# 2 COMBINED MONITORING REPORT

In accordance with Title V Permit Standard Condition 1.F, BAAQMD Rule 8-34-411 and §60.757(f) in the NSPS, this report is a Combined Semi-Annual Title V Report and Partial 8-34 Annual Report that is required to be submitted by Keller Canyon. The report contains monitoring data for the operation of the landfill gas collection and control system (GCCS). The operational records have been reviewed and summarized. The timeframe included in this report is September 1, 2011 through February 29, 2012. The following table lists the rules and regulations that are required to be included in this Combined Report.

**Table 2-1 Combined 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 C & D |
| 8-34-501.2 §60.757(f)(3) | All emission control system downtime and the reason for the shutdown. | Section 2.2, Appendix D |
| 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, Appendix E |
| 8-34-501.4, 8-34-505, 8-34-510 | Testing performed to satisfy any of the requirements of this rule. | Section 2.4 & 2.10 Appendices F & J |
| 8-34-501.5 | Monthly landfill gas flow (LFG) rates and well concentration readings for facilities subject to 8-34-404. | Section 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 (ppmv), 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 ppmv. | Section 2.6 & 2.7, Appendices G & 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 |

| RULE | REQUIREMENT | LOCATION IN REPORT |
|---|---|---|
| 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, 2.10.1, Appendices J & K |
| 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, Appendices E and L |
| 8-34-501.11, 8-34-509 | For operations subject to Section 8-34-509, records of 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, Appendices A & C |
| §60.10 (d)(5)(i) | Startup, Shutdown, Malfunction Events | Section 4.0, Appendices C & D |

## 2.1 Collection System Operation *(BAAQMD 8-34-501.1 & §60.757(f)(4))*

Appendix A contains a current map of Keller Canyon's existing GCCS. Section 2.1.1 includes the GCCS downtime for the reporting period. The information contained in Section 2.1.2 includes the wellfield SSM event information.

### 2.1.1 Collection System Downtime

During the period covered in this report, the GCCS was not shut down for more than five days on any one occasion. The GCCS downtime for the reporting period of September 1, 2011 through February 29, 2012 was 20.15 hours. The total downtime for the 2011 calendar year and partial 2012 calendar year was 17.03 and 6.45 hours, respectively, out of an allowable 240 hours per year. The GCCS Downtime Log for the reporting period is included in Appendix D.

### 2.1.2 Well Start-Up & Disconnection Log

There were fifty-six (56) wellfield SSM events that occurred during the reporting period. There were nineteen (19) wells started-up and twenty-nine (29) wells decommissioned during the reporting period. See Appendix C, Wellfield SSM Log for details of well

disconnection and reconnection events. Start-up and Decommissioning Notifications were submitted to the BAAQMD and are included in Appendix B.

### 2.2 Emission Control Device Downtime *(BAAQMD 8-34-501.2 & §60.757(f)(3))*

The emission control system consists of two Internal Combustion (IC) Engines that are owned and operated by Ameresco – Keller Canyon, LLC (Ameresco) (Site Number B7667) and operate under a separate BAAQMD Title V permit. The two IC Engines are fueled by LFG diverted from Flares A-1 or A-2. The A-1 and A-2 Flares operate non-concurrently. Flares A-1 and A-2 are the backup control device for Ameresco and either Flare is brought online if the engines are not operating, or to combust LFG in excess of the Ameresco capacity. The two Flares act as a back-up control device for one another, when one is unable to operate.

Pursuant to Title V Permit Condition Number 17309, Part 20, in order to help control surface emissions and raw LFG from being vented to the atmosphere, if only one off-site LFG fired engine is operating, at least one on-site flare (A-1 or A-2) must also be operating. This limitation does not apply to unavoidable LFG emissions that occur during collection system installation, maintenance, or repair performed in compliance with Regulation 8-34-113, 116, 117, or 118. There were 11.08 hours of total downtime when one engine was operating, but neither flare was operating, all due to maintenance or repairs to the flare and/or engines. Refer to the Flare & One Engine Downtime Log, located in Appendix D, for details.

The A-1 Flare began operation in 1995, and the A-2 Flare began operation in 2007. The control system was not bypassed at any time during the reporting period. Raw LFG was not emitted during the reporting period. The SSM logs for the A-1 and A-2 Flares, and the Ameresco Engine Plant, are located in Appendix D. As indicated in Section 2.1.1, the total GCCS downtime for the reporting period of September 1, 2011 through February 29, 2012 was 20.15 hours out of an allowable 240 hours per year. The GCCS Downtime Log for the reporting period is included in Appendix D.

#### 2.2.1 LFG Bypass Operations *(§60.757(f)(2))*

Title 40 CFR §60.757(f)(2) is not applicable at Keller Canyon because a by-pass line has not been installed. LFG cannot be diverted from the control equipment.

