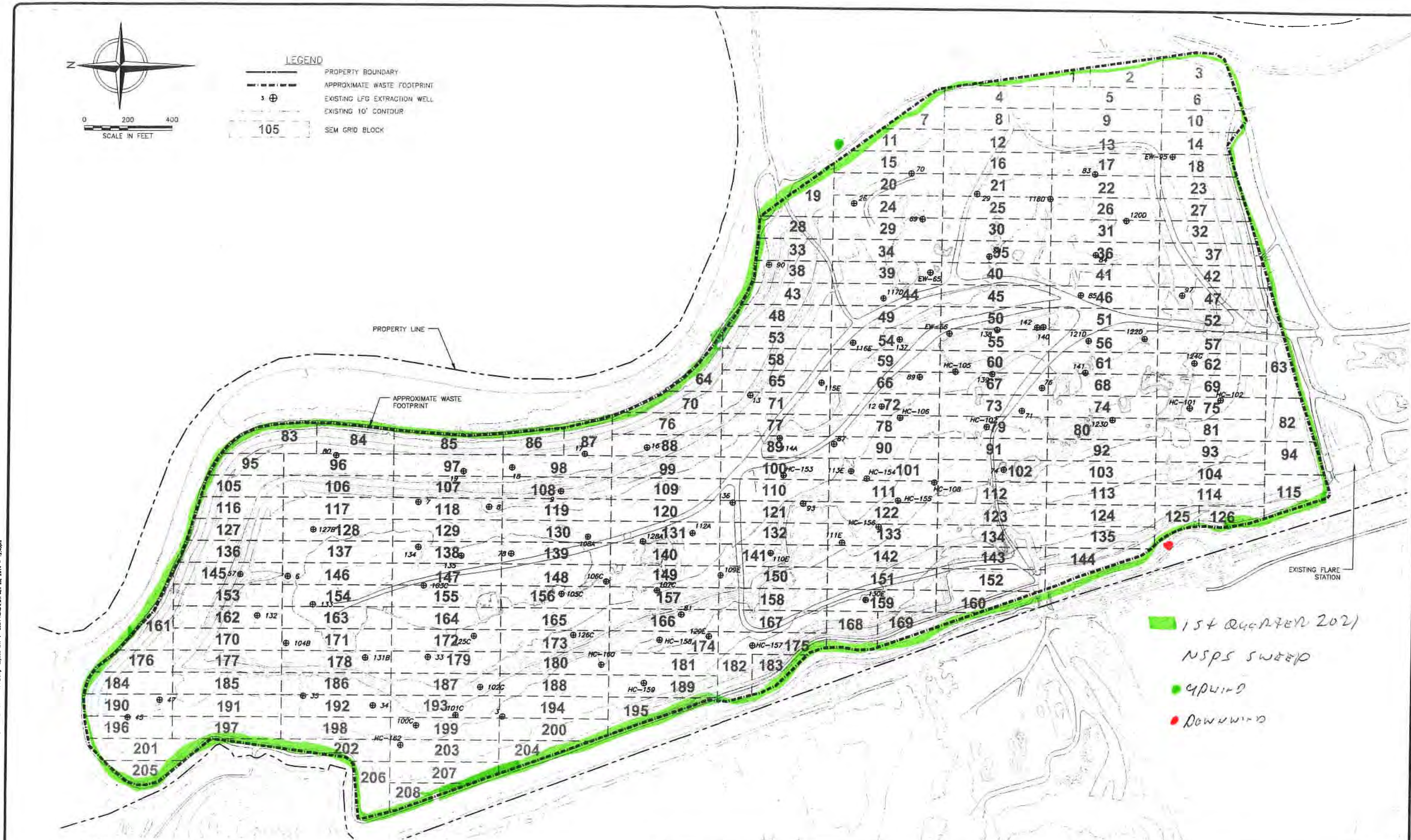
PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO. 1

PROJECT NO. 140521



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

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

			Page 1 of 1 Pages
Quarter / Year:	1st 2021		
Technician:	LEIGHWARD		
Instrument:	TVA 1000		
Calibration Standard:	500 ppm		

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd <500 ppm	Excd. >500 ppm	
O-41	143	1,000	1-18-21										WELL 247
O-1	31	1100											CAP WELL 10
O-2	90	600											WELL 230
O-21	62	25,000											WELL 124
O-22	17	3100											WELL 83
O-23	31	50,000											WELL 120
O-24	46	3300											WELL 217
O-25	92	1500											WELL 245
O-61	136	90,000	1-20-21										EW7
O-26	83	15,000											Black pipe 18 VE
O-27	95	1500											capped pipe 50
O-28	127	10,000											Black pipe 52
O-29	162	4,000											Black pipe 60
O-30	162	4,000											white cap pipe
O-31	197	9,000											white pipe 76
O-32	162	1100											WELL 132
O-33	128	800											WELL 127
O-39	84	1300											Black pipe 43
O-42	85	5000											WELL 39
O-43	85	800											Black pipe
O-44	87	1000											white capped pipe
O-													
O-													
O-													
O-													

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, Dwight Anderson, Omar Peralta, Nick Berks

Date: 1-18-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
1	LW	1215	1230	18	4	6	3	
2	OP	1215	1230	22	4	6	3	
3	NB	1215	1230	16	4	6	3	
5	DA	1215	1230	21	4	6	3	
6	LW	1230	1245	24	4	8	3	
9	OP	1230	1245	19	4	8	3	
10	NB	1230	1245	34	4	8	3	
13	DA	1230	1245	21	4	8	3	
14	LW	1245	1300	16	4	8	3	
17	OP	1245	1300	3100	4	8	3	WELL 83
18	NB	1245	1300	15	4	8	3	
22	DA	1245	1300	17	4	8	3	
23	LW	1300	1315	13	3	6	3	
26	OP	1300	1315	21	3	6	3	
27	NB	1300	1315	16	3	6	3	
31	DA	1300	1315	50,000	3	6	3	WELL 120
32	LW	1315	1330	20	2	3	3	
36	OP	1315	1330	18	2	3	3	
37	NB	1315	1330	26	2	3	3	
41	DA	1315	1330	24	2	3	3	
42	LW	1330	1345	17	4	6	8	
46	OP	1330	1345	3300	4	6	8	WELL 217
47	NB	1330	1345	15	4	6	8	
51	DA	1330	1345	19	4	6	8	
52	LW	1345	1400	22	4	6	8	
56	OP	1345	1400	32	4	6	8	
57	NB	1345	1400	47	4	6	8	
61	DA	1345	1400	58	4	6	8	
62	LW	1400	1415	25,000	4	6	8	WELL 124
63	OP	1400	1415	84	4	6	8	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Dwight Anderson; Omar Peralta; Nick Banks

Date: 1-18-12 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 74 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
68	NB	1400	1415	39	4	6	8	
69	DA	1400	1415	47	4	6	8	
74	LW	1415	1430	32	4	6	10	
75	OP	1415	1430	59	4	6	10	
80	NB	1415	1430	36	4	6	10	
81	DA	1415	1430	24	4	6	10	
82	LW	1430	1445	41	4	6	10	
92	OP	1430	1445	1500	4	6	10	Well 245
93	NB	1430	1445	36	4	6	10	
94	DA	1430	1445	28	4	6	10	
103	LW	1445	1500	31	4	6	10	
104	OP	1445	1500	26	4	6	10	
113	NB	1445	1500	20	4	6	10	
114	DA	1445	1500	31	4	6	10	
115	LW	1500	1515	26	4	6	10	
124	OP	1500	1515	20	4	6	10	
125	NB	1500	1515	17	4	6	10	
128	DA	1500	1515	15	4	6	10	
135	LW	1515	1530	21	4	6	10	
144	OP	1515	1530	38	4	6	10	
168	NB	1515	1530	29	4	6	10	
169	DA	1515	1530	34	4	6	10	
159	LW	1530	1545	41	4	6	9	
160	OP	1530	1545	26	4	6	9	
151	NB	1530	1545	47	4	6	9	
152	DA	1530	1545	61	4	6	9	
142	LW	1545	1600	49	4	6	9	
143	OP	1545	1600	1,000	4	6	9	Well 247
133	NB	1545	1600	58	4	6	9	
134	DA	1545	1600	44	4	6	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE; DWIGHT ANDERSON; OMAR DURETA; NICK BANKS

Date: 1-18-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 82 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
122	LW	1600	1615	57	3	4	8	
123	OD	1600	1615	74	3	4	8	
111	NB	1600	1615	48	3	4	8	
112	DA	1600	1615	59	3	4	8	
101	LW	1615	1630	66	3	4	8	
102	OD	1615	1630	43	3	4	8	
90	NB	1615	1630	600	3	4	8	WELL 230
91	DA	1615	1630	61	3	4	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE

Date: 1-18-21 Instrument Used: ______ Grid Spacing: ______

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

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
59								ACTIVE - TRASH
60								
66								
67								
72								
73								
78								
79								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Owen Pencehr, Nick Banks

Date: 1-20-21 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 36 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
7	LW	0520	0535	17	4	8	12	
4	OP	0520	0535	11	4	8	12	
8	NB	0520	0535	15	4	8	12	
11	DA	0520	0535	26	4	8	12	
12	LW	0535	0550	19	4	8	11	
15	OP	0535	0550	96	4	8	11	
16	NB	0535	0550	31	4	8	11	
19	DA	0535	0550	14	4	8	11	
20	LW	0550	0605	82	4	6	11	
21	OP	0550	0605	65	4	6	11	
24	NB	0550	0605	58	4	6	11	
25	DA	0550	0605	72	4	6	11	
29	LW	0605	0620	28	4	8	11	
30	OP	0605	0620	46	4	8	11	
34	NB	0605	0620	34	4	8	11	
35	DA	0605	0620	29	4	8	11	
39	LW	0620	0635	65	4	8	11	
40	OP	0620	0635	41	4	8	11	
44	NB	0620	0635	20	4	8	11	
45	DA	0620	0635	56	4	8	11	
49	LW	0635	0650	38	4	10	11	
50	OP	0635	0650	74	4	10	11	
54	NB	0635	0650	61	4	10	11	
55	DA	0635	0650	72	4	10	11	
28	LW	0650	0705	40	4	10	11	
33	OP	0650	0705	32	4	10	11	
38	NB	0650	0705	47	4	10	11	
43	DA	0650	0705	67	4	10	11	
48	LW	0705	0720	32	4	10	12	
53	OP	0705	0720	45	4	10	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade | Dwight Anderson |
Omar Peralta | |
Nick Banks | |

Date: 1-20-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 40 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
58	NB	0705	0720	31	4	10	12	
64	DA	0705	0720	27	4	10	12	
65	LW	0720	0735	36	4	10	12	
70	OP	0720	0735	47	4	10	12	
71	NB	0720	0735	39	4	10	12	
76	DA	0720	0735	82	4	10	12	
77	LW	0735	0750	59	5	11	12	
88	OP	0735	0750	37	5	11	12	
89	NB	0735	0750	24	5	11	12	
99	DA	0735	0750	38	5	11	12	
100	LW	0750	0805	22	5	11	12	
109	OP	0750	0805	46	5	11	12	
110	NB	0750	0805	33	5	11	12	
120	DA	0750	0805	51	5	11	12	
121	LW	0805	0820	26	5	11	12	
131	OP	0805	0820	31	5	11	12	
132	NB	0805	0820	24	5	11	12	
140	DA	0805	0820	51	5	11	12	
141	LW	0820	0835	36	5	12	13	
149	OP	0820	0835	54	5	12	13	
150	NB	0820	0835	37	5	12	13	
157	DA	0820	0835	29	5	12	13	
158	LW	0835	0850	81	5	12	12	
166	OP	0835	0850	42	5	12	12	
167	NB	0835	0850	65	5	12	12	
174	DA	0835	0850	38	5	12	12	
175	LW	0850	0905	21	5	13	12	
181	OP	0850	0905	19	5	13	12	
182	NB	0850	0905	24	5	13	12	
183	DA	0850	0905	31	5	13	12	

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Page 2 of 5

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wador   Dwight Anderson
Omar Peralta
Nick Banks

Date: 1-20-21   Instrument Used: TVA1000   Grid Spacing: 25'

Temperature: 45   Precip: 0   Upwind BG: 2.4   Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
189	LW	0905	0920	20	5	13	12	
195	OP	0905	0920	17	5	13	12	
85	ND	0905	0920	5,000	5	13	12	Well 39
86	DA	0905	0920	51	5	13	12	
87	LW	0920	0935	1,000	5	12	12	white cap pipe
97	OP	0920	0935	31	5	12	12	
98	ND	0920	0935	27	5	12	12	
107	DA	0920	0935	33	5	12	12	
108	LW	0935	0950	41	5	8	11	
118	OP	0935	0950	38	5	8	11	
119	ND	0935	0950	26	5	8	11	
129	DA	0935	0950	31	5	8	11	
130	LW	0950	1005	24	5	8	12	
138	OP	0950	1005	40	5	8	12	
139	ND	0950	1005	33	5	8	12	
147	DA	0950	1005	26	5	8	12	
148	LW	1005	1020	31	5	8	13	
155	OP	1005	1020	45	5	8	13	
156	ND	1005	1020	38	5	8	13	
164	DA	1005	1020	57	5	8	13	
165	LW	1020	1035	44	5	8	13	
172	OP	1020	1035	39	5	8	13	
173	ND	1020	1035	90	5	8	13	
179	DA	1020	1035	42	5	8	13	
180	LW	1035	1050	26	5	9	12	
187	OP	1035	1050	41	5	9	12	
188	ND	1035	1050	25	5	9	12	
193	DA	1035	1050	35	5	9	12	
194	LW	1050	1105	20	5	9	12	
199	OP	1050	1105	17	5	9	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leishwaor | Dwight Anderson
Oren Durelta
Nick Berks

Date: 1-20-21 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 51 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
200	NB	1050	1105	26	5	9	12	
203	OA	1050	1105	19	5	9	12	
204	LW	1105	1120	24	5	10	12	
207	OP	1105	1120	18	5	10	12	
208	NB	1105	1120	41	5	10	12	
205	OA	1105	1120	36	5	10	12	
206	LW	1120	1135	24	5	10	12	
201	OP	1120	1135	31	5	10	12	
202	NB	1120	1135	24	5	10	12	
196	OA	1120	1135	27	5	10	12	
197	LW	1135	1150	9,000	5	10	12	whitepipe 76
198	OP	1135	1150	19	5	10	12	
190	NB	1135	1150	31	5	10	12	
191	OA	1135	1150	46	5	10	12	
192	LW	1150	1205	34	5	8	13	
184	OP	1150	1205	59	5	8	13	
185	NB	1150	1205	32	5	8	13	
186	OA	1150	1205	26	5	8	13	
176	LW	1205	1220	19	5	8	12	
177	OP	1205	1220	31	5	8	12	
178	NB	1205	1220	58	5	8	12	
170	OA	1205	1220	64	5	8	12	
171	LW	1220	1235	42	5	8	13	
161	OP	1220	1235	38	5	8	13	
162	NB	1220	1235	4,000	5	9	13	Blackpipe 60
163	OA	1220	1235	35	5	8	13	
153	LW	1235	1250	26	5	9	13	
154	OP	1235	1250	38	5	9	13	
145	NB	1235	1250	31	5	9	13	
146	OA	1235	1250	39	5	9	13	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Ward, Dwight Anderson, Omar Pineda, Nick Banks

Date: 1-20-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
136	LW	1250	1305	90,000	5	9	12	EW7
137	OP	1250	1305	48	5	9	12	
127	ND	1250	1305	10,000	5	9	12	Black pipe 52
128	DA	1250	1305	800	5	9	12	Well 127
116	LW	1305	1320	74	5	10	12	
117	OP	1305	1320	39	5	10	12	
105	ND	1305	1320	32	5	10	12	
106	DA	1305	1320	29	5	10	12	
95	LW	1320	1335	1500	5	12	12	Capped pipe 50
96	OP	1320	1335	41	5	12	12	
83	ND	1320	1335	15,000	5	12	12	Black pipe 18VE
84	DA	1320	1335	1300	5	12	12	Black pipe 43

Attach Calibration Sheet
Attach site map showing grid ID

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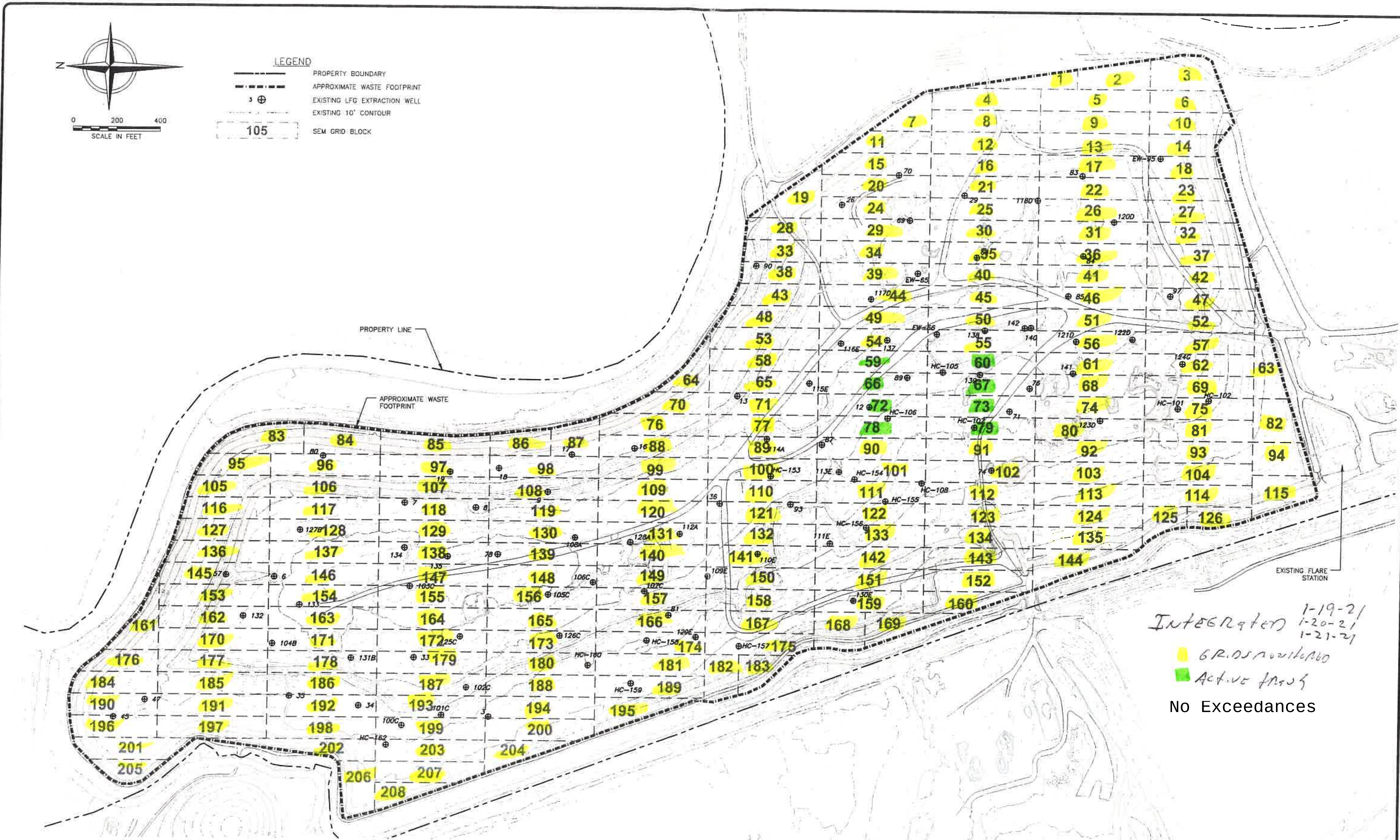
Attachment B

Integrated Surface Emission Monitoring Event Records

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

2021 QUARTER: 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									



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

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE 6/24/2014		DRAWN BY RL / DESIGNED BY MLH			CHECKED BY MED / APPROVED BY PJS	

cornerstone environmental

PREPARED BY: CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO. 1
PROJECT NO 140521

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Pereira, Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 1-19-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 46 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	0520	0545	3.71	2	3	4	
2	OP	0520	0545	3.28	2	3	4	
3	ND	0520	0545	3.15	2	3	4	
5	DA	0520	0545	4.11	2	3	4	
6	LW	0545	0610	3.79	2	3	4	
9	OP	0545	0610	4.68	2	3	4	
10	ND	0545	0610	4.02	2	3	4	
13	DA	0545	0610	3.77	2	3	4	
14	LW	0610	0635	4.15	2	3	7	
17	OP	0610	0635	3.21	2	3	7	
18	ND	0610	0635	3.54	2	3	7	
22	DA	0610	0635	3.50	2	3	7	
23	LW	0635	0700	4.15	2	3	8	
26	OP	0635	0700	4.66	2	3	8	
27	ND	0635	0700	4.71	2	3	8	
31	DA	0635	0700	3.54	2	3	8	
32	LW	0700	0725	3.21	3	5	8	
36	OP	0700	0725	4.28	3	5	8	
37	ND	0700	0725	3.91	3	5	8	
41	DA	0700	0725	3.74	3	5	8	
42	LW	0725	0750	4.15	3	5	8	
46	OP	0725	0750	3.89	3	5	8	
47	ND	0725	0750	3.66	3	5	8	
51	DA	0725	0750	5.16	3	5	8	
52	LW	0750	0815	3.52	4	6	8	
56	OP	0750	0815	3.47	4	6	8	
57	ND	0750	0815	3.81	4	6	8	
61	DA	0750	0815	4.54	4	6	8	
62	LW	0815	0840	4.28	4	7	9	
63	OP	0815	0840	3.56	4	7	9	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Puncella, Nick Benko

Cal. Gas Exp. Date: 9-21-21

Date: 1-19-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 58 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
68	NB	0815	0840	5.22	4	7	9	
69	DA	0815	0840	4.78	4	7	9	
74	LW	0840	0905	5.50	5	11	11	
75	OP	0840	0905	4.28	5	11	11	
80	NB	0840	0905	5.87	5	11	11	
81	DA	0840	0905	5.70	5	11	11	
82	LW	0905	0930	4.66	4	5	11	
92	OP	0905	0930	3.79	4	5	11	
93	NB	0905	0930	5.13	4	5	11	
94	DA	0905	0930	5.34	4	5	11	
103	LW	0930	0955	4.18	4	9	9	
104	OP	0930	0955	3.62	4	9	9	
113	NB	0930	0955	4.79	4	9	9	
114	DA	0930	0955	5.18	4	9	9	
115	LW	0955	1020	4.33	4	9	8	
124	OP	0955	1020	3.62	4	9	8	
125	NB	0955	1020	4.91	4	9	8	
126	DA	0955	1020	5.84	4	9	8	
135	LW	1020	1045	4.77	4	11	8	
144	OP	1020	1045	4.15	4	11	8	
168	NB	1020	1045	5.80	4	11	8	
169	DA	1020	1045	6.13	4	11	8	
159	LW	1045	1110	5.31	5	12	8	
160	OP	1045	1110	4.53	5	12	8	
151	NB	1045	1110	6.87	5	12	8	
152	DA	1045	1110	5.32	5	12	8	
142	LW	1110	1135	4.18	4	5	9	
143	OP	1110	1135	4.72	4	5	9	
133	NB	1110	1135	5.08	4	5	9	
134	DA	1110	1135	4.63	4	5	9	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Peralta, Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 1-19-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 64 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
122	LW	1135	1200	6.15	4	6	8	
123	OP	1135	1200	5.31	4	6	8	
111	NB	1135	1200	6.23	4	6	8	
112	DA	1135	1200	6.84	4	6	8	
101	LW	1200	1225	5.96	4	6	8	
102	OP	1200	1225	5.31	4	6	8	
90	NB	1200	1225	6.13	4	6	8	
91	DA	1200	1225	7.41	4	6	8	
4	LW	1225	1250	4.15	4	6	8	
7	OP	1225	1250	4.65	4	6	8	
8	NB	1225	1250	3.91	4	6	8	
12	DA	1225	1250	5.18	4	6	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Ward ______ ______
______ ______ ______
______ ______ Cal. Gas Exp. Date: ______

Date: 1-19-21 Instrument Used: ______ Grid Spacing: ______

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

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
59								Active trench
60								
66								
67								
72								
73								
78								
79								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leishwnor / Dwight Alderson / Omar Peralta / Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 1-20-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 78 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
11	LW	1345	1410	4.68	5	8	12	
15	OP	1345	1410	5.20	5	8	12	
16	ND	1345	1410	4.91	5	8	12	
19	DA	1345	1410	7.31	5	8	12	
20	LW	1410	1435	6.56	5	8	13	
21	OP	1410	1435	11.54	5	8	13	
24	ND	1410	1435	9.28	5	8	13	
25	DA	1410	1435	8.60	5	8	13	
29	LW	1435	1500	9.52	5	8	13	
30	OP	1435	1500	6.59	5	8	13	
34	ND	1435	1500	7.28	5	8	13	
35	DA	1435	1500	6.52	5	8	13	
39	LW	1500	1525	6.84	5	8	13	
40	OP	1500	1525	7.21	5	8	13	
44	ND	1500	1525	6.55	5	8	13	
45	DA	1500	1525	6.91	5	8	13	
49	LW	1525	1550	6.06	5	7	13	
50	OP	1525	1550	7.38	5	7	13	
54	ND	1525	1550	6.39	5	7	13	
55	DA	1525	1550	6.79	5	7	13	
28	LW	1550	1615	5.27	4	7	14	
33	OP	1550	1615	4.58	4	7	14	
38	ND	1550	1615	5.92	4	7	14	
43	DA	1550	1615	5.77	4	7	14	
48	LW	1615	1640	5.41	4	6	13	
53	OP	1615	1640	6.18	4	6	13	
58	ND	1615	1640	6.35	4	6	13	
64	DA	1615	1640	5.41	4	6	13	
65	LW	1640	1705	5.20	4	6	13	
70	OP	1640	1705	4.76	4	6	13	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEISHWADE | DWGLIANDERSON
OMERPERELTA
NICK BENKS

Cal. Gas Exp. Date: 9-21-21

Date: 1-20-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 78 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
71	NB	1640	1705	6.94	4	6	N	
72	OA	1640	1705	8.21	4	6	N	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Dwight Anderson; Omar Pereira; Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 1-21-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 41 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
76	LW	0520	0545	5.40	2	3	11	
88	OP	0520	0545	6.21	2	3	11	
89	ND	0520	0545	5.79	2	3	11	
99	DA	0520	0545	5.32	2	3	11	
100	LW	0545	0610	5.48	2	3	11	
109	OP	0545	0610	6.27	2	3	11	
110	ND	0545	0610	6.42	2	3	11	
120	DA	0545	0610	5.98	2	3	11	
121	LW	0610	0635	6.11	2	3	11	
131	OP	0610	0635	5.41	2	3	11	
132	ND	0610	0635	5.38	2	3	11	
140	DA	0610	0635	5.70	2	3	11	
141	LW	0635	0700	6.13	2	3	11	
149	OP	0635	0700	5.41	2	3	11	
150	ND	0635	0700	4.78	2	3	11	
157	DA	0635	0700	6.39	2	3	11	
158	LW	0700	0725	5.82	2	3	11	
166	OP	0700	0725	6.12	2	3	11	
167	ND	0700	0725	5.41	2	3	11	
174	DA	0700	0725	5.90	2	3	11	
175	LW	0725	0750	4.76	2	3	10	
181	OP	0725	0750	5.07	2	3	10	
182	ND	0725	0750	4.21	2	3	10	
183	DA	0725	0750	5.13	2	3	10	
189	LW	0750	0815	5.76	2	3	10	
195	OP	0750	0815	5.79	2	3	10	
208	ND	0750	0815	6.14	2	3	10	
207	DA	0750	0815	5.77	2	3	10	
203	LW	0815	0840	6.39	2	3	10	
204	OP	0815	0840	5.80	2	3	10	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Ponce [illegible], Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 1-21-21 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 45 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
199	NB	0815	0840	5.40	2	3	10	
200	DA	0815	0840	6.15	2	3	10	
193	LW	0840	0905	4.98	2	3	10	
194	OP	0840	0905	5.21	2	3	10	
187	NB	0840	0905	4.70	2	3	10	
188	DA	0840	0905	5.65	2	3	10	
179	LW	0905	0930	5.35	2	3	10	
180	OP	0905	0930	4.28	2	3	10	
172	NB	0905	0930	6.15	2	3	10	
173	DA	0905	0930	6.85	2	3	10	
164	LW	0930	0955	5.42	2	3	10	
165	OP	0930	0955	5.93	2	3	10	
155	NB	0930	0955	5.60	2	3	10	
156	DA	0930	0955	5.38	2	3	10	
147	LW	0955	1020	6.17	2	3	11	
148	OP	0955	1020	5.32	2	3	11	
138	NB	0955	1020	4.11	2	3	11	
139	DA	0955	1020	4.55	2	3	11	
129	LW	1020	1045	4.26	2	3	12	
130	OP	1020	1045	4.51	2	3	12	
118	NB	1020	1045	5.15	2	3	12	
119	DA	1020	1045	5.67	2	3	12	
107	LW	1045	1110	4.28	2	4	12	
108	OP	1045	1110	4.15	2	4	12	
97	NB	1045	1110	3.75	2	4	12	
98	DA	1045	1110	5.18	2	4	12	
85	LW	1110	1135	7.31	2	3	4	
86	OP	1110	1135	8.65	2	3	4	
87	NB	1110	1135	7.52	2	3	4	
84	DA	1110	1135	8.49	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Luis Wade | Dwight Anderson | ______
Omar Peralta
Nick Beales

Cal. Gas Exp. Date: 9-21-21

Date: 1-21-21 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 50 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
87	LW	1135	1200	6.17	1	2	3	
95	OP	1135	1200	7.21	1	2	3	
96	ND	1135	1200	5.44	1	2	3	
105	DA	1135	1200	5.96	1	2	3	
106	LW	1230	1255	4.67	2	3	3	
116	OP	1230	1255	5.20	2	3	3	
117	ND	1230	1255	5.97	2	3	3	
127	DA	1230	1255	5.45	2	3	3	
128	LW	1255	1320	6.60	2	3	10	
136	OP	1255	1320	5.38	2	3	10	
137	ND	1255	1320	4.95	2	3	10	
145	DA	1255	1320	6.24	2	3	10	
146	LW	1320	1345	5.19	2	3	11	
153	OP	1320	1345	5.78	2	3	11	
154	ND	1320	1345	4.76	2	3	11	
161	DA	1320	1345	5.81	2	3	11	
162	LW	1345	1410	6.27	2	3	11	
163	OP	1345	1410	6.50	2	3	11	
170	ND	1345	1410	4.25	2	3	11	
171	DA	1345	1410	4.97	2	3	11	
176	LW	1410	1435	5.74	2	3	13	
177	OP	1410	1435	6.27	2	3	13	
178	ND	1410	1435	6.97	2	3	13	
184	DA	1410	1435	5.43	2	3	13	
185	LW	1435	1500	4.20	2	3	2	
186	OP	1435	1500	5.97	2	3	2	
190	ND	1435	1500	4.71	2	3	2	
191	DA	1435	1500	5.02	2	3	2	
192	LW	1500	1528	4.71	2	3	11	
196	OP	1500	1525	4.68	2	3	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wador | Dwight Anderson
Omar Ponce
Nick Banks

Cal. Gas Exp. Date: 9-21-21

Date: 1-21-21 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 56 Precip: 0 Upwind BG: 2.4 Downwind BG: 3.0

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
157	NB	1500	1525	5.84	2	3	11	
158	DA	1500	1525	6.13	2	3	11	
201	LW	1525	1550	5.75	2	3	12	
202	OP	1525	1550	4.21	2	3	12	
205	NB	1525	1550	4.50	2	3	12	
206	DA	1525	1550	5.17	2	3	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 4

Attachment C

Component Leak Monitoring Event Records

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

2021 QUARTER: 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

2021 QUARTER: 1
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

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

LANDFILL NAME: Redwood
QUARTERLY LFG COMPONENT LEAK MONITORING

INSTRUMENT FID
MAKE: Thermo Environr
MODEL: TVA 1000
S/N: 1036246772

DATE OF SAMPLING: 1-20-21
TECHNICIAN: [illegible]

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

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

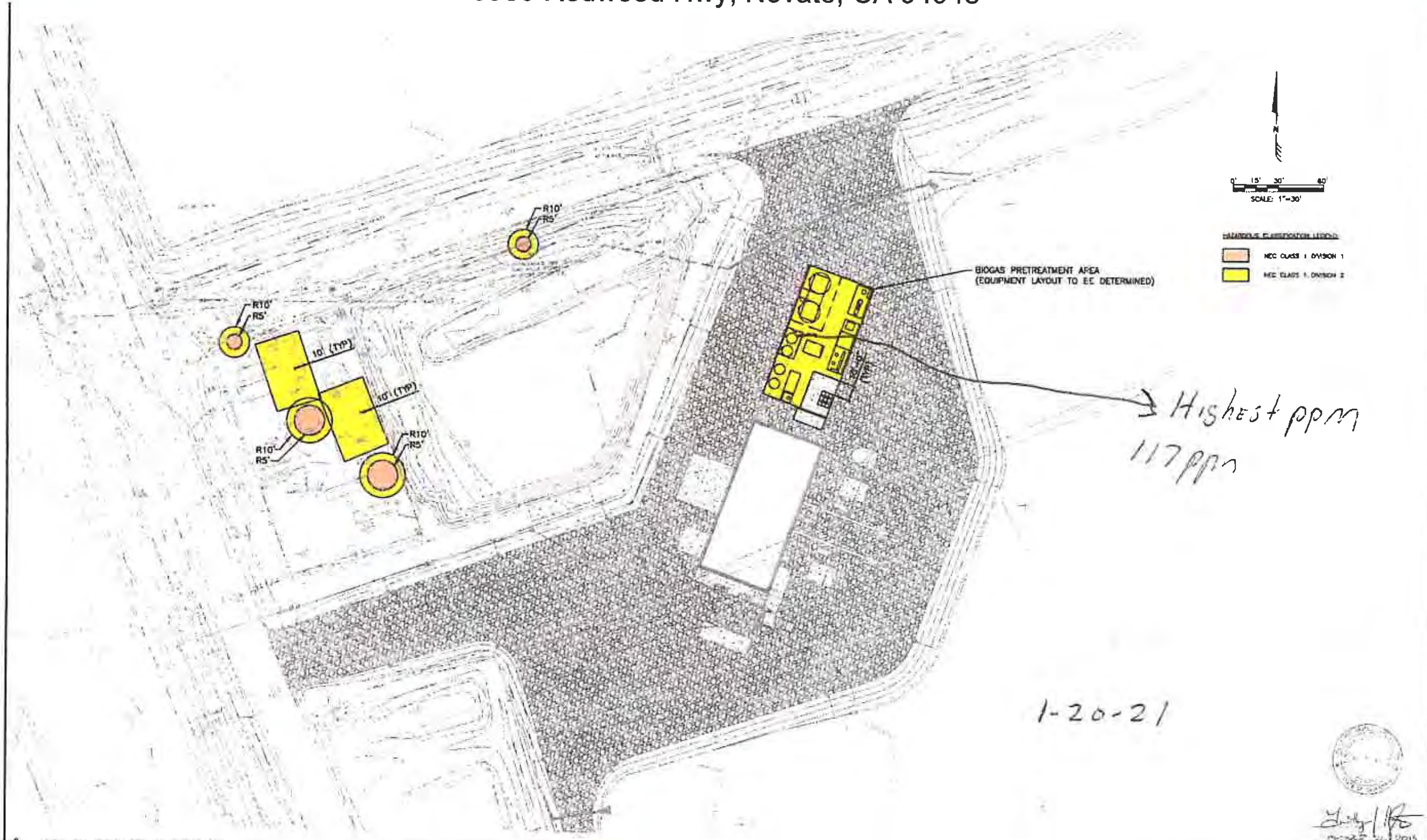
NOTE: Leaks over 500 ppmv methane are exceedances at any component containing landfill gas, pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B).

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

REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948



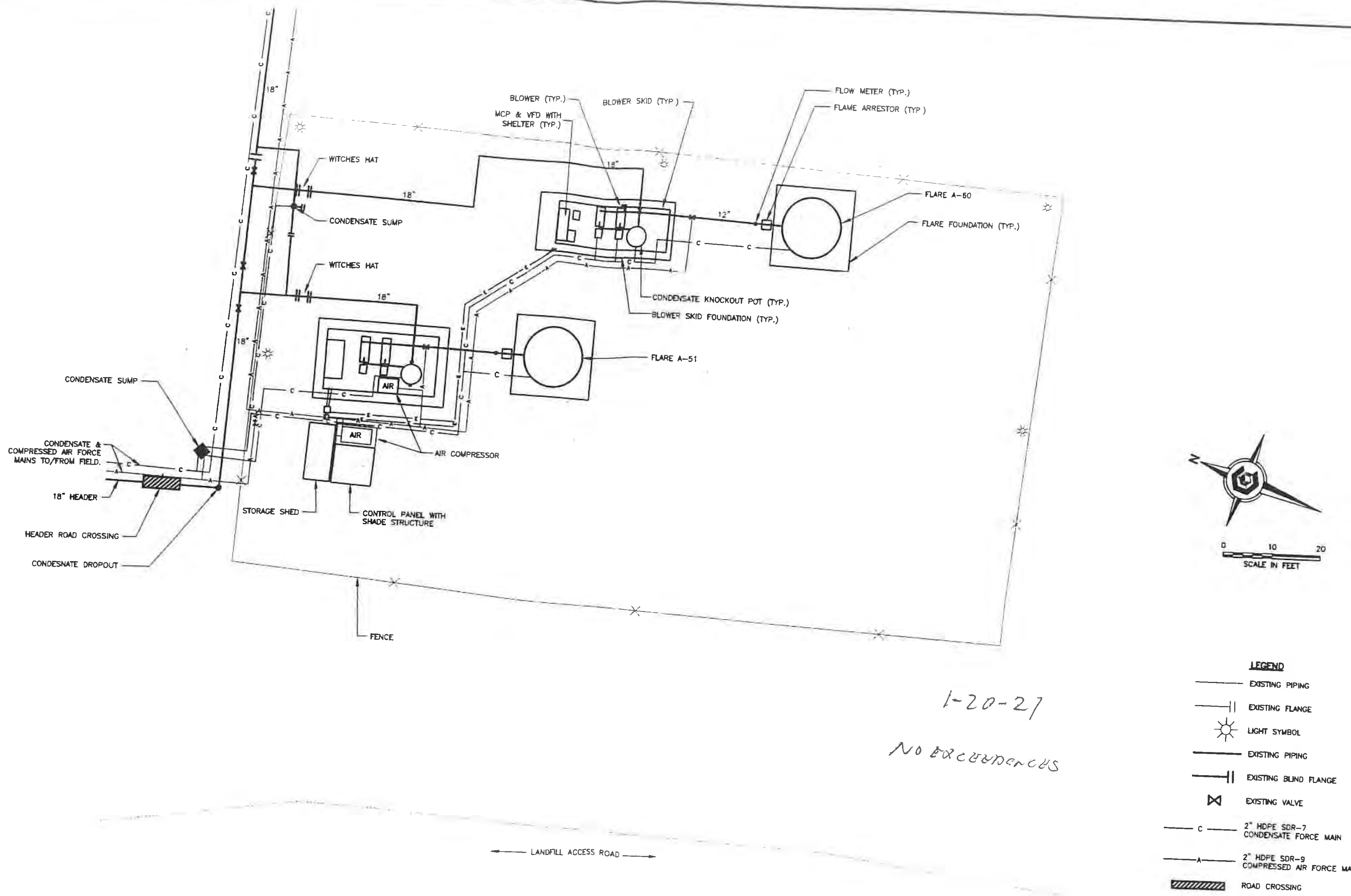
	3-1-16	RAA	ISSUED FOR CONSTRUCTION
	10-26-15	RAA	BUILDING PERMIT APPLICATION SET
	10-2-15	RAA	95% DESIGN RESUBMITTAL
	8-7-15	RAA	ISSUED FOR GAS TREATMENT SKID BID
	6-12-15	RAA	95% DESIGN SUBMITTAL
	5-5-15	RAA	50% DESIGN SUBMITTAL
REV	DATE	BY	DESCRIPTION

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

ACEng
www.ac-engineering.com

CLIENT	DESCRIPTION	PROJECT NO:
WASTE MANAGEMENT RENEWABLE ENERGY LANDFILL TO GAS ENERGY PROJECT REDWOOD LANDFILL, NOVATO, CA	PROPOSED CONDITIONS AND HAZARDOUS AREA CLASSIFICATIONS	1003.005.001 SHEET: G-5

7/25/2017



1-20-21

No Exceedences

DRAFT

WASTE MANAGEMENT

PAUL J. STOUT, P.E.

P.E. Lic No. C52827 Date

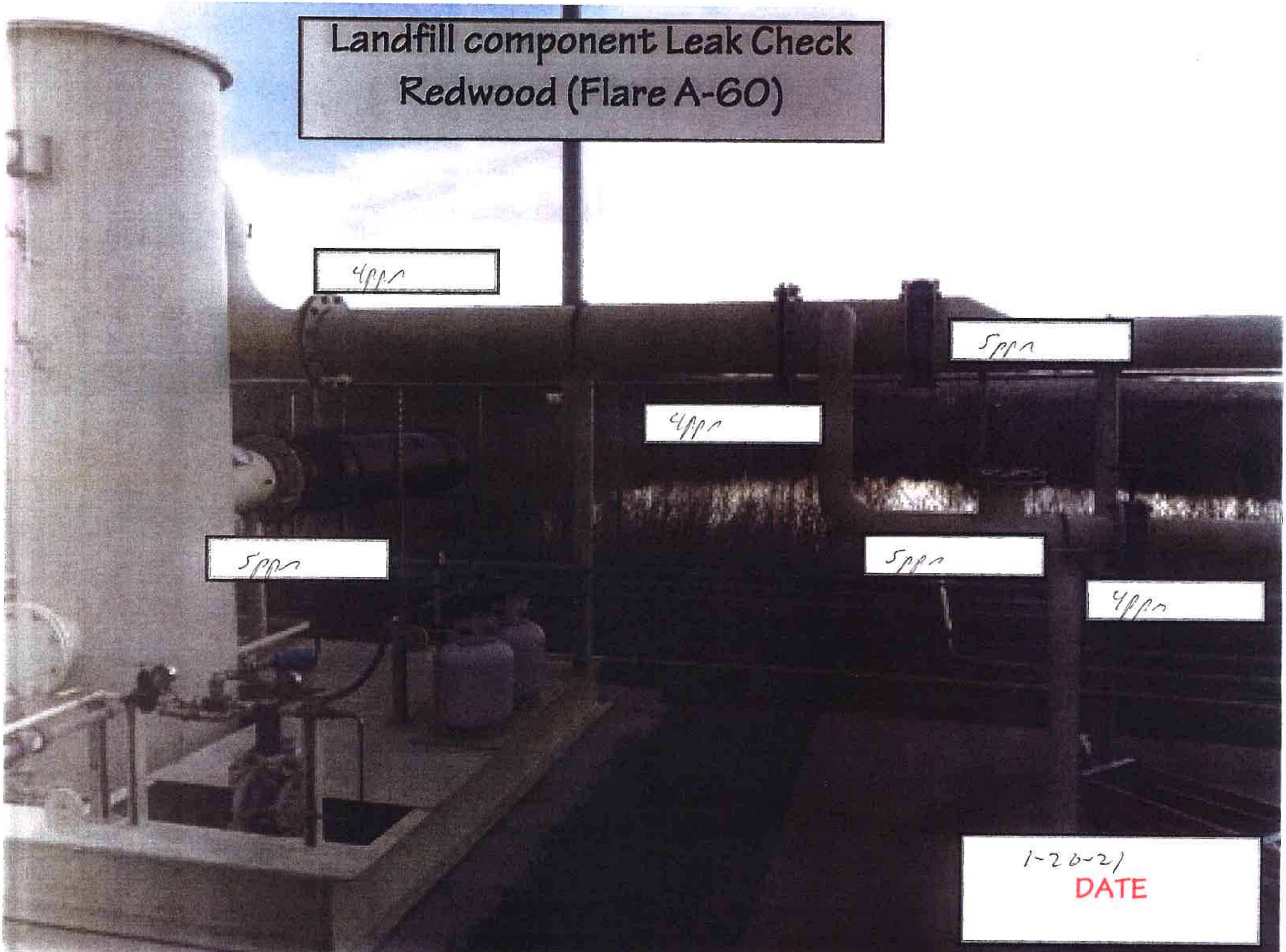
CORNERSTONE Environmental Group, LLC

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

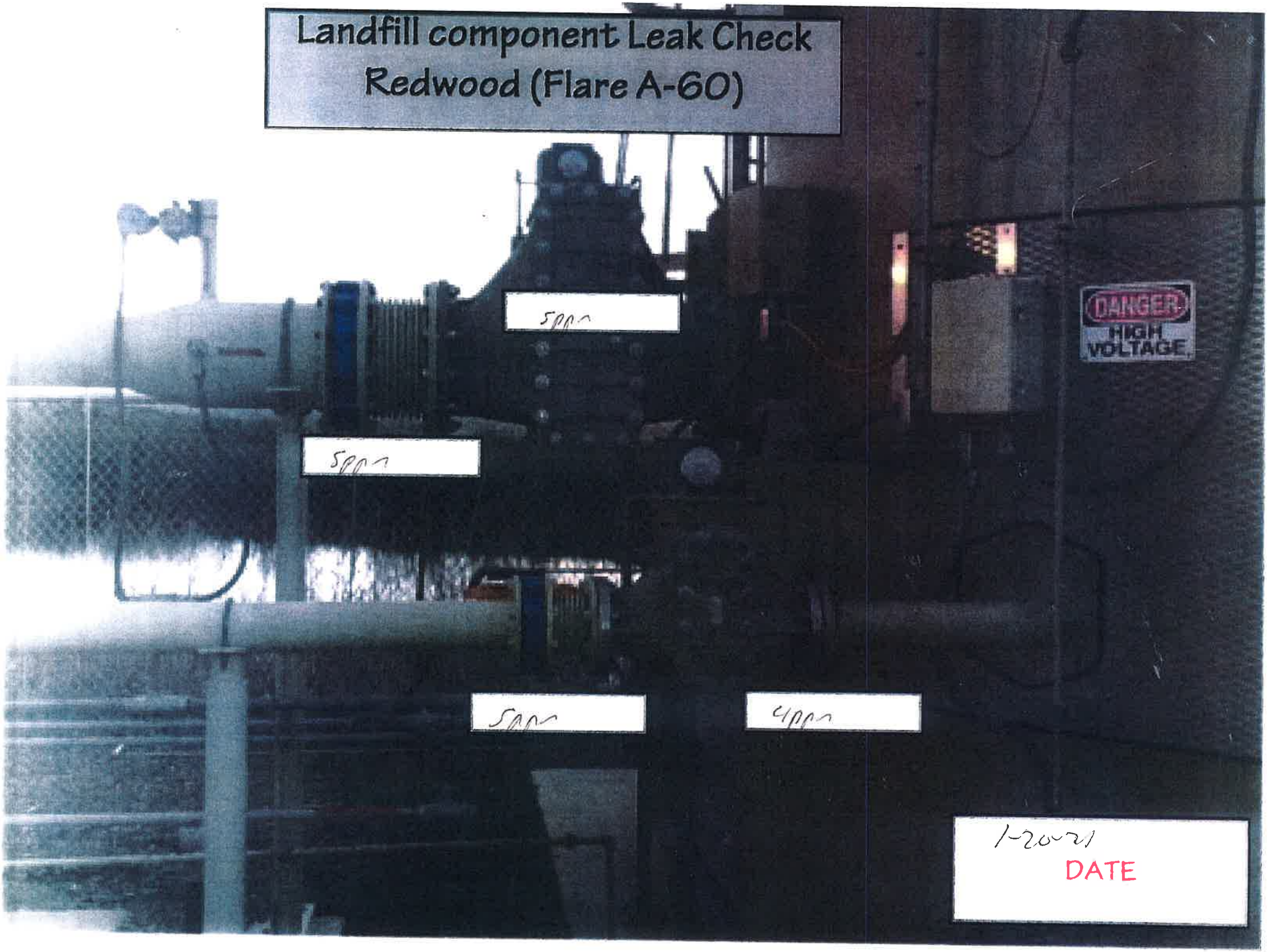
LFG FLARE AND GCCS AS-BUILT FACILITY SITE PLAN

SHEET NO
1

PROJECT NO 70314


Landfill component Leak Check
Redwood (Flare A-60)
4ppm
5ppm
4ppm
5ppm
5ppm
4ppm
1-20-21
DATE


Landfill component Leak Check
Redwood (Flare A-60)
6ppm
4ppm
5ppm
1-20-21
DATE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Redwood (Flare A-60)
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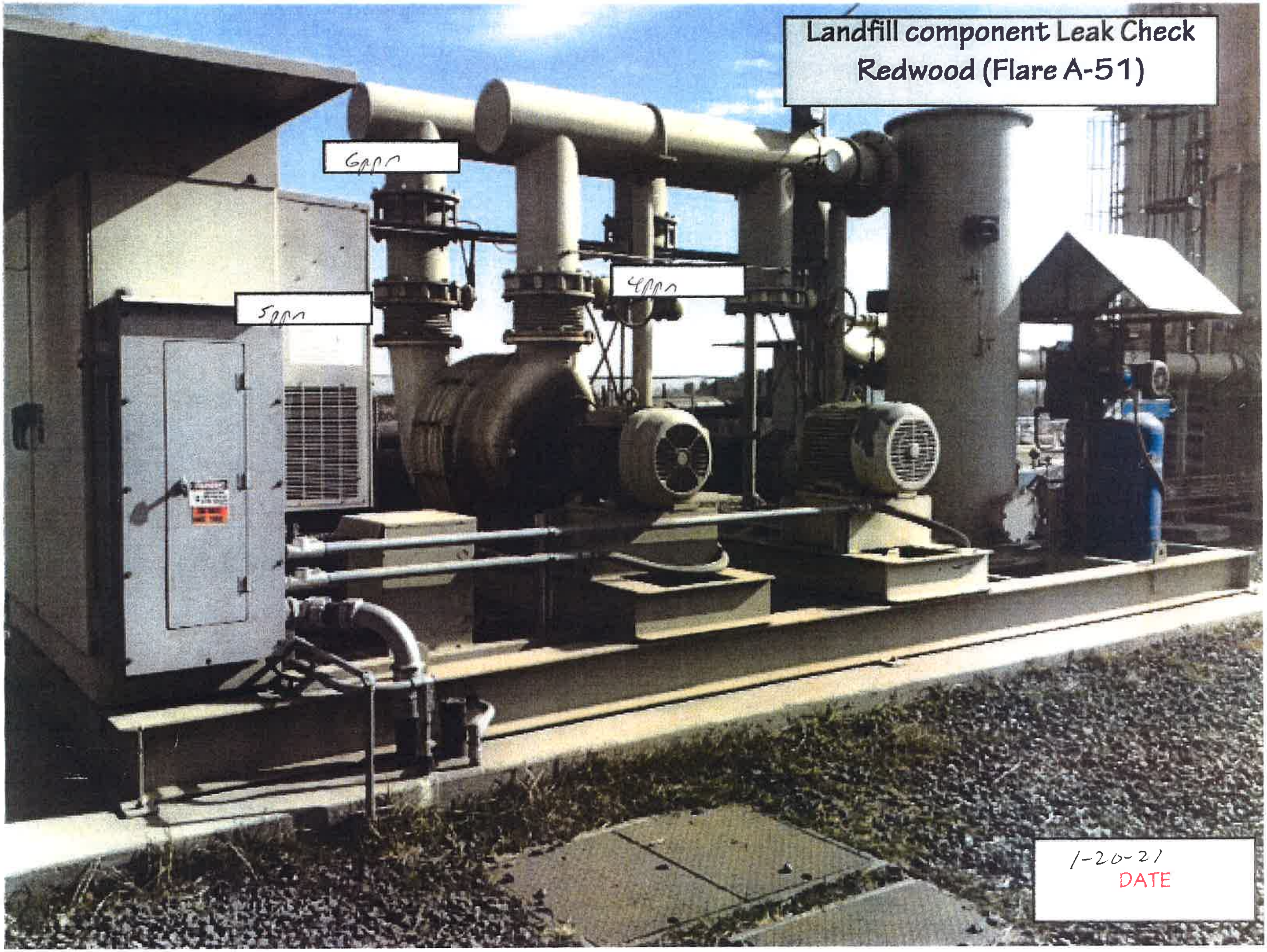
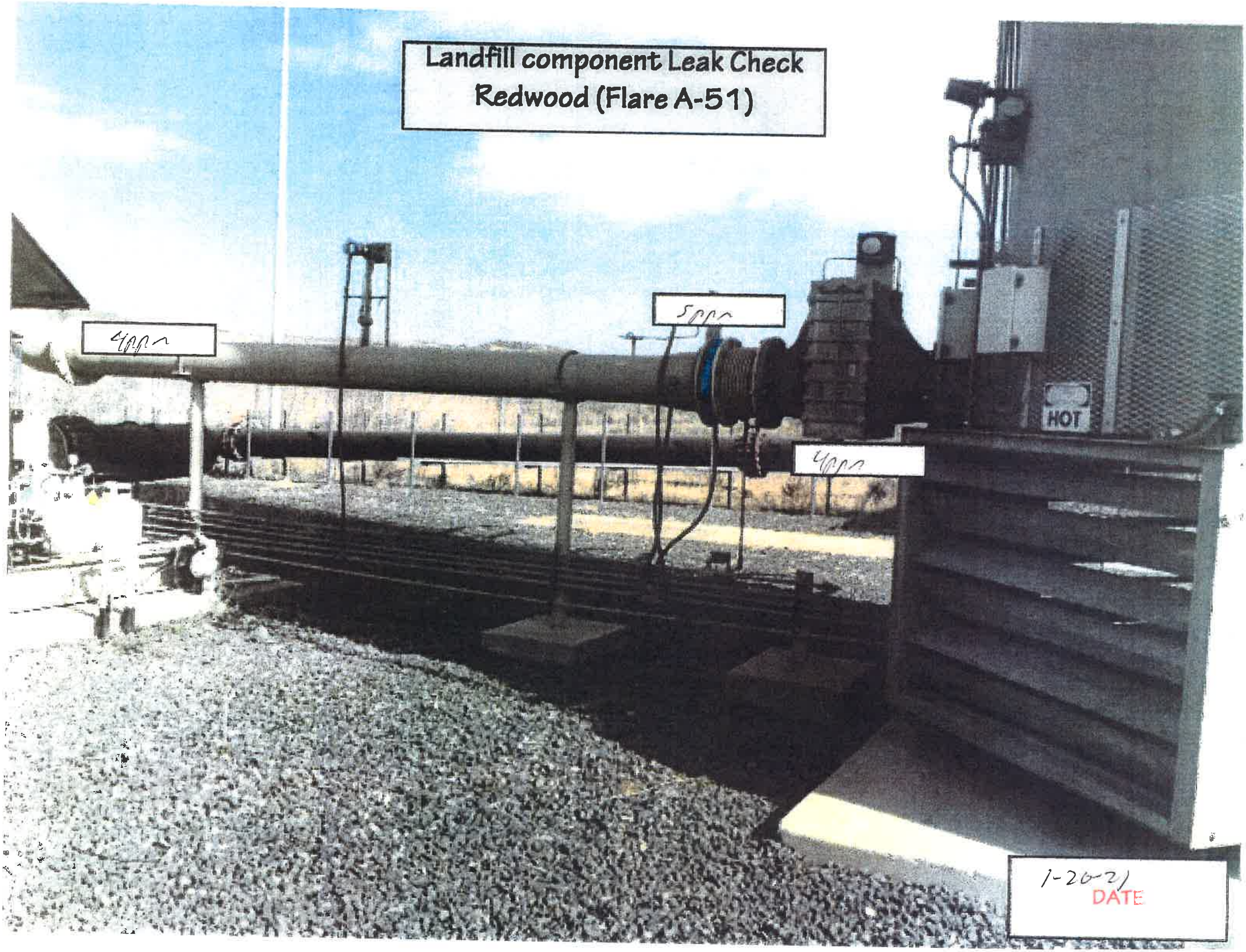
5ppm
5ppm
4ppm
DANGER
HIGH
VOLTAGE
1-20-21
DATE


Landfill component Leak Check
Redwood (Flare A-51)
6ppm
5ppm
4ppm
1-20-21
DATE

Landfill component Leak Check
Redwood (Flare A-51)



Attachment D

Weather Station Data

RES

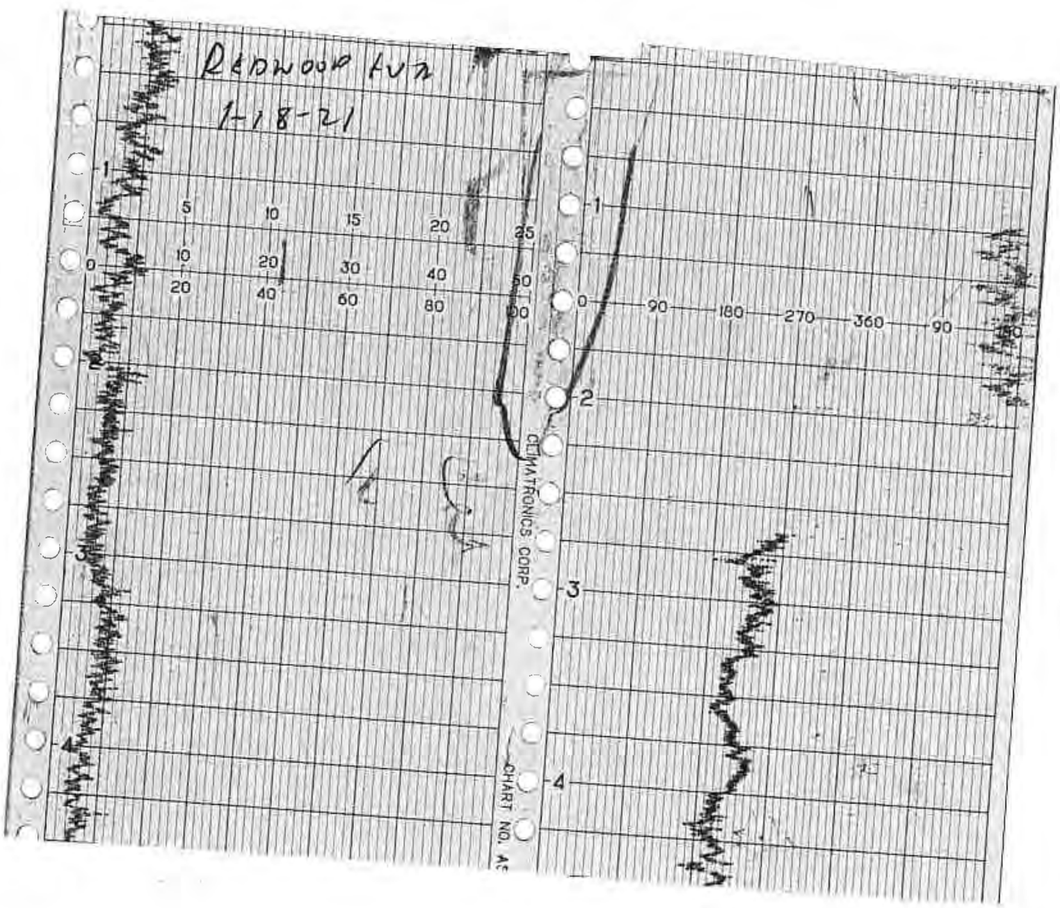
Environmental Inc.

16-POINT WIND DIRECTION INDEX

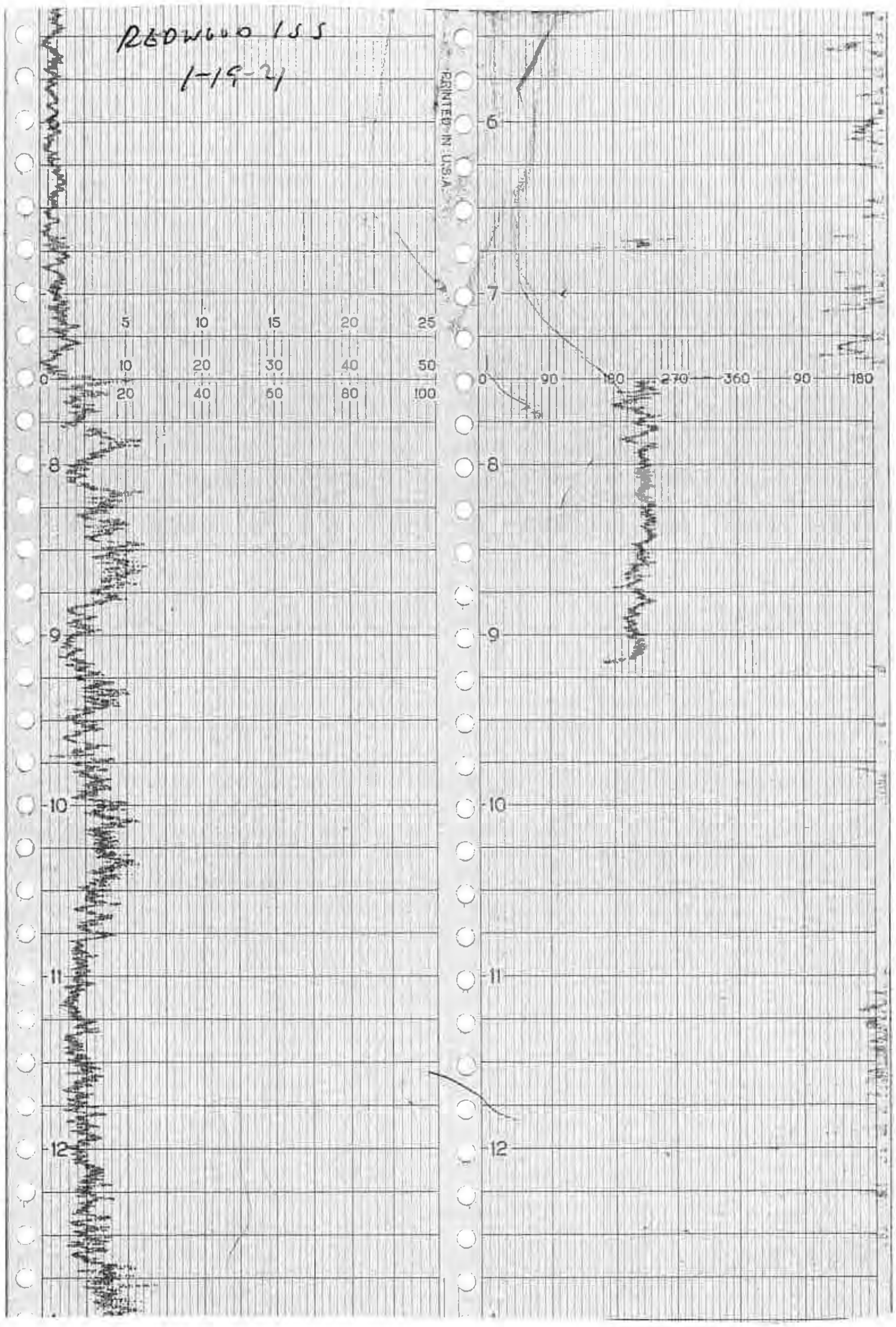
NO	DIRECTION	DEGREES FROM	DEGREES CENTER	DEGREES TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3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

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

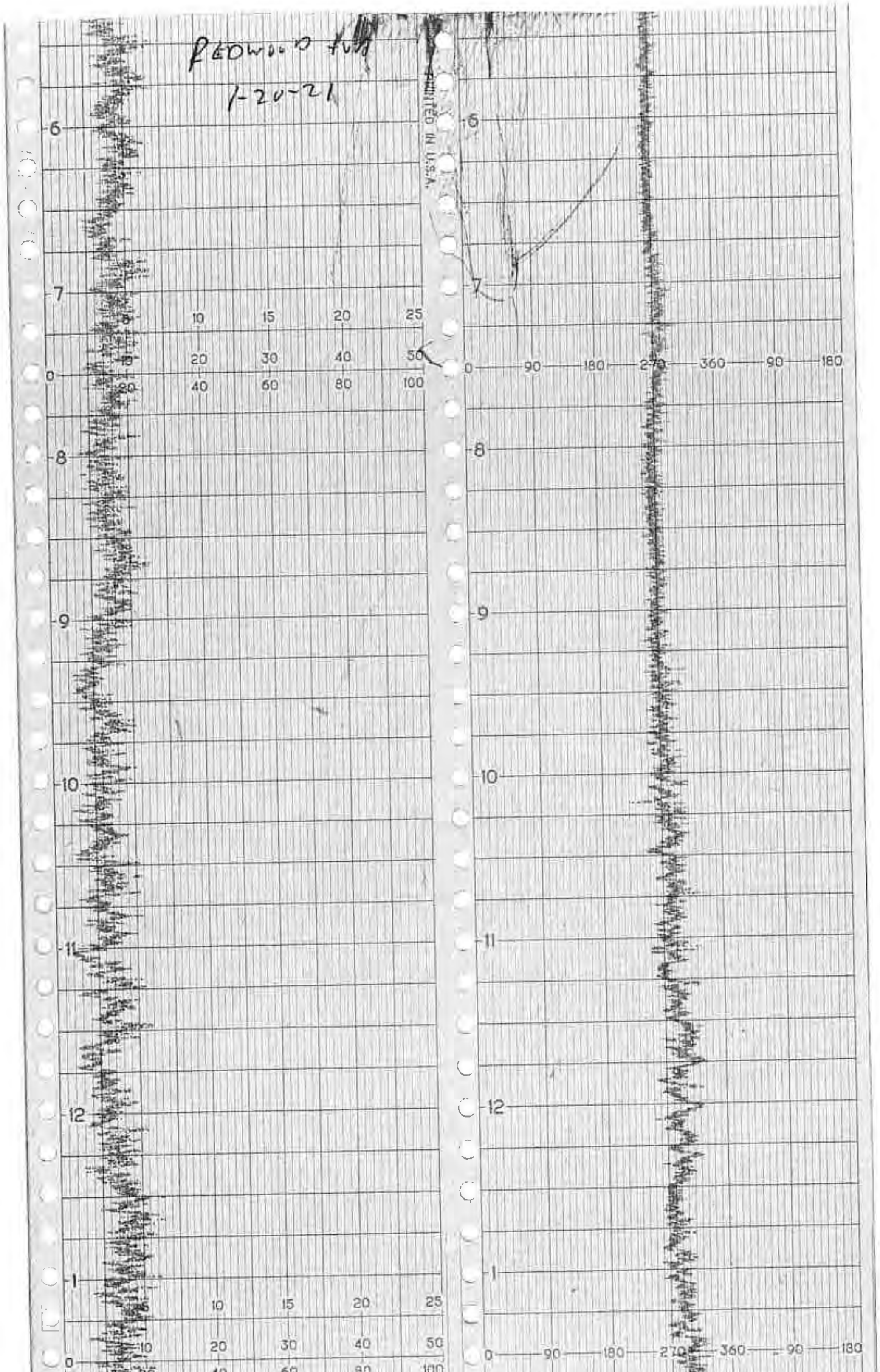
WIND SPEED & DIRECTION CHART ROLL



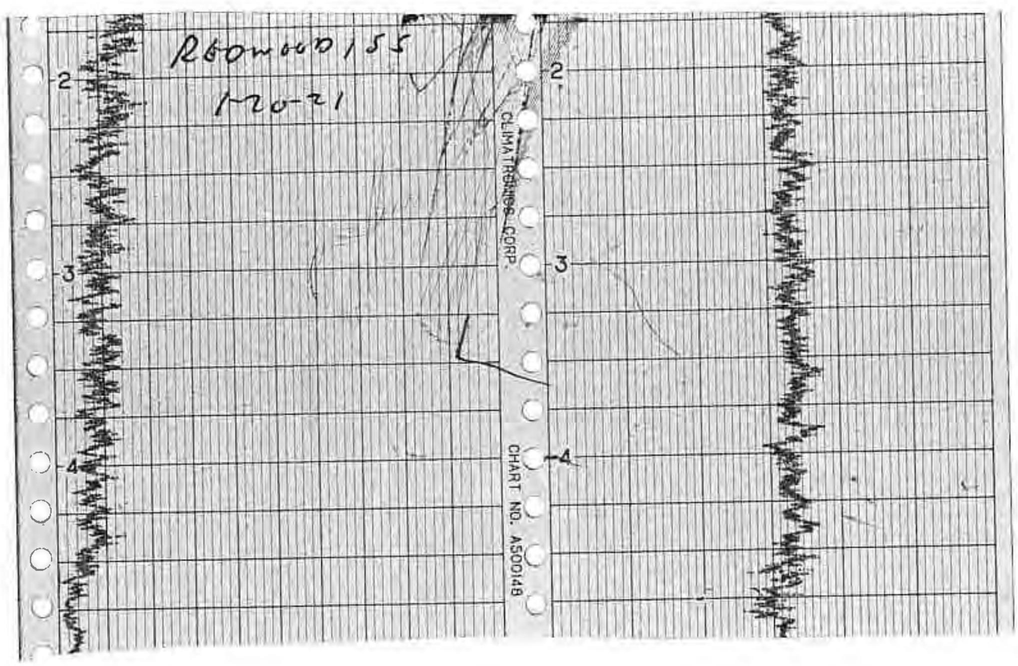
WIND SPEED & DIRECTION CHART ROLL

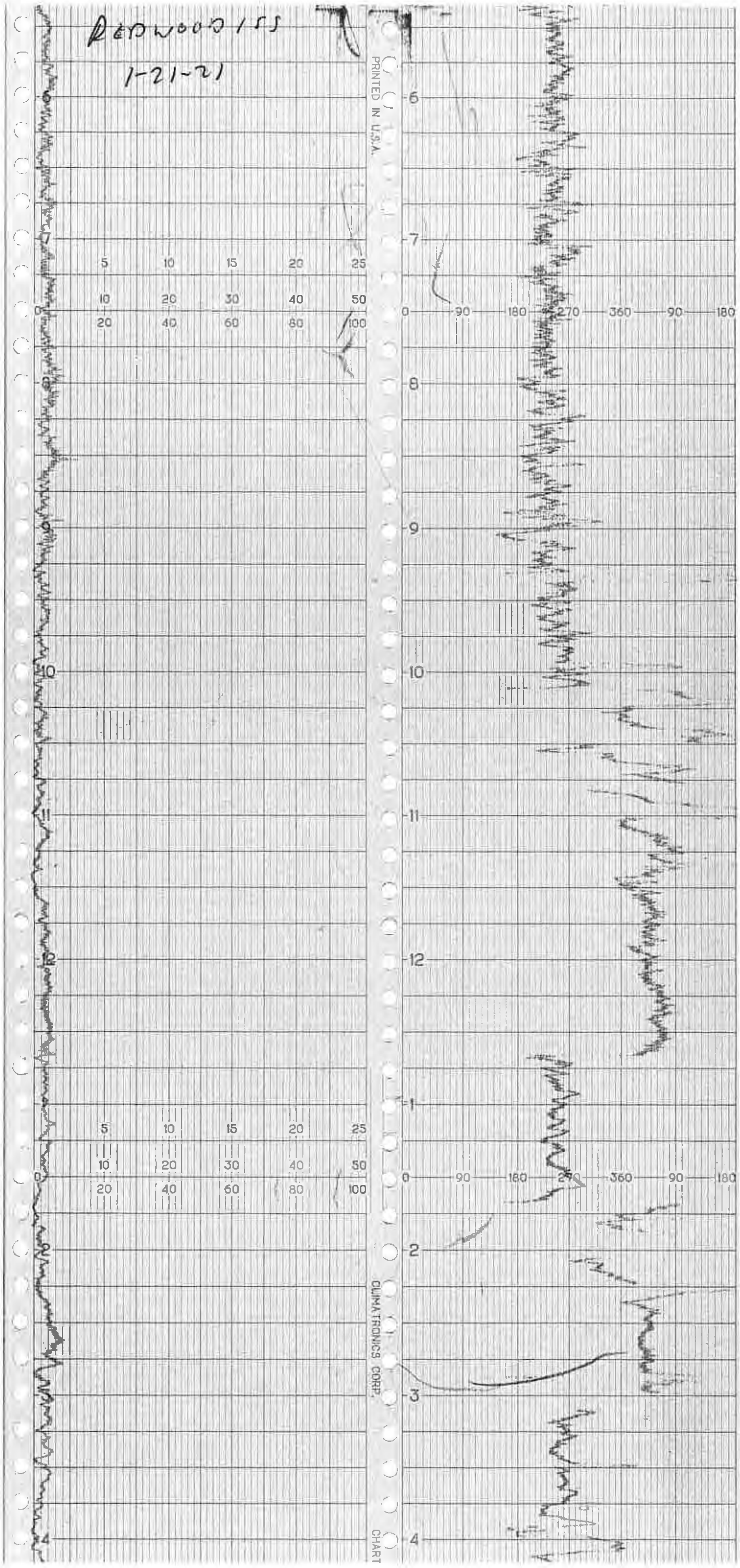


WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL




REDWOOD 1SS
1-21-21
PRINTED IN U.S.A.
5 10 15 20 25
10 20 30 40 50
20 40 60 80 100
0 90 180 270 360 90 180
CLIMATRONICS CORP.
CHART

Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 1/14/21

Expiration Date (3 months): 4/14/21

Time: ______ AM 1:44 PM

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

Measurement #1:

Stabilized Reading Using Calibration Gas: 497 ppm
90% of the Stabilized Reading: 447 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 4.0 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 496. ppm
90% of the Stabilized Reading: 447 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 2.0 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 496 ppm
90% of the Stabilized Reading: 446 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 5.0 seconds (c)

Calculate Response Time:

$\frac{(a) + (b) + (c)}{3} =$ 3.6 seconds (must be less than 30 seconds)

Performed By: ED KANG

CALIBRATION PRECISION TEST RECORD

Date: 1/14/21

Expiration Date (3 months): 4/14/21

Time: ______ AM 1:30 PM

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

Measurement #1:

Meter Reading for Zero Air: Ø ppm (a)

Meter Reading for Calibration Gas: 499 ppm (b)

Measurement #2:

Meter Reading for Zero Air: Ø ppm (c)

Meter Reading for Calibration Gas: 499 ppm (d)

Measurement #3:

Meter Reading for Zero Air: Ø ppm (e)

Meter Reading for Calibration Gas: 498 ppm (f)

Calculate Precision:

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

0.26 % (must be < than 10%)

Performed By: ED KANG

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: REDWOOD Date: 1/20/21

Time: 8:35 AM ______ PM

Instrument Make: Photovac Model: MicroFID S/N: C7MF340

Calibration Procedure

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

   Stable Reading = 500.1 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: E. KANG

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: RIDGWOOD Date: 1/21/21

Time: 9:40 AM ______ PM

Instrument Make: Photovac Model: MicroFID S/N: CZMF34

Calibration Procedure

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

   Stable Reading = 499.8 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: E. KANE

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: REDWOOD   Date: 1/22/21

Time: 7:26 AM ______ PM

Instrument Make: Photovac   Model: MicroFID   S/N: C2MF34

Calibration Procedure

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

   Stable Reading = 499.7 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: E KANG

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: REDWOOD Date: 1/28/21

Time: 9:20 AM _______ PM

Instrument Make: Photovac Model: MicroFID S/N: C2MF340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.
   Stable Reading = 499.9 ppm
3. Adjust meter to read 500 ppm.

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: E KANE

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: RIDGWOOD Date: 2/16/21

Time: ______ AM 1:35 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 ppm

3. Adjust meter to read 500 ppm.

Background Determination Procedure

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

Calculate Background Value:

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

Performed By: E KANE

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-18-21 TIME: 1210

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	497 ppm	447 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	0.27 ppm	504 ppm	4
#2	0.14 ppm	497 ppm	3
#3	0.10 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By: LEIGH WARD Date/Time 1-18-21 ~1210

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036396774

MONITORING DATE: 1-18-21 TIME: 1210

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 560 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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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	501 ppm	451 ppm	7
#3	506 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	0.38 ppm	489 ppm	11
#2	0.21 ppm	501 ppm	1
#3	0.16 ppm	500 ppm	0
Calculate Precision	([STD-B1] + [STD-B2] + [STD-B3]) / 3 X 1/500 X 100/1		0.80 #DIV/0! Must be less than 10%

Performed By: Omar Peraza Date/Time: 1-18-21 - 1210

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

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

MONITORING DATE: 1-18-21 TIME: 1210

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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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	496 ppm	446 ppm	5
#2	500 ppm	450 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.18 ppm	496 ppm	4
#2	0.11 ppm	500 ppm	0
#3	0.09 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.26 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 1-18-21 -1210

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 1-18-21 TIME: 1210

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	494 ppm	444 ppm	5
#2	506 ppm	456 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	0.26 ppm	494 ppm	6
#2	0.15 ppm	506 ppm	6
#3	0.10 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		0.80 #DIV/0! Must be less than 10%

Performed By DWIGHT ANDERSON Date/Time 1-18-21 1210

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-20-21 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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	498 ppm	448 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	0.29 ppm	507 ppm	7
#2	0.18 ppm	498 ppm	2
#3	0.14 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.60 #DIV/0! Must be less than 10%

Performed By: CRIS LWADE Date/Time: 1-20-21 - 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1030742774

MONITORING DATE: 1-20-21 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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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	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	0.35 ppm	489 ppm	11
#2	0.21 ppm	500 ppm	0
#3	0.11 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		0.73 #DIV/0! Must be less than 10%

Performed By: [illegible] Date/Time 1-20-21 - 0515

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

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

MONITORING DATE: 1-20-21 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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	7
#2	502 ppm	452 ppm	7
#3	510 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	0.20 ppm	490 ppm	10
#2	0.13 ppm	502 ppm	2
#3	0.09 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.88 #DIV/0! Must be less than 10%

Performed By Nick Banks Date/Time 1-20-21 - 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: FLIRMO

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1002746775

MONITORING DATE: 1-20-21 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	3.0 ppm	2.7 ppm

Background Value = 2.7 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	492 ppm	442 ppm	6
#2	497 ppm	447 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	0.15 ppm	492 ppm	8
#2	0.12 ppm	497 ppm	3
#3	0.09 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.73 #DIV/0! Must be less than 10%

Performed By: DWIGHT ANDERSON Date/Time 1-20-21 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-19-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	0.26 ppm	23 ppm	2
#2	0.18 ppm	25 ppm	0
#3	0.14 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: LORISH WADE Date/Time: 1-19-21-0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036296779

MONITORING DATE: 1-19-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	0.70 ppm	24 ppm	1
#2	0.10 ppm	25 ppm	0
#3	0.08 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By Omar Pineda Date/Time 1-19-21-0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE 1-19-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	0.24 ppm	23 ppm	2
#2	0.13 ppm	24 ppm	1
#3	0.11 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: NRIC BANKS Date/Time 1-19-21-0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 1-19-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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 $\frac{(1+2+3)}{3}$			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	0.21 ppm	24 ppm	1
#2	0.14 ppm	24 ppm	1
#3	0.12 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 Dwight Anderson Date/Time: 1-19-21 0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo
MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1026246773
MONITORING DATE: 1-20-21 TIME: 1340

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	0.34 ppm	23 ppm	2
#2	0.21 ppm	25 ppm	0
#3	0.16 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: LEIGH WADE Date/Time 1-20-21-1340

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1636296774

MONITORING DATE: 1-20-21 TIME: 1340

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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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	0.26 ppm	24 ppm	1
#2	0.14 ppm	25 ppm	0
#3	0.10 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By Omar perezan Date/Time 1-20-21-1340

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Heinao

MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 103624674/

MONITORING DATE: 1-20-21 TIME: 1340

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	0.19 ppm	23 ppm	2
#2	0.13 ppm	24 ppm	1
#3	0.08 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 1-20-21-1340

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 1-20-21 TIME: 1340

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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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	0.41 ppm	24 ppm	1
#2	0.26 ppm	24 ppm	1
#3	0.17 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 1-20-21 - 1340

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-21-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	0.22 ppm	24 ppm	1
#2	0.18 ppm	24 ppm	1
#3	0.11 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 Craig Wade Date/Time 1-21-21 - 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 1-21-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 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	0.31 ppm	23 ppm	2
#2	0.25 ppm	24 ppm	1
#3	0.14 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By Omar Poncela Date/Time: 1-21-21 - 0515

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

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

MONITORING DATE: 1-21-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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	0.10 ppm	25 ppm	0
#3	0.09 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: Nick Bones Date/Time: 1-21-21 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 1-21-21 TIME: 0515

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	3.0 ppm	2.7 ppm

Background Value = 2.7 **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 $\frac{(1+2+3)}{3}$			#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	0.24 ppm	23 ppm	2
#2	0.18 ppm	25 ppm	0
#3	0.15 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		.2.6 #DIV/0! Must be less than 10%

Performed By: DWIGHT ANDERSON Date/Time: 1-21-21-0515

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: __________

Purpose: __________

Operator: [signature]

Date: 1-9-21 Time: 0930

Model # TVA 1000B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK: Calibration Gas (ppm) 500; Actual (ppm) 500; % Accuracy 100
Reading following ignition	2.1 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm 500
H2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm 450
Date of last factory calibration	1-9-21	Time required to attain 90% of Cal Gas ppm: 1. 6 2. 5 3. 5 Average 5.6
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH4 gas.

Comments: __________

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site: ____________________

Purpose: ____________________

Operator: [signature]

Date: 1-9-21 Time: 0915

Model # TVA 1000 B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK
Reading following ignition	1.8 ppm	Calibration Gas (ppm): 500; Actual (ppm): 500; % Accuracy: 100%
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	1-9-21	Time required to attain 90% of Cal Gas ppm: 1. 7; 2. 7; 3. 7; Average 7.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH_4 gas.

Comments: ____________________

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RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site: ____________________

Purpose: ____________________

Operator: [illegible]

Date: 1-9-21 **Time:** 0900

Model # TVA 1000 B

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	1-9-21
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. 7
2. 6
3. 5

Average 6.0

Equal to or less than 30 seconds? Y N

Instrument calibrated to CH4 gas.

Comments: ____________________

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RES
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SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ________

Purpose: ________

Operator: [signature]

Date: 1-9-21 Time: 0845

Model # TVA 1000 B

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK Calibration Gas (ppm): 500 · Actual (ppm): 500 · % Accuracy: 100%
Reading following ignition	2.3 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500 90% of Calibration Gas, ppm: 450
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	Time required to attain 90% of Cal Gas ppm 1. 7 2. 7 3. 4
Date of last factory calibration	1-9-21	Average 6.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N Instrument calibrated to CH_4 gas.

Comments: ________

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #10

SERIAL NUMBER: 103634677 3

TECHNICIAN: [signature]

DATE: 1-9-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,103	+/- 2500
< 1	ZERO GAS	0.64	< 3
PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

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

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #11

SERIAL NUMBER: 10363 46 774

TECHNICIAN: [illegible] DATE: 1-9-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,101	+/- 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.

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT # 12

SERIAL NUMBER: 1036246741

TECHNICIAN: [signature] DATE: 1-9-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0.03	< 3

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

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

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RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: MES UNIT # 13

SERIAL NUMBER: 1102746775

TECHNICIAN: [illegible]   DATE: 1-9-21

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,001	+/- 2500
< 1	ZERO GAS	0.58	< 3

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

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

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INTERMOUNTAIN SPECIALTY GASES

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

CERTIFICATE OF ANALYSIS

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

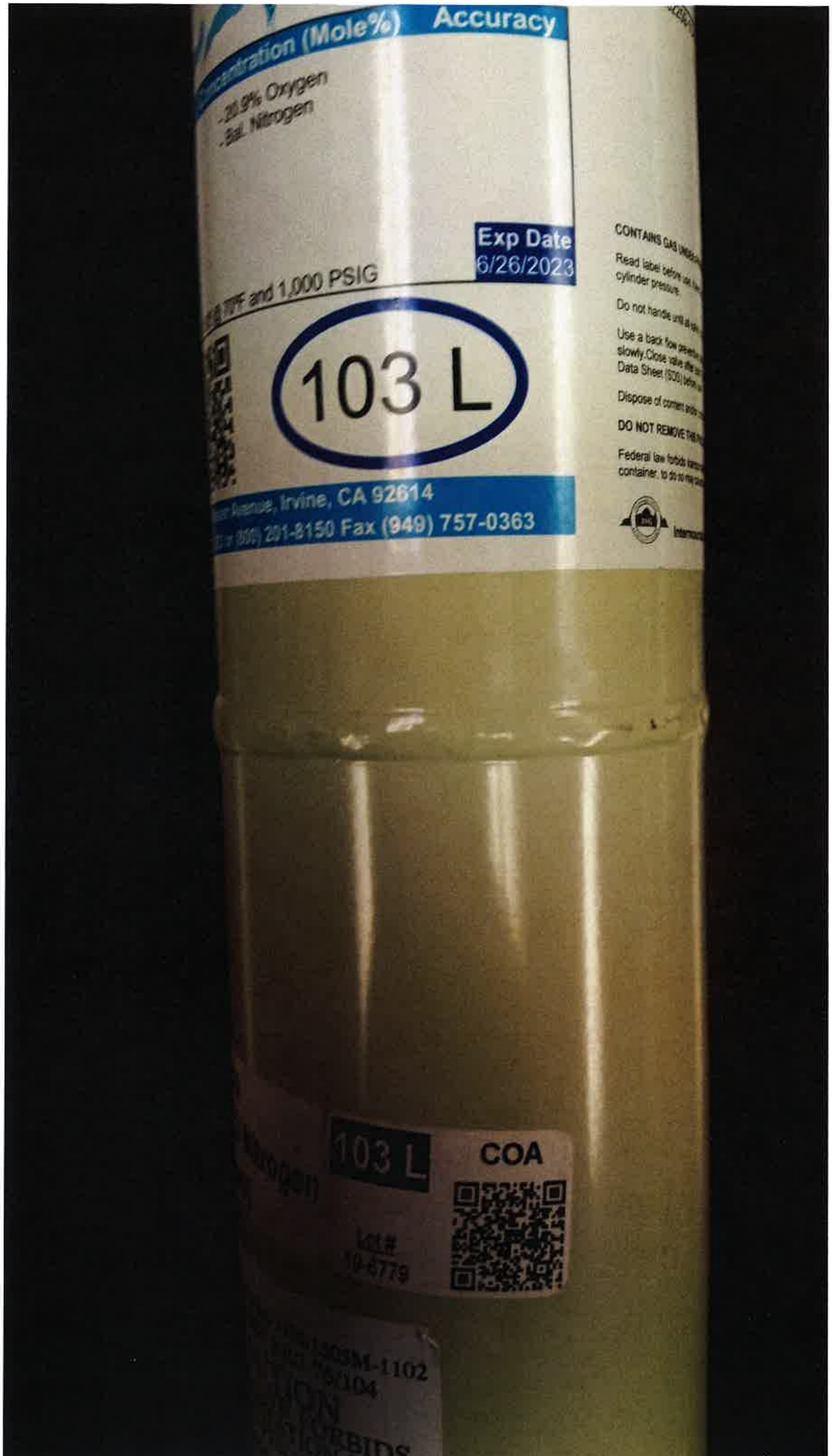
Lot # 19-6779

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

Method of Preparation:
Gravimetric/Pressure Transfilled

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

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


ntration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
6/26/2023
70°F and 1,000 PSIG
103 L
Avenue, Irvine, CA 92614
201-8150 Fax (949) 757-0363
CONTAINS GAS
Read label before use
cylinder pressure.
Do not handle until
Use a back flow
Dispose of content
DO NOT REMOVE
Federal law forbids
container.
103 L
COA
Lot#
19-6779
SM-1102

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800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

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

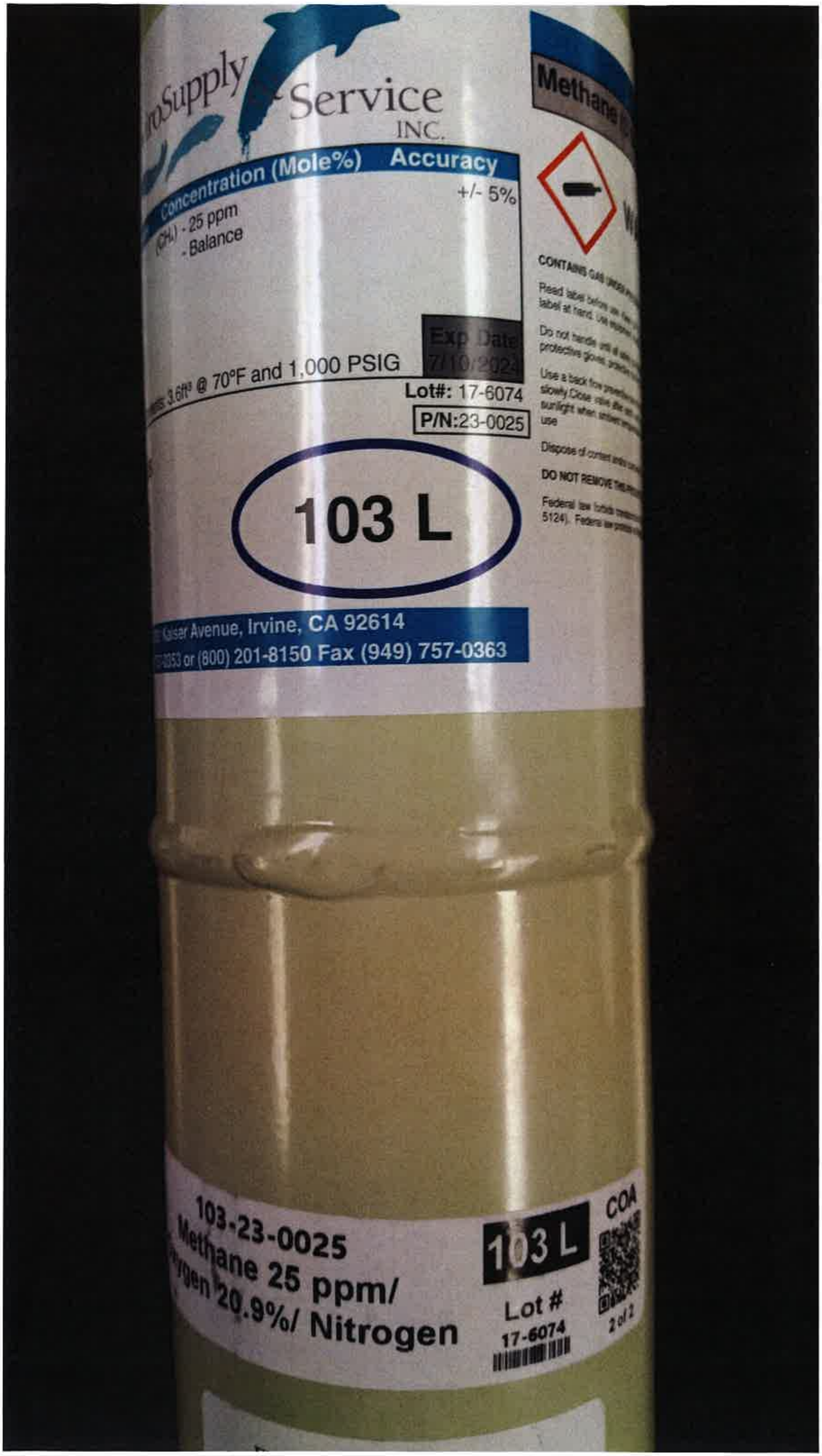
Lot # 17-6074

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

Method of Preparation:
Gravimetric/Pressure Transfilled

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

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



Service
INC.
Concentration (Mole%)
Accuracy
+/- 5%
- 25 ppm
- Balance
Exp Date
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
103-23-0025
Methane 25 ppm/
20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
2 of 2

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

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"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