#### 2.2.2 Key Emission Control Operating Parameters *(BAAQMD 8-34-501.11 & 8-34-509)*

BAAQMD Regulation 8-34-501.11 and 8-34-509 are not applicable to the A-1 and A-2 Flares because the A-1 and A-2 Flares are subject to continuous temperature monitoring as required in BAAQMD Regulation 8-34-507 and §60.757(f)(1).

## 2.3 Temperature Monitoring Results *(BAAQMD 8-34-501.3, 8-34-507, & §60.757(f)(1))*

The combustion zone temperatures of the A-1 and A-2 Flares are monitored with Thermo-Electric Thermocouples. The temperatures are recorded each minute with a Yokogawa DX100 digital recorder, and the data is downloaded and archived. There were no temperature deviations during the reporting period. Appendix E contains the A-1 and A-2 Flare Temperature Deviation/Inoperative Monitor/Missing Data Reports for September 1, 2011 through February 29, 2012.

## 2.4 Monthly Cover Integrity Monitoring *(BAAQMD 8-34-501.4)*

The cover integrity monitoring was performed on the following dates:

- September 7 and 8, 2011;
- October 3 and 4, 2011;
- November 23, 2011;
- December 19, 2011;
- January 9, 2012; and
- February 8, 2012.

Refer to the Monthly Cover Integrity Monitoring Logs, included in Appendix F, for details.

## 2.5 Less Than Continuous Operation *(BAAQMD 8-34-501.5)*

Keller Canyon 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) & California Air Resources Board Assembly Bill 32 Methane Control Measure (CARB AB-32 LF MCM))

Quarterly Surface Emissions Monitoring (SEM), was conducted for Third and Fourth Quarter 2011. Refer to the Third and Fourth Quarter 2011 SEM Reports, located in Appendix G, for detailed results. The First Quarter 2012 SEM Report is not yet available, and will be included in the next Semi-Annual Report.

## 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:

- Third Quarter 2011 – September 23, 2011
- Fourth Quarter 2011 – December 27 and 28, 2011
- First Quarter 2012 – February 7, 2012 (flare station only)

A component leak check for the wellfield is not yet completed for First Quarter 2012, and will be conducted prior to March 31, 2012. Details will be included in the next Semi-Annual Report. Refer to the Quarterly LFG Component Leak Monitoring Reports, located in Appendix H, for detailed results of completed component leak check monitoring during the reporting period.

### *2.7.1* Wellfield Component Leak Testing

Pursuant to Title V Permit Condition Number 17309 Part 19(c), any collection system components which were disconnected during the reporting period were required to be monitored for component leaks within 10 and 30 days of the initial disconnection. All wells disconnected during the reporting period were monitored for component leaks; however, two wells were not monitored within the required 10-day initial monitoring event.

Details of collection system component leak testing and results are included in Appendix C, Well SSM Log.

## 2.8 Quarterly Hydrogen Sulfide ($H_2S$) Monitoring *(BAAQMD 9-1-302 and 2-6-503)*

Quarterly $H_2S$ monitoring was conducted during the reporting period on the following date:

- Fourth Quarter 2011 – December 14, 2011

Pursuant to Title V Permit Condition 17309, Part 34, the $H_2S$ testing is required on a quarterly basis using the Draeger tube method. The Total Reduced Sulfur (TRS) content shall not exceed 300 ppmv (dry). The Fourth Quarter 2011 results were within the permitted TRS limit. $H_2S$ Monitoring for First Quarter 2012 is not yet completed, and will be conducted prior to March 31, 2012. Details will be included in the next Semi-Annual Report. Refer to the Quarterly $H_2S$ Monitoring Log, located in Appendix I, for detailed results for Fourth Quarter 2011 $H_2S$ monitoring.

## 2.9 Waste Acceptance Records *(BAAQMD 8-34-501.7)*

Total amount of waste accepted during 2011 was 1,041,795 tons. The amount of waste accepted during the reporting period of September 1, 2011 through February 29, 2012 was approximately 579,427 tons. The current Waste-In-Place as of February 29, 2012 is approximately 14,262,388 tons.

## 2.10 Non-Degradable Waste Acceptance Records *(BAAQMD 8-34-501.8)*

The GCCS Design Plan for Keller Canyon does not indicate non-degradable waste areas that are excluded from the collection system. Therefore, BAAQMD Regulation 8-34-501.8 is not applicable.

## 2.11 Wellhead Monitoring Data *(BAAQMD 8-34-501.4 & 8-34-505)*

Wellhead monitoring was performed on a monthly basis pursuant to 8-34-505. The well readings for September 1, 2011 through February 29, 2012 are included in Appendix J. 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 (°C) (131 degrees Fahrenheit [°F]); and
- 8-34-305.4 – The oxygen concentration in each wellhead shall be less than 5 percent by volume.