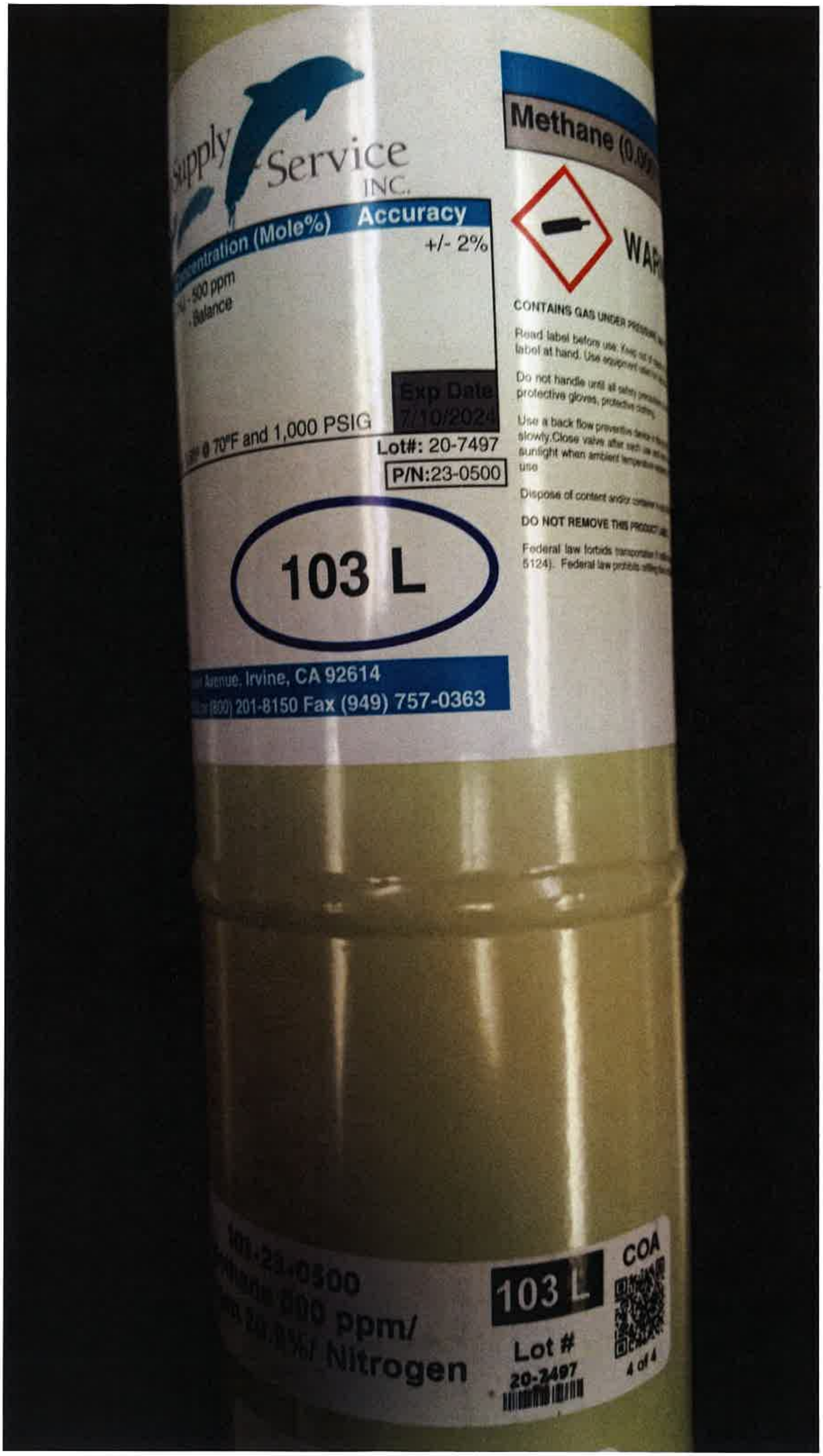
Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	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
CONTAINS GAS UNDER PRESSURE
Read label before use.
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
ppm/
Nitrogen
103 L
Lot #
COA
4 of 4

Intermountain Specialty Gases

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Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN SPECIALTY GASES

"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

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

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

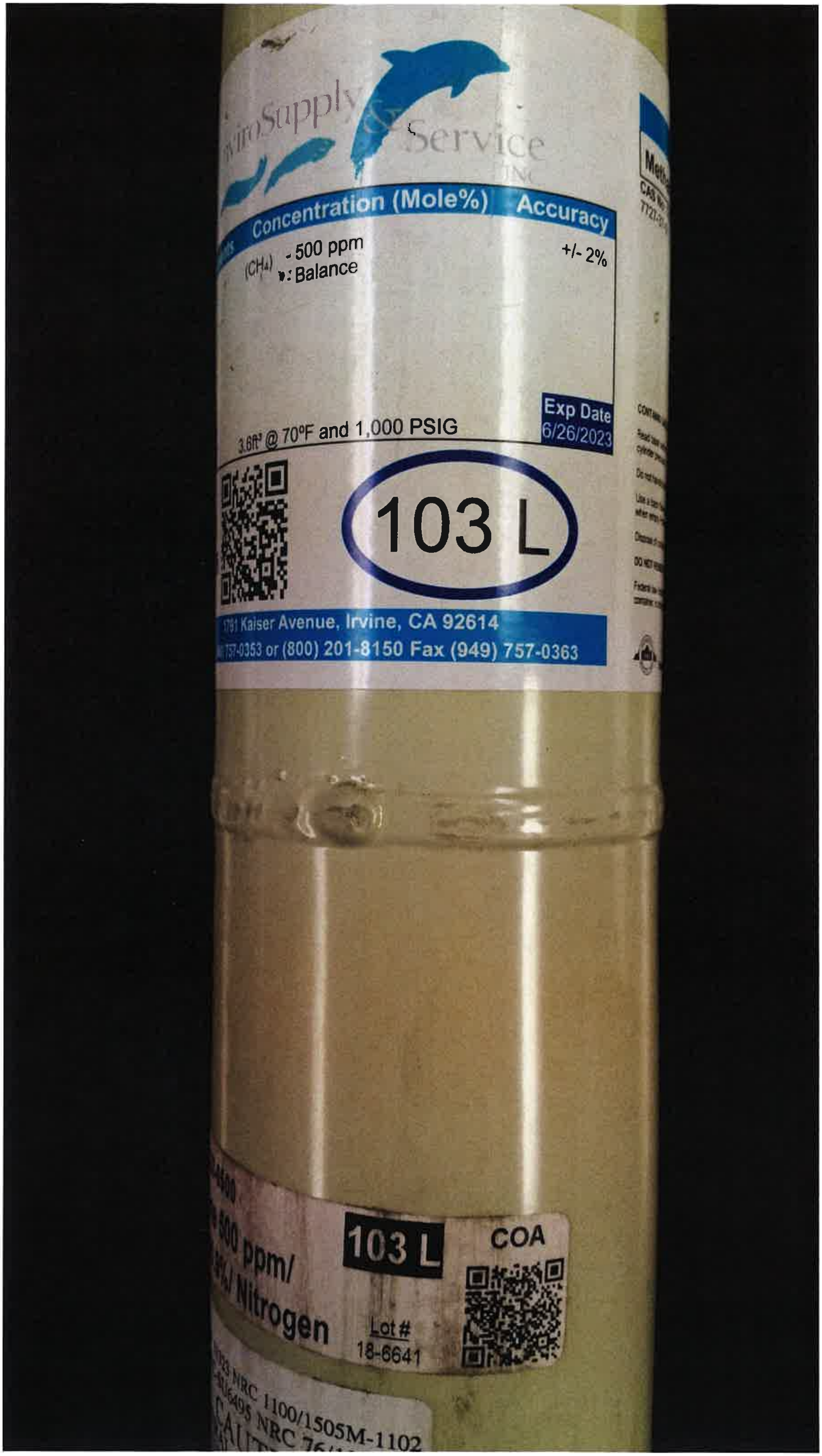
Method of Preparation:

Gravimetric/Pressure Transfilled

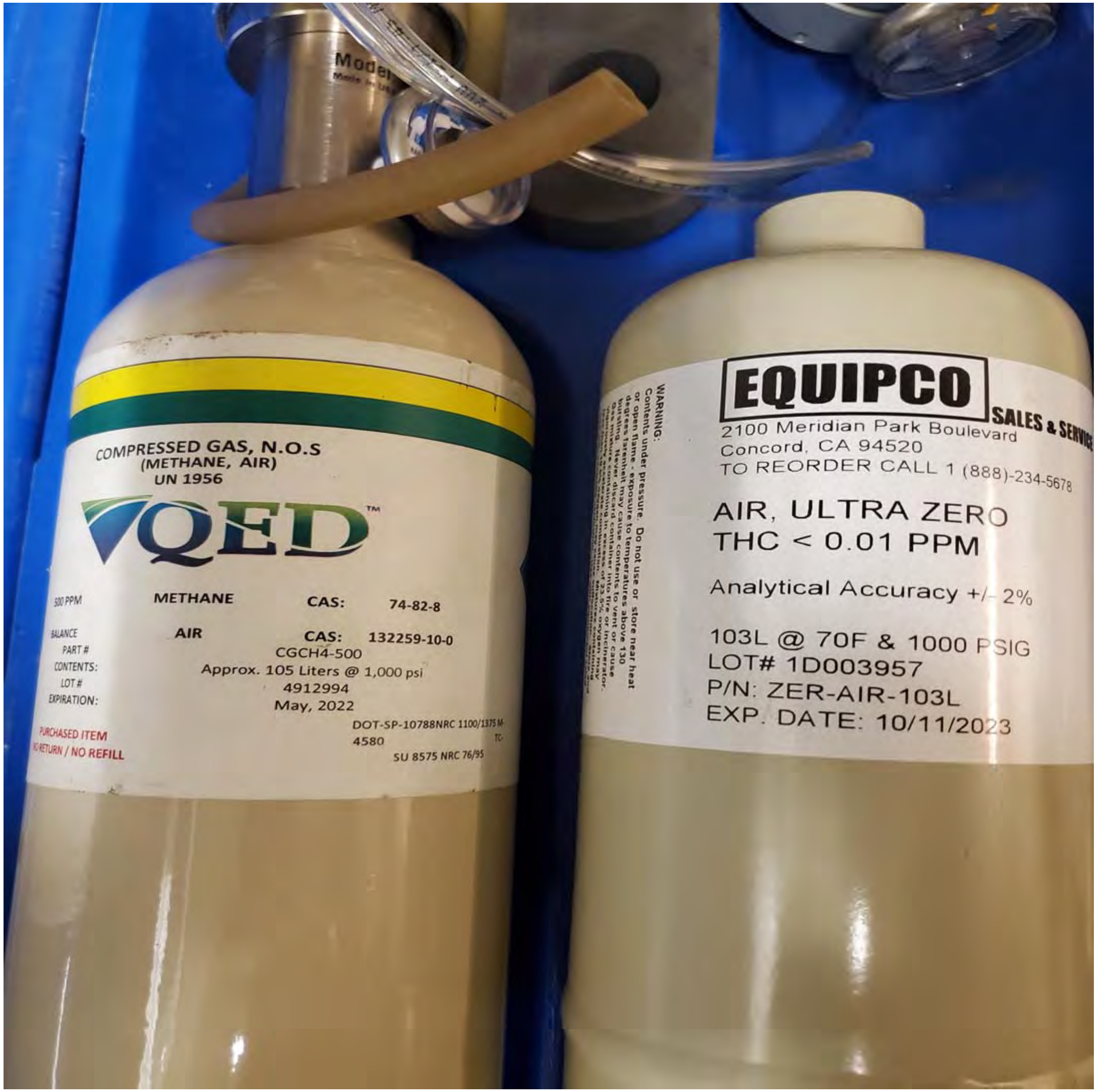
Method of Analysis:

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

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



Service
Concentration (Mole%)
Accuracy
(CH4) - 500 ppm
: Balance
+/- 2%
Exp Date
6/26/2023
3.6ft³ @ 70ºF and 1,000 PSIG
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103 L
COA
500 ppm/
Nitrogen
Lot#
18-6641
NRC 1100/1505M-1102



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

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

March 19, 2021

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

Re: March 2021 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 2021 Surface Emissions Monitoring (SEM). Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES).

APPLICABLE REQUIREMENTS

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

Surface Emission Monitoring (SEM)

- New Source Performance Standard (NSPS), Title 40 of the Code of Federal Regulations (CFR) §60.755 (c) and (d), 40 CFR 60, Appendix A Method 21, promulgated by the United States Environmental Protection Agency (USEPA).
- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) and Section 607 (Landfill Surface Inspection procedures).

PROCEDURES

General

Per NSPS and 8-34 rules, the entire surface of the landfill was monitored following a serpentine path with a 100' spacing. Active portions of the Landfill, slope areas, and as requested in the approved ACO, areas containing only asbestos-containing waste, inert waste and/or non-decomposable waste which are excluded for safety as allowed by the NSPS and 8-34.

Field personnel walked the surface of the landfill using the gridlines normally used for monitoring required by AB32 (see Attachment A map). These grids typically have dimensions of 500' x 100'. A consistent 100' spacing was achieved by walking on the 500' long borderline shared by two grids. Additionally, in accordance with the provisions of 40 CFR 60.753(d) and

60.755(c)(1-3), the entire perimeter of the landfill surface was monitored. During the event, special attention was given to monitoring unusual cover conditions (stressed vegetation, cracks, seeps, etc.) and any areas with unusual odors.

Instantaneous Surface Emissions Monitoring

The Instantaneous SEM was conducted using a Toxic Vapor Analyzer (TVA) 1000 flame ionization detector (FID), which was calibrated to 500 parts per million by volume (ppm_v) methane, which meets or exceeds all guidelines set forth in the NSPS and 8-34. The FID was calibrated prior to use in accordance with the United States Environmental Protection Agency (USEPA) Method 21 requirements.

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

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

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

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

MARCH 2021 SEM RESULTS

The Instantaneous surface monitoring was performed on March 16 and 17, 2021 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 16 and 17, 2021. No re-monitoring was required.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

Wind speeds during initial monitoring were monitored using a portable weather station. The station has a strip chart that records the wind speed and direction. The chart data is scanned and included in Attachment B.

EQUIPMENT CALIBRATION

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

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

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

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

- SEM Map
- Monitoring Logs and Exceedances

Attachment B – Weather Station Data

- Strip Chart Data

Attachment C – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Surface Emission Monitoring Event Records

LEGEND

- EXISTING 10' CONTOUR
- EXISTING LFG HEADER-ABOVE GROUND
- EXISTING HORIZONTAL COLLECTOR
- EXISTING FORCE MAIN AND AIR LINE
- EXISTING HORIZONTAL COLLECTOR WELLHEAD
- EXISTING HORIZONTAL COLLECTOR TERMINAL HEAD
- EXISTING CONTROL VALVE
- EXISTING BLIND FLANGE
- EXISTING FLANGE CONNECTION
- EXISTING REDUCER FITTING
- EXISTING CONDENSATE PUMP STATION
- EXISTING ROAD CROSSING
- EXISTING HEADER HIGH POINT
- EXISTING CAP ON EXISTING PIPE
- EXISTING LEACHATE SUMP

NSPS

3-16-3-17-2021

= UPWIND

= DOWNWIND

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

MARIN COUNTY

CALIFORNIA

NOVATO

DESIGN BY:	N/A
DRAWN BY:	STAFF
DATE:	NOV 2015
SCALE:	1"=200'
PAGE 1 OF 1	
JOB NUMBER: 15341	

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

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

Initial Monitoring Event			**Corrective Action**		**1st 10-day Follow-Up**			**1st 30-day Follow-Up**			**Comments**
Flag Number	Monitoring Date	Reading ppm	Repair Date	Action Taken	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
No Exceedances on March 16 and 17, 2021											

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

						Page of Pages
Quarter / Year:	1st 2021 NSPS					
Technician:	LEISHWADE					
Instrument:	TVA1000					
Calibration Standard:	500PPM					

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	
O-													
O-													NSPS
O-													NO EXCEEDANCES
O-													
O-													
O-													
O-													
O-													
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Attachment B

Weather Station Data

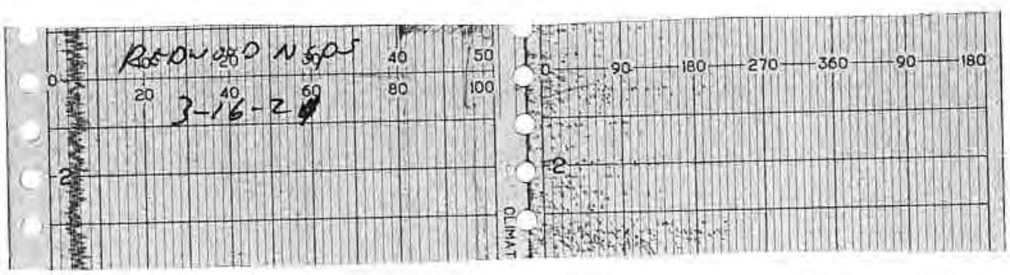
RES Environmental Inc.

16-POINT WIND DIRECTION INDEX

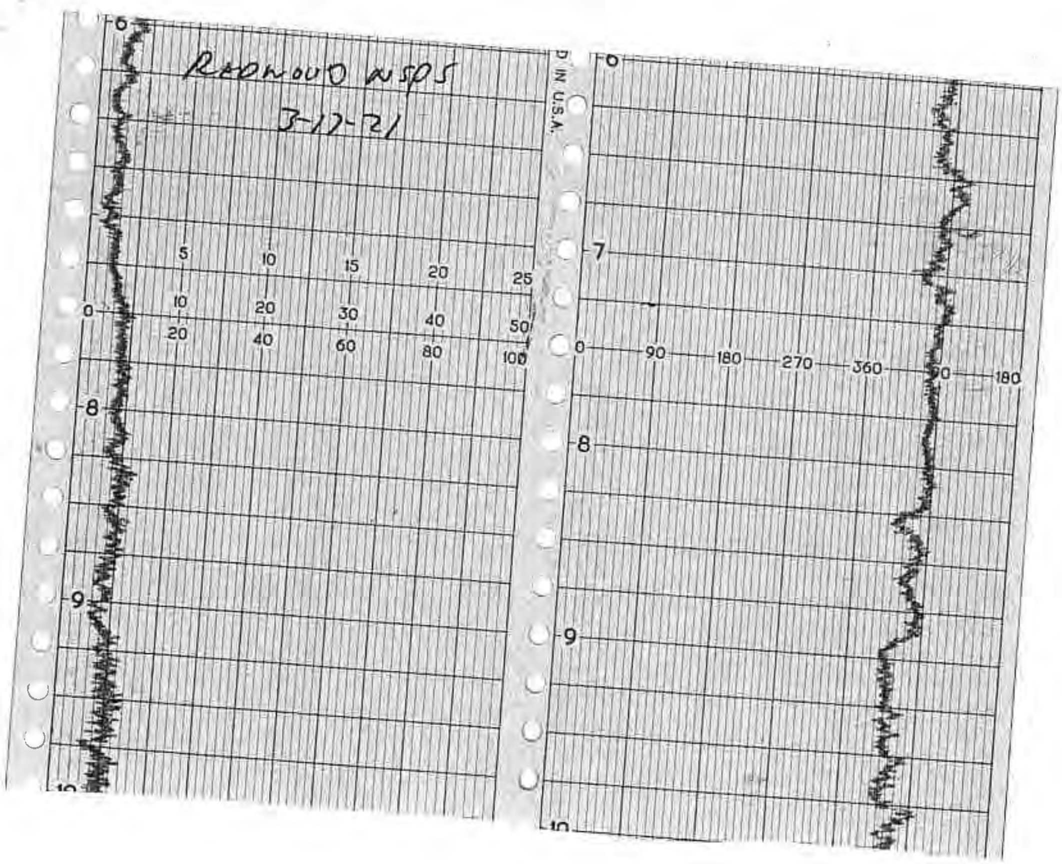
NO	DIRECTION	DEGREES FROM	DEGREES CENTER	DEGREES TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3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

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

WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



Attachment C

Calibration Records

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 3-16-21 TIME: 1315

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
2.0 ppm	3.2 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	489 ppm	439 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	0.41 ppm	489 ppm	11
#2	0.26 ppm	500 ppm	0
#3	0.10 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.73 #DIV/0! Must be less than 10%

Performed By Leishwant Date/Time 3-16-21 - 1315

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 3-16-21 TIME: 1315

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.0 ppm	3.2 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	456 ppm	7
#2	498 ppm	448 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	0.30 ppm	506 ppm	6
#2	0.14 ppm	498 ppm	2
#3	0.11 ppm	500 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.53 #DIV/0! Must be less than 10%

Performed By: Omar Peralta Date/Time: 3-16-21 - 1315

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 3-16-21 TIME: 1315

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
2.0 ppm	3.2 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	5
#2	501 ppm	451 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	0.19 ppm	497 ppm	3
#2	0.14 ppm	501 ppm	1
#3	0.08 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.26 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 3-16-21-1315

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1162746775

MONITORING DATE: 3-16-21 TIME: 1315

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
2.0 ppm	3.2 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	490 ppm	440 ppm	6
#2	496 ppm	446 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	0.33 ppm	490 ppm	10
#2	0.17 ppm	456 ppm	4
#3	0.08 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.93 #DIV/0! Must be less than 10%

Performed By Jesse Manning Date/Time 3-16-21 – 1315

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 3-17-21 TIME: 0600

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
2.0 ppm	3.2 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	491 ppm	441 ppm	5
#2	502 ppm	452 ppm	5
#3	500 ppm	500 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	0.21 ppm	491 ppm	9
#2	0.14 ppm	502 ppm	2
#3	0.12 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 Leash Wnorr Date/Time 3-17-21 0600

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE Thermo

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

MONITORING DATE: 3-17-21 TIME: 0600

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: $\frac{(Upwind + Downwind)}{2}$
2.0 ppm	3.2 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	507 ppm	457 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	0.34 ppm	507 ppm	7
#2	0.26 ppm	498 ppm	2
#3	0.19 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.60 #DIV/0! Must be less than 10%

Performed By Oscar Ponce LFA Date/Time 3-17-21 – 0600

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Rumwood INSTRUMENT MAKE: Thermo

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

MONITORING DATE: 3-17-21 TIME: 0600

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
2.0 ppm	3.2 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	495 ppm	445 ppm	5
#2	500 ppm	450 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time $\frac{(1+2+3)}{3}$			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.42 ppm	495 ppm	5
#2	0.20 ppm	500 ppm	0
#3	0.16 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.33 #DIV/0! Must be less than 10%

Performed By Nick Banks Date/Time 3-17-21 – 0600

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1162746775

MONITORING DATE: 3-17-21 TIME: 0600

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: $\frac{\text{(Upwind + Downwind)}}{2}$
2.0 ppm	3.2 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	491 ppm	441 ppm	5
#2	496 ppm	446 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	0.36 ppm	491 ppm	9
#2	0.22 ppm	496 ppm	4
#3	0.15 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.86 #DIV/0! Must be less than 10%

Performed By Jesus Bruning Date/Time 3-17-21 - 0600

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [illegible]

Date: 3-7-21 Time: 0900

Model # TVA 1000 B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	**CALIBRATION CHECK**
Reading following ignition	1.6 ppm	Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100%
Leak test	Pass / Fail / NA	**RESPONSE TIME**
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	1-9-21	Time required to attain 90% of Cal Gas ppm: 1. 7 2. 6 3. 7 Average 6.6
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH4 gas.

Comments: ______

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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator: [signature]

Date: 3-7-21 Time: 0915

Model # TVA 1000B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION		
		CALIBRATION CHECK		
Battery test	Pass / Fail	Calibration Gas (ppm)	Actual (ppm)	% Accuracy
Reading following ignition	2.6 ppm	500	500	100%
Leak test	Pass / Fail / NA	RESPONSE TIME		
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm	500	
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm	450	
		Time required to attain 90% of Cal Gas ppm		
		1.	6	
		2.	6	
Date of last factory calibration	1-9-21	3.	7	
Factory calibration record w/instrument within 3 months	Pass / Fail	Average	6.3	
		Equal to or less than 30 seconds?	Y	N
		Instrument calibrated to CH_4 gas.		

Comments:

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RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [signature]

Date: 3-7-21 Time: 0930

Model # TVA 1000B

Serial # #12 10362467411

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	CALIBRATION CHECK: Calibration Gas (ppm) 500; Actual (ppm) 500; % Accuracy 100%,
Reading following ignition	2.5 ppm	
Leak test	Pass / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm 450
Date of last factory calibration	1-9-21	Time required to attain 90% of Cal Gas ppm: 1. 7 2. 7 3. 5 Average 6.3
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH_4 gas.

Comments: ______

465

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: ______

Purpose: ______

Operator: [signature]

Date: 3-7-21 Time: 0945

Model # TVA 1000 B

Serial # #13 1102746275

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	Pass / Fail	**CALIBRATION CHECK**
Reading following ignition	2.4 ppm	Calibration Gas (ppm): 500; Actual (ppm): 500; % Accuracy: 100%
Leak test	Pass / Fail / NA	**RESPONSE TIME**
Clean system check (check valve chatter)	Pass / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	Pass / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	1-9-21	Time required to attain 90% of Cal Gas ppm: 1. 6; 2. 6; 3. 6; Average 6.0
Factory calibration record w/instrument within 3 months	Pass / Fail	Equal to or less than 30 seconds? Y N
		Instrument calibrated to CH_4 gas.

Comments: ______

P.O. Box 748 • Colton, California 92324 •
(909) 422-1001 Toll Free (888) 325-1098 Fax (909) 422-0707 www.resenvironmental.com

INTERMOUNTAIN SPECIALTY GASES

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

CERTIFICATE OF ANALYSIS

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

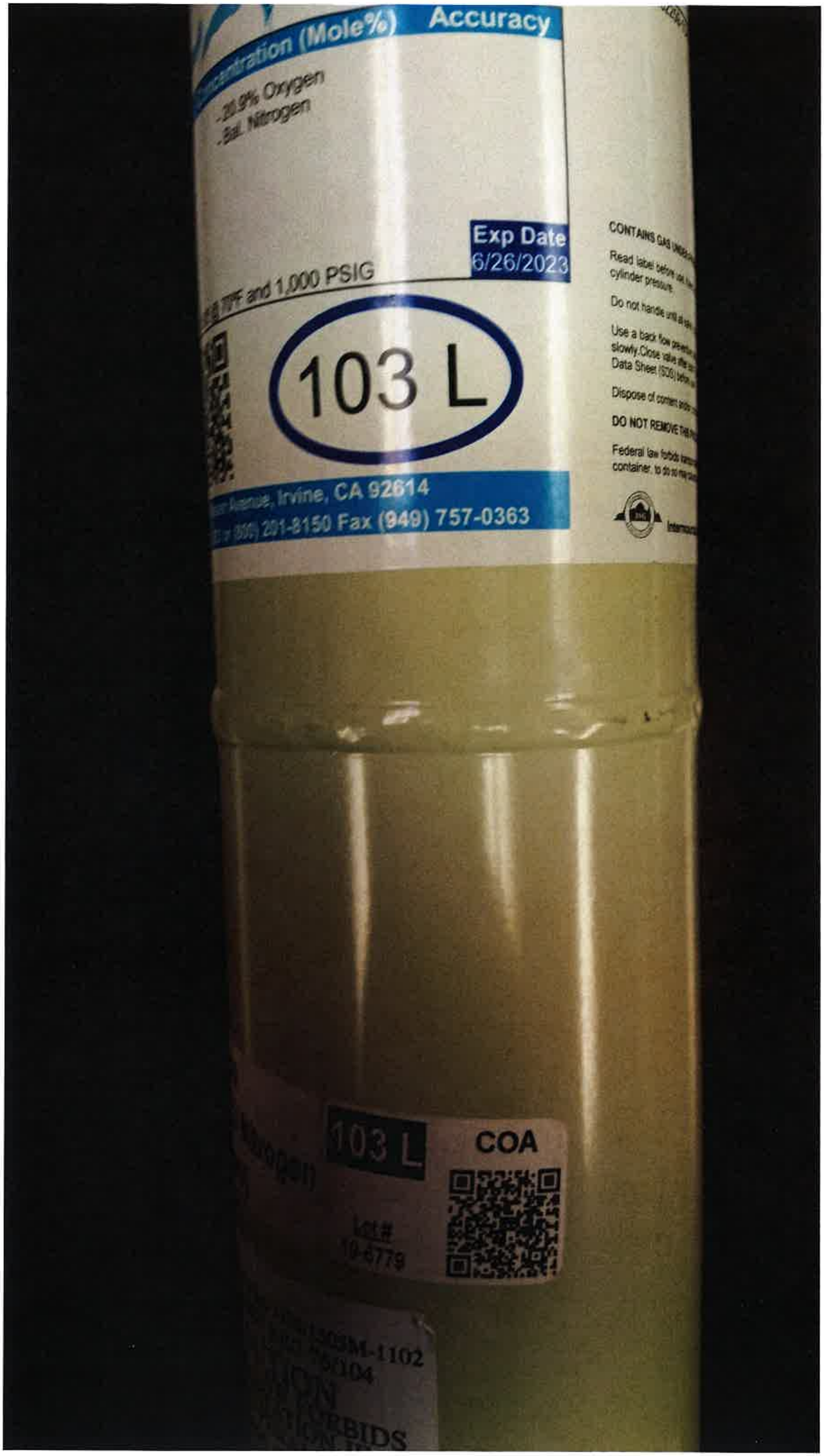
Lot # 19-6779

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

Method of Preparation:
Gravimetric/Pressure Transfilled

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

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


Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
6/26/2023
70°F and 1,000 PSIG
103 L
Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
CONTAINS GAS UNDER
Read label before use
cylinder pressure.
Do not handle until all
Use a back flow preventer
slowly.Close valve after
Data Sheet (SDS) before
Dispose of content and/or
DO NOT REMOVE THIS
Federal law forbids
container, to do so may
103 L
COA
Lot#
19-6779

INTERMOUNTAIN SPECIALTY GASES

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

CERTIFICATE OF ANALYSIS

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

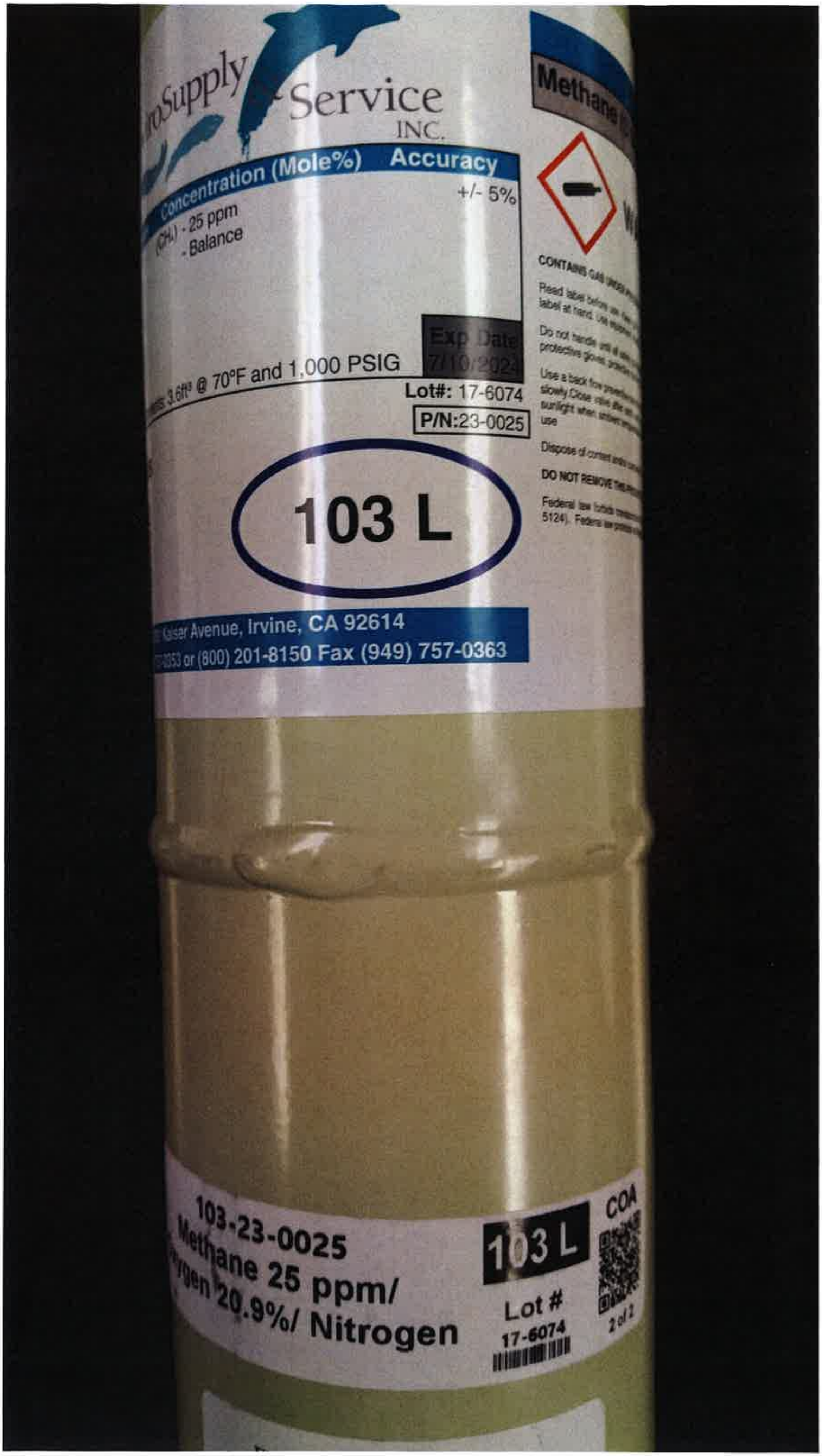
Lot # 17-6074

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

Method of Preparation:
Gravimetric/Pressure Transfilled

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

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



Service
INC.
Methane
Concentration (Mole%)
Accuracy
- 25 ppm
- Balance
+/- 5%
Exp Date
3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
Methane 25 ppm/
20.9%/ Nitrogen
103 L
COA
Lot #
17-6074
2 of 2

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

"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

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

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

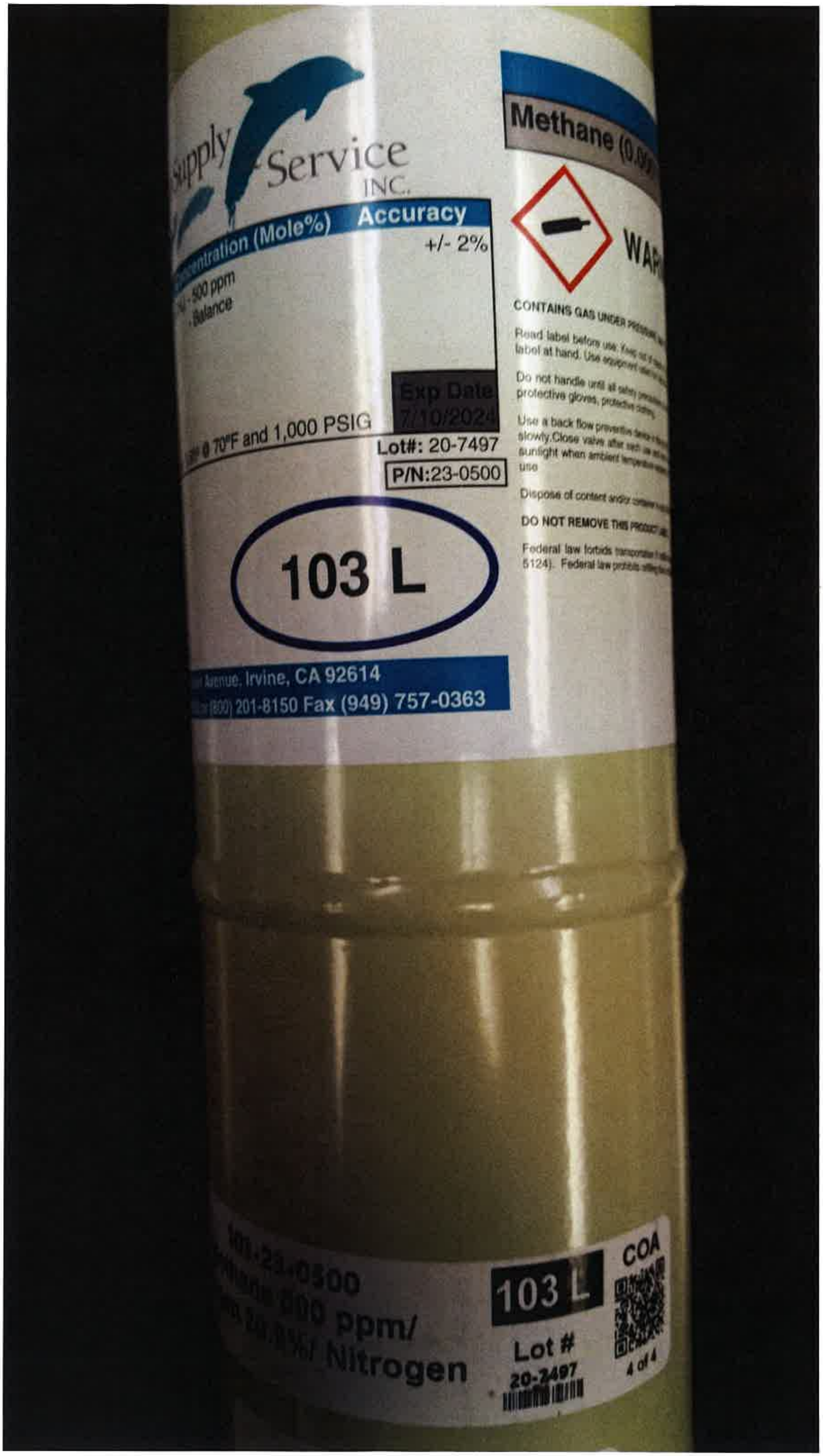
Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

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

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


Service
INC.
Accuracy
+/- 2%
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Irvine, CA 92614
Fax (949) 757-0363
Methane
CONTAINS GAS UNDER
ppm/
Nitrogen
103 L
COA
Lot #
4 of 4

Intermountain Specialty Gases

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CERTIFICATE OF ANALYSIS

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

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

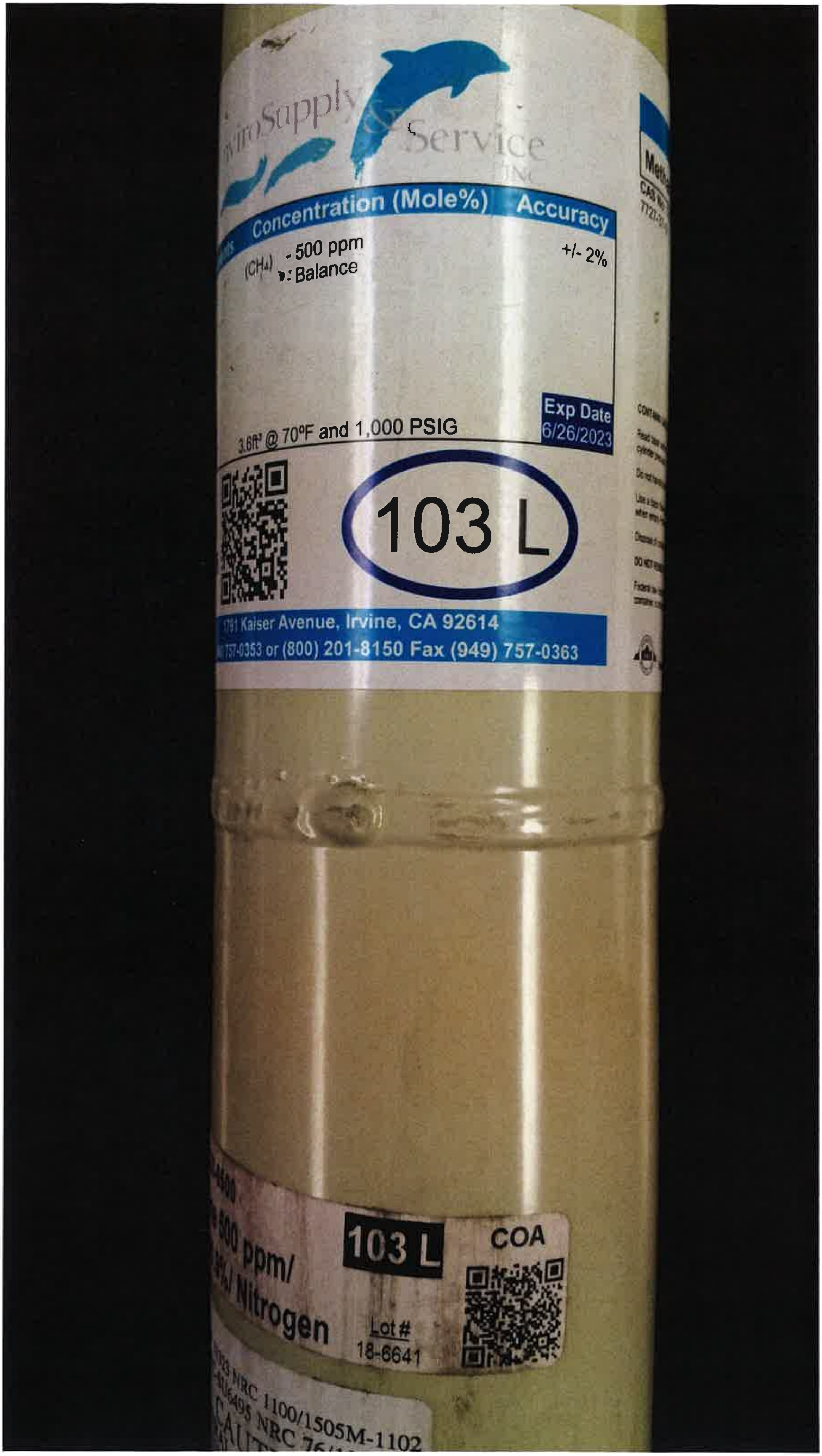
Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

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

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



Service
Concentration (Mole%)
Accuracy
(CH4) - 500 ppm
Balance
+/- 2%
Exp Date
6/26/2023
3.6ft³ @ 70ºF and 1,000 PSIG
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103 L
COA
500 ppm/
Nitrogen
Lot#
18-6641
NRC 1100/1505M-1102

APPENDIX I

WELLFIELD MONITORING LOGS

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 4, 16, 20, 23, 24, and 25, 2020

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	11/24/20 14:29	43.6	37	0	19.4	-1	103	-1	103
RLHC0156	11/24/20 11:54	63.3	34.3	0	2.4	-0.06	98.5	-0.02	98.4
RLI00003	11/23/20 14:01	43.9	37.8	0.6	17.7	-27.9	77	-23.3	77
RLI00008	11/23/20 13:18	58.7	36.9	0.1	4.3	-50.8	84	-50.7	84
RLI00016	11/23/20 14:50	46.2	30.7	0.1	23	-4.1	71	-4.1	71
RLI00017	11/23/20 14:46	57.8	36.1	0.1	6	-8.1	73	-8.1	74
RLI00018	11/23/20 14:43	17.2	23.8	0.7	58.3	-11.7	71	-11.7	71
RLI00019	11/23/20 14:39	58.6	37	0.1	4.3	-47	73	-47	73
RLI00034	11/23/20 14:17	52.5	37.2	1.3	9	-30.1	79	-30.9	79
RLI00035	11/23/20 14:21	48.8	35.5	0.3	15.4	-29.2	76	-29.1	76
RLI00045	11/23/20 14:25	47.8	33.3	0	18.9	-1	75	-1	75
RLI00047	11/23/20 14:32	47.8	34.3	0	17.9	-1.7	80	-1.7	80
RLI00065	11/23/20 14:05	49.7	38	0.1	12.2	-3.83	104.4	-3.6	104.4
RLI00083	11/16/20 14:53	63.3	36.5	0.2	0	-35.37	96.2	-35.42	96
RLI00095	11/16/20 15:03	54.8	36.9	0.1	8.2	-1.06	97.6	-1.15	97.7
RLI00132	11/23/20 13:38	54.1	37.9	0	8	-48	99	-49	99
RLI00134	11/23/20 12:21	40.2	30.7	3.6	25.5	-40.5	108	-28.5	108
RLI00135	11/23/20 12:25	40.7	43.5	1.4	14.4	-21.3	104	-16.9	105
RLI00137	11/24/20 7:52	65	34.1	0.6	0.3	-49.13	91.4	-49.12	91.1
RLI00140	11/23/20 12:42	69	27.2	1	2.8	-37.46	85.9	-37.49	85.9
RLI00141	11/24/20 10:45	46.2	32.6	1.2	20	-19.4	90	-19.4	90
RLI00142	11/23/20 12:52	65.7	32.1	0.1	2.1	-27.9	90.7	-34.96	92.1
RLI00220	11/16/20 14:07	53	37.8	0.4	8.8	-0.07	62.2	-0.07	62.2
RLI0100C	11/23/20 14:11	53.1	35.8	2	9.1	-33.1	79	-33	79
RLI0102C	11/23/20 13:44	60.6	39.3	0	0.1	-44.1	92	-44	92
RLI0103C	11/23/20 12:34	47	34.2	3.7	15.1	-38.9	103	-32.9	102
RLI0106C	11/24/20 15:09	61.1	38.8	0	0.1	-48.1	102	-48.3	102
RLI0107C	11/24/20 9:27	51.1	36.3	0.6	12	-4.45	103.1	-4.48	103.1
RLI0114A	11/24/20 10:01	51.9	29.8	3.1	15.2	-31.9	72	-31.5	76
RLI0115E	11/24/20 10:19	60.6	39.3	0	0.1	-48.5	85	-46.8	86
RLI0116E	11/24/20 8:06	59.1	37.7	0.8	2.4	-36.18	72.2	-36.16	72.2
RLI0117D	11/23/20 13:59	61.1	36.2	0.9	1.8	-48.71	94.8	-48	94.6
RLI0120D	11/16/20 14:43	63.4	36.5	0.1	0	0.1	86.7	-0.03	90.7
RLI0124G	11/16/20 15:16	60.1	37	0.1	2.8	-7.17	92	-7.7	91.9
RLI0126C	11/24/20 9:15	65.2	30.4	1	3.4	-46.77	82.9	-47.25	81.9
RLI0127B	11/23/20 13:28	49.3	35.9	0.7	14.1	-32.3	104	-32.3	104
RLI0128A	11/25/20 12:25	52.3	39.6	0.7	7.4	-0.4	116.6	-0.31	116.6
RLI0129E	11/23/20 13:53	43.3	28.8	0.7	27.2	-48.1	80	-42.8	80
RLI0129E	11/24/20 11:42	45	29.3	0.1	25.6	-39.63	81.9	-35.59	82.1
RLI0130E	11/24/20 11:33	45.8	30.5	0	23.7	-5.42	82.9	-4.68	82.9
RLIHC101	11/16/20 12:25	61.7	38.2	0.1	0	-1.84	93.9	-1.83	93.7
RLIHC101	11/16/20 12:28	61.7	38.3	0	0	-1.99	94.4	-3.89	96.1
RLIHC102	11/16/20 15:29	59.6	38.4	0	2	-4.8	104.1	-5.12	103.9
RLIHC107	11/24/20 14:14	36.6	35.4	0	28	-0.4	127	-0.4	128
RLLC0176	11/23/20 12:03	45.1	40.8	0.3	13.8	0	93	-0.1	105
RLLC0176	11/24/20 9:17	35	39.8	0	25.2	0	114	-0.3	112
RLLC0177	11/23/20 12:13	42.9	35.2	3.7	18.2	-39.5	103	-39.2	104
RLLC0179	11/16/20 14:23	47.3	32.4	0	20.3	-3.75	90.8	-3.74	90.8
RLLC0180	11/23/20 13:06	53.3	46.6	0	0.1	-3	101	-6.9	101
RLLC0181	11/24/20 9:23	58.5	40.5	0	1	-11.2	106	-12.6	106
RLLC0183	11/23/20 13:33	36.7	33.1	0	30.2	-3.8	72	-3.8	72
RLLC0184	11/23/20 13:23	41.5	33.8	0	24.7	-7.2	96	-7.1	95
RLLC0185	11/23/20 12:17	27.3	35.8	0.6	36.3	-0.2	77	-0.2	75
RLLC0186	11/23/20 12:50	53.6	44.5	0	1.9	-42.3	96	-43.8	96
RLLC0187	11/23/20 12:46	59.4	40.4	0	0.2	-45.5	101	-45.9	99
RLLC0188	11/23/20 12:41	50.7	42	1.4	5.9	-17.6	104	-17.5	105

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 4, 16, 20, 23, 24, and 25, 2020

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	11/24/20 14:29	43.6	37	0	19.4	-1	103	-1	103
RLHC0156	11/24/20 11:54	63.3	34.3	0	2.4	-0.06	98.5	-0.02	98.4
RLLC0189	11/4/20 8:37	58.7	41.1	0.1	0.1	-3.1	103	-3.9	104
RLLC0190	11/23/20 13:02	54	45.9	0	0.1	-1.9	106	-2.3	107
RLLC0191	11/16/20 15:39	53.5	33.9	0.1	12.5	-0.71	90.4	-0.81	91.4
RLLC0193	11/24/20 9:49	46.4	38	0	15.6	-10.5	107	-7.8	107
RLLC0194	11/25/20 12:20	47.3	37.9	0.2	14.6	-17.44	102.8	-18.21	102.8
RLLC0195	11/24/20 14:46	48.3	34.9	0	16.8	-7.9	95	-7.9	96
RLLC0196	11/24/20 14:38	54.5	37.5	0.2	7.8	-46.9	103	-46.8	103
RLLC0198	11/24/20 10:07	50	35	0	15	-5.05	112.8	-5.05	112.8
RLLC0199	11/24/20 10:13	46.5	36.1	0	17.4	-9.84	113.9	-8.66	113.8
RLLC0200	11/24/20 10:26	51	34.4	0	14.6	-0.97	91.2	-0.94	91.1
RLLC0201	11/24/20 10:38	42.5	34.7	0	22.8	-2.97	109.3	-2.38	109.1
RLLC0202	11/24/20 8:24	55.2	35.9	1.5	7.4	-0.32	86.6	-0.31	87.8
RLLC0203	11/24/20 8:35	38.9	32.5	0	28.6	-23.99	102.9	-17.98	102.4
RLLC0204	11/24/20 8:40	46.2	35	0	18.8	-1.73	103.9	-0.96	103.3
RLLC0205	11/24/20 8:52	36.2	32.3	0	31.5	-0.11	92.9	-0.09	92.3
RLLC0206	11/20/20 12:28	61.3	38.6	0	0.1	-0.6	72	-0.9	74
RLLC0206	11/24/20 9:04	62	38	0	0	-1.17	100.8	-2.28	100.7
RLLC0206	11/24/20 15:17	60.5	39.4	0	0.1	-3.5	77	-3.5	78
RLLC0209	11/16/20 12:00	63	37	0	0	-0.28	97	-0.26	97
RLLC0209	11/24/20 8:56	50.1	45.6	0	4.3	-1.02	98.1	-1.01	98.1
RLLC0210	11/24/20 8:46	35	31.8	0	33.2	-0.17	101	-0.17	100.8
RLLC0212	11/24/20 10:57	50.8	37.6	0	11.6	-24.6	93	-24.7	93
RLLC0214	11/24/20 11:08	47	32.7	0	20.3	-2.1	98	-1.6	99
RLLC0215	11/24/20 11:16	47	32.9	0	20.1	-4	98	-4	98
RLLC0217	11/23/20 12:34	48.5	34.7	0.8	16	-7.67	97.4	-6.81	97.3
RLLC0219	11/24/20 10:07	40.8	36.3	0.2	22.7	-1.6	69	-1.1	69
RLLC0221	11/24/20 9:49	53	36	0.3	10.7	-9.01	100.2	-9.13	100.3
RLLC0222	11/24/20 10:56	51	37.1	0.1	11.8	-5.39	105.3	-5.49	105.3
RLLC0223	11/24/20 11:03	56.9	40	0	3.1	-1.07	110.7	-0.93	110.7
RLLC0223	11/24/20 11:08	57.1	40	0	2.9	-0.94	110.7	-1.73	111.3
RLLC0224	11/24/20 11:12	49.8	37.6	0	12.6	-3.44	112.1	-3.41	112.1
RLLC0225	11/24/20 10:32	32.4	28.9	0	38.7	-4.29	100.1	-3.11	99.8
RLLC0226	11/24/20 11:02	48.7	36	0.2	15.1	-4.2	101	-4.1	101
RLLC0227	11/16/20 14:16	51.5	33.9	0.1	14.5	-2.29	95	-2.24	95
RLLC0228	11/24/20 10:00	46.5	33.6	0	19.9	-1.49	98.8	-1.52	98.8
RLLC0229	11/24/20 10:20	43.5	34.5	0	22	-0.54	74.1	-0.42	74
RLLC0230	11/23/20 15:03	50.3	37.7	0	12	-4.55	78	-3.45	77.6
RLLC0231	11/24/20 10:12	49.4	37.2	0	13.4	-1.1	94	-1.1	94
RLLC0232	11/23/20 13:13	49.4	38.3	0	12.3	-2.6	96	-2.6	96
RLLC0233	11/23/20 14:59	50.8	37.8	0	11.4	-0.78	105.5	-0.76	105.5
RLLC0234	11/23/20 13:33	52.8	40	0.1	7.1	-8.41	105	-8.41	105
RLLC0235	11/23/20 13:38	49	37.8	0	13.2	-2.33	99.1	-2.31	99.1
RLLC0236	11/23/20 13:43	49.9	36.9	0.1	13.1	-1.96	93.1	-1.95	93.1
RLLC0237	11/23/20 13:53	56.3	38.6	0.1	5	-4.89	100.2	-4.88	100.2
RLLC0238	11/23/20 14:36	49.9	37.5	0.1	12.5	-2.67	102.2	-2.66	102.2
RLLC0239	11/23/20 14:44	47.7	35.9	0.1	16.3	-0.36	98	-0.27	97.6
RLLC0240	11/23/20 14:49	49.8	36	0.1	14.1	-0.86	103	-0.86	103
RLLC0241	11/23/20 14:13	53.8	39.5	0.1	6.6	-16.66	107.6	-17.4	107.6
RLLC0242	11/23/20 14:17	52.3	40.7	0.1	6.9	-10	105.9	-9.99	105.9
RLLC0243	11/24/20 10:31	46	39.5	0	14.5	-0.1	106	-0.1	106
RLLC0244	11/24/20 10:28	51.3	41.4	0	7.3	-0.1	103	-0.2	104
RLLC0245	11/24/20 10:36	38.6	40.8	0	20.6	-0.2	99	-0.2	99
RLLC0246	11/24/20 10:48	51.7	33.3	0	15	-30.3	99	-30.4	99
RLLC0247	11/24/20 11:33	49.5	40	0	10.5	-0.3	98	-0.3	98

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 4, 16, 20, 23, 24, and 25, 2020

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	11/24/20 14:29	43.6	37	0	19.4	-1	103	-1	103
RLHC0156	11/24/20 11:54	63.3	34.3	0	2.4	-0.06	98.5	-0.02	98.4
RLLC0248	11/24/20 11:29	52.7	41.4	0.1	5.8	-1.7	102	-1.6	102
RLLC0249	11/23/20 12:53	44.6	43.6	0	11.8	-0.4	103	-0.4	103
RLLC0250	11/23/20 12:07	51.3	45	0.4	3.3	-0.3	108	-0.3	108
RLLC0251	11/23/20 11:58	49	45.3	0.4	5.3	-0.1	105	-0.1	105
RLLC0252	11/23/20 13:25	53	43.5	0	3.5	-1.95	99.8	-1.95	99.8
RLLC0253	11/23/20 13:19	49.6	43.6	0	6.8	-2	101	-1.67	101
RLLC0254	11/23/20 13:14	50.5	42.9	0.1	6.5	-1.77	101.6	-1.64	101.6
RLLC0255	11/23/20 13:07	54.2	40.8	0	5	-3.47	105.6	-3.82	105.7
RLLC0256	11/23/20 13:00	53.7	42.5	0.1	3.7	-1.36	98.5	-1.35	98.5

There are 113 total collectors; 106 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

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

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 1, 2, 3, 4, 14, 15, and 24, 2020

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	12/15/20 11:07	42.5	36.1	0	21.4	-1.1	101	-1	101
RLHC0156	12/15/20 9:57	63.2	36.7	0	0.1	0	79	-0.7	93
RLI00003	12/15/20 9:26	45.6	37.7	0.5	16.2	-20.2	70	-20.2	70
RLI00008	12/14/20 11:41	57.2	36.5	0.3	6	-50.5	80	-50.6	80
RLI00016	12/15/20 8:30	35.3	25.5	3.7	35.5	-5.3	48	-5.3	48
RLI00017	12/14/20 13:31	55.9	36.9	0	7.2	-8.5	71	-8.5	71
RLI00018	12/14/20 13:39	16.9	22.8	2.4	57.9	-8.2	66	-8.2	66
RLI00019	12/14/20 13:46	58.1	36.2	0.2	5.5	-45.6	53	-45.6	53
RLI00034	12/15/20 9:05	56.8	40	0	3.2	-31.9	65	-31.7	65
RLI00035	12/15/20 8:57	47.4	35.8	0.3	16.5	-29.7	72	-29.7	72
RLI00045	12/15/20 8:47	42.9	32.6	0	24.5	-1.6	64	-1.6	64
RLI00047	12/15/20 8:43	42.6	33.7	0	23.7	-2.4	77	-2.4	77
RLI00065	12/2/20 9:45	48.5	39.6	0	11.9	-3	103	-2.9	103
RLI00083	12/1/20 11:21	62.8	36.8	0.2	0.2	-34.3	95	-34.3	95
RLI00095	12/1/20 10:18	47.9	36.1	0	16	-1.4	94	-1.4	94
RLI00095	12/1/20 10:31	47.8	36.3	0	15.9	-1.4	94	-1.1	93
RLI00132	12/14/20 15:18	52	37.1	0	10.9	-48.7	98	-48.4	98
RLI00134	12/4/20 8:25	56.2	38.7	0.9	4.2	-13.5	110	-15.7	110
RLI00135	12/3/20 14:54	44.1	43.7	0.7	11.5	-9.8	105	-9.8	105
RLI00135	12/4/20 8:15	45	46.8	0	8.2	-10	104	-10	104
RLI00137	12/2/20 10:03	64.3	34.7	0.5	0.5	-48.9	83	-47.9	84
RLI00140	12/1/20 13:14	70.6	28.4	0.8	0.2	-36.9	88	-36.8	89
RLI00141	12/1/20 14:27	35.7	26.2	5.3	32.8	-18.3	91	-16.2	91
RLI00141	12/1/20 14:36	35	26.2	5.5	33.3	-14.6	91	-14.6	91
RLI00141	12/2/20 13:03	39.2	27.2	4.8	28.8	-13.5	91	-13.5	91
RLI00141	12/2/20 13:04	39.2	27.2	4.8	28.8	-13.5	91	-13.5	91
RLI00142	12/1/20 13:21	65	32.9	0.1	2	-36	92	-36.4	93
RLI00220	12/1/20 9:50	51	38.5	0.2	10.3	-0.7	54	-0.8	54
RLI00220	12/1/20 9:51	51	38.5	0.2	10.3	-0.7	54	-51.4	54
RLI0100C	12/15/20 9:19	59.5	40.3	0	0.2	-34.7	69	-34.4	69
RLI0102C	12/14/20 15:26	58.8	39.1	0.1	2	-44.2	92	-44.1	92
RLI0103C	12/4/20 8:35	58.1	41.8	0	0.1	-6.5	99	-7.8	101
RLI0105C	12/24/20 9:24	48.4	48.2	0	3.4	-3	94	-3	93
RLI0105C	12/24/20 9:28	50.8	48.6	0	0.6	-3.1	94	-3.1	94
RLI0106C	12/3/20 11:25	53.7	34.8	2	9.5	-45.6	103	-45.5	103
RLI0107C	12/15/20 11:30	50.5	37.7	0.1	11.7	-3.9	101	-3.9	101
RLI0114A	12/14/20 14:37	47.5	27.2	4.4	20.9	-16.8	75	-16.8	74
RLI0115E	12/14/20 14:18	60.9	38.8	0.1	0.2	-45.6	99	-46.1	100
RLI0116E	12/2/20 10:41	57.3	39.5	0.7	2.5	-35	80	-34.6	80
RLI0117D	12/2/20 9:54	58.5	37.4	0.8	3.3	-45.2	91	-48.8	91
RLI0120D	12/1/20 11:09	50.8	33.6	1	14.6	0	90	-0.1	92
RLI0124G	12/1/20 15:02	60.7	39.2	0	0.1	-9.4	91	-10.1	91
RLI0126C	12/3/20 11:16	51.5	24.3	4.8	19.4	-38.7	70	-38.8	70
RLI0127B	12/4/20 9:55	48.4	36.1	0.8	14.7	-31.7	105	-31.7	105
RLI0128A	12/15/20 11:23	50.3	39.4	0.4	9.9	0	108	-0.6	115
RLI0129E	12/15/20 9:34	46.2	30.5	0.3	23	-36.4	78	-36.3	78
RLI0130E	12/15/20 9:46	47.2	32.1	0	20.7	-4.2	77	-4.4	76
RLIHC102	12/15/20 10:07	59.8	39.1	0.2	0.9	-44.3	90	-44.3	91
RLIHC107	12/2/20 14:30	36.5	34.3	0	29.2	-0.3	128	-0.3	128
RLIHC107	12/3/20 11:33	50.1	36	0.5	13.4	-3.8	101	-3.8	102
RLLC0176	12/4/20 9:01	32.7	39.3	0	28	-0.2	118	-0.2	118
RLLC0177	12/4/20 8:44	54.9	43.4	0	1.7	-41.4	104	-41.4	105
RLLC0179	12/1/20 10:47	44.8	32.7	0	22.5	-3.8	85	-3.8	85
RLLC0180	12/14/20 11:51	49.1	50.8	0	0.1	-9.2	103	-9.2	103
RLLC0181	12/4/20 9:40	57.6	40.2	0	2.2	-16.6	107	-17.8	107
RLLC0183	12/4/20 9:50	36.3	33.9	0	29.8	-3.8	59	-3.8	59

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 1, 2, 3, 4, 14, 15, and 24, 2020

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	12/15/20 11:07	42.5	36.1	0	21.4	-1.1	101	-1	101
RLHC0156	12/15/20 9:57	63.2	36.7	0	0.1	0	79	-0.7	93
RLLC0183	12/14/20 15:10	36.5	33.3	0	30.2	-3.4	64	-3.4	64
RLLC0184	12/4/20 10:02	56.2	37.7	0	6.1	-2.5	95	-2.5	95
RLLC0184	12/4/20 10:05	56.7	37.6	0	5.7	-2.5	95	-2.7	97
RLLC0184	12/14/20 14:59	54.5	37.2	0	8.3	-2.7	83	-2.8	83
RLLC0185	12/15/20 10:21	25.1	35.3	0	39.6	-0.2	62	-0.2	66
RLLC0186	12/4/20 9:20	53	43.2	0.2	3.6	-44.2	87	-44	86
RLLC0187	12/4/20 9:25	57	39.3	0.6	3.1	-45.9	96	-45.9	97
RLLC0188	12/4/20 9:30	53.9	46	0	0.1	-19.7	104	-19.6	104
RLLC0189	12/3/20 14:41	49.1	47.3	0.6	3	-9.4	103	-9.4	104
RLLC0189	12/3/20 15:01	53.8	43.6	0.6	2	-6.6	97	-6.6	97
RLLC0190	12/3/20 14:47	54.3	44.7	0.3	0.7	-2.8	101	-3	103
RLLC0191	12/1/20 14:47	55.4	34.8	0	9.8	-0.7	90	-0.7	90
RLLC0191	12/1/20 14:52	53.9	34.3	0.1	11.7	-0.7	90	-1.2	90
RLLC0193	12/14/20 14:02	51.6	38.6	0	9.8	-5.7	105	-6.4	104
RLLC0194	12/15/20 11:17	45.9	38.1	0	16	-16.1	101	-13.3	101
RLLC0195	12/15/20 11:13	46.3	34.5	0	19.2	-9	97	-8.9	97
RLLC0196	12/15/20 11:11	52.5	36	0.8	10.7	-47	103	-46.8	103
RLLC0198	12/3/20 10:09	48.8	35.7	0.3	15.2	-4.6	109	-4.6	109
RLLC0199	12/3/20 10:03	47.9	36.6	0.2	15.3	-8.1	113	-8.1	113
RLLC0200	12/3/20 9:45	49	33.6	0.1	17.3	-0.5	87	-0.5	87
RLLC0201	12/2/20 14:37	46.4	36.5	0	17.1	-2.1	107	-2.1	107
RLLC0202	12/3/20 10:28	57.7	37	0.8	4.5	-0.2	91	-0.3	91
RLLC0203	12/3/20 10:33	40.6	32.9	0.3	26.2	-18.5	96	-18.5	97
RLLC0204	12/3/20 10:38	51.7	36.4	0.1	11.8	-0.8	102	-0.8	102
RLLC0205	12/4/20 7:59	32.6	32.3	0	35.1	-0.1	91	-0.1	92
RLLC0206	12/3/20 11:07	47.4	45.8	0.4	6.4	-3.8	69	-3.8	69
RLLC0209	12/3/20 11:02	38	51.1	0.2	10.7	-1.2	97	-0.9	97
RLLC0210	12/3/20 10:44	34.3	31.4	0	34.3	-0.1	99	-0.1	100
RLLC0212	12/1/20 14:01	51.3	37.5	0.3	10.9	-29.6	94	-29.6	94
RLLC0214	12/1/20 13:36	53.4	33.1	0.1	13.4	-1	98	-1.4	98
RLLC0215	12/1/20 13:44	48.4	32.8	0	18.8	-3.9	98	-3.9	99
RLLC0217	12/1/20 12:31	50.5	36.6	0.3	12.6	-6.1	96	-6.1	96
RLLC0219	12/14/20 14:30	51.5	39.6	0	8.9	-0.2	99	-0.2	99
RLLC0221	12/3/20 10:21	53.3	36.4	0.2	10.1	-8.6	99	-8.8	100
RLLC0222	12/2/20 14:23	48.2	36.7	0.4	14.7	-5.5	104	-5.5	105
RLLC0223	12/2/20 14:16	51	39.2	0	9.8	-1.9	109	-1.9	109
RLLC0224	12/15/20 10:59	46.1	37.9	0	16	-3.6	110	-2.7	111
RLLC0225	12/2/20 14:44	36.5	30.2	0	33.3	-2.5	99	-1.9	98
RLLC0226	12/1/20 13:53	52.4	36.4	0.1	11.1	-3.7	102	-3.7	102
RLLC0227	12/1/20 10:06	49.6	34	0	16.4	-2.1	92	-2.1	92
RLLC0227	12/1/20 10:07	49.6	34	0	16.4	-2.1	92	-53.1	92
RLLC0228	12/3/20 10:14	46.5	33.9	0.2	19.4	-1.4	95	-1.4	95
RLLC0229	12/3/20 9:57	43.7	34.9	0.1	21.3	-0.2	69	-0.2	69
RLLC0230	12/2/20 14:11	48	37.9	0	14.1	-3.3	110	-3.3	110
RLLC0231	12/14/20 14:45	50.4	37	0	12.6	-1	93	-1	93
RLLC0232	12/14/20 14:50	46.2	37.1	0	16.7	-2.3	80	-2.3	80
RLLC0233	12/2/20 10:24	49.6	39.1	0	11.3	-0.6	104	-0.6	104
RLLC0234	12/14/20 11:16	50.8	41.5	0	7.7	-8.6	104	-11.3	104
RLLC0235	12/2/20 11:07	46.5	38.6	0	14.9	-2.2	98	-1.9	99
RLLC0235	12/14/20 11:23	47.7	38.8	0	13.5	-1.9	97	-2.3	98
RLLC0236	12/2/20 10:54	47.7	38.9	0	13.4	-1.7	92	-1.5	92
RLLC0236	12/14/20 11:31	47.9	39.4	0	12.7	-1.5	91	-1.9	91
RLLC0237	12/2/20 10:11	55.1	39.8	0	5.1	-4.8	99	-6	99
RLLC0238	12/2/20 14:02	48.8	38.5	0	12.7	-2.6	101	-2.5	101

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 1, 2, 3, 4, 14, 15, and 24, 2020

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	12/15/20 11:07	42.5	36.1	0	21.4	-1.1	101	-1	101
RLHC0156	12/15/20 9:57	63.2	36.7	0	0.1	0	79	-0.7	93
RLLC0239	12/2/20 10:34	41.5	33.9	1.7	22.9	-0.1	96	-0.1	96
RLLC0240	12/2/20 10:18	48.3	37.3	0	14.4	-0.7	102	-0.7	102
RLLC0241	12/2/20 9:38	52.1	40.9	0	7	-18.7	105	-18.7	105
RLLC0242	12/2/20 9:32	50.6	42.2	0	7.2	-9.7	104	-9.9	104
RLLC0243	12/2/20 13:14	46.7	39.3	0	14	-0.2	107	-0.2	107
RLLC0244	12/2/20 13:20	51.5	40.9	0	7.6	-0.5	105	-0.5	106
RLLC0245	12/2/20 13:25	38.8	40.4	0	20.8	-0.2	100	-0.2	100
RLLC0246	12/1/20 13:04	52.4	32.9	0	14.7	-29.8	100	-30	101
RLLC0247	12/2/20 13:35	50.5	39.9	0	9.6	-0.3	98	-0.3	98
RLLC0248	12/2/20 13:41	54.3	41.4	0.2	4.1	-1.7	102	-1.7	103
RLLC0249	12/4/20 9:13	45.9	43.7	0	10.4	-0.4	103	-48.8	103
RLLC0250	12/4/20 9:06	51.4	45.6	0	3	-0.5	109	-0.5	109
RLLC0251	12/4/20 8:52	49.4	46.6	0	4	-0.2	105	-0.2	105
RLLC0252	12/2/20 8:58	48.7	42.8	1.1	7.4	-1.9	98	-1.9	98
RLLC0252	12/2/20 11:18	51.9	45	0	3.1	-1.8	98	-1.7	98
RLLC0253	12/2/20 8:47	50.3	45.6	0	4.1	-1.6	98	-1.6	99
RLLC0254	12/2/20 8:37	50.1	44.5	0	5.4	-1.4	100	-1.4	100
RLLC0255	12/1/20 12:52	52.6	41.7	0	5.7	-3.7	104	-3.7	104
RLLC0255	12/2/20 9:25	52.2	42	0	5.8	-3.9	104	-3.9	104
RLLC0256	12/1/20 12:44	53.9	43.8	0	2.3	-1.2	97	-1.5	97
RLLC0256	12/2/20 9:19	52.7	44	0	3.3	-1.7	97	-1.7	97

There are 113 total collectors; 106 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

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

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 11, 12, 18, 19, 20, 21, and 22, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/12/21 15:06	43.8	36.4	0.1	19.7	-1	101	-1	101
RLHC0156	1/21/21 11:16	52.9	33.7	0.5	12.9	-3.1	92	-0.1	91
RLI00003	1/11/21 11:04	48.5	37.8	0.7	13	-18.9	70	-18.8	70
RLI00008	1/11/21 13:38	56.6	34.9	0.8	7.7	-50.4	84	-50.4	84
RLI00016	1/19/21 14:23	35.4	23	4.4	37.2	-2.7	70	-2.6	70
RLI00017	1/19/21 14:17	55.6	35.2	0.3	8.9	-8.3	72	-8.2	72
RLI00018	1/19/21 14:12	22.7	25.6	0.4	51.3	-6.2	71	-6.1	71
RLI00019	1/19/21 14:07	56.4	35.8	0.3	7.5	-44.9	68	-44.9	68
RLI00034	1/11/21 10:40	56.3	39.2	0.7	3.8	-30.6	68	-31.2	68
RLI00035	1/11/21 10:33	47	35	0.9	17.1	-29.6	73	-29.6	74
RLI00045	1/11/21 10:16	44.6	32.3	0	23.1	-0.9	69	-0.9	69
RLI00047	1/11/21 10:22	44.4	33.8	0	21.8	-1.5	78	-1.5	78
RLI00065	1/19/21 12:48	45.7	38.1	0.1	16.1	-3.4	102	-3.4	102
RLI00083	1/19/21 15:12	58.8	36.1	0.8	4.3	-35.5	93	-35.4	94
RLI00095	1/19/21 15:05	52.1	36.7	0.1	11.1	-1	94	-1	94
RLI00132	1/11/21 12:49	52.6	37	0.5	9.9	-48.1	99	-48.9	99
RLI00134	1/12/21 9:08	56.8	40.9	0.3	2	-15.1	111	-15.1	111
RLI00134	1/12/21 9:11	56.6	41.3	0.2	1.9	-15.2	111	-16.8	111
RLI00135	1/12/21 9:01	44.5	44.7	0	10.8	-8.5	105	-7.5	106
RLI00137	1/19/21 12:24	61.6	33.8	0.7	3.9	-46.3	84	-44.7	83
RLI00140	1/19/21 14:41	59.6	26.5	2.2	11.7	-38.6	82	-38.6	83
RLI00141	1/18/21 17:13	53	33.6	0.4	13	-13.1	91	-13.9	91
RLI00142	1/19/21 14:36	62.4	33	0	4.6	-37.9	88	-38.5	89
RLI00220	1/21/21 16:49	35.7	31.4	1.5	31.4	-7.4	77	-2.9	77
RLI0100C	1/11/21 10:51	59.1	40.3	0.5	0.1	-32.8	73	-32.9	73
RLI0102C	1/21/21 15:45	58.7	37.8	0.5	3	-44.3	93	-44.3	93
RLI0103C	1/21/21 15:59	57.6	40.4	0.2	1.8	-16.6	103	-17.4	104
RLI0105C	1/12/21 10:21	55	44.9	0	0.1	-4.3	103	-5	104
RLI0106C	1/12/21 11:27	53.9	45.9	0	0.2	-47.9	98	-47.9	98
RLI0107C	1/12/21 11:20	56.7	39.3	0.4	3.6	-2.9	96	-2.9	95
RLI0114A	1/11/21 14:13	59.9	34	0.9	5.2	-13.9	80	-14	80
RLI0115E	1/11/21 14:31	56.7	37	1.4	4.9	-43.8	100	-45.2	100
RLI0116E	1/19/21 12:34	57	39.5	0.6	2.9	-34.8	77	-34.6	77
RLI0117D	1/19/21 12:40	56.9	36.2	1.3	5.6	-46.9	91	-47.2	91
RLI0120D	1/21/21 13:16	22.8	17.3	11.1	48.8	-0.3	86	-0.3	87
RLI0120D	1/21/21 13:18	26.4	19.9	9.7	44	-0.3	86	-0.2	86
RLI0120D	1/22/21 13:52	61.8	38	0	0.2	-2.9	79	-0.1	80
RLI0124G	1/18/21 18:26	60.8	38.9	0.1	0.2	-10.5	90	-11.4	91
RLI0124G	1/20/21 17:36	43.6	29.2	4	23.2	-3.7	91	0	92
RLI0124G	1/21/21 16:38	60.2	39.1	0.1	0.6	0	89	-14.7	89
RLI0126C	1/12/21 10:46	66.9	30.4	0.9	1.8	-47.9	62	-47.9	63
RLI0127B	1/11/21 13:22	51.3	36.8	0.5	11.4	-28.4	105	-28.3	105
RLI0128A	1/12/21 14:43	51.7	40	0.3	8	-0.5	111	-0.5	112
RLI0129E	1/18/21 15:55	51.1	29.2	1.1	18.6	-34.8	82	-34.7	82
RLI0130E	1/18/21 16:03	51.9	30.5	0.2	17.4	-5	82	-0.6	82
RLIHC102	1/11/21 11:12	58.2	38.2	1	2.6	-44	91	-44	91
RLIHC107	1/19/21 10:59	40	45.6	0.1	14.3	-0.3	124	-0.1	125
RLLC0176	1/12/21 9:39	33.2	38.5	0	28.3	-0.2	115	-0.2	116
RLLC0177	1/12/21 9:24	56.3	43.3	0	0.4	-41.5	104	-42	105
RLLC0179	1/19/21 14:54	51.1	33.1	0	15.8	-4.5	86	-4.5	86
RLLC0180	1/12/21 10:27	51	48.9	0	0.1	-9.5	103	-9.5	104
RLLC0181	1/12/21 10:36	53.1	43.2	0	3.7	-17.9	106	-17.9	107
RLLC0183	1/11/21 13:09	40.5	34.7	0	24.8	-3	66	-3.1	66
RLLC0184	1/11/21 13:28	58.1	38.2	0	3.7	-1.8	97	-1.8	98
RLLC0185	1/12/21 9:17	18.5	31.9	0.7	48.9	-0.2	61	-0.2	62
RLLC0186	1/12/21 9:54	54.3	43.1	0	2.6	-44.9	95	-44.9	96

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 11, 12, 18, 19, 20, 21, and 22, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/12/21 15:06	43.8	36.4	0.1	19.7	-1	101	-1	101
RLHC0156	1/21/21 11:16	52.9	33.7	0.5	12.9	-3.1	92	-0.1	91
RLLC0187	1/11/21 11:21	52.2	37.9	1.9	8	-45.4	101	-45.6	101
RLLC0188	1/12/21 10:01	54	45.8	0	0.2	-20.9	104	-22.8	104
RLLC0189	1/12/21 10:05	53.7	46.2	0	0.1	-6.6	110	-6.6	110
RLLC0190	1/12/21 8:54	36.5	56.4	0	7.1	-1.6	102	-1.3	102
RLLC0191	1/18/21 18:20	53.8	33.7	0	12.5	-1.5	93	-1.4	93
RLLC0193	1/11/21 14:20	50.5	38.6	0.1	10.8	-6.7	107	-6.6	107
RLLC0194	1/12/21 14:49	49.8	38.9	0.2	11.1	-13.1	100	-13.1	101
RLLC0195	1/12/21 14:55	44.2	32.3	0.1	23.4	-11.3	95	-11.2	95
RLLC0196	1/12/21 14:59	52.1	36.8	0.8	10.3	-46.8	102	-46.7	102
RLLC0198	1/19/21 9:57	55	38.1	0.1	6.8	-3.3	106	-6.1	108
RLLC0199	1/19/21 10:01	47.6	36.9	0.2	15.3	-8.5	111	-8.5	111
RLLC0200	1/19/21 10:09	49.9	34.7	0.1	15.3	-0.4	84	-0.5	84
RLLC0201	1/19/21 10:19	43.7	35.6	0.1	20.6	-2.3	106	-1.9	106
RLLC0202	1/19/21 9:34	60.1	38.5	0.6	0.8	-0.4	87	-0.3	87
RLLC0203	1/12/21 11:11	43.2	34.1	0	22.7	-22.9	101	-23	101
RLLC0204	1/12/21 11:08	52.8	37.6	0	9.6	-0.9	101	-0.9	101
RLLC0205	1/12/21 11:00	30.9	30.7	0	38.4	-0.2	93	-0.2	93
RLLC0206	1/12/21 10:50	51.2	45.4	0	3.4	-4.5	67	-4.5	67
RLLC0209	1/12/21 10:54	44.8	47.5	0	7.7	-1	96	-1	96
RLLC0210	1/12/21 11:04	34.3	31.2	0	34.5	-1.6	98	-0.2	98
RLLC0212	1/18/21 16:44	48.8	34.8	0.7	15.7	-28.6	94	-27.8	95
RLLC0214	1/18/21 16:49	50.4	30.8	0.4	18.4	-1.1	97	-1.1	97
RLLC0215	1/18/21 16:56	43.5	34.2	0.2	22.1	-4.1	99	-4	99
RLLC0217	1/19/21 14:47	54.1	36.9	0	9	-5	95	-6.5	96
RLLC0219	1/11/21 14:01	53	40.4	0.3	6.3	-0.2	96	-0.2	99
RLLC0221	1/19/21 9:44	54.9	36.1	0.2	8.8	-8.9	98	-8.4	98
RLLC0222	1/19/21 11:04	49.2	42.1	0.1	8.6	-4.2	104	-4.2	104
RLLC0223	1/21/21 11:36	51.4	39.7	0.2	8.7	-2.2	108	-2.1	109
RLLC0224	1/19/21 10:29	49.6	38.3	0.2	11.9	-2.6	109	-2.6	109
RLLC0225	1/19/21 10:15	37	30.4	0.1	32.5	-1.3	93	-1.2	93
RLLC0226	1/21/21 11:44	54.2	37	0.2	8.6	-4	99	-4	100
RLLC0227	1/19/21 14:59	53.7	35.2	0	11.1	-1.8	90	-2.5	90
RLLC0228	1/21/21 11:02	49.8	35.4	0	14.8	-1.6	84	-1.6	85
RLLC0229	1/19/21 10:05	39.8	32.9	0.4	26.9	-0.3	69	-0.1	69
RLLC0230	1/19/21 11:12	47	44.2	0.1	8.7	-4.3	112	-3.6	112
RLLC0231	1/11/21 13:53	52.6	38	0	9.4	-0.7	92	-0.7	93
RLLC0232	1/11/21 13:46	46.9	37	0	16.1	-2.2	96	-2.1	96
RLLC0233	1/12/21 15:11	44.2	37.2	0	18.6	-1.5	102	-0.6	102
RLLC0234	1/19/21 13:41	45.1	38.1	0	16.8	-11.8	105	-10.2	105
RLLC0235	1/19/21 13:45	40.9	35.9	0	23.2	-4	99	-2.1	99
RLLC0236	1/19/21 13:54	44.4	37	0	18.6	-2.1	92	-1.9	92
RLLC0237	1/19/21 12:17	52.3	38.6	0.1	9	-5.7	96	-5.7	96
RLLC0238	1/19/21 13:08	46.1	39.2	0	14.7	-2.2	101	-1.7	102
RLLC0239	1/21/21 16:22	45.6	36	0	18.4	-3.8	95	-0.1	96
RLLC0240	1/12/21 15:17	46.4	36.6	0	17	-1.1	100	-0.3	90
RLLC0241	1/19/21 12:53	47.7	38.8	0.4	13.1	-17.7	106	-14.6	106
RLLC0242	1/19/21 13:01	47.1	40.5	0.1	12.3	-9.6	103	-8.5	103
RLLC0243	1/18/21 18:09	45.5	36.8	0.1	17.6	-0.2	107	-0.1	108
RLLC0244	1/18/21 18:05	47.2	37.3	0.1	15.4	-0.4	106	-0.4	106
RLLC0245	1/18/21 18:01	36	35.9	0.1	28	-0.3	102	-0.2	102
RLLC0246	1/18/21 17:04	51	31	0.4	17.6	-13.2	100	-13.2	101
RLLC0247	1/21/21 11:24	49	39.6	0.2	11.2	-0.8	98	-0.5	98
RLLC0248	1/18/21 16:12	53.1	40.8	0.1	6	-1.6	103	-1.6	104
RLLC0249	1/12/21 9:49	45.3	42.3	0	12.4	-0.5	101	-0.4	102

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 11, 12, 18, 19, 20, 21, and 22, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/12/21 15:06	43.8	36.4	0.1	19.7	-1	101	-1	101
RLHC0156	1/21/21 11:16	52.9	33.7	0.5	12.9	-3.1	92	-0.1	91
RLLC0250	1/12/21 9:44	51.7	45.6	0	2.7	-0.6	107	-0.6	107
RLLC0251	1/12/21 9:33	49.1	45.4	0	5.5	-0.3	103	-0.3	103
RLLC0252	1/19/21 13:33	49.2	43.8	0	7	-1.7	97	-1.7	97
RLLC0253	1/19/21 13:23	49.2	44.1	0	6.7	-2	98	-1.8	99
RLLC0254	1/19/21 13:27	48.5	43.3	0	8.2	-1.4	100	-1	100
RLLC0255	1/19/21 13:14	49	40	0	11	-4	103	-4	103
RLLC0256	1/20/21 12:15	48.6	41.7	0	9.7	-1.8	98	-1.8	98

There are 113 total collectors; 106 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

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

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 1, 2, 3, 4, 5, 8, 9, and 10, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (^oF)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (^oF)
RLHC0153	2/5/21 12:05	43.9	36.6	0	19.5	-1.1	101	-1.1	102
RLHC0153	2/5/21 13:34	29.7	25.9	2.3	42.1	-1.3	101	-0.9	101
RLHC0156	2/5/21 13:38	30.3	26.2	2.1	41.4	-1.2	101	-0.9	101
RLI00003	2/2/21 11:11	49.5	36.8	0.3	13.4	-18	73	-18	73
RLI00008	2/2/21 10:17	57.2	34.9	0.3	7.6	-51.1	81	-51	81
RLI00016	2/2/21 9:29	34.7	24.1	3.5	37.7	-4.1	67	-4	68
RLI00017	2/1/21 13:59	54.7	35.1	0.3	9.9	-7.9	69	-12.3	70
RLI00018	2/1/21 14:07	22.6	25.8	0.5	51.1	-5	62	-4.8	62
RLI00019	2/1/21 14:13	56.4	35.3	0.6	7.7	-46	60	-46	60
RLI00034	2/2/21 9:06	57.7	39.5	0	2.8	-30.4	79	-30.9	79
RLI00035	2/2/21 8:59	49.4	35.9	0.2	14.5	-30.7	75	-30.7	75
RLI00045	2/1/21 14:22	45	32.1	0	22.9	-0.9	69	-0.8	69
RLI00047	2/1/21 14:25	45.3	33.4	0	21.3	-1.6	79	-1.5	79
RLI00065	2/8/21 10:25	43.6	37.6	0	18.8	-4.3	103	-3.7	103
RLI00083	2/9/21 10:25	61.8	37.8	0.3	0.1	-36.1	93	-36.1	93
RLI00095	2/9/21 10:44	55.2	38.1	0.1	6.6	-1.7	93	-1.9	94
RLI00132	2/9/21 11:17	53.9	37.2	0.1	8.8	-48.7	98	-48.7	98
RLI00134	2/2/21 10:25	54.1	39.6	0.1	6.2	-17.1	112	-18.8	112
RLI00135	2/2/21 13:26	43.8	43.1	0	13.1	-6.7	106	-5	106
RLI00137	2/8/21 10:06	64.2	35.5	0.1	0.2	-47.9	76	-47.7	76
RLI00140	2/9/21 11:00	62.4	27.6	2.1	7.9	-38.1	73	-38	73
RLI00141	2/9/21 8:31	43.1	28.6	4.9	23.4	-16	90	-13.9	90
RLI00142	2/9/21 10:55	64	33.5	0.1	2.4	-37.9	81	-38.4	82
RLI00220	2/10/21 11:17	40.1	33.5	1.5	24.9	-2.7	75	-2.2	74
RLI0100C	2/4/21 8:32	59.9	39.6	0.3	0.2	-33.4	67	-33.4	67
RLI0102C	2/2/21 11:05	59.6	37.8	0.1	2.5	-44.5	91	-44.5	91
RLI0103C	2/9/21 9:21	58.1	41.6	0.1	0.2	-21.6	101	-22	101
RLI0105C	2/2/21 14:17	37.1	60.8	0.2	1.9	-44.2	89	-44.1	89
RLI0106C	2/3/21 10:12	54.8	42.8	0.2	2.2	-47.8	97	-47.7	97
RLI0107C	2/4/21 11:46	57.1	39.2	0.2	3.5	-1.6	96	-1.6	96
RLI0114A	2/2/21 9:52	56.3	31.6	2	10.1	-15.1	74	-14.7	74
RLI0115E	2/9/21 9:10	60.4	39.2	0.2	0.2	-45	98	-46	98
RLI0116E	2/8/21 9:48	57.6	39	0.9	2.5	-37.7	60	-37.7	60
RLI0117D	2/8/21 10:17	59.3	37.6	1	2.1	-49	88	-48.6	89
RLI0120D	2/10/21 11:08	35.4	24	8.1	32.5	-2.6	80	-2.7	80
RLI0124G	2/8/21 13:14	59.5	39.3	0.3	0.9	-26.9	90	-28.8	90
RLI0126C	2/9/21 8:47	68	31.2	0.7	0.1	-47.1	53	-46.5	52
RLI0127B	2/2/21 10:37	51.1	36.2	0.1	12.6	-30.2	105	-30.1	105
RLI0127B	2/4/21 8:54	53.3	37.4	0.1	9.2	-30.8	105	-30.8	105
RLI0128A	2/3/21 10:23	45.8	38.4	0.3	15.5	-0.1	102	-0.1	102
RLI0129E	2/4/21 9:04	56.8	31.8	0.4	11	-36.3	78	-39.8	79
RLI0130E	2/4/21 9:22	56.1	32.4	0	11.5	-0.3	77	-2.4	78
RLIHC107	2/4/21 11:05	43.3	43.7	0	13	-0.2	125	-0.2	125
RLLC0176	2/2/21 10:51	38.3	37.1	0	24.6	-0.2	93	-0.2	112
RLLC0177	2/2/21 13:48	54.1	41.4	0.1	4.4	-41.1	104	-41.3	104
RLLC0179	2/9/21 10:32	50.8	33	0	16.2	-7.6	85	-7.6	85
RLLC0180	2/2/21 13:15	53.3	45.7	0	1	-9.1	103	-10	103
RLLC0181	2/2/21 14:23	54.8	40.6	0	4.6	-17.5	106	-17.3	106
RLLC0183	2/2/21 10:44	35.6	32.3	0	32.1	-3.8	69	-3.8	69
RLLC0184	2/2/21 10:30	54.5	37	0	8.5	-4.3	98	-4.7	98
RLLC0185	2/2/21 13:32	24	34.9	0	41.1	-0.3	71	-0.3	79
RLLC0186	2/2/21 13:57	52.2	41.1	0.1	6.6	-44.5	95	-44.5	95
RLLC0187	2/2/21 14:01	57.7	38.7	0.1	3.5	-48.6	100	-46.3	101
RLLC0188	2/2/21 14:06	53.3	44.4	0	2.3	-23.9	103	-24.8	103
RLLC0189	2/2/21 14:10	55.8	44.1	0	0.1	-6.7	110	-8	110
RLLC0190	2/2/21 13:20	38.6	53.7	0	7.7	-1	102	-0.7	102