Wellhead monitoring was performed on the following dates:

- September 7, 8, 12, 19, 21, 23, and 26, 2011;
- October 3, 4, 7, 19, 21, 24, and 25, 2011;
- November 1, 2, 5, 8, 14, 17, 18, 21, 23, and 29, 2011;
- December 7, 8, 9, 13, 19, and 28, 2011;
- January 9, 14, 24, 25, and 30, 2012; and
- February 7, 8, 9, 10, 13, 14, 21, and 22, 2012.

### 2.11.1 Wellhead Deviations *(BAAQMD 8-34-501.9 & §60.757(f)(1))*

There were 56 wells with readings that exceeded the limits set forth in BAAQMD Regulation 8-34-305 during the reporting period. Corrective action for wells was initiated within the required 5-day time period and re-monitoring was completed within 15 days of the deviation pursuant to BAAQMD Regulation 8-34-414. See Appendix K, Wellfield Deviation Log, for more detail.

### 2.11.2 Higher Operating Value (HOV) Wells

Pursuant to Title V Permit Condition Number 17309, Part 19(b)(i), the following wells are approved to operate at an oxygen HOV of 15 percent by volume: EW-E027R, EW-K035R, EW-M005R, EW-R001(P), EW-R003(P), EW-R004(P), EW-R005(P), EW-R006(P), and EW-R007(P). EW-HC1 and EW-HC3 are exempt from NSPS.

On December 15, 2011 via email correspondence with the BAAQMD, Wells EW-A001, EW-A002, EW-A003, EW-A004, EW-A005, EW-A021, EW-A029, EW-A030, and EW-A032 were approved to operate at an oxygen HOV of 15 percent by volume pursuant to Application Number 24016.

## 2.12 Gas Flow Monitoring Results *(BAAQMD 8-34-501.10, 8-34-508, & §60.757(f)(1)*

The A-1 and A-2 Flare LFG flow rates are measured with Thermal Instruments Model Numbers 62-9/926 (A-1 Flare) and 62-9/9500 (A-2 Flare) flow meters. The General Electric data panel displays the LFG flow, and the digital Yokogawa data recorder

records LFG flow every minute and the data is downloaded and saved to a compact flash drive. The flare flow meters meet the requirements of BAAQMD Regulation 8-34-508 by recording data at least every 15 minutes. The flow meters are maintained and calibrated pursuant to manufacturer's recommendations. The flow data for the flares are available for review at Keller Canyon. Appendix L contains a summary of the monthly LFG flow rates for each flare. No deviations of the flare flow at each flare were identified during the reporting period. Table 2-2 below is a summary of the total LFG flow for the reporting period of September 1, 2011 through February 29, 2012.

**Table 2-2 Total LFG Flow from September 1, 2011 through February 29, 2012**

| Emission Control Device | Average Flow (scfm) | Average $CH_4$ (%)* | Total LFG Volume (scf) | Total $CH_4$ Volume (scf) | Heat Input (MMBTU) |
|---|---|---|---|---|---|
| A-1 Flare | 980.1 | 56.4 | 240,191,280.5 | 134,794,174.9 | 136,546.5 |
| A-2 Flare | 1,382.5 | 51.4 | 15,570,383.0 | 7,861,694.1 | 8,107.2 |

*Methane content for the A-1 Flare was determined from the October 20, 2010 and October 18, 2011 source test. Methane content for the A-2 Flare was determined from the April 18, 2011 source test.
scfm = standard cubic feet per minute
$CH_4$ = methane
scf = standard cubic feet
MMBTU = million British thermal units

## 2.13 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."*

The GCCS was modified during the reporting period pursuant to Title V Permit Condition Number 17309, Part 18(b).

There were 29 wells decommissioned and 19 wells started up during the reporting period pursuant to Permit Application Number 23460. Well Decommissioning and Startup Notification Letters were submitted to the BAAQMD and are included in Appendix B.

Application Number 23460 still allows for the installation of up to eighty-one (81) new vertical LFG wells, and the decommissioning of up to forty-seven (47) vertical LFG wells.

As of March 1, 2012, Keller Canyon consists of eighty-four (84) vertical wells, two (2) horizontal collectors, and one (1) leachate cleanout riser system. Pursuant to Title V Permit Condition Number 17309, Part 18(b)(ii), HC-3 and LCRS-1 were installed to prevent or control LFG migration and are not part of the GCCS, and are therefore exempt from NSPS requirements.