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 1, 2, 3, 4, 5, 8, 9, and 10, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	2/5/21 12:05	43.9	36.6	0	19.5	-1.1	101	-1.1	102
RLHC0153	2/5/21 13:34	29.7	25.9	2.3	42.1	-1.3	101	-0.9	101
RLLC0191	2/8/21 13:36	51.8	33.8	0	14.4	-2.1	91	-2.1	92
RLLC0193	2/2/21 9:38	51.2	37.8	0	11	-7.1	107	-7	107
RLLC0194	2/4/21 12:17	50.3	39	0	10.7	-12.7	100	-12.7	100
RLLC0194	2/5/21 12:22	50.4	40	0	9.6	-13	101	-12.9	101
RLLC0195	2/5/21 12:15	42.4	30.5	0	27.1	-28	80	-28.4	80
RLLC0196	2/5/21 12:11	53.2	37.7	0	9.1	-46.1	102	-46.4	102
RLLC0198	2/5/21 13:04	36.9	30.7	0.3	32.1	-10.4	110	-9.4	110
RLLC0199	2/5/21 13:10	47	36.9	0	16.1	-8.5	112	-7.2	112
RLLC0200	2/5/21 13:18	50.4	33.5	0	16.1	-4.6	91	-0.5	92
RLLC0201	2/5/21 13:43	43	34.8	0	22.2	-1.8	107	-1.6	107
RLLC0202	2/9/21 12:20	61	38.8	0.1	0.1	-0.8	89	-0.7	89
RLLC0203	2/4/21 12:07	41.1	32.1	0	26.8	-25.1	102	-25	102
RLLC0204	2/4/21 12:03	50.8	36.3	0	12.9	-0.6	101	-0.6	101
RLLC0205	2/3/21 10:03	29.2	29.1	0	41.7	-0.2	93	-0.2	93
RLLC0206	2/3/21 9:44	53.1	42.8	0	4.1	-4.9	62	-4.9	62
RLLC0209	2/3/21 9:58	45.5	43.8	0	10.7	-1.1	95	-1	95
RLLC0210	2/4/21 11:59	33	30.2	0	36.8	-0.1	99	-0.1	100
RLLC0212	2/8/21 14:24	49.4	36.5	0.2	13.9	-26.5	94	-26.5	94
RLLC0214	2/8/21 14:14	51.3	32.3	0	16.4	-1.9	92	-1.5	92
RLLC0215	2/8/21 14:08	43	34.7	0.1	22.2	-5.3	98	-5.3	98
RLLC0217	2/9/21 10:04	54.8	37.6	0	7.6	-7.6	95	-8.9	95
RLLC0219	2/2/21 9:44	52.2	39	0.3	8.5	-0.4	97	-0.3	98
RLLC0221	2/5/21 12:54	52.3	35.5	0	12.2	-9.5	97	-9.5	97
RLLC0222	2/4/21 10:59	49.6	41.6	0	8.8	-7.8	104	-4.5	104
RLLC0223	2/4/21 10:53	51.4	39.9	0	8.7	-1.7	106	-1.7	106
RLLC0224	2/5/21 13:55	51.6	39	0	9.4	-2.5	107	-2.5	108
RLLC0225	2/5/21 13:23	40.8	31.2	0.2	27.8	-5.6	94	-0.9	94
RLLC0226	2/8/21 14:18	56	37.7	0	6.3	-5.1	97	-6.2	98
RLLC0227	2/9/21 10:38	51.5	35.4	0	13.1	-3.3	88	-3.3	88
RLLC0228	2/5/21 12:59	50.2	33.6	0	16.2	-1.2	96	-1.1	96
RLLC0229	2/9/21 12:29	33.7	31.5	0	34.8	-0.8	92	-0.8	92
RLLC0230	2/4/21 11:13	49.8	44.4	0	5.8	-2.8	112	-2.3	112
RLLC0231	2/2/21 9:59	51.5	37.1	0	11.4	-1.7	92	-0.9	92
RLLC0232	2/2/21 10:11	44.1	34.9	0	21	-2.8	95	-2.5	95
RLLC0233	2/8/21 9:30	47.7	37.2	0	15.1	-1.3	102	-1.3	102
RLLC0234	2/9/21 9:49	50	40.4	0	9.6	-11.4	107	-11.4	107
RLLC0235	2/9/21 9:33	43.2	37.1	0.1	19.6	-2.9	100	-2.3	100
RLLC0236	2/9/21 9:39	49	38.5	0	12.5	-2.2	92	-2.1	92
RLLC0237	2/8/21 9:59	56.7	40.7	0	2.6	-6.5	95	-7.8	96
RLLC0238	2/8/21 10:11	50	41.6	0.1	8.3	-2.8	103	-2.7	103
RLLC0239	2/8/21 9:38	48.5	37.5	0	14	-0.8	94	-0.8	94
RLLC0240	2/8/21 9:34	48.5	37.3	0	14.2	-1.6	101	-1.4	101
RLLC0241	2/8/21 10:32	52.9	41.2	0	5.9	-15.9	107	-15.8	107
RLLC0242	2/8/21 10:37	50.4	41.9	0	7.7	-9.8	105	-9.8	105
RLLC0243	2/8/21 13:30	42.9	36.6	0	20.5	-0.7	106	-0.6	106
RLLC0244	2/8/21 13:26	45.6	37.7	0	16.7	-1.7	105	-0.9	105
RLLC0245	2/8/21 13:22	35.6	36.2	0	28.2	-0.7	98	-0.7	98
RLLC0247	2/4/21 10:39	48.9	39.4	0	11.7	-0.5	97	-0.5	64
RLLC0248	2/4/21 10:45	53.8	41.3	0	4.9	-1.9	103	-1.8	103
RLLC0249	2/2/21 13:53	44.9	40.7	0	14.4	-0.2	101	-0.1	101
RLLC0250	2/2/21 13:42	50.3	43.6	0	6.1	-0.3	107	-0.3	107
RLLC0251	2/2/21 13:38	48.1	43.8	0	8.1	-0.2	102	-0.1	103
RLLC0252	2/8/21 11:07	51.2	44.3	0	4.5	-2.3	98	-2.3	98
RLLC0253	2/8/21 11:03	49.9	44.6	0.1	5.4	-6.1	99	-2.5	99

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 1, 2, 3, 4, 5, 8, 9, and 10, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	2/5/21 12:05	43.9	36.6	0	19.5	-1.1	101	-1.1	102
RLHC0153	2/5/21 13:34	29.7	25.9	2.3	42.1	-1.3	101	-0.9	101
RLLC0254	2/8/21 10:59	50.6	43.8	0	5.6	-1.7	101	-1.7	101
RLLC0255	2/8/21 10:45	50.2	40.6	0	9.2	-4.9	104	-4.9	105
RLLC0256	2/10/21 10:54	49.2	41.2	0	9.6	-2.1	99	-1.9	99

There are 112 total collectors; 105 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

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

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 2, 3, 4, 5, and 8, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/8/21 12:08	43.9	36	0	20.1	-4.8	102	-1.2	102
RLHC0156	3/4/21 14:17	39.5	28.5	1.1	30.9	-0.1	103	-0.1	103
RLI00003	3/2/21 14:23	52.2	35.4	0.4	12	-17.6	75	-25.6	76
RLI00008	3/8/21 13:53	61.3	33.4	0	5.3	-50.5	76	-50.5	76
RLI00016	3/8/21 14:03	36	22.8	4.2	37	-2.7	64	-2.7	65
RLI00017	3/2/21 12:52	36.7	29.1	0.8	33.4	-17.3	73	-16.6	73
RLI00018	3/2/21 13:07	22.9	26.1	0.5	50.5	-4	70	-3.9	70
RLI00019	3/2/21 13:14	55.3	33.8	0.8	10.1	-45.6	67	-45.5	67
RLI00034	3/3/21 13:48	60.3	37.2	0	2.5	-33.2	80	-29.1	80
RLI00035	3/2/21 13:44	49.1	34.7	0.3	15.9	-29.5	76	-29.4	77
RLI00045	3/2/21 13:32	42.4	30.6	0	27	-1.1	73	-1	73
RLI00047	3/2/21 13:37	44.1	31.7	0	24.2	-1.6	80	-1.6	80
RLI00065	3/5/21 15:52	49.8	39.3	0	10.9	-6.6	104	-2.5	104
RLI00083	3/8/21 11:26	63.1	36.8	0	0.1	-33.1	93	-33.1	93
RLI00095	3/8/21 11:12	50.6	36.3	0	13.1	-2	94	-1.9	94
RLI00132	3/5/21 12:50	53.8	35.4	0.2	10.6	-50.8	99	-47.5	99
RLI00134	3/3/21 16:15	59.9	40	0	0.1	-19	114	-21.3	114
RLI00135	3/3/21 16:09	46.7	42.3	0	11	-4	108	-4	108
RLI00137	3/5/21 14:35	65	32	0.2	2.8	-47.7	87	-48.1	86
RLI00140	3/8/21 11:59	65.3	26.6	1.9	6.2	-39.9	70	-37.7	70
RLI00141	3/4/21 15:14	61.5	34.9	0.1	3.5	-13.4	91	-17.2	91
RLI00142	3/4/21 16:48	66.6	32	0.2	1.2	-37.8	86	-37.8	86
RLI00220	3/5/21 11:21	49.4	36.5	0.8	13.3	-1	68	-0.9	68
RLI0100C	3/2/21 13:59	62.5	36	0	1.5	-33	70	-32.9	69
RLI0102C	3/2/21 14:14	61.7	37.2	0	1.1	-46	92	-44.2	93
RLI0103C	3/4/21 12:27	60.1	39.8	0	0.1	-21	103	-21.9	104
RLI0105C	3/3/21 16:33	41.9	56.1	0.5	1.5	-43.4	97	-43.5	98
RLI0106C	3/3/21 13:37	58	39.6	0	2.4	-47.1	99	-47	99
RLI0107C	3/2/21 16:33	61.2	38.7	0	0.1	-3.8	96	-1.1	96
RLI0114A	3/8/21 12:17	49	26.8	4.7	19.5	-36.3	68	-34.5	68
RLI0115E	3/5/21 13:48	61.3	37	0	1.7	-46.9	99	-47	100
RLI0116E	3/5/21 14:00	59.6	38.5	0.3	1.6	-37.5	74	-37.6	74
RLI0117D	3/5/21 16:05	62.6	36.7	0.6	0.1	-48.7	92	-46.3	92
RLI0124G	3/4/21 16:02	61.4	38.4	0	0.2	-30.2	90	-30.6	90
RLI0126C	3/4/21 12:38	69.4	30.1	0.3	0.2	-44	72	-42.9	70
RLI0127B	3/5/21 13:02	52.4	36.1	0	11.5	-31	106	-30.6	106
RLI0128A	3/2/21 17:00	58.8	41.1	0	0.1	-0.9	110	-1.5	111
RLI0129E	3/3/21 13:15	52.8	30	0.2	17	-42.6	80	-42.6	80
RLI0130E	3/3/21 13:07	47.1	29.5	0	23.4	-10.5	80	-10.5	80
RLIHC107	3/3/21 12:36	46.9	40.2	0	12.9	-0.4	124	-0.3	125
RLLC0176	3/4/21 12:20	30.7	34.7	0	34.6	-0.5	118	-0.1	118
RLLC0177	3/3/21 15:44	58.5	41.4	0	0.1	-42.1	105	-42.1	105
RLLC0179	3/8/21 11:20	42.1	30.7	0	27.2	-6.8	84	-6.8	85
RLLC0180	3/3/21 16:40	54.7	45.2	0	0.1	-10.3	105	-13.8	105
RLLC0181	3/3/21 16:46	61.3	38.6	0	0.1	-20.5	106	-17.7	106
RLLC0183	3/5/21 12:56	34.6	31.4	0	34	-4	70	-3.9	70
RLLC0184	3/5/21 13:09	52.1	36	0	11.9	-6.9	100	-6.8	100
RLLC0185	3/3/21 16:19	25.3	35.7	0	39	-0.4	89	-0.4	94
RLLC0186	3/3/21 15:51	57.3	40.4	0	2.3	-46.2	98	-43.5	98
RLLC0187	3/3/21 15:55	61.6	38.3	0	0.1	-30.5	103	-45	101
RLLC0188	3/3/21 15:58	55.7	44.2	0	0.1	-26.1	105	-26.2	105
RLLC0189	3/3/21 16:04	56.4	43.5	0	0.1	-12.5	112	-9.9	112
RLLC0190	3/8/21 13:39	31.7	54	0	14.3	-4.9	103	-1	104
RLLC0191	3/4/21 15:56	54.4	33	0	12.6	-1.9	93	-2.3	92
RLLC0193	3/5/21 13:41	53.8	37.1	0	9.1	-7.4	108	-7	108
RLLC0194	3/2/21 17:08	52.2	38.8	0	9	-13	76	-12.9	76

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 2, 3, 4, 5, and 8, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/8/21 12:08	43.9	36	0	20.1	-4.8	102	-1.2	102
RLHC0156	3/4/21 14:17	39.5	28.5	1.1	30.9	-0.1	103	-0.1	103
RLLC0195	3/2/21 17:13	43.9	28.8	0	27.3	-22.7	84	-22.8	84
RLLC0196	3/2/21 17:24	54.1	35.5	0.5	9.9	-45.3	103	-45.4	103
RLLC0198	3/4/21 13:16	38.9	31.4	0.1	29.6	-11	111	-7.3	111
RLLC0199	3/4/21 13:20	46.7	35	0	18.3	-11.1	113	-7.6	113
RLLC0200	3/4/21 13:28	32.5	28.3	0	39.2	-1.8	95	-1.3	95
RLLC0201	3/4/21 13:41	44	32.7	0	23.3	-0.4	108	-0.3	108
RLLC0202	3/8/21 13:30	63.2	36	0.1	0.7	-0.1	86	-0.1	78
RLLC0203	3/8/21 16:47	37.2	30.3	0	32.5	-26.3	102	-26.2	103
RLLC0204	3/2/21 16:18	53.6	35.8	0	10.6	-0.8	102	-1.2	102
RLLC0205	3/2/21 16:09	27.2	27.3	0	45.5	-0.1	94	-0.1	95
RLLC0206	3/2/21 15:48	56.1	39.9	0	4	-4.8	78	-5.7	78
RLLC0209	3/2/21 15:54	48.9	40.1	0	11	-0.8	97	-0.8	97
RLLC0210	3/2/21 16:14	28.9	27.6	0	43.5	-0.3	102	-0.3	102
RLLC0212	3/4/21 15:34	50.2	36	0	13.8	-28.1	95	-25.9	95
RLLC0214	3/4/21 15:24	51.5	30.4	0.3	17.8	-3.8	92	-3.8	95
RLLC0215	3/3/21 12:29	46	35.2	0	18.8	-5.4	99	-5.4	99
RLLC0217	3/4/21 16:58	53.9	35.2	0	10.9	-12.2	96	-9	97
RLLC0219	3/5/21 13:30	54.5	38.5	0.4	6.6	-1.5	104	-1.6	105
RLLC0221	3/4/21 13:05	54.7	34.7	0	10.6	-10.8	100	-10.8	101
RLLC0222	3/3/21 12:52	53.7	39.6	0	6.7	-4.6	106	-5.3	106
RLLC0223	3/3/21 12:57	52.7	37.9	0	9.4	-1.8	107	-1.8	107
RLLC0224	3/4/21 14:03	53.6	37.4	0	9	-1.1	108	-1.4	109
RLLC0225	3/4/21 13:32	44.2	31.2	0	24.6	-1.2	93	-1.2	93
RLLC0226	3/4/21 15:28	56.3	36.1	0	7.6	-8.3	98	-6.6	98
RLLC0227	3/8/21 11:07	50.6	33.9	0	15.5	-3.1	87	-3	87
RLLC0228	3/4/21 13:10	47.1	32.1	0	20.8	-1.3	94	-1.3	94
RLLC0229	3/4/21 13:24	29.5	28.2	0	42.3	-0.5	93	-0.4	93
RLLC0230	3/3/21 12:45	55	41.7	0	3.3	-3	113	-4.5	114
RLLC0231	3/5/21 13:21	55.5	37.5	0	7	-0.9	93	-2	94
RLLC0232	3/5/21 13:15	45.1	34.8	0	20.1	-2.5	95	-1.9	96
RLLC0233	3/5/21 14:16	43.1	35.1	0	21.8	-0.6	104	-0.5	104
RLLC0234	3/8/21 11:39	50.7	38.4	0.2	10.7	-11.2	109	-11.2	109
RLLC0235	3/5/21 16:18	49.7	37.3	0	13	-5.3	101	-1.6	101
RLLC0236	3/5/21 16:12	52.8	38.2	0	9	-6.2	93	-1.5	93
RLLC0237	3/5/21 14:28	53.1	38.4	0	8.5	-7.4	94	-7.4	94
RLLC0238	3/5/21 15:28	51.6	39.4	0	9	-6.7	104	-2.1	104
RLLC0239	3/5/21 14:05	44.5	34.5	0	21	-0.6	96	-0.1	96
RLLC0240	3/5/21 14:09	46.3	35	0	18.7	-1.3	102	-0.4	102
RLLC0241	3/5/21 15:57	54.9	39.7	0.1	5.3	-16.6	107	-19.6	107
RLLC0242	3/5/21 15:48	52.1	41	0	6.9	-8.8	104	-8.8	105
RLLC0243	3/4/21 15:51	43.1	35.6	0	21.3	-3.7	106	-0.2	106
RLLC0244	3/4/21 15:47	45.9	37.2	0	16.9	-3.2	106	-0.5	106
RLLC0245	3/4/21 15:44	36.7	36.4	0	26.9	-0.3	101	-0.3	101
RLLC0246	3/5/21 12:29	63.1	36.7	0	0.2	-40.2	97	-38.8	98
RLLC0247	3/3/21 12:11	49.7	38.1	0	12.2	-0.5	98	-0.5	98
RLLC0248	3/3/21 12:16	56.1	40.1	0	3.8	-2.2	105	-2.7	105
RLLC0249	3/3/21 15:39	47.6	39.8	0	12.6	-4.1	104	-0.1	104
RLLC0250	3/3/21 15:22	54.9	43.6	0	1.5	-3	109	-0.4	109
RLLC0251	3/4/21 12:14	49.1	42.3	0	8.6	-0.3	106	-0.3	106
RLLC0252	3/8/21 11:46	51.9	43.6	0	4.5	-2	99	-2	99
RLLC0253	3/5/21 15:37	52.1	43.8	0	4.1	-2.1	100	-2.1	100
RLLC0254	3/5/21 15:41	52.9	42.8	0	4.3	-2.6	102	-1.2	102
RLLC0255	3/4/21 17:11	49	39	0	12	-4.5	105	-4	106
RLLC0256	3/4/21 17:05	48.8	39.7	0	11.5	-2.1	100	-1.8	100

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 2, 3, 4, 5, and 8, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/8/21 12:08	43.9	36	0	20.1	-4.8	102	-1.2	102
RLHC0156	3/4/21 14:17	39.5	28.5	1.1	30.9	-0.1	103	-0.1	103

There are 112 total collectors; 105 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

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

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 5, 6, 7, and 8, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/6/21 13:53	41.4	35.3	0.1	23.2	-1.42	104.4	-1.06	104.1
RLHC0156	4/7/21 14:10	32.4	26.2	2.1	39.3	-1.3	106.4	-0.94	106.4
RLI00003	4/7/21 14:38	43.4	30.6	4.6	21.4	-26.06	68	-26.04	68.1
RLI00008	4/8/21 13:33	40.2	27.9	2.3	29.6	-50.32	86.2	-50.29	86.2
RLI00016	4/8/21 13:06	41.7	22.6	4.9	30.8	-1.05	80.1	-1.03	80
RLI00017	4/8/21 13:12	38.8	29.9	0.5	30.8	-17.04	76.6	-17.04	76.6
RLI00018	4/8/21 13:18	20	24.2	0.6	55.2	-5.96	78.1	-5.87	77.9
RLI00019	4/8/21 13:25	56	34.1	0.5	9.4	-45.83	72.7	-45.82	72.8
RLI00034	4/8/21 12:25	53.8	36	1.8	8.4	-28.94	80.7	-29.75	80.7
RLI00035	4/8/21 12:31	50.1	35.7	0	14.2	-30.28	78.1	-30.29	78.1
RLI00045	4/8/21 12:43	41.6	30.3	0	28.1	-1.29	78.5	-1.22	78.6
RLI00047	4/8/21 12:37	43.3	32	0	24.7	-1.74	82.4	-1.7	82.5
RLI00065	4/6/21 10:58	48.7	40	0	11.3	-1.86	105.5	-1.86	105.5
RLI00083	4/5/21 13:15	62.8	37.1	0.1	0	-32.98	95.4	-32.89	95.4
RLI00095	4/5/21 12:55	48.6	36.7	0	14.7	-1.75	96.5	-1.55	96.5
RLI00132	4/8/21 11:54	53.5	36	0.5	10	-48.41	100.5	-48.7	100.5
RLI00134	4/7/21 12:07	53	39.9	0.1	7	-23.73	115.5	-24.38	115.6
RLI00135	4/7/21 10:08	37.6	40	0	22.4	-4.74	108.4	-3.37	108
RLI00137	4/8/21 13:47	54.9	30.5	1.5	13.1	-44.91	87.3	-45.85	86.9
RLI00140	4/5/21 13:48	63.7	27.4	1.5	7.4	-38.7	81	-38.62	81.2
RLI00141	4/5/21 14:05	50.6	35	0.3	14.1	-19.07	92	-19.13	92
RLI00142	4/5/21 13:55	63.7	32.7	0	3.6	-38.75	86.5	-38.74	86.4
RLI00220	4/5/21 12:35	48.8	37.1	0.6	13.5	-0.52	71.2	-0.6	71
RLI0100C	4/8/21 12:10	26.7	19.7	7.8	45.8	-32.65	69.5	-32.66	69.4
RLI0100C	4/8/21 12:18	45.4	28	4.6	22	-33.32	71.9	-32.37	71.4
RLI0102C	4/7/21 14:44	57.5	42.2	0.3	0	-43.59	93	-43.57	93.1
RLI0103C	4/7/21 10:53	56.7	40.3	0	3	-26.78	105.4	-28	102.4
RLI0105C	4/7/21 15:12	44.4	52.1	3.5	0	-43.17	87.2	-43.13	87.4
RLI0106C	4/6/21 15:15	51.9	39.3	0.5	8.3	-46.95	100.4	-46.93	100.4
RLI0107C	4/6/21 15:25	55.3	36.3	0.3	8.1	-0.3	92.2	-0.22	92.1
RLI0114A	4/8/21 14:09	39.6	22.6	7	30.8	-26.04	82	-22.54	81.9
RLI0114A	4/8/21 14:23	54.9	28.9	3.5	12.7	-23.16	78.2	-27	79.3
RLI0115E	4/8/21 13:58	60.1	36.8	0.6	2.5	-45.63	102	-45.88	102.2
RLI0116E	4/6/21 12:11	53.3	37.3	1.1	8.3	-37.54	69.8	-37.61	68.4
RLI0117D	4/6/21 11:05	61.7	37.7	0.3	0.3	-42.02	92.4	-48.37	91.9
RLI0124G	4/5/21 13:26	61.1	38.5	0.1	0.3	-33.34	90.1	-33.79	90.2
RLI0126C	4/6/21 14:46	33.8	17.1	9.2	39.9	-48.17	83.8	-46.72	81.3
RLI0126C	4/6/21 14:51	43.1	22.1	5.9	28.9	-46.95	81	-46.36	80.6
RLI0126C	4/6/21 15:06	49.3	24.7	4.5	21.5	-45.96	76.9	-9.64	76.1
RLI0127B	4/8/21 11:38	52.2	36.4	0.1	11.3	-30.94	107.1	-30.88	107.1
RLI0128A	4/6/21 14:19	32.2	30.4	2.2	35.2	-2.76	124.8	-2.76	124.7
RLI0129E	4/7/21 14:23	55.1	33.2	0.3	11.4	-42.18	80.5	-43.26	80.5
RLI0130E	4/7/21 14:00	49.2	31.7	0	19.1	-7.76	81	-7.68	80.9
RLIHC107	4/7/21 13:25	46.9	41.1	0.1	11.9	-0.43	124.9	-0.44	125
RLLC0176	4/7/21 12:50	34	35	0	31	0.09	88.5	-0.09	110.3
RLLC0177	4/7/21 12:13	53.4	41.3	0	5.3	-40.44	106.1	-40.39	106.1
RLLC0179	4/5/21 13:04	35.4	29.3	0	35.3	-7.34	87.2	-3.71	85.8
RLLC0180	4/7/21 9:58	51.1	45.8	0	3.1	-17.72	106.4	-17.7	106.4
RLLC0181	4/7/21 9:53	50.4	38.3	0	11.3	-18.84	108.5	-18.82	108.5
RLLC0183	4/8/21 11:43	33.8	31.5	0.1	34.6	-4.2	76.5	-4.14	76.6
RLLC0184	4/8/21 11:27	50.5	35.7	0	13.8	-7.28	101.4	-7.3	101.4
RLLC0185	4/7/21 12:01	12.4	24.8	2.2	60.6	-0.9	98.7	-0.55	96
RLLC0186	4/7/21 10:37	50.6	40.6	0	8.8	-44.4	98.8	-44.22	98.7
RLLC0187	4/7/21 10:32	57.5	39.1	0	3.4	-45.51	100.4	-45.7	95.6
RLLC0188	4/7/21 10:26	51.7	43.3	0	5	-28.01	105.1	-27.95	105.1
RLLC0189	4/7/21 10:21	54	44.2	0	1.8	-10.55	112.7	-11.7	112.6

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 5, 6, 7, and 8, 2021

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/6/21 13:53	41.4	35.3	0.1	23.2	-1.42	104.4	-1.06	104.1
RLHC0156	4/7/21 14:10	32.4	26.2	2.1	39.3	-1.3	106.4	-0.94	106.4
RLLC0190	4/7/21 10:15	26.8	51.3	0.1	21.8	-0.62	102.2	-0.37	97.2
RLLC0191	4/5/21 13:38	42.9	32.4	0	24.7	-2.75	93.8	-1.9	94
RLLC0193	4/8/21 11:08	49.4	36.6	0.1	13.9	-6.07	109.6	-6.02	109.6
RLLC0194	4/6/21 14:08	48.6	38	0	13.4	-10.89	103.3	-10.87	103.3
RLLC0195	4/6/21 14:03	38	28.8	0	33.2	-22.23	87.3	-21.84	87.3
RLLC0196	4/6/21 13:58	51.5	36.1	0.1	12.3	-45.29	104.7	-44.95	104.7
RLLC0198	4/7/21 8:46	39.8	32.9	0.2	27.1	-6.13	109.3	-4.36	106.2
RLLC0199	4/7/21 8:40	44.3	35.8	0	19.9	-7.42	113.7	-5.98	113.2
RLLC0200	4/7/21 8:10	34.9	29.8	0.1	35.2	-1.32	90.7	-1.03	89.5
RLLC0201	4/7/21 8:16	38.8	33	0	28.2	-2.17	108.5	-1.85	108
RLLC0202	4/7/21 9:17	61.7	38.2	0	0.1	-0.56	87.3	-0.45	87.5
RLLC0203	4/7/21 9:23	32.7	30.2	0	37.1	-26.11	103.3	-22.54	103.1
RLLC0204	4/7/21 9:29	36.3	32.1	0	31.6	-1.98	104.3	-1.08	103.7
RLLC0205	4/7/21 9:41	20.9	26.5	0	52.6	-0.15	94.7	-0.08	94.1
RLLC0206	4/6/21 14:38	52.7	39.6	0	7.7	-5.08	98.7	-5.79	98.3
RLLC0209	4/6/21 14:23	44.6	37.5	0	17.9	-1.02	99.7	-0.93	99.7
RLLC0210	4/7/21 9:36	24	27.3	0	48.7	-0.34	101.9	-0.24	101
RLLC0212	4/5/21 14:14	46.1	39.2	0	14.7	-25.89	96.6	-23.06	96.8
RLLC0217	4/5/21 15:07	49.3	35.4	0.1	15.2	-6.88	98.1	-6.87	98.1
RLLC0219	4/8/21 14:17	38	33.2	0.9	27.9	-2.4	110.9	-1.62	110.7
RLLC0221	4/7/21 9:03	49.8	35	0	15.2	-9.84	99.3	-9.81	99.3
RLLC0222	4/7/21 13:33	57.8	42.1	0.1	0	-5.73	106.6	-6.78	106.7
RLLC0223	4/7/21 13:21	55.5	40.2	0.2	4.1	-1.99	106.3	-2.26	106.5
RLLC0224	4/7/21 13:12	48.5	36.9	0.1	14.5	-2.89	108.8	-2.87	108.8
RLLC0225	4/7/21 8:22	38.4	30.9	0.1	30.6	-1.07	88.8	-1.05	88.7
RLLC0226	4/5/21 14:22	42.9	46.4	0	10.7	-6.57	97.5	-5.21	97.5
RLLC0227	4/5/21 12:43	49	33.7	0	17.3	-2.64	87	-2.39	86.8
RLLC0228	4/7/21 8:53	41.4	31.6	0.5	26.5	-1.1	86.7	-1.1	86.7
RLLC0229	4/7/21 8:29	29.4	28.9	0	41.7	-0.42	86	-0.41	83.3
RLLC0230	4/6/21 13:35	48.3	40.3	0	11.4	-3.69	114.6	-3.71	114.6
RLLC0231	4/8/21 11:13	51.1	36.4	0	12.5	-1.09	95.1	-1.08	95.1
RLLC0232	4/8/21 11:20	42.8	33.8	0.1	23.3	-2.18	96.4	-2.12	96.5
RLLC0233	4/6/21 13:30	38.9	33.6	0	27.5	-1.03	105.3	-0.68	105.2
RLLC0234	4/6/21 11:28	49.9	38.9	0.2	11	-9.95	109.7	-10.01	109.9
RLLC0235	4/6/21 11:21	48.1	38.1	0	13.8	-1.41	102.5	-1.22	102.2
RLLC0236	4/6/21 11:12	50.5	38	0	11.5	-1.22	93.6	-1.2	93.6
RLLC0237	4/6/21 12:04	49.8	38.3	0	11.9	-10.12	93.2	-10.14	93.3
RLLC0238	4/6/21 13:45	49.4	38.8	0.1	11.7	-2.2	105.5	-2.09	105.6
RLLC0239	4/6/21 12:15	38.9	33.2	0	27.9	-0.87	96.2	-0.58	96
RLLC0240	4/6/21 12:20	44	34.8	0	21.2	-0.93	102.5	-0.9	102.4
RLLC0241	4/6/21 10:31	50.2	39.2	0	10.6	-21.3	107.6	-21.26	107.6
RLLC0242	4/6/21 10:51	48.9	40.7	0.1	10.3	-9.57	105.6	-9.54	105.7
RLLC0243	4/5/21 14:34	42.2	37.1	0	20.7	-0.39	106.9	-0.29	106.6
RLLC0244	4/5/21 14:40	43.6	37.7	0	18.7	-0.61	108.2	-0.43	107.6
RLLC0245	4/5/21 14:44	35.1	35.4	0	29.5	-0.45	102.6	-0.28	100.7
RLLC0246	4/5/21 14:56	56.8	41.5	0	1.7	-39.02	98.6	-39.72	98.8
RLLC0247	4/7/21 13:44	55.1	41.3	0.2	3.4	-0.61	99.1	-0.78	99.3
RLLC0248	4/7/21 13:51	56.2	43.7	0.1	0	-4.16	106.6	-2.65	106.7
RLLC0249	4/7/21 12:19	38.6	37.1	0	24.3	-0.6	105.8	-0.35	105.1
RLLC0250	4/7/21 12:41	48.3	42.3	0	9.4	-0.68	109.9	-0.67	109.8
RLLC0251	4/7/21 12:56	46	42.2	0.1	11.7	-0.63	106.6	-0.11	105.2
RLLC0252	4/6/21 10:39	50.9	43	0.1	6	-1.91	100.4	-1.92	100.4
RLLC0253	4/6/21 10:16	49.6	43.2	0	7.2	-2.22	101.3	-2.22	101.4
RLLC0253	4/6/21 10:43	49.2	43.2	0	7.6	-2.23	101	-2.21	101

REDWOOD LANDFILL, Novato, CA

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Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/6/21 13:53	41.4	35.3	0.1	23.2	-1.42	104.4	-1.06	104.1
RLHC0156	4/7/21 14:10	32.4	26.2	2.1	39.3	-1.3	106.4	-0.94	106.4
RLLC0254	4/6/21 10:13	48.9	42.4	0.1	8.6	-1.76	103.9	-1.76	103.9
RLLC0255	4/5/21 15:18	48.1	39.3	0	12.6	-4.51	107.5	-4.47	107.5
RLLC0256	4/5/21 15:13	48.9	40.7	0.1	10.3	-2.05	101.6	-1.97	101.6

There are 112 total collectors; 105 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

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

APPENDIX J

WELLFIELD DEVIATION LOGS

REDWOOD LANDFILL, INC
WELLFIELD DEVIATIONS AND 15-DAY REMONITORING REPORT

MONITORING PERFORMED BY: S. Johnson, E. Kane, and R. Reed
UPDATED DATE: 05/24/21
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)
RLI0120D	11/16/20 14:43	63.4	36.5	0.1	0	0.1	86.7	-0.03	90.7	NSPS/EG CAI;Inc. Flow/Vac.	
RLI0120D was monitored on 11/16/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 11/16/2020. The exceedance was cleared on 11/16/2020.											
RLLC0176	11/23/20 12:03	45.1	40.8	0.3	13.8	0	93	-0.1	105	Barely Open;No Adj. Made	
RLLC0176 was monitored on 11/23/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 11/23/2020. The exceedance was cleared on 11/23/2020.											
RLLC0176	11/24/20 9:17	35	39.8	0	25.2	0	114	-0.3	112	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0176 was monitored on 11/24/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 11/24/2020. The exceedance was cleared on 11/24/2020.											
RLHC0156	12/15/20 9:57	63.2	36.7	0	0.1	0	79	-0.7	93	NSPS/EG CAI;Barely Open;Inc. Flow/Vac.	
RLHC0156 was monitored on 12/15/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 12/15/2020. The exceedance was cleared on 12/15/2020.											
RLI00141	12/1/20 14:27	35.7	26.2	5.3	32.8	-18.3	91	-16.2	91	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00141	12/1/20 14:36	35	26.2	5.5	33.3	-14.6	91	-14.6	91	NSPS/EG CAI;Dec. Flow/Vac.	
RLI00141	12/2/20 13:03	39.2	27.2	4.8	28.8	-13.5	91	-13.5	91		1
RLI00141 was monitored on 12/1/2020 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 12/2/2020. The exceedance was cleared on 12/2/2020.											
RLI0120D	12/1/20 11:09	50.8	33.6	1	14.6	0	90	-0.1	92	NSPS/EG CAI;Inc. Flow/Vac.	
RLI0120D was monitored on 12/1/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 12/1/2020. The exceedance was cleared on 12/1/2020.											
RLI0128A	12/15/20 11:23	50.3	39.4	0.4	9.9	0	108	-0.6	115	NSPS/EG CAI;Barely Open;Inc. Flow/Vac.	
RLI0128A was monitored on 12/15/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 12/15/2020. The exceedance was cleared on 12/15/2020.											
RLI0120D	1/21/21 13:16	22.8	17.3	11.1	48.8	-0.3	86	-0.3	87	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLI0120D	1/21/21 13:18	26.4	19.9	9.7	44	-0.3	86	-0.2	86	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLI0120D	1/22/21 13:52	61.8	38	0	0.2	-2.9	79	-0.1	80	Inc. Flow/Vac.	1
RLI0120D was monitored on 1/21/2021 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 1/22/2021. The exceedance was cleared on 1/22/2021.											
RLI0124G	1/21/21 16:38	60.2	39.1	0.1	0.6	0	89	-14.7	89	NSPS/EG CAI;Inc. Flow/Vac.	
RLI0124G was monitored on 1/21/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 1/21/2021. The exceedance was cleared on 1/21/2021.											
RLI0120D	2/10/21 11:08	35.4	24	8.1	32.5	-2.6	80	-2.7	80	NSPS/EG CAI;Barely Open;No Adj. Made	
RLI0120D was monitored on 2/10/2021 and was found to be in exceedance for oxygen. Corrective actions were initiated. Well RLI0120D decommissioned pursuant to AN #30065 on 2/24/21.											
No well exceedances in March 2021											
RLI0100C	4/8/21 12:10	26.7	19.7	7.8	45.8	-32.65	69.5	-32.66	69.4	NSPS/EG CAI;Fully Open;Dec. Flow/Vac.	
RLI0100C	4/8/21 12:18	45.4	28	4.6	22	-33.32	71.9	-32.37	71.4	Fully Open;Inc. Flow/Vac.	
RLI0100C was monitored on 4/8/2021 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 4/8/2021. The exceedance was cleared on 4/8/2021.											
RLI0114A	4/8/21 14:09	39.6	22.6	7	30.8	-26.04	82	-22.54	81.9	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0114A	4/8/21 14:23	54.9	28.9	3.5	12.7	-23.16	78.2	-27	79.3	Surging;No Adj. Made	
RLI0114A was monitored on 4/8/2021 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 4/8/2021. The exceedance was cleared on 4/8/2021.											
RLI0126C	4/6/21 14:46	33.8	17.1	9.2	39.9	-48.17	83.8	-46.72	81.3	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLI0126C	4/6/21 14:51	43.1	22.1	5.9	28.9	-46.95	81	-46.36	80.6	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLI0126C	4/6/21 15:06	49.3	24.7	4.5	21.5	-45.96	76.9	-9.64	76.1	Barely Open;No Adj. Made	
RLI0126C was monitored on 4/6/2021 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 4/6/2021. The exceedance was cleared on 4/6/2021.											
RLLC0176	4/7/21 12:50	34	35	0	31	0.09	88.5	-0.09	110.3	NSPS/EG CAI;Inc. Flow/Vac.	
RLLC0176 was monitored on 4/7/2021 and was found to be in exceedance for static pressure. Corrective actions were initiated. The well was re-monitored on 4/7/2021. The exceedance was cleared on 4/7/2021.											

APPENDIX K

MONTHLY LANDFILL GAS FLOW RATES

REDWOOD LANDFILL, INC.
Novato, CA

Yearly LFG for A-51 & A-60 Flares and S64 & S65 Engines (Engines #1 & #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-20	0	60,797,112	20,327,032	25,172,506	106,296,649	33,928,306	811,006,449	282,121,529	300,729,032	1,427,785,316
Jun-20	0	68,753,096	10,818,920	20,230,871	99,802,888	31,975,226	805,257,053	267,120,496	291,748,897	1,396,101,672
Jul-20	656,227	57,828,250	14,968,282	21,201,239	94,653,997	32,631,452	787,930,889	249,782,071	281,640,959	1,351,985,371
Aug-20	0	49,727,417	20,892,533	24,148,878	94,768,828	19,902,369	756,272,155	250,151,381	280,255,665	1,306,581,570
Sep-20	0	71,190,422	19,744,736	8,171,766	99,106,924	15,379,227	756,703,314	245,158,705	262,077,531	1,279,318,777
Oct-20	328,018	58,202,619	30,773,163	14,845,969	104,149,769	12,266,523	754,650,263	254,452,413	254,420,805	1,275,790,004
Nov-20	0	40,253,518	30,334,808	27,793,423	98,381,749	12,170,619	732,946,411	260,731,447	256,576,493	1,262,424,970
Dec-20	37,809	38,507,832	31,328,559	29,509,671	99,383,871	2,657,334	702,426,272	275,678,766	272,941,308	1,253,703,679
Jan-21	247,258	39,046,114	31,330,254	29,175,172	99,798,798	1,479,374	673,519,620	281,398,548	276,865,130	1,233,262,672
Feb-21	0	38,277,166	27,255,234	24,243,905	89,776,305	1,479,374	645,590,535	284,429,674	276,579,583	1,208,079,167
Mar-21	0	45,026,992	29,328,446	27,886,872	102,242,311	1,479,374	629,327,613	287,338,053	277,761,165	1,195,906,205
Apr-21	0	38,767,621	30,530,764	26,192,994	95,491,378	1,269,313	606,378,159	297,632,730	278,573,266	1,183,853,467

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-20	721.00	721.00	0.00	0		0	0	0	0	0.020	0.00	186.27	0.00
December-20	744.00	743.40	0.60	1,063	48.8	38,268	37,809	18,662	19	0.020	0.00	186.27	0.00
January-21	744.00	738.43	5.57	749	48.8	250,258	247,258	122,043	124	0.020	0.00	195.68	0.02
February-21	672.00	672.00	0.00	0		0	0	0	0	0.020	0.00	195.68	0.00
March-21	743.00	743.00	0.00	0		0	0	0	0	0.068	0.00	195.68	0.00
April-21	720.00	720.00	0.00	0		0	0	0	0	0.068	0.00	TBD	TBD
TOTAL/ AVG:	**4,344.00**	**4,337.83**	**6.17**	**780**	**48.8**	**288,526**	**285,068**	**140,705**	**142.53**	**--**	**--**	**--**	**--**

NOTES:

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

[1]CH_4 content and CO emission factor was determined from the January 22, 2020 (March 16, 2020 - March 9, 2021) and January 14, 2021 (March 10, 2021 - 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-20

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
11/1/2020	0.00	48.8	0	0	0	1,013	0	0
11/2/2020	0.00	48.8	0	0	0	1,013	0	0
11/3/2020	0.00	48.8	0	0	0	1,013	0	0
11/4/2020	0.00	48.8	0	0	0	1,013	0	0
11/5/2020	0.00	48.8	0	0	0	1,013	0	0
11/6/2020	0.00	48.8	0	0	0	1,013	0	0
11/7/2020	0.00	48.8	0	0	0	1,013	0	0
11/8/2020	0.00	48.8	0	0	0	1,013	0	0
11/9/2020	0.00	48.8	0	0	0	1,013	0	0
11/10/2020	0.00	48.8	0	0	0	1,013	0	0
11/11/2020	0.00	48.8	0	0	0	1,013	0	0
11/12/2020	0.00	48.8	0	0	0	1,013	0	0
11/13/2020	0.00	48.8	0	0	0	1,013	0	0
11/14/2020	0.00	48.8	0	0	0	1,013	0	0
11/15/2020	0.00	48.8	0	0	0	1,013	0	0
11/16/2020	0.00	48.8	0	0	0	1,013	0	0
11/17/2020	0.00	48.8	0	0	0	1,013	0	0
11/18/2020	0.00	48.8	0	0	0	1,013	0	0
11/19/2020	0.00	48.8	0	0	0	1,013	0	0
11/20/2020	0.00	48.8	0	0	0	1,013	0	0
11/21/2020	0.00	48.8	0	0	0	1,013	0	0
11/22/2020	0.00	48.8	0	0	0	1,013	0	0
11/23/2020	0.00	48.8	0	0	0	1,013	0	0
11/24/2020	0.00	48.8	0	0	0	1,013	0	0
11/25/2020	0.00	48.8	0	0	0	1,013	0	0
11/26/2020	0.00	48.8	0	0	0	1,013	0	0
11/27/2020	0.00	48.8	0	0	0	1,013	0	0
11/28/2020	0.00	48.8	0	0	0	1,013	0	0
11/29/2020	0.00	48.8	0	0	0	1,013	0	0
11/30/2020	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:

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

*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - March 15, 2020) and January 22, 2020 (March 16, 2020 - 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-20

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
12/1/2020	0.00	48.8	0	0	0	1,013	0	0
12/2/2020	0.00	48.8	0	0	0	1,013	0	0
12/3/2020	0.00	48.8	0	0	0	1,013	0	0
12/4/2020	0.00	48.8	0	0	0	1,013	0	0
12/5/2020	0.00	48.8	0	0	0	1,013	0	0
12/6/2020	0.00	48.8	0	0	0	1,013	0	0
12/7/2020	0.00	48.8	0	0	0	1,013	0	0
12/8/2020	0.00	48.8	0	0	0	1,013	0	0
12/9/2020	0.00	48.8	0	0	0	1,013	0	0
12/10/2020	0.00	48.8	0	0	0	1,013	0	0
12/11/2020	0.60	48.8	1,063	38,268	18,662	1,013	19	37,809
12/12/2020	0.00	48.8	0	0	0	1,013	0	0
12/13/2020	0.00	48.8	0	0	0	1,013	0	0
12/14/2020	0.00	48.8	0	0	0	1,013	0	0
12/15/2020	0.00	48.8	0	0	0	1,013	0	0
12/16/2020	0.00	48.8	0	0	0	1,013	0	0
12/17/2020	0.00	48.8	0	0	0	1,013	0	0
12/18/2020	0.00	48.8	0	0	0	1,013	0	0
12/19/2020	0.00	48.8	0	0	0	1,013	0	0
12/20/2020	0.00	48.8	0	0	0	1,013	0	0
12/21/2020	0.00	48.8	0	0	0	1,013	0	0
12/22/2020	0.00	48.8	0	0	0	1,013	0	0
12/23/2020	0.00	48.8	0	0	0	1,013	0	0
12/24/2020	0.00	48.8	0	0	0	1,013	0	0
12/25/2020	0.00	48.8	0	0	0	1,013	0	0
12/26/2020	0.00	48.8	0	0	0	1,013	0	0
12/27/2020	0.00	48.8	0	0	0	1,013	0	0
12/28/2020	0.00	48.8	0	0	0	1,013	0	0
12/29/2020	0.00	48.8	0	0	0	1,013	0	0
12/30/2020	0.00	48.8	0	0	0	1,013	0	0
12/31/2020	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**0.60**	**48.8**	**1,063**	**38,268.0**	**18,662**	**1,013**	**19**	**37,809**
						Maximum:	**19**	**37,809**

Notes:

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

*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - March 15, 2020) and January 22, 2020 (March 16, 2020 - 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-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
1/1/2021	0.00	48.8	0	0	0	1,013	0	0
1/2/2021	0.00	48.8	0	0	0	1,013	0	0
1/3/2021	0.00	48.8	0	0	0	1,013	0	0
1/4/2021	0.00	48.8	0	0	0	1,013	0	0
1/5/2021	0.00	48.8	0	0	0	1,013	0	0
1/6/2021	0.00	48.8	0	0	0	1,013	0	0
1/7/2021	0.00	48.8	0	0	0	1,013	0	0
1/8/2021	0.00	48.8	0	0	0	1,013	0	0
1/9/2021	0.00	48.8	0	0	0	1,013	0	0
1/10/2021	0.00	48.8	0	0	0	1,013	0	0
1/11/2021	0.00	48.8	0	0	0	1,013	0	0
1/12/2021	0.00	48.8	0	0	0	1,013	0	0
1/13/2021	1.37	48.8	776	63,630	31,030	1,013	31	62,867
1/14/2021	4.20	48.8	741	186,628	91,012	1,013	92	184,391
1/15/2021	0.00	48.8	0	0	0	1,013	0	0
1/16/2021	0.00	48.8	0	0	0	1,013	0	0
1/17/2021	0.00	48.8	0	0	0	1,013	0	0
1/18/2021	0.00	48.8	0	0	0	1,013	0	0
1/19/2021	0.00	48.8	0	0	0	1,013	0	0
1/20/2021	0.00	48.8	0	0	0	1,013	0	0
1/21/2021	0.00	48.8	0	0	0	1,013	0	0
1/22/2021	0.00	48.8	0	0	0	1,013	0	0
1/23/2021	0.00	48.8	0	0	0	1,013	0	0
1/24/2021	0.00	48.8	0	0	0	1,013	0	0
1/25/2021	0.00	48.8	0	0	0	1,013	0	0
1/26/2021	0.00	48.8	0	0	0	1,013	0	0
1/27/2021	0.00	48.8	0	0	0	1,013	0	0
1/28/2021	0.00	48.8	0	0	0	1,013	0	0
1/29/2021	0.00	48.8	0	0	0	1,013	0	0
1/30/2021	0.00	48.8	0	0	0	1,013	0	0
1/31/2021	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**5.57**	**48.8**	**749**	**250,258.0**	**122,043**	**1,013**	**124**	**247,258**
						Maximum:	**92**	**184,391**

Notes:
The A-51 Flare commenced operation on June 21, 2005.
*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - March 15, 2020) and January 22, 2020 (March 16, 2020 - 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-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
2/1/2021	0.00	48.8	0	0	0	1,013	0	0
2/2/2021	0.00	48.8	0	0	0	1,013	0	0
2/3/2021	0.00	48.8	0	0	0	1,013	0	0
2/4/2021	0.00	48.8	0	0	0	1,013	0	0
2/5/2021	0.00	48.8	0	0	0	1,013	0	0
2/6/2021	0.00	48.8	0	0	0	1,013	0	0
2/7/2021	0.00	48.8	0	0	0	1,013	0	0
2/8/2021	0.00	48.8	0	0	0	1,013	0	0
2/9/2021	0.00	48.8	0	0	0	1,013	0	0
2/10/2021	0.00	48.8	0	0	0	1,013	0	0
2/11/2021	0.00	48.8	0	0	0	1,013	0	0
2/12/2021	0.00	48.8	0	0	0	1,013	0	0
2/13/2021	0.00	48.8	0	0	0	1,013	0	0
2/14/2021	0.00	48.8	0	0	0	1,013	0	0
2/15/2021	0.00	48.8	0	0	0	1,013	0	0
2/16/2021	0.00	48.8	0	0	0	1,013	0	0
2/17/2021	0.00	48.8	0	0	0	1,013	0	0
2/18/2021	0.00	48.8	0	0	0	1,013	0	0
2/19/2021	0.00	48.8	0	0	0	1,013	0	0
2/20/2021	0.00	48.8	0	0	0	1,013	0	0
2/21/2021	0.00	48.8	0	0	0	1,013	0	0
2/22/2021	0.00	48.8	0	0	0	1,013	0	0
2/23/2021	0.00	48.8	0	0	0	1,013	0	0
2/24/2021	0.00	48.8	0	0	0	1,013	0	0
2/25/2021	0.00	48.8	0	0	0	1,013	0	0
2/26/2021	0.00	48.8	0	0	0	1,013	0	0
2/27/2021	0.00	48.8	0	0	0	1,013	0	0
2/28/2021	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:
The A-51 Flare commenced operation on June 21, 2005.
*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - March 15, 2020) and January 22, 2020 (March 16, 2020 - 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-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
3/1/2021	0.00	48.8	0	0	0	1,013	0	0
3/2/2021	0.00	48.8	0	0	0	1,013	0	0
3/3/2021	0.00	48.8	0	0	0	1,013	0	0
3/4/2021	0.00	48.8	0	0	0	1,013	0	0
3/5/2021	0.00	48.8	0	0	0	1,013	0	0
3/6/2021	0.00	48.8	0	0	0	1,013	0	0
3/7/2021	0.00	48.8	0	0	0	1,013	0	0
3/8/2021	0.00	48.8	0	0	0	1,013	0	0
3/9/2021	0.00	48.8	0	0	0	1,013	0	0
3/10/2021	0.00	50.0	0	0	0	1,013	0	0
3/11/2021	0.00	50.0	0	0	0	1,013	0	0
3/12/2021	0.00	50.0	0	0	0	1,013	0	0
3/13/2021	0.00	50.0	0	0	0	1,013	0	0
3/14/2021	0.00	50.0	0	0	0	1,013	0	0
3/15/2021	0.00	50.0	0	0	0	1,013	0	0
3/16/2021	0.00	50.0	0	0	0	1,013	0	0
3/17/2021	0.00	50.0	0	0	0	1,013	0	0
3/18/2021	0.00	50.0	0	0	0	1,013	0	0
3/19/2021	0.00	50.0	0	0	0	1,013	0	0
3/20/2021	0.00	50.0	0	0	0	1,013	0	0
3/21/2021	0.00	50.0	0	0	0	1,013	0	0
3/22/2021	0.00	50.0	0	0	0	1,013	0	0
3/23/2021	0.00	50.0	0	0	0	1,013	0	0
3/24/2021	0.00	50.0	0	0	0	1,013	0	0
3/25/2021	0.00	50.0	0	0	0	1,013	0	0
3/26/2021	0.00	50.0	0	0	0	1,013	0	0
3/27/2021	0.00	50.0	0	0	0	1,013	0	0
3/28/2021	0.00	50.0	0	0	0	1,013	0	0
3/29/2021	0.00	50.0	0	0	0	1,013	0	0
3/30/2021	0.00	50.0	0	0	0	1,013	0	0
3/31/2021	0.00	50.0	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:
The A-51 Flare commenced operation on June 21, 2005.
*CH_4 content was determined from the January 22, 2020 (March 16, 2020 - March 9, 2021) and January 14, 2021 (March 10, 2021 - present) source tests.
Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.
scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Apr-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
4/1/2021	0.00	50.0	0	0	0	1,013	0	0
4/2/2021	0.00	50.0	0	0	0	1,013	0	0
4/3/2021	0.00	50.0	0	0	0	1,013	0	0
4/4/2021	0.00	50.0	0	0	0	1,013	0	0
4/5/2021	0.00	50.0	0	0	0	1,013	0	0
4/6/2021	0.00	50.0	0	0	0	1,013	0	0
4/7/2021	0.00	50.0	0	0	0	1,013	0	0
4/8/2021	0.00	50.0	0	0	0	1,013	0	0
4/9/2021	0.00	50.0	0	0	0	1,013	0	0
4/10/2021	0.00	50.0	0	0	0	1,013	0	0
4/11/2021	0.00	50.0	0	0	0	1,013	0	0
4/12/2021	0.00	50.0	0	0	0	1,013	0	0
4/13/2021	0.00	50.0	0	0	0	1,013	0	0
4/14/2021	0.00	50.0	0	0	0	1,013	0	0
4/15/2021	0.00	50.0	0	0	0	1,013	0	0
4/16/2021	0.00	50.0	0	0	0	1,013	0	0
4/17/2021	0.00	50.0	0	0	0	1,013	0	0
4/18/2021	0.00	50.0	0	0	0	1,013	0	0
4/19/2021	0.00	50.0	0	0	0	1,013	0	0
4/20/2021	0.00	50.0	0	0	0	1,013	0	0
4/21/2021	0.00	50.0	0	0	0	1,013	0	0
4/22/2021	0.00	50.0	0	0	0	1,013	0	0
4/23/2021	0.00	50.0	0	0	0	1,013	0	0
4/24/2021	0.00	50.0	0	0	0	1,013	0	0
4/25/2021	0.00	50.0	0	0	0	1,013	0	0
4/26/2021	0.00	50.0	0	0	0	1,013	0	0
4/27/2021	0.00	50.0	0	0	0	1,013	0	0
4/28/2021	0.00	50.0	0	0	0	1,013	0	0
4/29/2021	0.00	50.0	0	0	0	1,013	0	0
4/30/2021	0.00	50.0	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:

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

*CH_4 content was determined from the January 22, 2020 (March 16, 2020 - March 9, 2021) and January 14, 2021 (March 10, 2021 - present) source tests.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

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-20	721.00	0.33	720.67	900	51.1	38,906,898	40,253,518	19,868,469	20,127	0.100	1.01	186.27	3.62
December-20	744.00	2.07	741.93	836	51.1	37,219,611	38,507,832	19,006,827	19,254	0.100	0.96	186.27	3.47
January-21	744.00	6.53	737.47	853	51.1	37,739,886	39,046,114	19,272,514	19,523	0.100	0.98	195.68	3.69
February-21	672.00	0.17	671.83	918	51.1	36,996,662	38,277,166	18,892,974	19,139	0.100	0.96	195.68	3.62
March-21	743.00	0.40	742.60	977	51.1	43,520,683	45,026,992	22,224,577	22,513	0.100	1.13	195.68	4.26
April-21	720.00	0.00	720.00	867	51.1	37,470,709	38,767,621	19,135,055	19,384	0.100	0.97	TBD	TBD
TOTAL/ AVG:	**4,344.00**	**9.50**	**4,334.50**	**892**	**51.1**	**231,854,449**	**239,879,243**	**118,400,416**	**119,939.62**	**--**	**--**	**--**	**--**

NOTES:

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

[1]CH_4 content and CO emission factor was determined from the July 25, 2019 (9/20/19 to 9/14/20) and July 22 & 23, 2020 (9/15/20 - 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-20

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
11/1/2020	25.00	51.1	891	1,335,750	682,123	1,013	691	1,381,982
11/2/2020	24.00	51.1	875	1,259,741	643,308	1,013	652	1,303,342
11/3/2020	24.00	51.1	861	1,239,959	633,206	1,013	641	1,282,876
11/4/2020	24.00	51.1	873	1,257,380	642,102	1,013	650	1,300,900
11/5/2020	24.00	51.1	887	1,277,808	652,534	1,013	661	1,322,035
11/6/2020	24.00	51.1	880	1,267,497	647,269	1,013	656	1,311,367
11/7/2020	24.00	51.1	875	1,260,483	643,687	1,013	652	1,304,110
11/8/2020	24.00	51.1	867	1,247,962	637,293	1,013	646	1,291,156
11/9/2020	24.00	51.1	864	1,244,785	635,671	1,013	644	1,287,869
11/10/2020	24.00	51.1	876	1,261,449	644,180	1,013	653	1,305,109
11/11/2020	24.00	51.1	881	1,268,656	647,861	1,013	656	1,312,566
11/12/2020	24.00	51.1	1,134	1,632,923	833,880	1,013	845	1,689,441
11/13/2020	24.00	51.1	888	1,278,840	653,061	1,013	662	1,323,102
11/14/2020	23.77	51.1	1,189	1,695,050	865,606	1,013	877	1,753,718
11/15/2020	24.00	51.1	921	1,325,946	677,117	1,013	686	1,371,839
11/16/2020	24.00	51.1	930	1,338,782	683,672	1,013	693	1,385,119
11/17/2020	24.00	51.1	919	1,322,775	675,498	1,013	684	1,368,558
11/18/2020	24.00	51.1	908	1,307,093	667,489	1,013	676	1,352,333
11/19/2020	24.00	51.1	904	1,301,805	664,789	1,013	673	1,346,862
11/20/2020	24.00	51.1	917	1,320,575	674,374	1,013	683	1,366,282
11/21/2020	24.00	51.1	933	1,343,341	686,000	1,013	695	1,389,836
11/22/2020	24.00	51.1	930	1,338,510	683,533	1,013	692	1,384,838
11/23/2020	24.00	51.1	876	1,261,240	644,074	1,013	652	1,304,893
11/24/2020	24.00	51.1	841	1,210,926	618,380	1,013	626	1,252,838
11/25/2020	24.00	51.1	854	1,229,184	627,704	1,013	636	1,271,728
11/26/2020	24.00	51.1	847	1,219,409	622,712	1,013	631	1,261,614
11/27/2020	24.00	51.1	843	1,214,538	620,224	1,013	628	1,256,575
11/28/2020	24.00	51.1	845	1,216,185	621,066	1,013	629	1,258,279
11/29/2020	24.00	51.1	829	1,193,640	609,553	1,013	617	1,234,953
11/30/2020	23.90	51.1	861	1,234,666	630,503	1,013	639	1,277,399
Totals/ Average:	**720.67**	**51.1**	**900**	**38,906,898.0**	**19,868,469**	**1,013**	**20,127**	**40,253,518**
						Maximum:	**877**	**1,753,718**

Notes:

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

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Dec-20

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
12/1/2020	24.00	51.1	826	1,189,568	607,473	1,013	615	1,230,741
12/2/2020	24.00	51.1	822	1,183,634	604,443	1,013	612	1,224,601
12/3/2020	24.00	51.1	978	1,408,000	719,019	1,013	728	1,456,733
12/4/2020	24.00	51.1	826	1,189,822	607,603	1,013	616	1,231,003
12/5/2020	24.00	51.1	823	1,185,072	605,177	1,013	613	1,226,089
12/6/2020	24.00	51.1	822	1,183,458	604,353	1,013	612	1,224,419
12/7/2020	24.00	51.1	896	1,290,873	659,206	1,013	668	1,335,552
12/8/2020	24.00	51.1	827	1,191,218	608,316	1,013	616	1,232,448
12/9/2020	24.00	51.1	823	1,185,662	605,478	1,013	613	1,226,699
12/10/2020	24.00	51.1	817	1,176,701	600,902	1,013	609	1,217,428
12/11/2020	22.27	51.1	994	1,328,366	678,353	1,013	687	1,374,343
12/12/2020	24.00	51.1	840	1,210,276	618,048	1,013	626	1,252,165
12/13/2020	24.00	51.1	819	1,180,017	602,596	1,013	610	1,220,859
12/14/2020	24.00	51.1	820	1,180,447	602,815	1,013	611	1,221,304
12/15/2020	24.00	51.1	825	1,188,048	606,697	1,013	615	1,229,168
12/16/2020	24.00	51.1	828	1,192,752	609,099	1,013	617	1,234,035
12/17/2020	24.00	51.1	971	1,397,996	713,910	1,013	723	1,446,383
12/18/2020	24.00	51.1	797	1,146,967	585,718	1,013	593	1,186,665
12/19/2020	23.67	51.1	943	1,338,843	683,703	1,013	693	1,385,182
12/20/2020	24.00	51.1	814	1,171,900	598,451	1,013	606	1,212,461
12/21/2020	24.00	51.1	807	1,161,376	593,076	1,013	601	1,201,573
12/22/2020	24.00	51.1	796	1,146,104	585,277	1,013	593	1,185,772
12/23/2020	24.00	51.1	791	1,139,370	581,839	1,013	589	1,178,805
12/24/2020	24.00	51.1	800	1,152,488	588,538	1,013	596	1,192,377
12/25/2020	24.00	51.1	801	1,153,653	589,133	1,013	597	1,193,582
12/26/2020	24.00	51.1	821	1,181,574	603,391	1,013	611	1,222,470
12/27/2020	24.00	51.1	813	1,170,203	597,584	1,013	605	1,210,705
12/28/2020	24.00	51.1	794	1,142,740	583,560	1,013	591	1,182,292
12/29/2020	24.00	51.1	786	1,131,226	577,680	1,013	585	1,170,379
12/30/2020	24.00	51.1	799	1,150,946	587,750	1,013	595	1,190,782
12/31/2020	24.00	51.1	813	1,170,311	597,639	1,013	605	1,210,817
Totals/ Average:	**741.93**	**51.1**	**836**	**37,219,611.0**	**19,006,827**	**1,013**	**19,254**	**38,507,832**
						Maximum:	**728**	**1,456,733**

Notes:

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

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Jan-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
1/1/2021	24.00	51.1	836	1,203,144	614,406	1,013	622	1,244,786
1/2/2021	24.00	51.1	821	1,182,788	604,011	1,013	612	1,223,726
1/3/2021	24.00	51.1	823	1,185,764	605,531	1,013	613	1,226,805
1/4/2021	24.00	51.1	818	1,178,607	601,876	1,013	610	1,219,400
1/5/2021	24.00	51.1	843	1,213,932	619,915	1,013	628	1,255,948
1/6/2021	24.00	51.1	818	1,178,074	601,604	1,013	609	1,218,849
1/7/2021	24.00	51.1	820	1,180,693	602,941	1,013	611	1,221,558
1/8/2021	24.00	51.1	809	1,165,591	595,229	1,013	603	1,205,934
1/9/2021	24.00	51.1	815	1,173,888	599,466	1,013	607	1,214,518
1/10/2021	24.00	51.1	855	1,231,817	629,048	1,013	637	1,274,452
1/11/2021	24.00	51.1	819	1,178,849	601,999	1,013	610	1,219,651
1/12/2021	24.00	51.1	824	1,186,024	605,663	1,013	614	1,227,074
1/13/2021	22.17	51.1	836	1,111,826	567,773	1,013	575	1,150,308
1/14/2021	19.30	51.1	973	1,126,891	575,466	1,013	583	1,165,894
1/15/2021	24.00	51.1	953	1,371,973	700,621	1,013	710	1,419,459
1/16/2021	24.00	51.1	824	1,186,532	605,923	1,013	614	1,227,599
1/17/2021	24.00	51.1	901	1,296,801	662,233	1,013	671	1,341,685
1/18/2021	24.00	51.1	1,222	1,760,149	898,850	1,013	911	1,821,070
1/19/2021	24.00	51.1	1,106	1,592,917	813,450	1,013	824	1,648,050
1/20/2021	24.00	51.1	889	1,279,915	653,610	1,013	662	1,324,215
1/21/2021	24.00	51.1	795	1,145,407	584,922	1,013	593	1,185,051
1/22/2021	24.00	51.1	799	1,151,150	587,854	1,013	595	1,190,993
1/23/2021	24.00	51.1	791	1,139,337	581,822	1,013	589	1,178,771
1/24/2021	24.00	51.1	795	1,145,014	584,721	1,013	592	1,184,644
1/25/2021	24.00	51.1	791	1,139,429	581,869	1,013	589	1,178,866
1/26/2021	24.00	51.1	792	1,139,843	582,080	1,013	590	1,179,294
1/27/2021	24.00	51.1	790	1,137,434	580,850	1,013	588	1,176,802
1/28/2021	24.00	51.1	920	1,324,175	676,212	1,013	685	1,370,006
1/29/2021	24.00	51.1	785	1,130,795	577,460	1,013	585	1,169,933
1/30/2021	24.00	51.1	795	1,145,178	584,805	1,013	592	1,184,814
1/31/2021	24.00	51.1	803	1,155,949	590,305	1,013	598	1,195,958
Totals/ Average:	**737.47**	**51.1**	**853**	**37,739,886.0**	**19,272,514**	**1,013**	**19,523**	**39,046,114**
						Maximum:	**911**	**1,821,070**

Notes:

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

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Feb-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
2/1/2021	24.00	51.1	798	1,149,583	587,054	1,013	595	1,189,372
2/2/2021	24.00	51.1	799	1,150,898	587,726	1,013	595	1,190,732
2/3/2021	24.00	51.1	839	1,207,708	616,737	1,013	625	1,249,508
2/4/2021	24.00	51.1	815	1,173,413	599,223	1,013	607	1,214,026
2/5/2021	24.00	51.1	820	1,180,529	602,857	1,013	611	1,221,389
2/6/2021	24.00	51.1	895	1,288,451	657,969	1,013	667	1,333,046
2/7/2021	24.00	51.1	815	1,173,281	599,156	1,013	607	1,213,890
2/8/2021	24.00	51.1	926	1,333,961	681,210	1,013	690	1,380,131
2/9/2021	24.00	51.1	1,062	1,528,739	780,677	1,013	791	1,581,651
2/10/2021	23.83	51.1	1,158	1,655,962	845,645	1,013	857	1,713,277
2/11/2021	24.00	51.1	1,105	1,590,494	812,213	1,013	823	1,645,543
2/12/2021	24.00	51.1	901	1,297,301	662,489	1,013	671	1,342,202
2/13/2021	24.00	51.1	804	1,157,071	590,878	1,013	599	1,197,119
2/14/2021	24.00	51.1	801	1,154,086	589,354	1,013	597	1,194,030
2/15/2021	24.00	51.1	1,194	1,720,059	878,377	1,013	890	1,779,593
2/16/2021	24.00	51.1	1,264	1,820,420	929,628	1,013	942	1,883,427
2/17/2021	24.00	51.1	829	1,193,326	609,392	1,013	617	1,234,629
2/18/2021	24.00	51.1	795	1,145,482	584,960	1,013	593	1,185,129
2/19/2021	24.00	51.1	792	1,140,057	582,189	1,013	590	1,179,516
2/20/2021	24.00	51.1	786	1,132,097	578,125	1,013	586	1,171,280
2/21/2021	24.00	51.1	793	1,141,882	583,121	1,013	591	1,181,404
2/22/2021	24.00	51.1	1,417	2,040,151	1,041,838	1,013	1,055	2,110,763
2/23/2021	24.00	51.1	1,309	1,884,624	962,415	1,013	975	1,949,853
2/24/2021	24.00	51.1	788	1,135,129	579,673	1,013	587	1,174,417
2/25/2021	24.00	51.1	855	1,230,728	628,492	1,013	637	1,273,325
2/26/2021	24.00	51.1	782	1,126,536	575,285	1,013	583	1,165,527
2/27/2021	24.00	51.1	777	1,119,262	571,570	1,013	579	1,158,001
2/28/2021	24.00	51.1	782	1,125,432	574,721	1,013	582	1,164,385
Totals/ Average:	**671.83**	**51.1**	**918**	**36,996,662.0**	**18,892,974**	**1,013**	**19,139**	**38,277,166**
						Maximum:	**1,055**	**2,110,763**

Notes:

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

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Mar-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
3/1/2021	24.00	51.1	786	1,131,488	577,814	1,013	585	1,170,650
3/2/2021	24.00	51.1	819	1,179,102	602,128	1,013	610	1,219,912
3/3/2021	24.00	51.1	848	1,221,091	623,571	1,013	632	1,263,355
3/4/2021	24.00	51.1	875	1,260,454	643,672	1,013	652	1,304,080
3/5/2021	24.00	51.1	911	1,311,504	669,742	1,013	678	1,356,897
3/6/2021	24.00	51.1	898	1,293,819	660,711	1,013	669	1,338,600
3/7/2021	24.00	51.1	903	1,300,502	664,123	1,013	673	1,345,514
3/8/2021	24.00	51.1	891	1,283,640	655,513	1,013	664	1,328,069
3/9/2021	23.87	51.1	890	1,274,952	651,076	1,013	660	1,319,080
3/10/2021	24.00	51.1	865	1,244,991	635,776	1,013	644	1,288,082
3/11/2021	23.90	51.1	862	1,236,290	631,333	1,013	640	1,279,080
3/12/2021	24.00	51.1	852	1,227,555	626,872	1,013	635	1,270,042
3/13/2021	24.00	51.1	844	1,215,913	620,927	1,013	629	1,257,997
3/14/2021	23.00	51.1	851	1,173,885	599,464	1,013	607	1,214,515
3/15/2021	24.00	51.1	867	1,249,157	637,903	1,013	646	1,292,392
3/16/2021	24.00	51.1	835	1,201,793	613,716	1,013	622	1,243,389
3/17/2021	24.00	51.1	841	1,210,634	618,231	1,013	626	1,252,536
3/18/2021	24.00	51.1	843	1,214,503	620,207	1,013	628	1,256,539
3/19/2021	24.00	51.1	874	1,258,361	642,603	1,013	651	1,301,915
3/20/2021	24.00	51.1	852	1,227,396	626,791	1,013	635	1,269,878
3/21/2021	24.00	51.1	859	1,236,600	631,491	1,013	640	1,279,400
3/22/2021	24.00	51.1	831	1,197,254	611,398	1,013	619	1,238,693
3/23/2021	24.00	51.1	799	1,150,890	587,722	1,013	595	1,190,724
3/24/2021	24.00	51.1	1,839	2,648,243	1,352,370	1,013	1,370	2,739,902
3/25/2021	24.00	51.1	1,909	2,748,513	1,403,575	1,013	1,422	2,843,643
3/26/2021	24.00	51.1	1,570	2,260,353	1,154,288	1,013	1,169	2,338,587
3/27/2021	23.83	51.1	1,448	2,070,184	1,057,175	1,013	1,071	2,141,836
3/28/2021	24.00	51.1	1,435	2,065,732	1,054,901	1,013	1,069	2,137,230
3/29/2021	24.00	51.1	781	1,125,076	574,539	1,013	582	1,164,016
3/30/2021	24.00	51.1	789	1,136,755	580,503	1,013	588	1,176,100
3/31/2021	24.00	51.1	808	1,164,053	594,443	1,013	602	1,204,342
Totals/ Average:	**742.60**	**51.1**	**977**	**43,520,683.0**	**22,224,577**	**1,013**	**22,513**	**45,026,992**
						Maximum:	**1,422**	**2,843,643**

Notes:

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

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Apr-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
4/1/2021	24.00	51.1	1,108	1,595,679	814,861	1,013	825	1,650,908
4/2/2021	24.00	51.1	1,429	2,057,932	1,050,918	1,013	1,065	2,129,160
4/3/2021	24.00	51.1	1,109	1,596,564	815,313	1,013	826	1,651,823
4/4/2021	24.00	51.1	906	1,305,321	666,584	1,013	675	1,350,500
4/5/2021	24.00	51.1	1,097	1,580,164	806,938	1,013	817	1,634,856
4/6/2021	24.00	51.1	1,192	1,716,483	876,551	1,013	888	1,775,893
4/7/2021	24.00	51.1	815	1,173,859	599,451	1,013	607	1,214,488
4/8/2021	24.00	51.1	788	1,135,385	579,804	1,013	587	1,174,682
4/9/2021	24.00	51.1	794	1,143,619	584,008	1,013	592	1,183,201
4/10/2021	24.00	51.1	807	1,162,247	593,521	1,013	601	1,202,474
4/11/2021	24.00	51.1	807	1,162,051	593,421	1,013	601	1,202,271
4/12/2021	24.00	51.1	801	1,153,622	589,117	1,013	597	1,193,550
4/13/2021	24.00	51.1	828	1,192,288	608,862	1,013	617	1,233,555
4/14/2021	24.00	51.1	892	1,283,977	655,685	1,013	664	1,328,417
4/15/2021	24.00	51.1	890	1,281,602	654,472	1,013	663	1,325,960
4/16/2021	24.00	51.1	752	1,083,213	553,161	1,013	560	1,120,704
4/17/2021	24.00	51.1	753	1,084,901	554,023	1,013	561	1,122,451
4/18/2021	24.00	51.1	757	1,090,571	556,919	1,013	564	1,128,317
4/19/2021	24.00	51.1	757	1,089,503	556,373	1,013	564	1,127,212
4/20/2021	24.00	51.1	756	1,088,710	555,968	1,013	563	1,126,392
4/21/2021	24.00	51.1	748	1,077,416	550,201	1,013	557	1,114,707
4/22/2021	24.00	51.1	739	1,063,690	543,191	1,013	550	1,100,506
4/23/2021	24.00	51.1	740	1,066,271	544,509	1,013	552	1,103,176
4/24/2021	24.00	51.1	743	1,070,047	546,438	1,013	554	1,107,083
4/25/2021	24.00	51.1	742	1,069,118	545,963	1,013	553	1,106,122
4/26/2021	24.00	51.1	992	1,428,658	729,568	1,013	739	1,478,106
4/27/2021	24.00	51.1	1,003	1,444,769	737,796	1,013	747	1,494,774
4/28/2021	24.00	51.1	748	1,077,516	550,252	1,013	557	1,114,810
4/29/2021	24.00	51.1	805	1,159,741	592,241	1,013	600	1,199,881
4/30/2021	24.00	51.1	719	1,035,792	528,945	1,013	536	1,071,642
Totals/ Average:	**720.00**	**51.1**	**867**	**37,470,709.0**	**19,135,055**	**1,013**	**19,384**	**38,767,621**
						Maximum:	**1,065**	**2,129,160**

Notes:

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

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

MONTHLY LFG Input to Landfill Gas Engine (S-64)
WM - REDWOOD LANDFILL, Novato, CA

S-64 (Engine #1)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMBtu)[2]	SO2 Emissions (tons)[2]
November-20	721.00	5.33	715.67	657	53.0	28,232,749	30,334,808	14,972,758	15,167	0.083	0.63	1.54	2.17E-02
December-20	744.00	17.67	726.33	669	53.0	29,157,637	31,328,559	15,463,257	15,664	0.083	0.65	1.54	2.24E-02
January-21	744.00	18.33	725.67	670	53.0	29,159,215	31,330,254	15,464,094	15,665	0.083	0.65	1.54	2.24E-02
February-21	672.00	33.50	638.50	662	53.0	25,366,574	27,255,234	13,452,732	13,628	0.083	0.57	1.54	1.95E-02
March-21	743.00	68.83	674.17	675	53.0	27,296,123	29,328,446	14,476,035	14,664	0.083	0.61	1.54	2.10E-02
April-21	720.00	27.00	693.00	683	53.0	28,415,125	30,530,764	15,069,479	15,265	0.083	0.63	1.54	2.19E-02
TOTAL/ AVG:	**4,344.00**	**170.67**	**4,173.33**	**669**	**53.0**	**167,627,422**	**180,108,065**	**88,898,354**	**90,054**	**--**	**--**	**--**	**--**

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 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Nov-20

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
11/01/2020	24.00	53.0	665	957,953	508,034	1,013	515	1,029,277
11/02/2020	24.00	53.0	665	957,444	507,764	1,013	514	1,028,730
11/03/2020	24.00	53.0	667	960,591	509,433	1,013	516	1,032,111
11/04/2020	24.00	53.0	670	965,023	511,783	1,013	518	1,036,873
11/05/2020	24.00	53.0	667	960,474	509,371	1,013	516	1,031,986
11/06/2020	24.00	53.0	633	948,812	503,186	1,013	510	1,019,455
11/07/2020	24.00	53.0	656	944,105	500,690	1,013	507	1,014,398
11/08/2020	24.00	53.0	657	946,765	502,101	1,013	509	1,017,256
11/09/2020	24.00	53.0	664	956,424	507,223	1,013	514	1,027,634
11/10/2020	24.00	53.0	664	956,846	507,447	1,013	514	1,028,088
11/11/2020	24.00	53.0	668	961,487	509,908	1,013	517	1,033,074
11/12/2020	24.00	53.0	666	958,480	508,314	1,013	515	1,029,843
11/13/2020	24.00	53.0	670	964,356	511,430	1,013	518	1,036,157
11/14/2020	21.50	53.0	591	807,072	428,017	1,013	434	867,162
11/15/2020	24.00	53.0	652	939,327	498,156	1,013	505	1,009,264
11/16/2020	24.00	53.0	646	929,935	493,175	1,013	500	999,172
11/17/2020	24.00	53.0	647	931,977	494,258	1,013	501	1,001,367
11/18/2020	24.00	53.0	653	939,720	498,364	1,013	505	1,009,686
11/19/2020	24.00	53.0	655	942,525	499,852	1,013	506	1,012,700
11/20/2020	24.00	53.0	659	949,282	503,435	1,013	510	1,019,960
11/21/2020	24.00	53.0	652	938,542	497,740	1,013	504	1,008,421
11/22/2020	24.00	53.0	650	936,072	496,430	1,013	503	1,005,767
11/23/2020	24.00	53.0	654	941,858	499,498	1,013	506	1,011,983
11/24/2020	23.75	53.0	642	924,714	490,407	1,013	497	993,564
11/25/2020	23.33	53.0	634	912,957	484,171	1,013	490	980,931
11/26/2020	24.00	53.0	649	934,797	495,753	1,013	502	1,004,397
11/27/2020	24.00	53.0	654	941,445	499,279	1,013	506	1,011,539
11/28/2020	24.00	53.0	654	941,885	499,513	1,013	506	1,012,013
11/29/2020	24.00	53.0	666	958,546	508,348	1,013	515	1,029,914
11/30/2020	23.08	53.0	641	923,339	489,677	1,013	496	992,086
Totals/ Average:	**715.67**	**53.0**	**657**	**28,232,748.6**	**14,972,758**	**1,013**	**15,167**	**30,334,808**
						Maximum:	**518**	**1,036,873**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Dec-20

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
12/01/2020	24.00	53.0	671	966,628	512,635	1,013	519	1,038,598
12/02/2020	24.00	53.0	672	967,690	513,198	1,013	520	1,039,739
12/03/2020	21.50	53.0	585	842,472	446,791	1,013	453	905,198
12/04/2020	24.00	53.0	670	964,508	511,511	1,013	518	1,036,320
12/05/2020	24.00	53.0	670	965,431	512,000	1,013	519	1,037,312
12/06/2020	24.00	53.0	673	969,475	514,144	1,013	521	1,041,657
12/07/2020	21.92	53.0	598	860,742	456,480	1,013	462	924,828
12/08/2020	24.00	53.0	664	955,763	506,873	1,013	513	1,026,924
12/09/2020	24.00	53.0	668	961,432	509,879	1,013	517	1,033,015
12/10/2020	24.00	53.0	672	967,309	512,996	1,013	520	1,039,330
12/11/2020	19.25	53.0	539	776,016	411,547	1,013	417	833,795
12/12/2020	23.50	53.0	656	945,345	501,347	1,013	508	1,015,730
12/13/2020	24.00	53.0	677	975,186	517,173	1,013	524	1,047,793
12/14/2020	24.00	53.0	678	976,142	517,681	1,013	524	1,048,821
12/15/2020	24.00	53.0	674	970,212	514,535	1,013	521	1,042,448
12/16/2020	24.00	53.0	670	964,475	511,493	1,013	518	1,036,285
12/17/2020	18.58	53.0	495	712,502	377,863	1,013	383	765,551
12/18/2020	24.00	53.0	675	971,384	515,157	1,013	522	1,043,709
12/19/2020	21.58	53.0	590	849,088	450,299	1,013	456	912,306
12/20/2020	24.00	53.0	671	965,523	512,049	1,013	519	1,037,411
12/21/2020	24.00	53.0	668	962,587	510,492	1,013	517	1,034,256
12/22/2020	24.00	53.0	670	965,380	511,973	1,013	519	1,037,257
12/23/2020	24.00	53.0	674	970,380	514,625	1,013	521	1,042,630
12/24/2020	24.00	53.0	669	963,602	511,030	1,013	518	1,035,347
12/25/2020	24.00	53.0	670	965,077	511,812	1,013	518	1,036,932
12/26/2020	24.00	53.0	674	971,005	514,956	1,013	522	1,043,301
12/27/2020	24.00	53.0	663	954,366	506,132	1,013	513	1,025,423
12/28/2020	24.00	53.0	668	962,179	510,275	1,013	517	1,033,818
12/29/2020	24.00	53.0	678	976,383	517,808	1,013	525	1,049,079
12/30/2020	24.00	53.0	673	969,666	514,246	1,013	521	1,041,862
12/31/2020	24.00	53.0	673	969,687	514,257	1,013	521	1,041,884
Totals/ Average:	**726.33**	**53.0**	**669**	**29,157,637.0**	**15,463,257**	**1,013**	**15,664**	**31,328,559**
						Maximum:	**525**	**1,049,079**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Jan-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
1/01/2021	24.00	53.0	672	968,194	513,465	1,013	520	1,040,281
1/02/2021	24.00	53.0	678	976,133	517,676	1,013	524	1,048,811
1/03/2021	24.00	53.0	678	977,003	518,137	1,013	525	1,049,745
1/04/2021	24.00	53.0	674	971,080	514,996	1,013	522	1,043,382
1/05/2021	23.50	53.0	651	937,505	497,190	1,013	504	1,007,306
1/06/2021	24.00	53.0	677	974,851	516,995	1,013	524	1,047,433
1/07/2021	24.00	53.0	674	970,438	514,656	1,013	521	1,042,692
1/08/2021	24.00	53.0	677	975,124	517,140	1,013	524	1,047,726
1/09/2021	24.00	53.0	676	972,875	515,948	1,013	523	1,045,310
1/10/2021	22.75	53.0	630	907,787	481,429	1,013	488	975,376
1/11/2021	24.00	53.0	674	970,059	514,454	1,013	521	1,042,284
1/12/2021	24.00	53.0	676	974,031	516,561	1,013	523	1,046,552
1/13/2021	24.00	53.0	679	978,016	518,674	1,013	525	1,050,834
1/14/2021	22.08	53.0	622	896,193	475,281	1,013	481	962,918
1/15/2021	24.00	53.0	675	972,614	515,809	1,013	523	1,045,029
1/16/2021	24.00	53.0	678	975,942	517,574	1,013	524	1,048,606
1/17/2021	23.00	53.0	640	922,260	489,105	1,013	495	990,926
1/18/2021	18.67	53.0	599	718,298	380,937	1,013	386	771,779
1/19/2021	18.50	53.0	504	725,269	384,634	1,013	390	779,269
1/20/2021	21.17	53.0	573	824,610	437,318	1,013	443	886,007
1/21/2021	24.00	53.0	673	969,168	513,982	1,013	521	1,041,327
1/22/2021	24.00	53.0	669	962,675	510,539	1,013	517	1,034,351
1/23/2021	24.00	53.0	673	968,691	513,729	1,013	520	1,040,815
1/24/2021	24.00	53.0	669	963,047	510,735	1,013	517	1,034,750
1/25/2021	24.00	53.0	668	961,306	509,812	1,013	516	1,032,880
1/26/2021	24.00	53.0	668	962,007	510,184	1,013	517	1,033,633
1/27/2021	24.00	53.0	664	956,239	507,125	1,013	514	1,027,435
1/28/2021	24.00	53.0	659	948,368	502,951	1,013	509	1,018,978
1/29/2021	24.00	53.0	666	959,322	508,760	1,013	515	1,030,748
1/30/2021	24.00	53.0	669	962,827	510,619	1,013	517	1,034,514
1/31/2021	24.00	53.0	665	957,285	507,680	1,013	514	1,028,559
Totals/ Average:	**725.67**	**53.0**	**670**	**29,159,214.6**	**15,464,094**	**1,013**	**15,665**	**31,330,254**
						Maximum:	**525**	**1,050,834**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Feb-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
2/01/2021	24.00	53.0	662	953,949	505,911	1,013	512	1,024,975
2/02/2021	24.00	53.0	668	962,136	510,252	1,013	517	1,033,771
2/03/2021	24.00	53.0	669	963,983	511,232	1,013	518	1,035,756
2/04/2021	24.00	53.0	669	963,926	511,202	1,013	518	1,035,695
2/05/2021	24.00	53.0	668	961,407	509,866	1,013	516	1,032,988
2/06/2021	21.33	53.0	580	835,424	443,053	1,013	449	897,626
2/07/2021	24.00	53.0	663	954,668	506,292	1,013	513	1,025,747
2/08/2021	24.00	53.0	660	950,709	504,192	1,013	511	1,021,494
2/09/2021	15.42	53.0	395	568,797	301,652	1,013	306	611,146
2/10/2021	24.00	53.0	661	951,224	504,466	1,013	511	1,022,047
2/11/2021	23.50	53.0	638	918,469	487,095	1,013	493	986,854
2/12/2021	24.00	53.0	665	957,309	507,692	1,013	514	1,028,585
2/13/2021	24.00	53.0	667	959,767	508,996	1,013	516	1,031,226
2/14/2021	24.00	53.0	667	960,294	509,276	1,013	516	1,031,792
2/15/2021	24.00	53.0	661	951,673	504,704	1,013	511	1,022,530
2/16/2021	24.00	53.0	661	951,719	504,728	1,013	511	1,022,579
2/17/2021	24.00	53.0	667	959,817	509,023	1,013	516	1,031,280
2/18/2021	24.00	53.0	669	962,943	510,681	1,013	517	1,034,639
2/19/2021	24.00	53.0	666	959,330	508,765	1,013	515	1,030,757
2/20/2021	24.00	53.0	668	962,505	510,448	1,013	517	1,034,168
2/21/2021	24.00	53.0	668	962,498	510,444	1,013	517	1,034,160
2/22/2021	11.17	53.0	297	427,926	226,943	1,013	230	459,787
2/23/2021	15.08	53.0	403	580,361	307,785	1,013	312	623,572
2/24/2021	24.00	53.0	664	955,846	506,917	1,013	514	1,027,014
2/25/2021	24.00	53.0	667	959,897	509,065	1,013	516	1,031,366
2/26/2021	24.00	53.0	664	956,483	507,254	1,013	514	1,027,697
2/27/2021	24.00	53.0	664	956,206	507,108	1,013	514	1,027,400
2/28/2021	24.00	53.0	665	957,307	507,692	1,013	514	1,028,583
Totals/ Average:	**638.50**	**53.0**	**662**	**25,366,574.4**	**13,452,732**	**1,013**	**13,628**	**27,255,234**
						Maximum:	**518**	**1,035,756**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Mar-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
3/01/2021	24.00	53.0	664	955,690	506,834	1,013	513	1,026,846
3/02/2021	24.00	53.0	660	949,911	503,769	1,013	510	1,020,636
3/03/2021	24.00	53.0	661	952,284	505,028	1,013	512	1,023,186
3/04/2021	24.00	53.0	671	966,322	512,473	1,013	519	1,038,270
3/05/2021	24.00	53.0	669	963,177	510,804	1,013	517	1,034,890
3/06/2021	24.00	53.0	672	968,381	513,564	1,013	520	1,040,481
3/07/2021	24.00	53.0	671	966,372	512,499	1,013	519	1,038,322
3/08/2021	24.00	53.0	675	971,846	515,402	1,013	522	1,044,205
3/09/2021	24.00	53.0	673	969,587	514,204	1,013	521	1,041,777
3/10/2021	24.00	53.0	672	968,015	513,370	1,013	520	1,040,088
3/11/2021	24.00	53.0	668	962,483	510,437	1,013	517	1,034,144
3/12/2021	24.00	53.0	678	975,841	517,521	1,013	524	1,048,497
3/13/2021	24.00	53.0	681	981,101	520,310	1,013	527	1,054,149
3/14/2021	23.00	53.0	677	933,642	495,141	1,013	502	1,003,156
3/15/2021	24.00	53.0	675	971,441	515,187	1,013	522	1,043,770
3/16/2021	24.00	53.0	678	976,709	517,981	1,013	525	1,049,429
3/17/2021	24.00	53.0	681	980,423	519,951	1,013	527	1,053,420
3/18/2021	24.00	53.0	683	983,056	521,347	1,013	528	1,056,249
3/19/2021	23.67	53.0	663	955,024	506,480	1,013	513	1,026,129
3/20/2021	24.00	53.0	685	986,187	523,007	1,013	530	1,059,613
3/21/2021	24.00	53.0	684	985,356	522,567	1,013	529	1,058,720
3/22/2021	24.00	53.0	687	988,605	524,290	1,013	531	1,062,211
3/23/2021	24.00	53.0	681	980,711	520,103	1,013	527	1,053,729
3/24/2021	5.58	53.0	156	223,948	118,767	1,013	120	240,622
3/25/2021	6.67	53.0	189	272,799	144,674	1,013	147	293,110
3/26/2021	13.50	53.0	368	530,206	281,186	1,013	285	569,683
3/27/2021	12.67	53.0	368	529,513	280,818	1,013	284	568,937
3/28/2021	13.08	53.0	356	513,289	272,214	1,013	276	551,505
3/29/2021	24.00	53.0	679	978,037	518,685	1,013	525	1,050,857
3/30/2021	24.00	53.0	679	978,456	518,907	1,013	526	1,051,307
3/31/2021	24.00	53.0	679	977,711	518,513	1,013	525	1,050,507
Totals/ Average:	**674.17**	**53.0**	**675**	**27,296,122.7**	**14,476,035**	**1,013**	**14,664**	**29,328,446**
						Maximum:	**531**	**1,062,211**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Apr-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
4/01/2021	24.00	53.0	668	961,998	510,179	1,013	517	1,033,623
4/02/2021	24.00	53.0	653	939,829	498,422	1,013	505	1,009,804
4/03/2021	24.00	53.0	672	967,308	512,995	1,013	520	1,039,329
4/04/2021	24.00	53.0	678	976,160	517,690	1,013	524	1,048,840
4/05/2021	24.00	53.0	672	967,441	513,066	1,013	520	1,039,471
4/06/2021	24.00	53.0	669	963,705	511,085	1,013	518	1,035,457
4/07/2021	24.00	53.0	679	977,456	518,377	1,013	525	1,050,232
4/08/2021	24.00	53.0	679	977,071	518,173	1,013	525	1,049,819
4/09/2021	24.00	53.0	682	981,579	520,564	1,013	527	1,054,662
4/10/2021	24.00	53.0	681	980,829	520,166	1,013	527	1,053,857
4/11/2021	24.00	53.0	680	978,642	519,006	1,013	526	1,051,506
4/12/2021	24.00	53.0	679	977,638	518,474	1,013	525	1,050,428
4/13/2021	24.00	53.0	677	975,338	517,254	1,013	524	1,047,956
4/14/2021	19.67	53.0	548	789,787	418,850	1,013	424	848,591
4/15/2021	19.58	53.0	547	787,224	417,491	1,013	423	845,836
4/16/2021	24.00	53.0	692	997,143	528,818	1,013	536	1,071,385
4/17/2021	24.00	53.0	694	999,731	530,190	1,013	537	1,074,165
4/18/2021	24.00	53.0	696	1,001,805	531,290	1,013	538	1,076,394
4/19/2021	24.00	53.0	695	1,001,461	531,108	1,013	538	1,076,025
4/20/2021	24.00	53.0	691	995,354	527,869	1,013	535	1,069,462
4/21/2021	24.00	53.0	691	995,634	528,018	1,013	535	1,069,764
4/22/2021	24.00	53.0	695	1,000,773	530,743	1,013	538	1,075,285
4/23/2021	24.00	53.0	696	1,002,475	531,646	1,013	539	1,077,114
4/24/2021	24.00	53.0	696	1,002,073	531,432	1,013	538	1,076,682
4/25/2021	24.00	53.0	693	997,961	529,252	1,013	536	1,072,264
4/26/2021	14.25	53.0	410	589,760	312,769	1,013	317	633,670
4/27/2021	16.00	53.0	438	630,449	334,348	1,013	339	677,388
4/28/2021	23.50	53.0	680	979,785	519,613	1,013	526	1,052,735
4/29/2021	24.00	53.0	701	1,009,565	535,405	1,013	542	1,084,732
4/30/2021	24.00	53.0	701	1,009,153	535,187	1,013	542	1,084,289
Totals/ Average:	**693.00**	**53.0**	**683**	**28,415,125.2**	**15,069,479**	**1,013**	**15,265**	**30,530,764**
						Maximum:	**542**	**1,084,732**

Notes:
The S-64 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - 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-20	721.00	16.67	704.33	612	53.0	25,883,722	27,793,423	13,718,373	13,897	0.090	0.62	1.5267	1.98E-02
December-20	744.00	6.17	737.83	621	53.0	27,482,046	29,509,671	14,565,484	14,755	0.090	0.66	1.5267	2.10E-02
January-21	744.00	17.00	727.00	623	53.0	27,170,530	29,175,172	14,400,381	14,588	0.090	0.65	1.5267	2.07E-02
February-21	672.00	81.83	590.17	638	53.0	22,578,094	24,243,905	11,966,390	12,122	0.090	0.54	1.5267	1.72E-02
March-21	743.00	81.92	661.08	655	53.0	25,970,751	27,886,872	13,764,498	13,943	0.090	0.62	1.5267	1.98E-02
April-21	720.00	67.17	652.83	623	53.0	24,393,260	26,192,994	12,928,428	13,096	0.090	0.59	1.5267	1.86E-02
TOTAL/ AVG:	**4,344.00**	**270.75**	**4,073.25**	**628**	**53.0**	**153,478,402**	**164,802,038**	**81,343,553**	**82,401**	**--**	**--**	**--**	**--**

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 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Nov-20