## 2.14 Compliance with Title V Permit Condition Number 16462 for S-3 Yard and Green Waste Stockpiles

The total amount of yard and green waste received at S-3 did not exceed 1000 tons during any day. Keller Canyon's yard and green waste annual acceptance for the period of March 1, 2011 through February 29, 2012 was 57,819 tons, which is in compliance with the 70,200 tons limit during any consecutive 12-month period.

Records are maintained at Keller Canyon and can be made available upon request.

# 3 PERFORMANCE TEST REPORT

In accordance with BAAQMD Rule 8-34-413 and 40 CFR §60.757(g) in the NSPS, a Performance Test Report is required to be submitted from subject facilities containing performance and monitoring data for the operation of the GCCS. A copy of the most recent Performance Test for the A-1 and A-2 Flares conducted on October 18, 2011 and April 18, 2011 is included in Appendix M.

**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 Appendix M |
| §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 Appendix L |

## 3.1 Flare (A-1) Compliance Demonstration Test Results *(BAAQMD 8-34-412)*

The Compliance Demonstration Test (Performance Test) was performed on the A-1 Flare by Blue Sky Environmental, Inc. (Blue Sky) on October 18, 2011, pursuant to

BAAQMD Regulation 8-34-412. A copy of this Performance Test Report is included in Appendix M.

### 3.2 Flare (A-2) Compliance Demonstration Test Results *(BAAQMD 8-34-412)*

The Performance Test was performed on the A-2 Flare Blue Sky on April 18, 2011, pursuant to BAAQMD Regulation 8-34-412. A copy of this Performance Test Report is included in Appendix M.

### 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 location 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."*

The existing GCCS has historically provided LFG wells and collectors spaced in accordance with standard industry practices. Based on continuous compliance and operational experience the installed collector density appears more than adequate for controlling surface emissions and subsurface LFG migration.

The landfill operator will conduct routine monitoring in accordance with NSPS requirements. If the GCCS at the Landfill does not meet the measures of performance set forth in the NSPS, the GCCS will be adjusted or modified as required.

The existing GCCS conveyance piping and emission control devices have sufficient capacity to handle all current and future LFG flow rates (based on quarterly surface emissions monitoring results and monthly wellhead readings). New emission control devices will be designed and permitted as appropriate for future landfill LFG generation rates.

### 3.5 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."*

Segregated areas or accumulations of asbestos material were not documented for the site in the GCCS Design Plan. Therefore, §60.757(g)(3) is not applicable.

### 3.6 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."*

All areas of this facility that have received waste material are considered productive areas for LFG generation. There are not any non-productive areas that have been excluded from the coverage of the GCCS. Therefore, §60.757(g)(4) is not applicable.

### 3.7 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 existing GCCS conveyance piping and emission control devices have sufficient capacity to handle all current and future LFG flow rates. New emission control devices will be designed and permitted as appropriate for future landfill LFG generation rates.

### 3.8 Compliance with §60.757(G)(6)

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

Quarterly LFG migration monitoring, including all probes and on-site buildings, occurred on the following dates:

- Third Quarter 2011 – August 15 and September 14, 2011
- Fourth Quarter 2011 – October 10 and 31, and November 1, 2011

There were no exceedances detected during the Third Quarter 2011 and Fourth Quarter, 2011 Probe and building monitoring events. The LFG Probe and In-Structure Monitoring Reports are included in Appendix N.

The Landfill operator will continue surface and perimeter monitoring in accordance with the approved monitoring plans. If the GCCS at the Landfill does not meet the measures of performance set forth in the NSPS, the GCCS will be adjusted or modified in accordance with the NSPS requirements.

# 4 STARTUP, SHUTDOWN, MALFUNCTION (SSM) PLAN

**SSM Log for the GCCS at Keller Canyon**

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 §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 §63.10(d)(5)(i) of the General Provisions.

NESHAP 40 CFR part 63, AAAA became effective on January 16, 2004. Those SSM events that occurred during the NSPS semi-annual reporting period are reported in this section (September 1, 2011 through February 29, 2012). The following information is included as required:

- During the reporting period, twenty-six (26) A-1 Flare SSM events occurred and eighteen (18) A-2 Flare SSM events occurred. The A-1 and A-2 Flares were shut down and restarted during the reporting period due to the reasons noted in Appendix D, Flare SSM Log.
- During the reporting period, 56 Wellfield SSM events occurred. Details are included in Appendix C, Well SSM Log.
- There were one-hundred (100) events in total. In all 100 events, automatic systems and operator actions were consistent with the standard operating procedures contained in the SSM Plan. There were no deviations from the SSM plan.
- Exceedances were not identified during the reporting period in any applicable emission limitation in the landfills NESHAP (§63.10(d)(5)(i)).
- Revisions of the SSM Plan to correct deficiencies in the landfill operations or procedures were neither required, nor prepared (§63.6(e)(3)(viii)).