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
11/01/2020	23.92	53.0	599	862,613	457,185	1,013	463	926,257
11/02/2020	24.00	53.0	610	878,275	465,486	1,013	472	943,074
11/03/2020	24.00	53.0	612	880,620	466,728	1,013	473	945,592
11/04/2020	24.00	53.0	616	886,738	469,971	1,013	476	952,161
11/05/2020	24.00	53.0	613	882,563	467,758	1,013	474	947,679
11/06/2020	24.00	53.0	584	876,278	464,427	1,013	470	940,929
11/07/2020	24.00	53.0	606	872,077	462,201	1,013	468	936,419
11/08/2020	24.00	53.0	608	875,012	463,756	1,013	470	939,570
11/09/2020	24.00	53.0	615	885,558	469,346	1,013	475	950,894
11/10/2020	24.00	53.0	613	883,188	468,090	1,013	474	948,350
11/11/2020	24.00	53.0	613	882,858	467,915	1,013	474	947,995
11/12/2020	15.25	53.0	371	534,818	283,454	1,013	287	574,277
11/13/2020	24.00	53.0	615	885,011	469,056	1,013	475	950,307
11/14/2020	17.50	53.0	433	590,495	312,962	1,013	317	634,062
11/15/2020	24.00	53.0	618	889,839	471,615	1,013	478	955,491
11/16/2020	24.00	53.0	612	880,635	466,737	1,013	473	945,608
11/17/2020	24.00	53.0	614	883,442	468,224	1,013	474	948,622
11/18/2020	24.00	53.0	619	891,453	472,470	1,013	479	957,225
11/19/2020	24.00	53.0	621	893,692	473,657	1,013	480	959,629
11/20/2020	24.00	53.0	619	891,238	472,356	1,013	478	956,994
11/21/2020	24.00	53.0	618	889,330	471,345	1,013	477	954,945
11/22/2020	24.00	53.0	616	887,027	470,124	1,013	476	952,472
11/23/2020	24.00	53.0	620	893,424	473,515	1,013	480	959,341
11/24/2020	24.00	53.0	619	890,768	472,107	1,013	478	956,489
11/25/2020	24.00	53.0	617	888,421	470,863	1,013	477	953,969
11/26/2020	24.00	53.0	616	887,288	470,263	1,013	476	952,752
11/27/2020	24.00	53.0	619	891,998	472,759	1,013	479	957,810
11/28/2020	24.00	53.0	621	893,839	473,735	1,013	480	959,787
11/29/2020	24.00	53.0	618	890,563	471,998	1,013	478	956,268
11/30/2020	23.67	53.0	600	864,661	458,270	1,013	464	928,456
Totals/ Average:	**704.33**	**53.0**	**612**	**25,883,722.3**	**13,718,373**	**1,013**	**13,897**	**27,793,423**
						Maximum:	**480**	**959,787**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Dec-20

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
12/01/2020	24.00	53.0	616	887,463	470,355	1,013	476	952,939
12/02/2020	24.00	53.0	616	887,508	470,379	1,013	476	952,988
12/03/2020	21.42	53.0	538	774,734	410,609	1,013	416	831,894
12/04/2020	24.00	53.0	616	886,571	469,883	1,013	476	951,982
12/05/2020	24.00	53.0	617	889,185	471,268	1,013	477	954,790
12/06/2020	24.00	53.0	618	890,329	471,874	1,013	478	956,017
12/07/2020	24.00	53.0	621	894,757	474,221	1,013	480	960,772
12/08/2020	24.00	53.0	614	884,764	468,925	1,013	475	950,042
12/09/2020	24.00	53.0	613	882,371	467,656	1,013	474	947,472
12/10/2020	24.00	53.0	618	890,004	471,702	1,013	478	955,669
12/11/2020	22.08	53.0	550	792,460	420,004	1,013	425	850,928
12/12/2020	24.00	53.0	624	897,914	475,894	1,013	482	964,162
12/13/2020	24.00	53.0	624	898,271	476,083	1,013	482	964,545
12/14/2020	24.00	53.0	625	899,722	476,852	1,013	483	966,103
12/15/2020	24.00	53.0	624	898,744	476,334	1,013	483	965,053
12/16/2020	24.00	53.0	621	894,039	473,841	1,013	480	960,001
12/17/2020	24.00	53.0	626	901,213	477,643	1,013	484	967,705
12/18/2020	24.00	53.0	631	908,764	481,645	1,013	488	975,812
12/19/2020	22.75	53.0	570	820,908	435,081	1,013	441	881,475
12/20/2020	24.00	53.0	626	901,397	477,740	1,013	484	967,902
12/21/2020	24.00	53.0	625	900,629	477,333	1,013	484	967,077
12/22/2020	24.00	53.0	626	901,884	477,998	1,013	484	968,425
12/23/2020	24.00	53.0	630	907,564	481,009	1,013	487	974,524
12/24/2020	24.00	53.0	626	901,727	477,916	1,013	484	968,257
12/25/2020	24.00	53.0	626	901,311	477,695	1,013	484	967,810
12/26/2020	23.58	53.0	607	873,860	463,146	1,013	469	938,333
12/27/2020	24.00	53.0	619	891,236	472,355	1,013	478	956,992
12/28/2020	24.00	53.0	624	899,259	476,607	1,013	483	965,606
12/29/2020	24.00	53.0	633	911,293	482,985	1,013	489	978,528
12/30/2020	24.00	53.0	630	906,500	480,445	1,013	487	973,381
12/31/2020	24.00	53.0	629	905,665	480,002	1,013	486	972,485
Totals/ Average:	**737.83**	**53.0**	**621**	**27,482,046.0**	**14,565,484**	**1,013**	**14,755**	**29,509,671**
						Maximum:	**489**	**978,528**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Jan-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
1/01/2021	24.00	53.0	629	906,429	480,407	1,013	487	973,305
1/02/2021	24.00	53.0	634	913,126	483,957	1,013	490	980,497
1/03/2021	24.00	53.0	633	911,537	483,115	1,013	489	978,790
1/04/2021	24.00	53.0	630	906,558	480,476	1,013	487	973,444
1/05/2021	24.00	53.0	634	912,815	483,792	1,013	490	980,162
1/06/2021	24.00	53.0	634	912,391	483,567	1,013	490	979,707
1/07/2021	24.00	53.0	632	910,412	482,518	1,013	489	977,582
1/08/2021	24.00	53.0	636	916,493	485,741	1,013	492	984,112
1/09/2021	24.00	53.0	634	912,827	483,799	1,013	490	980,176
1/10/2021	24.00	53.0	636	915,958	485,458	1,013	492	983,538
1/11/2021	24.00	53.0	635	913,813	484,321	1,013	491	981,234
1/12/2021	24.00	53.0	636	916,425	485,705	1,013	492	984,039
1/13/2021	24.00	53.0	639	920,134	487,671	1,013	494	988,022
1/14/2021	22.33	53.0	578	831,972	440,945	1,013	447	893,355
1/15/2021	20.17	53.0	513	738,409	391,357	1,013	396	792,889
1/16/2021	24.00	53.0	635	914,209	484,531	1,013	491	981,659
1/17/2021	22.67	53.0	592	852,798	451,983	1,013	458	915,718
1/18/2021	18.50	53.0	467	560,865	297,258	1,013	301	602,245
1/19/2021	23.83	53.0	491	706,874	374,643	1,013	380	759,027
1/20/2021	24.00	53.0	637	917,399	486,221	1,013	493	985,085
1/21/2021	24.00	53.0	635	914,049	484,446	1,013	491	981,487
1/22/2021	24.00	53.0	629	906,345	480,363	1,013	487	973,215
1/23/2021	24.00	53.0	634	912,603	483,679	1,013	490	979,934
1/24/2021	24.00	53.0	629	906,087	480,226	1,013	486	972,938
1/25/2021	24.00	53.0	629	905,978	480,168	1,013	486	972,821
1/26/2021	24.00	53.0	630	906,564	480,479	1,013	487	973,450
1/27/2021	24.00	53.0	625	899,319	476,639	1,013	483	965,671
1/28/2021	19.50	53.0	497	714,972	378,935	1,013	384	767,723
1/29/2021	24.00	53.0	627	902,984	478,582	1,013	485	969,606
1/30/2021	24.00	53.0	630	907,721	481,092	1,013	487	974,692
1/31/2021	24.00	53.0	627	902,463	478,305	1,013	485	969,046
Totals/ Average:	**727.00**	**53.0**	**623**	**27,170,529.9**	**14,400,381**	**1,013**	**14,588**	**29,175,172**
						Maximum:	**494**	**988,022**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Feb-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
2/01/2021	24.00	53.0	624	897,952	475,915	1,013	482	964,203
2/02/2021	24.00	53.0	630	906,905	480,660	1,013	487	973,816
2/03/2021	23.42	53.0	600	863,474	457,641	1,013	464	927,181
2/04/2021	24.00	53.0	644	926,866	491,239	1,013	498	995,250
2/05/2021	24.00	53.0	646	930,459	493,143	1,013	500	999,108
2/06/2021	24.00	53.0	647	931,597	493,747	1,013	500	1,000,331
2/07/2021	24.00	53.0	641	923,043	489,213	1,013	496	991,145
2/08/2021	20.42	53.0	530	762,814	404,291	1,013	410	819,094
2/09/2021	24.00	53.0	659	948,888	502,911	1,013	509	1,018,897
2/10/2021	11.42	53.0	295	425,324	225,421	1,013	228	456,704
2/11/2021	13.83	53.0	366	527,035	279,328	1,013	283	565,919
2/12/2021	21.08	53.0	546	786,243	416,709	1,013	422	844,252
2/13/2021	24.00	53.0	650	935,871	496,012	1,013	502	1,004,919
2/14/2021	24.00	53.0	651	937,358	496,800	1,013	503	1,006,516
2/15/2021	9.25	53.0	246	353,817	187,523	1,013	190	379,922
2/16/2021	8.00	53.0	171	246,529	130,660	1,013	132	264,717
2/17/2021	24.00	53.0	614	883,457	468,232	1,013	474	948,638
2/18/2021	24.00	53.0	651	937,692	496,977	1,013	503	1,006,874
2/19/2021	24.00	53.0	651	936,902	496,558	1,013	503	1,006,026
2/20/2021	24.00	53.0	652	939,586	497,981	1,013	504	1,008,909
2/21/2021	24.00	53.0	652	939,217	497,785	1,013	504	1,008,512
2/22/2021	13.92	53.0	379	545,397	289,061	1,013	293	585,637
2/23/2021	14.58	53.0	376	542,133	287,330	1,013	291	582,132
2/24/2021	24.00	53.0	645	929,170	492,460	1,013	499	997,725
2/25/2021	22.25	53.0	578	832,170	441,050	1,013	447	893,568
2/26/2021	24.00	53.0	645	928,576	492,145	1,013	499	997,086
2/27/2021	24.00	53.0	645	929,289	492,523	1,013	499	997,852
2/28/2021	24.00	53.0	646	930,331	493,075	1,013	499	998,971
Totals/ Average:	**590.17**	**53.0**	**638**	**22,578,093.5**	**11,966,390**	**1,013**	**12,122**	**24,243,905**
						Maximum:	**509**	**1,018,897**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Mar-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
3/01/2021	24.00	53.0	646	929,705	492,743	1,013	499	998,298
3/02/2021	24.00	53.0	625	899,916	476,955	1,013	483	966,312
3/03/2021	24.00	53.0	633	911,222	482,948	1,013	489	978,452
3/04/2021	24.00	53.0	654	941,052	498,758	1,013	505	1,010,483
3/05/2021	24.00	53.0	652	938,897	497,616	1,013	504	1,008,169
3/06/2021	24.00	53.0	655	943,881	500,257	1,013	507	1,013,520
3/07/2021	24.00	53.0	656	944,054	500,349	1,013	507	1,013,706
3/08/2021	24.00	53.0	660	950,117	503,562	1,013	510	1,020,216
3/09/2021	24.00	53.0	656	944,512	500,591	1,013	507	1,014,198
3/10/2021	24.00	53.0	655	943,240	499,917	1,013	506	1,012,832
3/11/2021	24.00	53.0	652	939,170	497,760	1,013	504	1,008,462
3/12/2021	24.00	53.0	661	951,200	504,136	1,013	511	1,021,379
3/13/2021	24.00	53.0	666	958,967	508,252	1,013	515	1,029,719
3/14/2021	23.00	53.0	660	911,121	482,894	1,013	489	978,343
3/15/2021	23.58	53.0	633	911,123	482,895	1,013	489	978,346
3/16/2021	24.00	53.0	661	951,551	504,322	1,013	511	1,021,756
3/17/2021	24.00	53.0	663	954,158	505,704	1,013	512	1,024,556
3/18/2021	24.00	53.0	664	955,935	506,646	1,013	513	1,026,464
3/19/2021	24.00	53.0	668	962,107	509,917	1,013	517	1,033,092
3/20/2021	24.00	53.0	670	965,187	511,549	1,013	518	1,036,398
3/21/2021	24.00	53.0	669	962,962	510,370	1,013	517	1,034,009
3/22/2021	24.00	53.0	672	967,169	512,600	1,013	519	1,038,527
3/23/2021	24.00	53.0	665	957,493	507,471	1,013	514	1,028,137
3/24/2021	5.17	53.0	130	187,811	99,540	1,013	101	201,668
3/25/2021	1.00	53.0	7	10,166	5,388	1,013	5	10,916
3/26/2021	7.17	53.0	178	256,394	135,889	1,013	138	275,311
3/27/2021	12.42	53.0	324	467,079	247,552	1,013	251	501,540
3/28/2021	12.75	53.0	336	484,458	256,763	1,013	260	520,202
3/29/2021	24.00	53.0	665	957,007	507,214	1,013	514	1,027,615
3/30/2021	24.00	53.0	663	955,324	506,322	1,013	513	1,025,808
3/31/2021	24.00	53.0	665	957,772	507,619	1,013	514	1,028,437
Totals/ Average:	**661.08**	**53.0**	**655**	**25,970,750.5**	**13,764,498**	**1,013**	**13,943**	**27,886,872**
						Maximum:	**519**	**1,038,527**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Apr-21

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
4/01/2021	14.42	53.0	372	536,233	284,204	1,013	288	575,797
4/02/2021	2.67	53.0	41	58,716	31,119	1,013	32	63,048
4/03/2021	14.83	53.0	350	504,231	267,242	1,013	271	541,433
4/04/2021	24.00	53.0	554	797,327	422,583	1,013	428	856,153
4/05/2021	15.00	53.0	353	508,308	269,403	1,013	273	545,811
4/06/2021	10.42	53.0	229	330,388	175,106	1,013	177	354,764
4/07/2021	24.00	53.0	593	853,473	452,341	1,013	458	916,442
4/08/2021	24.00	53.0	623	897,821	475,845	1,013	482	964,063
4/09/2021	24.00	53.0	608	876,030	464,296	1,013	470	940,664
4/10/2021	24.00	53.0	598	861,155	456,412	1,013	462	924,691
4/11/2021	24.00	53.0	597	859,876	455,734	1,013	462	923,318
4/12/2021	24.00	53.0	596	858,706	455,114	1,013	461	922,061
4/13/2021	22.33	53.0	568	817,449	433,248	1,013	439	877,760
4/14/2021	24.00	53.0	631	909,125	481,836	1,013	488	976,200
4/15/2021	24.00	53.0	642	924,866	490,179	1,013	497	993,103
4/16/2021	24.00	53.0	639	919,955	487,576	1,013	494	987,830
4/17/2021	24.00	53.0	642	923,970	489,704	1,013	496	992,140
4/18/2021	24.00	53.0	643	925,926	490,741	1,013	497	994,240
4/19/2021	24.00	53.0	643	925,417	490,471	1,013	497	993,695
4/20/2021	24.00	53.0	637	917,352	486,197	1,013	493	985,035
4/21/2021	24.00	53.0	639	920,347	487,784	1,013	494	988,250
4/22/2021	24.00	53.0	639	920,519	487,875	1,013	494	988,435
4/23/2021	24.00	53.0	639	920,783	488,015	1,013	494	988,718
4/24/2021	24.00	53.0	639	920,758	488,002	1,013	494	988,692
4/25/2021	24.00	53.0	637	917,476	486,262	1,013	493	985,167
4/26/2021	24.00	53.0	659	948,255	502,575	1,013	509	1,018,218
4/27/2021	23.00	53.0	626	901,061	477,562	1,013	484	967,542
4/28/2021	24.00	53.0	659	949,080	503,012	1,013	510	1,019,103
4/29/2021	22.17	53.0	577	830,770	440,308	1,013	446	892,064
4/30/2021	24.00	53.0	665	957,886	507,680	1,013	514	1,028,559
Totals/ Average:	**652.83**	**53.0**	**623**	**24,393,259.6**	**12,928,428**	**1,013**	**13,096**	**26,192,994**
						Maximum:	**514**	**1,028,559**

Notes:

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

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - 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)
April-20	0.00	0.00
May-20	0.00	0.00
June-20	0.00	0.00
July-20	0.00	0.00
August-20	0.00	0.00
September-20	0.00	0.00
October-20	0.00	0.00
November-20	0.00	0.00
December-20	0.00	0.00
January-21	0.00	0.00
February-21	0.00	0.00
March-21	0.00	0.00
April-21	0.00	0.00
TOTALS:	**0.00**	

VOC Laden Soils is defined as soils containing concentrations of VOC less than 50 parts per million by weight (ppm_w).

APPENDIX M

H_2S TWICE WEEKLY AND QUARTERLY MONITORING

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 4 - 2020

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
10/1/2020	895	909
10/5/2020	931	945
10/6/2020	826	838
10/6/20*	519	526
10/12/2020	960	974
10/15/2020	795	807
10/19/2020	727	738
10/22/2020	749	760
10/27/2020	796	808
10/29/2020	889	902
11/3/2020	980	994
11/5/2020	860	873
11/10/2020	913	926
11/12/2020	828	840
11/17/2020	912	925
11/19/2020	932	946
11/23/2020	925	939
11/25/2020	893	906
11/30/2020	856	869
12/3/2020	855	868
12/7/2020	718	729
12/10/2020	458	465
12/14/2020	452	459
12/18/2020	989	1,004
12/21/2020	853	866
12/24/2020	932	946
12/28/2020	969	983
12/31/2020	923	937
Quarterly Average:	833	846

ppm_v= parts per million by volume

TRS= total reduced sulfur

* Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 1 - 2021

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
1/4/2021	995	1,010
1/7/2021	877	890
1/11/2021	990	1,005
1/15/2021	975	990
1/18/2021	891	905
1/21/2021	777	789
1/25/2021	890	904
1/28/2021	885	898
2/1/2021	788	800
2/4/2021	887	900
2/8/2021	791	803
2/11/2021	943	957
2/15/2021	813	825
2/18/2021	892	906
2/22/2021	1,003	1,018
2/24/2021	674	684
2/24/21*	1,017	1,028
3/1/2021	927	941
3/4/2021	891	904
3/8/2021	959	973
3/11/2021	893	907
3/15/2021	893	906
3/17/2021	892	905
3/22/2021	791	803
3/23/2021	884	897
3/29/2021	886	899
3/31/2021	886	899
Quarterly Average:	889	902

ppm_v= parts per million by volume   TRS= total reduced sulfur   * Quarterly LFG lab analysis

<u>Title V Permit Condition Number 19867 Part 31b</u>

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

<u>November 22, 2016 Compliance Agreement</u>

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 2 - 2021

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
4/6/2021	975	990
4/8/2021	994	1,008
4/14/2021	722	732
4/15/2021	847	860
4/22/2021	813	825
4/23/2021	794	806
4/27/2021	845	857
4/28/2021	756	767
Quarterly Average:	TBD	TBD

H_2S= hydrogen sulfide

ppm_v= parts per million by volume

TRS= total reduced sulfur

* Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Rolling Quarterly Average Total Reduced Sulfur Content

Year	Quarter	Calculated TRS (ppm_v)	Rolling Quarterly Average Annual TRS (ppm_v)	Quarterly SO_2 Emission Factor (lb/MMscf)
2020	2	668	784	112.9
2020	3	762	740	128.8
2020	4	1,103	822	186.3
2021	1	1,158	923	195.7
2021	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

Annual Compliance Emissions Test Report #20200
Source Test for Landfill Gas Flare - Sources A-60A & S-71

Located at:
Redwood Landfill
8950 Redwood Highway
Novato, CA 94948

Performed and Reported by:
Blue Sky Environmental, Inc
624 San Gabriel Avenue
Albany, CA 94706

Prepared For:
SCS Engineers
Attn: Patrick S. Sullivan
3117 Fite Circle Suite 108
Sacramento, CA 95827
psullivan@scsengineers.com

For Submittal To:
Bay Area Air Quality Management District
Attn: Marco Hernandez/Gloria Espena
Source Test Division
375 Beale Street, Suite 600
San Francisco, CA 94105
mhernandez@baaqmd.gov / gespena@baaqmd.gov
sourcetest@baaqmd.gov

Testing Performed On:
July 22nd – 23rd, 2020

Final Report Submitted On:
September 15th, 2020

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 is 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 (510) 508 3469.

Guy Worthington
Project Manager

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SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc was contracted to perform the compliance emissions testing on the A-60 A Landfill Gas Flare & S-71 Willexa Gas Treatment & Desorption System at Redwood Landfill, 8950 Redwood Highway, Novato, California. Table 1.1 summarizes the source test information. Table 1.2 summarizes the results compared to the emission limits.

Table 1.1 Source Test Information

Test Location:	Redwood Landfill, 8950 Redwood Highway, Novato, California 94948 Mailing Address PO Box 793, Novato, CA 94948
Source Contact:	Alisha McCutcheon (415) 892-2851
Source Tested:	Enclosed Landfill Gas Flare (A-60 A) and LFG Treatment & Desorption System (S-71)
Source Test Dates:	July 22nd, - 23rd, 2020
Test Objective:	Determine Compliance with Regulation 8, Rule 34 and Title V Permit A1179, Condition 19867, Permit Condition 25635, Part 13
Test Performed By:	Blue Sky Environmental, Inc 624 San Gabriel Ave., Albany, CA 94706 Guy Worthington (510) 508 3469
Test Parameters:	**Landfill Gas & Willexa Purge 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. Compliance Summary

A60-A@ 1,601°F July 23rd 0931-1245	Average Test	Permit Limit	Compliance Status
NOx, lbs/MMBTU	0.05	0.06	In Compliance
NOx, ppm @ 15% O_2	12.8	15	In Compliance
CO, lbs/MMBTU	0.10	0.20	In Compliance
CO, ppm @ 15% O_2	40.8	82	In Compliance
NMOC, (ppmvd @ 3% O_2 as CH_4)	6.7	30	In Compliance
CH_4 Destruction Efficiency %	99.978%	99%	In Compliance
SO_2, ppm	1.9	300	In Compliance
SO_2, lbs/MMBTU	0.01	1.69	In Compliance

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This performance test was conducted to demonstrate that the Enclosed Landfill Gas Flare (A-60-A) and Willexa System Waste Gas Treatment System (S-71) are operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Title V Permit A1179, Regulation 8 Rule 34 and PTO Condition 19867, Part 30 and Condition 25636, Part 4. The A-60 flare is divided into two discrete zones A (larger) and B (smaller). This report also includes the results of sampling the Willexa System Waste Gas (S-71), all of the data presented in the very back section of the report, since there are no compliance limits associated with the results.

2.2. Pollutants Tested

The following EPA and ASTM sampling and analytical methods were used:

EPA 3A	O_2, CO_2
EPA 10	CO
Modified EPA 18	NMOC
EPA 7E	NOx
EPA 6C	SO_2
EPA 4 Part 16.4	Moisture Calculation
EPA 19	Flow Rate Calculation, DSCFM
EPA 25C	LFG Gas analysis for NMOC by GC
EPA TO-15	VOC Species
ASTM 1945/3588	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS

The following EPA and ASTM sampling and analytical methods were used for the Willexa Waste Gas (S-71) Sampling:

EPA 25C	LFG Gas analysis for NMOC by GC
EPA TO-15	VOC Species
ASTM 1945/3588	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS

2.3. Test Date(s)

Testing was conducted on the Willexa S-71 July 22nd and the Flare A60-A on July 23rd, 2020.

2.4. Sampling and Observing Personnel

Guy Worthington and Timothy Eandi representing Blue Sky Environmental, Inc, performed testing.

Fred Parker (Manager), Patrick Madison (Operator) and Sean Johnson of Waste Management and Dave Bearden of SCS Engineers were present to operate and oversee the Flare operation and assist in coordinating testing and the collection of process data during testing, and also provided the Yokogawa Flare data.

The BAAQMD was notified of the test in a plan submitted by SCS Engineers on June 26th, 2020. A Source Test Protocol acknowledgement was requested and received by SCS Engineers (NST #6010), but no observers were present to witness the testing. A copy of the source test protocol and emails can be found in Appendix I.

2.5. Source/Process Description

The enclosed LFG flare A-60 consists of two Zones, Large A & Small B. Zone A is a large segment, with 4 ports requiring unique - not perpendicular - traverses of 133 inches in length. The Willexa system is designed to remove non-methane organics, sulfurs, siloxanes and chlorinated compounds from up to 1,875 SCFM of landfill gas prior to using as a fuel in the Engines. The Willexa waste gas is vented at separate times through 1" and 12" diameter pipes to the Flare A60 (B-side). The Willexa has four cycles, Depress Cycle #1, Regen Cycle, Depress Cycle #2 and Stabilization.

2.6. Source Operating Conditions

The flare landfill gas and waste gases flow rate records are contained in Appendix-F. There is no condensate injection.

The A60–A flare was operated at an average of 1,601 Degrees Fahrenheit (°F). The landfill gas methane content averaged 51.1 percent (%) and the average LFG 1,502 SCFM and the Willexa (S-71) was not purging to the Flare during this test.

The Willexa 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 in the A-60 (A&B) flare present a unique sampling configuration, as the cross-section is neither round, square, rectangular or oval. The A-60A Flare sampling was conducted via adjacent flange ports both with a 133 inch traverse path length. The port is located approximately 35 feet above grade, accessed by a 40-foot boom-lift. The 4-inch flange port is available ~4 stack diameters downstream from the burners and ~1 stack diameter upstream from the exit.

3.2. Point description/Labeling – ports/stack

Blue Sky Environmental conducted sampling at the mid-point of the A60A Flare stack, the stack was traversed during all 3 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.

Blue Sky Environmental conducted sampling at the mid-point of the Willexa stack, the stack was traversed during all 3 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 included in the Appendix H. Additional descriptive information is included in the following section.

3.4. Sampling procedure description

Three 32 minute test runs were performed on the Flare A60-A on July 23rd, 2020. Waste Gas testing occurred over an approximate 5 hour period on July 22nd, 2020. Testing of the waste gas was performed during the period of highest concentrations of emissions from the Willexa 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.

EPA Method 3A (O_2, CO_2), 10 (CO) and 7E (NO_X) are 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 CEM test van. The sampling system consists of a stainless steel sample probe, teflon sample line, glass-fiber particulate filter, glass moisture-knockout condensers in ice, followed by thermoelectric coolers (optional), teflon sample transfer tubing, diaphragm pump and a stainless steel/teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5 PSI was provided to each analyzer to avoid pressure variable response differences. The entire sampling system was leak checked prior to and at the end of the sampling program.

The sampling and analytical system (for EPA Methods) was 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 usually use the calibration gas that most closely matches the stack gas effluent. Along with the Sampling System Bias, the Zero and Calibration Drift values were determined for each test. 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. In addition, the NOx analyzer NO_2 to NO conversion efficiency check defers to EPA Method 20 section 5.6 for the criteria and procedure.

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of a Honeywell DPR3000 or using OMEGA 3-pen flat-bed strip chart recorder supported by a Data Acquisition System (DAS).

EPA Method 18 is used to determine emissions of volatile organics analyzed by gas chromatograph/mass spectroscopy (GC/MS). Gaseous emissions are drawn through a purged, short teflon sample line to a tedlar bag located in a rigid leak proof bag container. Sample is drawn into the bag by evacuating the container to below stack gas pressure to allow sample flow into the bag without using a pump to avoid contamination. Using a rotometer at the probe tip prior to sampling, the negative pressure inside the container is adjusted with an adjustable flow orifice to maintain a constant integrated sample flow for the test duration. The bag samples are taken to a laboratory and analyzed within 72 hours.

EPA TO-15/ASTM 1945/ASTM5504/EPA 25C Sampling consists of collecting gases 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 SILCO canisters have a silanized (glass) lining that permits longer holding times (up to 72 hours) for reactive sulfur compounds. 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 flow controller consisted of capillary orifice tubing designed to sample for a pre-set duration of 0.5 – 1.0 hours depending on the Permit requirements. The canister vacuum is monitored with a vacuum gauge to verify sample collection, and ideally drawn down to ~5"Hg Vacuum to minimize compound condensation inside the canister.

The samples are analyzed for volatile organics by EPA Method TO-15 using GC/MS (gas chromatography/mass spectroscopy and for tentatively identified compounds, not included in the TO-15 list. The samples were also analyzed for 20 sulfur compounds by ASTM Method D-5504 GC/SCD (gas chromatography/sulfur chemiluminescent detector).

Stack Gas Moisture by EPA Method 4-16.4 is an acceptable alternative to EPA Method 4 for the determination of moisture using F-factors. In this case the mole fraction of the moisture in the ambient air is calculated using equations in EPA Method 4-16.4 from 1) the measured ambient relative humidity, ambient temperature and barometric pressure, 2) the mole fraction from free water in the fuel, calculated from the moisture % in the fuel which is determined by the analytical lab to be the balance after all the major gaseous components have been summed, and 3) the mole fraction from the hydrogen in the fuel. To determine the moisture in the fuel, the raw fuel analysis before normalization to 100% is referenced.

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 7E)	≥ 90% (checked)

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" 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.

Willexa Gas Samples			
07/22/20	LFG Gas Sample	Willexa Purge Gas Sample 12”	Willexa Purge Gas Sample 1”
Run 1-Step 1 1151-1205	-		1”-1
Run 2-Step 6/7/8 (A) 1220-1325	-	12” 6/7/8 (A)	-
Run 3 –Step 6/7/8 (B) 1331-1638	-	12” 6/7/8 (B)	-
Run 4 – Step 9 (A) + (B) 1439-1638	-	12” – 9 (A) + (B)	-
LFG Gas Samples			
07/23/20	-	-	-
Run 1 0930-1015	R1-LFG-A60	-	-
Run 2 1053-1130	R2-LFG-A60	-	-
Run 3 1200-1300	R3-LFG-A60	-	-
Stack CH_4			
Run 1 0930 -	M18-R1-A60	-	-
Run 2 1053 -	M18-R2-A60	-	-
Run 3 1208 -	M18-R3-A60	-	-

The inlet volumetric Flow Rate and Flare Temperature was continuously measured and recorded by the facility Yokogawa monitors.

3.5. Instrumentation and Analytical Procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO 43C	SO_2	Pulsed Fluorescence
TECO 42C	NO_x	Chemiluminescence
TECO 48C	CO	GFC/IR
Ratfisch RS-55	THC	FID
Servomex 1440	CO_2	IR
Servomex 1440	O_2	Paramagnetic

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of Omega 3 channel strip chart recorders, which can be supported by a Data Acquisition System (DAS).

The instrument response was recorded on strip charts and DAS and some data is manually reduced. The averages were corrected for drift using BAAQMD & EPA Method 7E equations.

3.6. Summary and Comments

The measured emissions meet the Permit required limits, no deviations from the protocol or abnormalities during the test were observed.

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
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A
Tabulated Results

TABLE #1

Redwood Landfill
Flare A-60A
1,601°F

RUN	RUN 1	RUN 2	RUN 3	AVERAGE	LIMITS
Test Date	7/23/20	7/23/20	7/23/20		
Test Time	0931-1015	1053-1135	1209-1245		
Test Minutes	30	30	30		
Standard Temp., °F	70	70	70		
Flare Temperature, °F	1,597	1,604	1,601	1,601	
LFG Fuel Flow Rate, SCFM	1,502	1,503	1,501	1,502	
Total Fuel Heat Input, MMBTU/Hr	45.0	46.4	46.4	46.0	
Exhaust Flow Rate, DSCFM (Method 19)	18,818	19,904	19,132	19,285	
Oxygen, O_2, %	13.0	13.2	12.9	13.0	
Carbon Dioxide, CO_2, %	6.8	6.7	7.0	6.9	
Water Vapor, H_2O, %	5.3	5.4	5.7	5.5	
NO, ppm		16.63	17.83	17.2	
NO_2, ppm		0.02	0.39	0.21	
NO_2/NO		0.001	0.022	0.012	
NOx, ppm	16.2	16.6	18.2	17.0	
NOx, ppm @ 15% O_2	**12.2**	**12.7**	**13.4**	**12.8**	**15**
NOx, lbs/hr	2.18	2.36	2.49	2.34	
NOx, lbs/MMBTU	**0.05**	**0.05**	**0.05**	**0.05**	**0.06**
CO, ppm	60.1	62.4	40.2	54.2	
CO, ppm @ 15% O_2	**45.1**	**47.7**	**29.6**	**40.8**	**82**
CO, lbs/hr	4.91	5.40	3.34	4.55	
CO, lbs/MMBTU	**0.11**	**0.12**	**0.07**	**0.10**	**0.20**
Total Reduced Sulfur as H_2S in fuel, ppm	**724**	**797**	**834**	**785**	**410**
SO_2, ppm (calculated)	**1.7**	**1.9**	**2.0**	**1.9**	**300**
SO_2, lbs/hr	0.32	0.37	0.39	0.36	
SO_2, lbs/MMBTU	**0.01**	**0.01**	**0.01**	**0.01**	**1.69**
THC, ppm wet (M25A)	11.9	13.1	7.7	10.9	
THC, ppm dry	12.6	13.9	8.2	11.55	
THC, lbs/hr as CH_4	0.59	0.69	0.39	0.55	
CH_4, ppm (M18)	7.9	11.1	6.8	8.6	
CH_4, lbs/hr	0.4	0.5	0.3	0.4	
NMHC, ppm as CH_4 (M25A/M18)	4.7	2.8	1.4	3.0	
NMHC, lbs/hr as CH_4	0.22	0.14	0.07	0.14	
NMHC, ppm @ 3% O_2 as CH_4	**10.7**	**6.5**	**3.1**	**6.7**	**30**
LFG INLET NMHC ppm as CH_4 (25C)	1,225	1,310	1,299	1,278	
LFG INLET NMHC lbs/hr as CH_4	4.6	4.9	4.8	4.8	**OR**
Total NMHC Removal Efficiency	**95.2%**	**97.2%**	**98.6%**	**>97.0%**	**98**
LFG INLET CH_4 ppm	500,000	516,000	516,000	510,667	
LFG INLET CH_4 lbs/hr	1,864	1,925	1,923	1,904	
CH_4 Removal Efficiency	**99.980%**	**99.972%**	**99.983%**	**99.978%**	**99**
INLET THC (TOC) lbs/hr as CH_4	1,868.9	1,930.1	1,927.5	1,909	
THC (TOC) Removal Efficiency	99.969%	99.964%	99.980%	99.971%	

WHERE,

ppm = Parts Per Million Concentration
Lbs/hr = Pound Per Hour Emission Rate
Tstd. = Standard Temp. (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
TOC = THC = Total Organic Carbon as Methane including CH_4 (MW = 16)
THC = Total Hydrocarbons as Methane (MW = 16)
NMHC = Total Non-Methane Hydrocarbons as Methane (MW = 16)
SO_2 = Sulfur Dioxide as SO_2 (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)
Lbs/hr = ppm x 8.223 E-05 x DSCFM x MW / Tstd. °R
Lbs/MMBtu = (Lbs/hr)/(MMBtu/hr)
Lbs/day = Lbs/hr * 24
Removal Efficiency = (inlet lbs/hr- outlet lbs/hr) / inlet lbs/hr
<Value = 2% of Analyzer Range
ppm dry = ppm * 100/(100-%H2O)

TABLE #2

Redwood Landfill

Landfill Gas Characterization

RUN			R1-LFG-A60	R2-LFG-A60	R3-LFG-A60	LIMITS
Test Date			7/23/20	7/23/20	7/23/20	
Average TNMHC as Hexane		ppm	204	218	217	
Acrylonitrile		ppb	<25.9	<25.0	<28.3	300
Benzene		ppb	480	538	563	1,500
Benzyl Chloride	Chloromethylbenzene	ppb	<6.47	<6.24	<7.08	500
Carbon Tetrachloride		ppb	<6.47	<6.24	<7.08	200
Chlorobenzene		ppb	51.4	58.0	59.7	200
Chloroethane		ppb	87.9	98.0	113	500
Chloroform		ppb	<6.47	<6.24	<7.08	200
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<6.47	<6.24	<7.08	500
1,1 Dichloroethene	Vinylidene Chloride	ppb	<6.47	<6.24	<7.08	500
1,2 Dichloroethane	Ethylene Dichloride	ppb	103	99.1	105	200
1,4 Dichlorobenzene		ppb	234	238	246	1,000
Ethylbenzene		ppb	1,740	2,140	1,930	4,000
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<6.47	<6.24	<7.08	200
Hexane		ppb	450	470	500	2,000
Isopropyl Alcohol	IPA	ppb	1,120	1,560	1,480	10,000
Methyl Alcohol	Methanol	ppb	3,390	4,860	4,470	300,000
Methyl Ethyl Ketone	MEK	ppb	2,350	3,360	2,950	15,000
Methylene Chloride		ppb	23.7	25.8	29.0	1,000
Methyl tert Butyl Ether	MTBE	ppb	<6.47	<6.24	<7.08	500
Perchloroethylene	Tetrachloroethylene	ppb	52.3	54.7	59.1	1,000
Styrene		ppb	135	134	145	500
Toluene		ppb	2,790	3,430	2,920	20,000
1,1,1 Trichlororethane		ppb	<6.47	<6.24	<7.08	200
1,1,2,2 Tetrachloroethane		ppb	<6.47	<6.24	<7.08	200
Trichloroethylene	Trichloroethene	ppb	50.1	53.5	54.1	500
Vinyl Chloride		ppb	121	126	136	2,000
Xylenes		ppb	3,525	4,450	3,770	20,000
Carbon Disulfide		ppm	<0.065	<0.062	<0.071	
Carbonyl Sulfide		ppm	<0.065	<0.062	<0.071	
Dimethyl Sulfide		ppm	0.253	0.219	0.206	
Ethyl Mercaptan		ppm	0.191	0.195	0.167	
Methyl Mercaptan		ppm	0.836	0.819	0.828	
Hydrogen Sulfide		ppm	718	791	828	
TRS as H2S		ppm	724	797	834	410

Redwood Landfill, Inc.

BAAQMD Facility #1179

Annual Compliance Emissions Test Report #20199
Landfill Gas Engines-Source S-64 and S-65

Located at:

8950 Redwood Highway
Novato, CA 94948

Performed and Reported by:

Blue Sky Environmental, Inc.
624 San Gabriel Avenue
Albany, CA 94706

Prepared For:

SCS Engineers
3117 Fite Circle, Suite 108
Sacramento, CA 95827

For Submittal To:

Bay Area Air Quality Management District
Attn: Marco Hernandez
Compliance & Enforcement Division
375 Beale Street, Suite 600
San Francisco, CA 94105

Testing Performed On:
July 21st & 22nd, 2020

Final Report Submitted On:
September 18th, 2020

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 Jeramie Richardson (810) 923-3181, Chuck Arrivas (925) 338-4875 or Guy Worthington at (510) 508 3469.

Jeramie Richardson
Project Manager

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SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc. was contracted to perform the emissions testing on the S-64 and S-65 Landfill Gas Engines at Redwood Landfill, Inc., 8950 Redwood Highway, Novato, California. This report presents the results of the test program. Table 1 summarizes the source test information. Table 2 and 3 summarize the results compared to the emission limits.

Table 1. Source Test Information

Test Location:	Redwood Landfill, Inc., 8950 Redwood Highway, Novato, California
Source Contact:	Alisha McCutcheon (415) 892-2851
Source Tested:	Landfill Gas Engines #1 (S-64) and #2 (S-65)
Source Test Date:	July 21st & 22nd, 2020
Test Objective:	**Determine Compliance with ATC Condition 25635, Part 13 and 40 CFR 60 Subpart JJJJ**
Test Performed By:	Blue Sky Environmental, Inc. 624 San Gabriel Ave., Albany, CA 94706 Guy Worthington (510) 508-3469
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, PM10 (S-64), NH_3, Formaldehyde (S-64) & Volumetric Flow Rate.

Table 2
Engine #1 Compliance Summary

Engine #1 (S-64)	Average Test Result	Permit Limit (Regulation Limit)	Status
NO_X, gm/BHp-hr	0.06	0.15	In Compliance
CO, gm/BHp-hr	0.29	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.5	9	In Compliance
SO_2, gm/BHp-hr	<0.01	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.49	10	In Compliance
NMOC, ppmd @ 15% O_2 as CH_4	3.3	32	In Compliance
NMOC, gm/BHp-hr as CH_4	0.01	0.16	In Compliance
Total Reduced Sulfurs, ppm	0.437	150	In Compliance
Total Particulate, as PM10 (g/BHp)	<0.009	0.10	In Compliance
Formaldehyde, lb/hr	0.0100	0.51	In Compliance
CH_4, ppm @ 15% O_2	687.1	3,000	In Compliance

Table 3
Engine #2 Compliance Summary

Engine #2 (S-65)	Average Test Result	Permit Limit (Regulation Limit)	Status
NO_X, gm/BHp-hr	0.07	0.15	In Compliance
CO, gm/BHp-hr	0.32	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.5	9	In Compliance
SO_2, gm/BHp-hr	<0.01	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.68	10	In Compliance
NMOC, ppmd @ 15% O_2 as CH_4	6.1	32	In Compliance
NMOC, gm/BHp-hr as CH_4	0.03	0.16	In Compliance
Total Reduced Sulfurs, ppm	0.164	150	In Compliance
CH_4, ppm @ 15% O_2	756	3,000	In Compliance

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This annual test was performed to demonstrate that 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.

2.2. Pollutants Tested

The following BAAQMD, CARB, EPA and ASTM sampling and analytical methods were used:

EPA 3A	CO_2
EPA 10	CO
EPA ALT-078	NMOC, CH_4
EPA 7E	NO_X
EPA 3A	O_2
EPA 6C	SO_2
EPA 19	Flow Rate Calculation, DSCFM
EPA 25C	LFG Gas analysis for NMOC by GC
ASTM 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	NH_3
EPA 5/202	Particulate Matter (PM_{10} as total PM)

2.3. Test Date(s)

Testing was conducted on July 21st & 22nd, 2020.

2.4. Sampling and Observing Personnel

Jeramie Richardson, Chuck Arrivas, Wes Alder and Alex Arrivas representing Blue Sky Environmental, Inc., performed the testing.

Dave Bearden of SCS Engineers and Fred Parker, Patrick Madison, and Sean Johnson 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.

The EPA and BAAQMD were notified of the test in a plan submitted by Blue Sky Environmental on June 18th, 2020. A Source Test Protocol acknowledgement (NST #5996) was received by Blue Sky Environmental, but no agency observers were present to witness the testing. A copy of the source test protocol and BAAQMD acknowledgment can be found in Appendix I.

2.5. Source/Process Description

The two identical Caterpillar G3502C, landfill gas Engines are rated for 2,739 brake-horsepower-hour 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 operating kilowatt (kW) and fuel flow rate records are contained in Appendix-F.

During the test period Engine #1 (S-64) was operated at an average of 1,933 kW with an average fuel flow rate of 650 Standard Cubic Feet per Minute (SCFM). Engine #2 (S-65) was operated at an average of 1,937 kW with an average fuel flow rate of 655 SCFM.

LFG samples collected at the header of Engine S-64 showed that the Methane quality averaged 53.0 percent (%) and the Oxygen content was 0.67%.

LFG samples collected at the header of Engine S-65 showed that the Methane quality averaged 53.0 percent (%) and the Oxygen content was 0.67%.

Additional data on the LFG samples is contained in Appendix C.

Engine serial numbers and hours of operation at time of test

Engine #1 (S-64), SN: LGS00188, Hours of Operation: 24,753

Engine #2 (S-65), SN: LGS00189, Hours of Operation: 25,466

SECTION 3. SAMPLING AND ANALYSIS PROCEDURES

3.1. Port location

Both the S-64 and S-65 sampling were conducted in the 30-inch diameter ID stacks, via two 4-inch ports, ~4 stack diameters downstream from and ~1½ diameters upstream of nearest disturbances.

3.2. Point description/Labeling – ports/stack

Ammonia and Formaldehyde were sampled from a point mid-stack. The CEM and PM samples were collected from a full traverse across two axis. Traverse points 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.

3.3. Sample train descriptions

Sampling system diagrams are included in the Appendix H. Additional descriptive information is included in the following section.

3.4. Sampling procedure descriptions

Three sixty-minute test runs were performed on both Engines for Continuous Emission Monitoring (CEM) gases and Ammonia (NH_3).

Three sixty-minute tests for Particulate Matter (PM) and three thirty-minute test runs for formaldehyde were performed on Engine #1 (S-64).

Sampling & Traverse Points Selection by EPA Method 1. 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.

Stack Gas Velocity & Flow Rate by EPA Method 2. This method is used to determine stack gas velocity using a standard or S-type pitot tube and inclined manometer. Temperature is monitored using a K-type thermocouple and calibrated Omega temperature meter. QA/QC procedures include leak checks before and after each traverse to validate the results. Thermometer calibrations are performed using an Omega Model CL-300 calibrator. Geometric calibrations of S-type pitots are performed every 6 months or following modification according to the guidelines in California Air Resources Board (CARB) QA/QC Volume VI, Table 3.

Stack Gas Molecular Weight by EPA Method 3. This method is used to determine the molecular weight of the stack gas. Measurements of gas constituents $\%O_2$ and $\%CO_2$ were made by CARB 100.

Stack Gas Moisture by EPA Method 4. This method is used to determine the moisture content in the gas stream by extracting a sample and condensing the moisture 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**. 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 a ice bath to maintain a gas outlet temperature of <68°F. Pre- -test leak checks are performed for each run at least 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, then the volume is corrected based on the leak rate, or the run is voided and repeated.

EPA Method 5 was used to determine the filterable particulate emissions. The sampling equipment consists of a stainless steel or glass or quartz nozzle, a heated stainless steel, inconel, glass or quartz probe/liner, 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" H_2O. 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. Sampling system leak checks are performed 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 0.02CFM 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 in 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 were collected using identical equipment, reagents, proportions and techniques as the test samples

EPA Method 202. The concentrations and emission rates of PM_{10} were measured using a combination of EPA Methods 5 and EPA Method 202. The measurements included filterable and condensable particulate matter (CPM). The Method 5 samples were handled as described in the Method. The Method 202 samples were also handled as described in Method 202, including the use of "dry" impingers and the required post-test nitrogen purge.

The apparatus included a quartz sampling nozzle and quartz probe liner attached to a glass filter holder with glass-fiber filter heated to ~250 degrees Fahrenheit. The filter holder was mounted at the end of probe liner, which was then attached to a length of heated Teflon tubing to connect the filter holder to the impinger train. The impinger train was connected to the control box, which contained the sampling pump and dry gas meter. A nozzle size was chosen to allow isokinetic sampling (i.e. within 20%) at all the traverse points at the calculated sampling rate.

The filterable "front-half" PM_{10} was recovered from the sampling apparatus as described in EPA Method 5. The sample fractions included the rinses of the internal sections of the nozzle. probe liner, the front-half of the filter holder, and the filter. The sample fractions were analyzed gravimetrically to determine the concentration of filterable PM_{10}.

The "back-half" contents were recovered and analyzed for condensable PM_{10} as described in EPA Method 202. The probe extension, condenser and first impinger contents were rinsed with water into the second impinger, water was added as necessary for the subsequent purge. Then the condenser and first impinger were reattached to the second impinger and the condenser, impingers and CPM filter was purged with nitrogen for one hour.

After the purge, the sample was recovered in three fractions. These included the CPM filter, the water contents and rinses of the condenser, impingers, and filter holder, and the acetone/hexane rinses of the condenser, impingers, and filter holder. The sample containers were transported to Chips Environmental laboratory for analysis.

Ammonia by BAAQMD Method ST-1B. This method is used to determine the ammonia content in the gas stream by extracting a sample via a Teflon® or stainless-steel probe and condensing/adsorbing the ammonia 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 determined at the laboratory by analysis using Specific Ion Electrode or Nessler's reagent and a spectrophotometer according to BAAQMD Lab 1A. Results are recorded on the field data sheet. Sampling QA/QC consists of performing sampling system leak checks before and after each test run. Reagent blanks are collected. All the sampling equipment is calibrated according to CARB schedules and documentation is included in the final report. Analytical QA/QC consists of a reagent blank, and laboratory blanks, and duplicates. **Ammonia Lab Analysis by BAAQMD Method 1A.** This method is used to determine the ammonia content in a sample procured using BAAQMD method ST-1B. The Orion 920A meter is calibrated with 1mg/ml ammonia (NH_3) as nitrogen (N_2) and 10mg/ml ammonia as nitrogen. This calibration is performed while using an Orion #95-11 ion specific electrode. 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 then enhanced with a pH adjusting ionic strength adjuster to help the electrode read the nitrogen more effectively. When the calibration is completed the meter will calculate a standard curve for the electrode. The standard curve is acceptable between –54mv (millivolts) and –60mv.

After the meter calibration passes and the standard curve is established, a 49ml aliquot of sample is placed into a clean polypropylene beaker, and then enhanced with a pH adjusting ionic strength adjuster. The sample is then placed on top of a magnetic stirrer and a clean Teflon coated magnetic stirring bar is added. The ammonia specific ion electrode is then placed into the samples and a concentration of ammonia (as N_2) is displayed on the meter.

CARB Method 430 was used to determine emissions of aldehyde and ketone compounds. Gaseous emissions are drawn through a short 1/8-inch Teflon sample line and two midget impingers in series, on ice, each containing an 10ml aqueous acidic solution of 2,4-dinitrophenyl-hydrazine (DNPH). 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 where target compounds are quantified and identified by comparison of retention times and area counts of the samples with those of standards. 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 3A (O_2, CO_2), 6C (SO_2), 10 (CO) and 7E (NO_X): Continuous Emission Monitoring on each engine was conducted in accordance with EPA Methods 6C (SO_2), 7E (NO_X), 10 (CO) and 3A (O_2 and CO_2). Sampling is performed by extracting exhaust flue gas from the stack, conditioning the sample and analyzing it by continuous monitoring gas analyzers in a CEM test van. The sampling system consists of a stainless-steel sample probe, Teflon sample line, glass-fiber particulate filter, glass moisture-knockout condensers in ice, Teflon sample transfer tubing, diaphragm pump and a stainless steel/Teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5

PSI was provided to each analyzer to avoid pressure variable response differences. The entire sampling system was leak checked prior to and at the end of the sampling program.

The sampling and analytical system (per EPA Methods) was calibrated at the beginning and end of each test run. The calibration gases were selected to fall approximately within 80 to 90 percent of the instrument range. Zero and calibration drift values were determined for each test. All calibration gases are EPA Protocol #1.

System Performance Criteria	
Instrument Linearity	≤ 2% Full Scale (complied)
Instrument Bias	≤ 5% Full Scale (complied)
ALT-078 Instrument Linearity	≤ 5% Cal Gas Value
System Response Time	≤ 2 minutes (complied)
NO_X Converter Efficiency (EPA 7E)	≥ 90% (complied)
Instrument Zero Drift	≤± 3% Full Scale (complied)
Instrument Span Drift	≤± 3% Full Scale (complied)

Fuel Samples by ASTM 1945 (fixed Gases, C1-C6+ and CH_4) ASTM 5504 (Sulfurs), 25C (NMOC). Three samples of landfill gas (LFG) were collected per engine (one per run), in 6-liter SILCO SUMMA Canisters. The samples were collected using Teflon tubing connections. The gas sample was controlled with a valve to collect a 60-minute integrated sample. The samples were analyzed for NMOC, HHV, F-Factor and Fixed Gases and Sulfur Species (including H_2S and TRS) by AAC Labs in Ventura.

3.5. Instrumentation and Analytical procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO 42C	$NO_X/NO/NO_2$	Chemiluminescence
TECO 48C	CO	GFC/IR
Servomex 1440	CO_2	IR
Servomex 1440	O_2	Paramagnetic
TECO 43C	SO_2	Pulsed Fluorescence
TECO 55C	$THC/CH_4/NMOC$	FID

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of a Honeywell DPR3000 strip chart recorder, which is supported by a computer-based Data Acquisition System (DAS) known as DasyLAB.

The instrument response was recorded on strip charts and DAS. The averages were corrected for calibration bias and drift using EPA Method 7E equations.

3.6. Comments: Limitations and Data Qualifications

The measured emissions meet the Permit required limits, no deviations from the protocol or abnormalities during the test were observed.

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. Strip Chart Records

F. Process Information

G. Calibration Certifications and Quality Assurance Records

H. Sample Train Configuration and Stack Diagrams

I. Related Correspondence (Source Test Plan)

J. BAAQMD PTO

A
Tabulated Results

TABLE #1

Redwood Landfill
Engine #1 (S-64)

RUN	1	2	3	AVERAGE	Limits
Test Date	7/22/20	7/22/20	7/22/20	--	
Test Time	1245-1351	1439-1545	1637-1744	--	
Standard Temp., °F	70	70	70	70	
Generator kW	1,933	1,932	1,934	1,933	
Engine BHp	2,694	2,692	2,694	2,693	
Fuel Flow Rate, SCFM	653	651	645	650	
Fuel Gross Btu/cf @60°F	540	535	537	537	
Fuel Fd Factor, DSCF/MMBtu @60°F	9,306	9,298	9,323	9,309	
Exhaust Flow Rate, DSCFM (M2)	6,038	5,659	5,625	5,774	
Urea Injection Rate, gph	1.06	1.02	1.01	1.03	
SCR Temperature, ˚F	850	850	850	850	
Oxygen, O_2, %	9.8	9.8	9.9	9.8	
Carbon Dioxide, CO_2 %	9.8	9.7	9.9	9.8	
Water Vapor, H_2O, %	11.02	10.65	10.83	10.83	
NOx, ppm	8.1	7.8	7.9	7.9	
NOx, ppm @ 15% O_2	**4.3**	**4.1**	**4.2**	**4.2**	
NOx, lbs/hr	0.35	0.31	0.32	0.33	
NOx, gm/BHp-hr	**0.06**	**0.05**	**0.05**	**0.06**	**0.15**
CO, ppm	67.5	68.3	72.5	69.4	
CO, ppm @ 15% O_2	**36.0**	**36.3**	**38.8**	**37.0**	
CO, lbs/hr	1.77	1.68	1.77	1.74	
CO, gm/BHp-hr	**0.30**	**0.28**	**0.30**	**0.29**	**1.80**
SO_2, ppm	<1.0	<1.0	<1.0	<1.0	
SO_2, ppm @ 15% O_2	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**9**
SO_2, lbs/hr	<0.06	<0.06	<0.06	<0.06	
SO_2, gm/BHp-hr	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**0.18**
Ammonia, ppm	1.08	0.91	0.78	0.92	
Ammonia, ppm @ 15% O_2	**0.58**	**0.48**	**0.42**	**0.49**	**10**
NMOC, ppmd as Methane (wet)(ALT 078)	5.1	5.4	5.8	5.5	
NMOC, ppmd as Methane (dry)	5.8	6.1	6.6	6.1	
NMOC, ppmd as Propane	1.9	2.0	2.2	2.0	
NMOC, ppmd @ 15% O_2 as Methane	**3.1**	**3.2**	**3.5**	**3.3**	**32**
NMOC, lbs/hr as Methane (MW=16)	0.09	0.09	0.09	0.09	
NMOC, gm/BHp-hr as Methane	**0.01**	**0.01**	**0.02**	**0.01**	**0.16**
NMOC, ppmd @ 15% O_2 as Propane	1.0	1.1	1.2	1.1	
NMOC, lbs/hr as Propane (MW=44)	0.08	0.08	0.08	0.08	
NMOC, gm/BHp-hr as Propane	0.01	0.01	0.01	0.01	
CH_4, ppm (wet)(ALT 078)	1,150.4	1,135.6	1,153.1	1,146.4	
CH_4, ppmd (dry)	1292.9	1270.9	1293.2	1285.7	
CH_4, ppm @ 15% O_2	**688.7**	**676.0**	**692.2**	**685.7**	**3,000**
CH_4, lbs/hr as Methane	19.38	17.85	18.06	18.4	
CH_4, gm/BHp-hr as Methane	3.26	3.01	3.04	3.10	
THC, ppmd as Methane (dry)	1,298.7	1,277.0	1,299.8	1,291.8	
THC, lbs/hr as Methane	19.47	17.94	18.15	18.52	
THC gm/BHp-hr as Methane	3.28	3.02	3.06	3.12	
Inlet CH_4, ppmd as Methane (dry)	533,000	528,000	530,000	530,333	
Inlet CH_4, lbs/hr as Methane	864	853	848	855	
CH_4 Removal Efficiency	**>97.8%**	**>97.9%**	**>97.9%**	**>97.8%**	
Total Reduced Sulfurs in LFG (ppm)	**0.457**	**0.444**	**0.411**	**0.437**	**150**

WHERE,

ppm = Parts Per Million Concentration
Lbs/hr = Pound Per Hour Emission Rate
Tstd. = Standard Temp. (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
VOC = Volatile Organic Compounds
Methane Molecular Weight = 16
Propane Molecular Weight = 44
SO_2 = Sulfur Dioxide (MW = 64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
lbs/hr = ppm * 8.223 E-05 * DSCFM * MW / Tstd. °R
gm/BHp-hr = lbs/hr * 453.6/BHp-hr
Engine BHp = Engine kW * 1.3932 hp/kW
ppm dry = ppm wet *100 / (100-%$H_2$0)

TABLE #2

Method 5 Particulate Emission Test Results
WMI-RLI
Engine #1 (S-64)
1937 kW

RUN #		1	2	3	AVERAGE	LIMITS
TEST DATE		7/22/20	7/22/20	7/22/20		
TEST TIME		1235-1347	1434-1545	1632-1741		
Generator Kw		1,933	1,932	1,934	1,933	
Engine Kw		2,030	2,029	2,030	2,030	
Engine BHp-hr		2,720	2,719	2,720	2,720	
SAMPLE VOLUME	DSCF	35.237	33.313	33.159	33.903	
ISOKINETIC	%	104.4	98.7	98.9	100.7	
DUCT TEMP	°F	839.7	843.1	841.0	841.3	
VELOCITY	Ft/sec	60.64	56.75	57.51	58.30	
FLOW RATE	ACFM	16,699	15,628	15,839	16,055	
FLOW RATE	DSCFM	6,038	5,659	5,625	5,774	
H_2O	%	11.02	10.65	10.83	10.83	
O_2	%	9.82	9.81	9.88	9.84	
CO_2	%	9.83	9.73	9.88	9.81	
Filiterable Particulate (FP)	mg	0.8	<1.7	1.1	<1.2	
	gr/DSCF	0.0004	<0.0008	0.0005	<0.0006	
	lb/hr	0.018	<0.039	0.025	<0.027	
	g/BHp-hr	0.003	<0.006	0.004	<0.005	
Total Particulate	mg	2.5	<2.1	2.3	<2.3	
	gr/DSCF	0.0011	<0.0010	0.0011	<0.0011	
	lb/hr	0.057	<0.047	0.052	<0.052	
	g/BHp-hr	**0.010**	**<0.008**	**0.009**	**<0.009**	**0.1**

Notes: Less than (<) signs precede the method detection limit.

Particulate Concentration (gr/DSCF) = mg/Vmstd x 0.01543 =
Particulate Emission Rate (lb/hr) = 0.00857 x gr/DSCF x DSCFM =
Particulate Emission Factor (g/BHp-hr) = lb/hr * 453.6 / BHp-hr =

TABLE #3

Redwood Landfill
Engine #1 (S-64)
Formaldehyde

RUN		Run 1	Run 2	Run 3	AVG	Limits
Test Date		7/22/20	7/22/20	7/22/20		
Test Time		1317-1347	1514-1544	1711-1742		
Sample Duration	mins	30	30	30		
Standard Temp., °F (Tstd)		70	70	70	70	
Exhaust Flow Rate, DSCFM (M2)		6,038	5,659	5,625	5,774	
Meter yd		1.0504	1.0504	1.0504	1.0504	
Meter Volume, Vm		14.893	15.073	15.017	14.994	
Rotometer Rate LPM		0.5	0.5	0.5	0.5	
Total Liter Volume, Vm corr		15.644	15.833	15.774	15.750	
Avg Meter Temp., °F (Tm)		78.0	94.8	96.3	89.7	
Std. Meter Volume (Vm std)	Liters	15.411	15.124	15.027	15.187	
Formaldehyde, ug/sample		13.43	4.44	3.29	7.05	
Formaldehyde, ug/DSCM		871.5	280.6	208.4	453.5	
Formaldehyde, ppb		690.8	225.8	167.7	361.4	
Formaldehyde, gm/hr		8.94	2.70	1.99	4.55	
Formaldehyde, lbs/hr		**0.0197**	**0.0060**	**0.0044**	**0.0100**	**0.51**

WHERE:
ml = milliliters
gm = grams
ug = micrograms
DSCFM = Dry Standard Cubic Feet per Minute
DSCM = Dry Standard Cubic Meter

CALCULATIONS:
Formaldehyde ppb = 1000*(ug/sample)*24.14/(30.0 Mol.Wt.*Vm std liters)
ug/DSCM = (1000 L/DSCM)* (ug/sample)/(Sample Vol L)
gm/hr = ug/DSCM * (DSCFM*60min-hr/35.3)/(1000000 ug/gm)
Lbs/hr = (gm/hr)/453.6 gm/lb
Vmstd=Vm*Yd*(460+Tstd)/(460+Tm)

TABLE #4

Redwood Landfill
Engine #2 (S-65)

RUN	1	2	3	AVERAGE	Limits
Test Date	7/21/20	7/21/20	7/21/20	--	
Test Time	1242-1345	1503-1608	1708-1817	--	
Standard Temp., °F	70	70	70	70	
Generator kW	1,946	1,940	1,927	1,937	
Engine BHp	2,710	2,703	2,684	2,699	
Fuel Flow Rate, SCFM	658	655	651	655	
Fuel Gross Btu/cf @60°F	533	540	538	537	
Fuel Fd Factor, DSCF/MMBtu @60°F	9,312	9,298	9,312	9,307	
Exhaust Flow Rate, DSCFM (M2)	5,941	5,938	6,045	5,975	
Urea Injection Rate, gph	1.05	1.05	1.04	1.05	
SCR Temperature, ˚F	850	850	850	850	
Oxygen, O_2, %	10.3	10.3	9.8	10.1	
Carbon Dioxide, CO_2 %	9.4	9.5	9.5	9.4	
Water Vapor, H_2O, %	9.51	10.68	9.56	9.9	
NOx, ppm	10.3	10.3	10.4	10.4	
NOx, ppm @ 15% O_2	**5.7**	**5.7**	**5.5**	**5.7**	
NOx, lbs/hr	0.44	0.44	0.45	0.44	
NOx, gm/BHp-hr	**0.07**	**0.07**	**0.08**	**0.07**	**0.15**
CO, ppm	74.5	72.0	71.6	72.7	
CO, ppm @ 15% O_2	**41.4**	**40.0**	**38.1**	**39.8**	
CO, lbs/hr	1.92	1.86	1.88	1.89	
CO, gm/BHp-hr	**0.32**	**0.31**	**0.32**	**0.32**	**1.80**
SO_2, ppm	<1.0	<1.0	<1.0	<1.0	
SO_2, ppm @ 15% O_2	**<0.6**	**<0.6**	**<0.5**	**<0.5**	**9**
SO_2, lbs/hr	<0.06	<0.06	<0.06	<0.06	
SO_2, gm/BHp-hr	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**0.18**
Ammonia, ppm	1.37	1.21	1.15	1.25	
Ammonia, ppm @ 15% O_2	**0.76**	**0.67**	**0.61**	**0.68**	**10**
NMOC, ppmd as Methane (wet)(ALT 078)	11.0	10.4	8.6	10.0	
NMOC, ppmd as Methane (dry)	12.1	11.7	9.5	11.1	
NMOC, ppmd as Propane	4.0	3.9	3.2	3.7	
NMOC, ppmd @ 15% O_2 as Methane	**6.7**	**6.5**	**5.1**	**6.1**	**32**
NMOC, lbs/hr as Methane (MW=16)	0.18	0.17	0.14	0.16	
NMOC, gm/BHp-hr as Methane	**0.03**	**0.03**	**0.02**	**0.03**	**0.16**
NMOC, ppmd @ 15% O_2 as Propane	2.24	2.16	1.68	2.02	
NMOC, lbs/hr as Propane (MW=44)	0.16	0.16	0.13	0.15	
NMOC, gm/BHp-hr as Propane	0.03	0.03	0.02	0.03	
CH_4, ppm (wet)(ALT 078)	1,194	1,246	1,292	1,244	
CH_4, ppmd (dry)	1320	1395	1428	1381	
CH_4, ppm @ 15% O_2	**732**	**776**	**761**	**756**	**3,000**
CH_4, lbs/hr as Methane	19.46	20.56	21.43	20.5	
CH_4, gm/BHp-hr as Methane	3.26	3.45	3.62	3.44	
THC, ppmd as Methane (dry)	1,332	1,407	1,438	1,392	
THC, lbs/hr as Methane	19.64	20.73	21.58	20.65	
THC gm/BHp-hr as Methane	3.29	3.48	3.65	3.47	
Inlet CH_4, ppmd as Methane (dry)	526,000	533,000	531,000	530,000	
Inlet CH_4, lbs/hr as Methane	859	867	857	861	
CH_4 Removal Efficiency	**97.7%**	**97.6%**	**97.5%**	**97.6%**	
Total Reduced Sulfurs in LFG (ppm)	**0.147**	**0.170**	**0.175**	**0.164**	**150**

WHERE,

ppm = Parts Per Million Concentration
Lbs/hr = Pound Per Hour Emission Rate
Tstd. = Standard Temp. (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
VOC = Volatile Organic Compounds
Methane Molecular Weight = 16
Propane Molecular Weight = 44
SO_2 = Sulfur Dioxide (MW = 64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
lbs/hr = ppm * 8.223 E-05 * DSCFM * MW / Tstd. °R
gm/BHp-hr = lbs/hr * 453.6/BHp-hr
Engine BHp = Engine kW * 1.3932 hp/kW
ppm dry = ppm wet *100 / (100-%$H_2$0)

Redwood Landfill, Inc.

BAAQMD Facility # 1179

Annual Compliance Emissions Test Report #21015

Landfill Gas Flare A-51

Located at:
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, CA 94948

Prepared for:
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3117 Fite Circle Suite 108
Sacramento, CA 95827
Attn: Michael O'Connor
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For Submittal to:
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Testing Performed on:
January 14th, 2021

Final Report Submitted on:
March 10th, 2021

Performed and Reported by:
Blue Sky Environmental, Inc.
624 San Gabriel Avenue
Albany, CA 94706
bluesky@blueskyenvironmental.com
Office (510) 525-1261 / Cell (510) 508-3469

REVIEW AND CERTIFICATION

Team Leader:

The work performed herein was conducted under my supervision, and I certify that:

a) the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program,

b) that the sampling and analytical procedures and data presented in the report are authentic and accurate,

c) that all testing details and conclusions are accurate and valid, and

d) that the production rate and/or heat input rate during the source test are reported accurately.

If this report is submitted for Compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please contact me at (925) 338-4875.

Chuck Arrivas, QSTI

Project Manager

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SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc. was contracted by SCS Engineers to perform the emissions testing for the Redwood Landfill Inc. (RLI), located in Novato, California. Testing was conducted to demonstrate that Landfill Gas Flare A-51 is operating in compliance with 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. Test results derived from the source test are summarized in Table 2.1. Results for individual test runs are included in Appendix A. The flare met all compliance emission criteria.

Table 1. Source Test Information

Test Location:	Redwood Landfill Inc. 8950 Redwood Highway, Novato, CA 94948
Source Contact:	Michael O'Connor, SCS Engineers (707) 236-3791
Source Tested:	Industrial Landfill Gas Flare (A-51) – 90 MMBtu/hr
Source Test Date:	January 14th, 2021
Test Objective:	Determine compliance with Bay Area Air Quality Management District (BAAQMD) Permit to Operate for Plant #1179, Conditions 19867 and 25634
Test Performed By:	Blue Sky Environmental, Inc 624 San Gabriel Avenue Albany, CA 94706 Chuck Arrivas (925) 338-4875 carrivas@blueskyenvironmental.com
Test Parameters:	**Landfill Gas Fuel Analysis** O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, Sulfur, VOC Species and Volumetric Flow Rate **Turbine Emissions** THC, CH_4, NMOC, NO_X, CO, O_2, SO_2, Volumetric Flow Rate and Temperature

Table 2. Compliance Summary

Emission Parameter	Average Results (Flare A-51)	Permit Limit	Status
NO_X, lbs/MMBtu	0.051	0.06	In Compliance
NO_X, ppm @ 15% O_2	12.7	15	In Compliance
CO, lbs/MMBtu	0.068	0.20	In Compliance
CO, ppm @ 15% O_2	27.6	82	In Compliance
TNMHC, ppm @ 3% O_2 as hexane (C_6H_{14})	<1.88	360	In Compliance
TNMHC, ppm @ 3% O_2 as CH_4	<11.3	30 or >98	In Compliance
NMOC Removal Efficiency	>95.82		
CH4, Removal Efficiency	>99.95	>99	In Compliance
Total Reduced Sulfurs in Fuel, ppm	1,879	410	Exceeds Limit[1]
SO_2, ppm	96.2	300	In Compliance
SO_2, lbs/MMBtu	0.62	1.69	In Compliance

[1]On October 6th, 2016 Redwood Landfill proposed a permit modification to increase the peak limit. This modification is still under review by BAAQMD. Per the November 2016 Compliance Agreement between Redwood Landfill and BAAQMD enforcement actions are not expected if the Agreement is complied with.

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This annual source test was performed to demonstrate that landfill gas Flare A-51 is operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Title V Permit to Operate (PTO) for Plant #1179, Conditions 19867 and 25634.

2.2. Pollutants Tested

The following US Environmental Protection Agency (EPA), Bay Area Air Quality Management District (BAAQMD) and ASTM International sampling and analytical methods were used:

EPA Method 1	Sample and Traverse Point Determination
EPA Method 3A	O_2 and CO_2, Stack Gas Molecular Weight
EPA Method 10	CO
EPA Method 7E	NO_X and NO_2 Converter Check
EPA Method 4, part 16.4	Moisture Calculation
EPA Method 19	Flow Rate Calculation, DSCFM
EPA Method 25C	Analysis of landfill gas for TNMHC (NMOC)
EPA Method 25A	VOC Emissions
EPA Method 18	THC/CH_4/NMHC Emissions
ASTM D-1945/3588	Fuel Analysis for BTU, F-Factors & Fixed Gases
ASTM D-5504	Sulfur Species, Hydrogen Sulfide (H_2S) and TRS
EPA Method TO-15	Toxic Organic Compounds

2.3. Test Date(s)

Testing was conducted on January 14th, 2021.

2.4. Sampling and Observing Personnel

Testing was conducted by Chuck Arrivas and Timothy Eandi, representing Blue Sky Environmental, Inc.

John Silva of SCS Engineers and Ben Tarver of Waste Management were present to oversee turbine operations and assist in coordinating testing and the collection of process data to verify the accuracy of digitally recorded data collected during testing.

The BAAQMD was notified of the scheduled testing in a plan submitted by SCS Engineering on behalf of Waste Management, on December 31st, 2020. A Source Test Protocol acknowledgement (NST #6282) was received the same day; however, no agency observers were present during testing. A copy of the source test protocol and email correspondence are provided in Appendix I.

2.5. Source/Process Description

Redwood Landfill Inc. is a multi-material landfill with a gas collection system that is abated by two industrial landfill gas enclosed flares. Flare A-51 consists of a 90 MMBtu/hr multiple nozzle burner manufactured by Perennial Energy. The Flare shell is approximately 45 feet high and 136 inches in diameter.

2.6. Source Operating Conditions

The A-51 flare was operated at approximately 1,538 °F for all tests. The average landfill gas fuel flow rate was 742 standard cubic feet per minute (SCFM), with a methane content ranging from 48.8% to 50.7%.

The flare operating temperature and the landfill gas flow rate records are contained in Appendix F. There was no condensate injection.

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 a sixteen point traverse on the flare to check for the presence of cyclonic flow. O_2 stratification was greater than 10%; therefore, subsequent CEM sampling was conducted using all sixteen traverse points. The traverse points for the 136-inch diameter stack 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 included in the 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 (NOx), nitric oxide (NO), carbon monoxide (CO), carbon dioxide (CO_2), oxygen (O_2), and total hydrocarbons (THC) 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 equation 100-3 from CARB Method 100. 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 six integrated samples for off-site analysis. Three landfill gas fuel samples were collected in SUMMA canisters and analyzed for hydrocarbons by EPA Method 25, HHV, F-factor, fixed gases, sulfur species (incl. H_2S and TRS), volatile organic compounds (VOCs) and nonmethane organic compounds (NMOCs). Three exhaust samples were collected in Tedlar bags and analyzed for C_1-C_6^+ hydrocarbons by EPA Method 18 modified. The gas flow was controlled with a rotameter to collect a 32-minute integrated sample.

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.

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.

System Performance Criteria

Instrument Linearity	≤2% Full Scale
Instrument Bias	≤5% Full Scale
System Response Time	≤± 2 minutes
NO_X Converter Efficiency (EPA 7E)	≥ 90%
Instrument Zero Drift	≤± 3% Full Scale
Instrument Span Drift	≤± 3% Full Scale

EPA Method 4-16.4 – Determination of Moisture Content in Stack Gas
This is an acceptable alternative to EPA Method 4 for the determination of moisture using F-factors. The mole fraction of moisture in the ambient air is calculated using equations in EPA Method 4-16.4 from 1) the measured ambient relative humidity, ambient temperature, and barometric pressure, 2) the mole fraction of free water in the fuel, calculated from the moisture % in the fuel, which is determined by the analytical lab to be the balance after all the major

gaseous components have been summed, and 3) the mole fraction of hydrogen in the fuel. To determine the moisture in the fuel, the raw fuel analysis before normalization to 100% is referenced.

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.
301.

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 25A – Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer

This method is used to measure total hydrocarbons, methane, and non-methane hydrocarbons in stationary source emissions using a gas chromatograph with a flame ionization detector (GC/FID). Heated Teflon sample gas transfer lines are used to provide a continuous sample to the heated GC/FID hydrocarbon 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. Sampling system bias, zero and calibration drift values are determined for each test.

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-3588 – Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels

This method uses the molar composition of gaseous fuel determined from Method ASTM D-1945 to calculate the heating value and F-factor.

ASTM D-5504 – Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence

This method is used for the determination of speciated volatile sulfur-containing compounds in high methane content gaseous fuels by gas chromatography. Sulfur compounds are processed using a flame ionization detector (GC/FID). The products are then analyzed with a sulfur chemiluminescence detector (GC/SCD). Samples may be collected in Tedlar bags and analyzed within 24 hours or in Silco SUMMA canisters and analyzed 7 days.

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	GFC/IR
Ratfisch Model RS-55	THC	FID
Servomex 1440	CO_2	IR
Servomex 1440	O_2	Paramagnetic

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. All system performance criteria were met.

3.6. Comments: Limitations and Data Qualifications

This source test was performed in accordance with the protocol submitted to the BAAQMD. No deviations from the protocol or anomalies were observed during testing. The measured emissions from the flare comply with the permit limits, except the TRS as H_2S, ppm in Fuel exceeded the permit limit.

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 warrant the accuracy of information supplied by others.

SECTION 4. APPENDICES

A.	**Tabulated Results**
B.	**Calculations**
C.	**Laboratory Reports**
D.	**Field Data Sheets**
E.	**Strip Chart Records**
F.	**Process Information**
G.	**QC Calibration Certificates and Quality Assurance Records**
H.	**Sample Train Configuration and Stack Diagrams**
I.	**Related Correspondence (Source Test Plan)**
J.	**Permit to Operate**

A
Tabulated Results

TABLE #1

Redwood Landfill
Flare A-51
1,538°F

RUN	**1**	**2**	**3**	**AVERAGE**	**LIMITS**
Test Date	1/14/21	1/14/21	1/14/21		
Test Time	0923-1000	1023-1100	1125-1200		
Standard Temperature, °F	70	70	70		
Flare Temperature, °F Average	1,539	1,538	1,537	1,538	
Fuel Flow Rate, SCFM	738	745	744	742	
Fuel Heat Input, MMBtu/hr	21.6	22.5	22.6	22.2	
Exhaust Flow Rate, DSCFM *(EPA M19)*	13,656	15,000	14,837	14,497	
Oxygen, O_2, %	15.61	15.89	15.82	15.77	
Carbon Dioxide, CO_2, %	4.65	4.20	4.27	4.38	
Water Vapor, H_2O, % *(EPA M4.16)*	4.19	4.27	3.93	4.13	
NO, ppm	8.9	7.8	5.4	7.4	
NO_2, ppm	3.1	2.7	5.3	3.7	
NO_2/NO	0.34	0.34	0.98	0.55	
NOx, ppm	12.0	10.5	10.7	11.1	
NOx, ppm @ 15% O_2	**13.4**	**12.4**	**12.4**	**12.7**	**15**
NOx, lbs/hr	1.17	1.12	1.13	1.14	
NOx, lbs/MMBtu	**0.054**	**0.050**	**0.050**	**0.051**	**0.06**
CO, ppm	23.1	25.6	23.1	23.9	
CO, ppm @ 15% O_2	**25.8**	**30.1**	**26.8**	**27.6**	**82**
CO, lbs/hr	1.37	1.67	1.49	1.51	
CO, lbs/MMBtu	**0.064**	**0.074**	**0.066**	**0.068**	**0.20**
TRS as H_2S, ppm in Fuel	**1,867**	**2,021**	**1,748**	**1,879**	**410**
SO_2, ppm (calculated)	**100.9**	**100.4**	**87.7**	**96.2**	**300**
SO_2, ppm @ 15% O_2	112.6	118.1	101.8	110.9	
SO_2, ppm @ 3% O_2	341.7	358.4	308.9	336.4	
SO_2, lbs/hr	13.70	14.97	12.93	13.87	
SO_2, lbs/MMBtu	**0.64**	**0.66**	**0.57**	**0.62**	**1.69**
THC, ppm *(EPA M25A) (wet)*	8.62	1.89	21.25	10.59	
THC, ppm *(dry)*	9.00	1.97	22.12	11.03	
THC, lbs/hr as CH_4	0.305	0.073	0.815	0.398	
CH_4, ppm *(EPA M18)*	8.8	15.2	14.5	12.8	
CH_4, lbs/hr	0.30	0.57	0.53	0.47	
TNMHC, ppm as CH_4	<1.0	<1.0	7.6	3.2	
TNMHC, lbs/hr as CH_4	<0.03	<0.04	0.281	<0.12	
TNMHC, ppm as hexane (C_6H_{14}) @ 3% O_2	**<0.56**	**<0.60**	**4.48**	**<1.88**	**360**
TNMHC, ppm @ 3% O_2 as CH_4	**<3.4**	**<3.6**	**26.9**	**<11.3**	**30**
INLET TNMOC, ppm *(EPA M25C)*	1,431	1,398	1,548	1,459	
INLET NMOC, lbs/hr as CH_4	2.6	2.6	2.9	2.7	**or**
NMOC Removal Efficiency	**98.71%**	**98.56%**	**90.18%**	**95.82%**	**98**
INLET CH_4, ppm	488,000	504,000	507,000	499,667	
INLET CH_4, lbs/hr	894.0	932.1	936.4	921	
CH_4 Removal Efficiency	**>99.967%**	**>99.939%**	**>99.943%**	**>99.950%**	**99**
INLET THC (TOC), ppm as CH_4	489,431	505,398	508,548	501,126	
INLET THC (TOC), lbs/hr as CH_4	897	935	939	924	
THC (TOC) Removal Efficiency	**99.966%**	**99.992%**	**99.913%**	**99.957%**	**98**

< Value = 2% of Analyzer Range

WHERE,

ppm = Parts per Million Concentration
Lbs/hr = Pound per Hour Emission Rate
Tstd. = Standard Temperature (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
TOC = THC = Total Organic Carbon as Methane including CH_4 (MW = 16)
THC = Total Hydrocarbons as Methane (MW = 16)
NMOC = Total Non-Methane Organic Carbon as Methane (MW = 16)
TNMHC = Total Non-Methane Hydrocarbon
SO_2 = Sulfur Dioxide as SO_2 (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)
Lbs/hr = ppm * 8.223 E-05 * DSCFM * MW / Tstd. °R
Lbs/day = Lbs/hr * 24
Removal Efficiency = (inlet lbs/hr- outlet lbs/hr) / inlet lbs/hr
TNMHC, ppm as CH_4 = Total Non-Methane Hydrocarbons - Methane
TNMHC, ppm as Hexane = Total Non-Methane Hydrocarbons as Methane / 6

TABLE # 2

Redwood Landfill

Flare A-51

Landfill Gas Characterization

RUN		1	2	3	Average	LIMITS
Sample ID		**R1-LFG-A51**	**R2-LFG-A51**	**R3-LFG-A51**		
Sample Date		**1/14/21**	**1/14/21**	**1/14/21**		
Acrylonitrile	ppb	<501	<271	<324	<365	300
Benzene	ppb	578	531	517	542	1,500
Benzyl Chloride (Chloromethylbenzene)	ppb	<125	<67.7	<81.0	<91.2	500
Carbon Tetrachloride	ppb	<125	<67.7	<81.0	<91.2	200
Chlorobenzene	ppb	<125	<67.7	<81.0	<91.2	200
Chloroethane	ppb	260	130	133	174	500
Chloroform	ppb	<125	<67.7	<81.0	<91.2	200
1,1 Dichloroethane (Ethylidene Dichloride)	ppb	<125	<67.7	<81.0	<91.2	500
1,1 Dichloroethene (Vinylidene Chloride)	ppb	<125	<67.7	<81.0	<91.2	500
1,2 Dichloroethane (Ethylene Dichloride)	ppb	145	146	144	145	200
1,4 Dichlorobenzene	ppb	170	182	<81.0	144.3	1,000
Ethylbenzene	ppb	2,240	2,010	2,210	2,153	4,000
Ethlyene Dibromide (1,2 Dibromoethane)	ppb	<125	<67.7	<81.0	<91.23	200
Hexane	ppb	458	511	518	496	2,000
Isopropyl Alcohol (IPA)	ppb	2,320	2,560	2,870	2,583	10,000
Methyl Alcohol (Methanol)	ppb	3,330	3,280	3,760	3,457	300,000
2-Butanone (Methyl Ethyl Ketone) (MEK)	ppb	4,590	4,870	5,050	4,837	15,000
Methylene Chloride	ppb	<250	<135	<162	<182	1,000
Methyl tert Butyl Ether (MTBE)	ppb	<125	<67.7	<81.0	<91.2	500
Perchloroethylene (Tetrachloroethane)	ppb	<125	<67.7	84.2	<92.3	1,000
Styrene	ppb	133	138	178	150	500
Toluene	ppb	5,060	4,400	4,460	4,640	20,000
1,1,1 Trichlororethane	ppb	<125	<67.7	<81.0	<91.2	200
1,1,2,2 Tetrachloroethane	ppb	<125	<67.7	<81.0	<91.2	200
Trichloroethylene (Trichloroethane)	ppb	<125	<67.7	<81.0	<91.2	500
Vinyl Chloride	ppb	<125	<67.7	<81.0	<91.2	2,000
Xylenes	ppb	4,490	4,270	4,760	4,507	20,000
Carbon Disulfide	ppm	<0.125	<0.068	<0.081	<0.091	
Carbonyl Sulfide (COS/SO_2)	ppm	1.86	1.78	1.89	1.84	
Dimethyl Sulfide	ppm	0.523	0.247	0.219	0.330	
Ethyl Mercaptan	ppm	0.222	0.206	0.202	0.210	
Methyl Mercaptan	ppm	1.34	1.31	1.42	1.36	
Hydrogen Sulfide	ppm	1,854	2,006	1,732	1,864	
TRS as H2S	ppm	1,867	2,021	1,748	1,879	410

APPENDIX O

S-55 STATIC PRESSURE PERFORMANCE TEST
(LEAK TEST)

EPIC Environmental Compliance Systems, Inc.
39120 Argonaut Way # 643, Fremont, CA 94538
www.epiccompliance.com ▪ contact@epiccompliance.com
▪ 888-700-EPIC ▪ Fax 415-296-6110 ▪

Letter of Transmittal

Date: 4/3/2020

To: Bay Area AQMD

gdfresults@baaqmd.gov

Attn: Hiroshi Doi

Re: Testing Results
Redwood Landfill
8950 Redwood Hwy
Novato, CA 94945

Inspector Doi,

Enclosed is a copy of the test results from testing performed at subject site on April 2nd, 2020.

Test	Passed	Failed	Notes
TP-206.3	✓	—	

If you have any questions or need any further information please feel free to contact us at 1-888-700-EPIC.

Thank you,

EPIC Environmental Compliance Systems, Inc.

Form 1

Summary of Source Test Data TP206.3

Static Pressure Performance Test

GDF Name and Address:	PHASE II SYSTEM TYPE (Check One)
Redwood Landfill 8950 Redwood Hwy Novato, CA 94945	Balance ✓ Vac Assist Other
GDF Representative and Title: Alisha McCutcheon	
GDF Phone # 415-408-9055	Manufacturer:
GDF # 8573	Permit Conditions:
Manifolded? No	

TANK # :	1	2	3	4
1. Product Grade	87			
2. Actual Tank Capacity, gallons	1000			
3. Gasoline Volume	720			
4. Ullage, gallons (ullage = capacity-volume)	280			
5. Initial Pressure (inches water column)	2.00			
6. Pressure After 1 Minute	1.99			
7. Pressure After 2 Minutes	1.97			
8. Pressure After 3 Minutes	1.96			
9. Pressure After 4 Minutes	1.94			
10. Final Pressure After 5 Minutes	1.92			
11. Allowable Final Pressure	0.94			
Pass/Fail	Pass			

Test Conducted by:	Test Company:
Brian Dunahay	**EPIC Environmental Compliance Systems, Inc.** 39120 Argonaut Way # 643 Fremont, CA 94538
Date of Test: 4/2/2020	

MBSERVICES

P.O. Box 1299 Suisun City, CA 94585

707-290-7716 Mbservices1@yahoo.com

Letter of Transmittal

Date
04/22/2021

To:	RE:
REDWOOD LANDFILL 8950 REDWOOD HIGHWAY NOVATO, CA 94945	**Testing Results** **GDF# 8573**

Enclosed are copies of the Air Quality test results for your location for test performed Please see below for brief summary.

Test	Passed	Failed	Notes
Air Quality	✓	----	
TP-206.3	✓	----	

State law requires that you keep a copy of these test results at your location. For you convenience the test results were submitted to your local agency.

If you have any question please feel free to contact us at:
707-290-7716
707-439-3778
mbservices1@yahoo.com

Thank you,
MB Services

TP-206.3
AST Static Pressure Performance Test Report Form

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	08/01/2021
Date/Time of Test: 04/22/2021 10:30 am			

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	☒ Phase I vapor coupler	☐ Phase I vent line	☐ Phase II vapor riser
Pressure measuring device	☒ digital manometer		
Calibration date for pressure measuring device (must be within 180 days of the test)			03/10/2021
Ending value for digital manometer drift test if applicable (must be 0.01 in. w.c. or less)			.01 in. w.c
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)	571				571
Ullage (gallons)[1]	429				429
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	10:30 AM				
Initial Pressure, inches of water column (in. w.c.)	2.00				
Pressure at one minute, in. w.c.	1.92				
Pressure at two minutes, in. w.c.	1.88				
Pressure at three minutes, in. w.c.	1.84				
Pressure at four minutes, in. w.c.	1.80				
Pressure at five minutes, in. w.c.	1.76				
Allowable minimum pressure, in. w.c.	1.16				
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: 04/22/2021

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: Monday, May 17, 2021 2:05 PM
To: gdfresults@baaqmd.gov
Cc: Chan, Michael
Subject: FW: [EXTERNAL] Redwood Landfill Air Quality Test Results
Attachments: Redwood Landfill AQ Test Results.PDF

FYI, These ST-38 test results summited on behalf of Redwood Landfill, Plant 1179, were the ANNUAL TEST RESULTS.
Thank you.

Alisha McCutcheon
Technical Manager
Redwood Landfill
amccutch@wm.com

Waste Management
PO Box 793
8950 Redwood Hwy
Novato, CA 94948
Tel 415 408 9055
Cell 415 373 8033

From: Byron Melendez <mbservices1@yahoo.com>
Sent: Saturday, May 15, 2021 8:59 AM
To: GDFResults <gdfresults@baaqmd.gov>
Cc: McCutcheon, Alisha <amccutch@wm.com>
Subject: [EXTERNAL] Redwood Landfill Air Quality Test Results

Hi please open attachments to view Air Quality test results for Redwood Landfill location for test performed.
if you have any question please let us know.

Sincerely,
MB Services
Byron Melendez
707-2907716
707-4393778

APPENDIX P

ROLLING QUARTERLY LFG INPUT AND CO AND SO2 EMISSIONS

QUARTERLY LFG Input to all LFG-Fired Combustion Equipment

WM - REDWOOD LANDFILL, Novato, CA

Quarter	Month	Total LFG Throughput (MMscf)				Monthly Total (MMscf)	Quarterly Total (MMscf)	Rolling 4-Qtr Total (MMscf)
		A-51	A-60	S-64	S-65			
2020 Q2	April	0.21	64.45	20.94	26.19	111.79	326.15	1,428
	May	0.00	63.49	21.03	25.98	110.50		
	June	0.00	71.80	11.20	20.88	103.87		
2020 Q3	July	0.66	60.39	15.49	21.88	98.42	295.91	1,325
	August	0.00	51.93	21.62	24.92	98.47		
	September	0.00	71.80	19.09	8.14	99.02		
2020 Q4	October	0.33	56.26	28.64	13.83	99.05	285.98	1,271
	November	0.00	38.91	28.23	25.88	93.02		
	December	0.04	37.22	29.16	27.48	93.90		
2021 Q1	January	0.25	37.74	29.16	27.17	94.32	276.05	1,184
	February	0.00	37.00	25.37	22.58	84.94		
	March	0.00	43.52	27.30	25.97	96.79		
2021 Q2	April	0.00	37.47	28.42	24.39	90.28	90.28	948
	May					0.00		
	June					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			
2020 Q2	April	0.00	1.54	0.47	0.59	2.60	7.62	36.02
	May	0.00	1.52	0.47	0.58	2.58		
	June	0.00	1.72	0.25	0.47	2.44		
2020 Q3	July	0.00	1.45	0.35	0.49	2.29	6.95	30.77
	August	0.00	1.24	0.49	0.56	2.29		
	September	0.00	1.78	0.41	0.18	2.37		
2020 Q4	October	0.00	1.46	0.64	0.33	2.43	6.96	29.99
	November	0.00	1.01	0.63	0.62	2.26		
	December	0.00	0.96	0.65	0.66	2.27		
2021 Q1	January	0.00	0.98	0.65	0.65	2.28	6.71	28.24
	February	0.00	0.96	0.57	0.54	2.07		
	March	0.00	1.13	0.61	0.62	2.36		
2021 Q2	April	0.00	0.97	0.63	0.59	2.19	2.19	22.81
	May					0.00		
	June					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			
2020 Q2	April	0.01	3.64	0.02	0.02	3.69	11.38	58.12
	May	0.00	3.58	0.02	0.02	3.62		
	June	0.00	4.05	0.01	0.02	4.08		
2020 Q3	July	0.04	3.89	0.01	0.02	3.96	11.99	50.61
	August	0.00	3.34	0.02	0.02	3.38		
	September	0.00	4.62	0.01	0.01	4.64		
2020 Q4	October	0.03	5.24	0.02	0.01	5.30	12.48	49.05
	November	0.00	3.62	0.02	0.02	3.67		
	December	0.00	3.47	0.02	0.02	3.51		
2021 Q1	January	0.02	3.69	0.02	0.02	3.76	11.72	47.57
	February	0.00	3.62	0.02	0.02	3.66		
	March	0.00	4.26	0.02	0.02	4.30		
2021 Q2	April	TBD	TBD	0.02	0.02	TBD	TBD	TBD
	May					0.00		
	June					0.00		

Pursuant to Title V Permit Condition Number 25634 Part 3, the total SO2 emissions from all landfill gas combustion equipment at Plant #1179 shall not exceed 99 tons during any consecutive rolling 4-quarter period.

TBD=To Be Determined.

SO2 emissions from flares are updated at the end of each quarter when the quarterly average emission factor is calculated.