

SCOPE OF SERVICES

TASK 1: ROUTINE OPERATIONS

Task 1.1 - Monthly Operations

ONCE EACH MONTH the LFG vertical extraction wells flow rates will be observed and then adjusted, as required, to minimize and control LFG migration, odors, and to meet specific site Permit requirements and conditions. In addition to the parameters below, Contractor will document testing protocols and instrumentation calibration. The following parameters will be recorded and reported monthly in the Operations and Maintenance Report (O&M Report):

- a. Point Identification and Date;
- b. LFG temperature flow;
- c. Wellhead and lateral pipeline static pressure (initial and adjusted pressure in inches of H₂O);
- d. Methane, oxygen, carbon dioxide, and balance gas concentrations (% by volume); and
- e. Once each quarter the field and compliance team will meet with the County IWOM to review the operations reports for the previous quarter.
- f. Twice each year the Contractor's Project Manager will perform a site visit and inspection of the site.

TASK 2: ROUTINE MAINTENANCE

Task 2.1 - Monthly Maintenance

ONCE EACH MONTH the operation of the BFS control system blowers, flame arresters, flares (including burner heads), well field, condensate sumps, and leachate pumps, will be observed and adjusted, (as needed) for the following:

- a. Proper operation;
- b. Accessibility;
- c. Malfunctions;
- d. Leaks; and
- e. Vandalism.

The results will be will be recorded, and reported monthly in the O&M Report.

ONCE EACH MONTH active/inactive blower operation will be rotated, recorded, and reported in the monthly O&M Report.

ONCE EACH MONTH electronic chart recording data (i.e. temperature, operation, and flow) will be downloaded, stored, and submitted with the monthly O&M Report. Additional monitoring will be performed as necessary under Task 5 Services.

Task 2.2 - Quarterly Maintenance

ONCE EACH QUARTER all alarm signals (i.e. blower failure, flame failure, low/high temperature, etc.) will be simulated for proper operation and notification (if applicable);

ONCE EACH QUARTER the blowers, and bower motor bearings will be lubricated (if applicable) in accordance with manufacturers' specifications, and the blower motor belts will be checked for proper tension and adjusted, as necessary;

SCOPE OF SERVICES

ONCE EACH QUARTER the flame arrester will be observed and checked for proper operation.

Task 2.3 - Semi-Annual Maintenance

ONCE EVERY SIX MONTHS every leachate pump will be pulled from its well casing, cleaned, and inspected. Under this task the Contractor will perform the following services:

- a. Pull, clean, and return the pump to service. If the pump is not able to be readily cleaned and returned to service, Contractor will remove the pump and replace it with a pump from the County's stock. The pulled pump will be immersed in a soaking solution, provided by the County to remove build-up. If there are not enough clean spare pumps available at the time of the event and additional effort is required to remove build up, then this will be considered Non-Routine servicing and will fall under Task 5 Services
- b. Pumps requiring more than basic soaking and cleaning will be cleaned, rebuilt and placed on the shelf for future swap-out. These services will be considered Non-Routine servicing and will fall under Task 5 Services;
- c. Contractor will perform minor maintenance at the time if each pump-pull. Minor maintenance will include adjusting cycle counters, regulators, and tightening loose fittings and hose clamps. Any additional troubleshooting, repair, or replacement of these items will be considered Non-Routine maintenance and fall under Task 5 Services;
- d. Contractor will conduct liquid level soundings in conjunction with the pump-pull.

TASK 3: ROUTINE MONITORING

Task 3.1 - Twice Monthly Monitoring

TWICE EACH MONTH the Blower/Flare Station (BFS) will be monitored and the following data will be collected, recorded, and stored in an electronic format:

- a. Date, time, and monitoring personnel;
- b. Methane Gas (% by volume);
- c. Oxygen (% by volume);
- d. Carbon Dioxide (% by volume);
- e. Balance Gas (% by volume);
- f. LFG flow rate to Flare (scfm);
- g. Flare Exit Gas Temperature (°F);
- h. Extraction Blowers - Inlet/Outlet Pressures (inches-W.C.)
- i. Extraction Blower operating inlet/outlet temperatures (°F);
- j. Flare combustion louver and flow control valve positions;
- k. Supply air pressure to BFS components;
- l. Air compressors run and oil level; and
- m. Pilot ignition system propane storage tank level.

The results will be reported in the monthly O&M Report.

SCOPE OF SERVICES

Task 3.2 - Monthly Monitoring

ONCE EACH MONTH the BFS and LFG Header access ports will be monitored and tested for the following:

- a. Point Name and Date
- b. Methane (% by volume)
- c. Carbon Dioxide (% by volume);
- d. Oxygen (% by volume);
- e. Balance Gas (% by volume);
- f. Initial/adjusted Temperature (°F);
- g. Initial/Adjusted Static Pressure (inches H₂O);
- h. Initial/Adjusted Flow Rate (scfm); and
- i. Comments and recommendations.

The results will be recorded, and reported in the monthly O&M Report.

ONCE EACH MONTH the cycle counter readers for the leachate extraction well pumps will be read and recorded. The results for each individual counter will be reported in the monthly O&M Report.

ONCE EACH MONTH visual observation of the landfill surface along the extent of the LFG extraction system will be performed. The observations will consist of the following:

- a. Erosion;
- b. Surface cracks that might allow LFG to escape into the atmosphere or allow air intrusion;
- c. Settlement or cracking around well bore seals; and
- d. Leachate seeps.

The results will be reported in the monthly O&M Report.

Once each month the Flare Downtimes will be recorded and reported in the O&M Report. At a minimum the log will consist of the following:

- a. Date and Time flare is off-line;
- b. Date and Time flare is back on-line;
- c. Total hours the flare is off-line;
- d. Cause; and
- e. Corrective Action.

The results will be reported in the monthly O&M Report.

Task 3.3 – Quarterly Monitoring

Once each quarter all landfill components under positive pressure will be monitored and tested for methane leaks (500 ppmv). Component leak testing will be performed at the BFS, LFG collection wells, and on all pipes and appurtenances under positive pressure in accordance with the Landfill Methane Rule (LMR). The results of the quarterly monitoring will be reported to NSCAPCD annually.

SCOPE OF SERVICES

Task 3.4 – Annual Monitoring

Once each year Instantaneous and Integrated Surface Emissions Monitoring (SEM) will be performed in accordance with the LMR on the Healdsburg Landfill Surface. The results of the annual SEM will be submitted to both California Air Resources Board (CARB) and the NSCAPCD annually.

This work will be performed as outlined in the proposal submitted to the County. Should a change in either frequency of the event occur, or spacing at which the event is performed, then this additional monitoring will be completed under Non-Routine Task 5 Services. Any re-monitoring required will likewise be performed under Non-Routine Task 5 Services.

TASK 4: REPORTING

Task 4.1 – Operations and Maintenance Reporting

Once each month the CONTRACTOR will assemble all the information from Tasks 1 through Task 3 in an Operations and Maintenance Report (O&M Report). The O&M Report will be submitted electronically (via email) to the IWOM. The O&M Report will also reflect the submittal (not the actual report) of any reports (if applicable) to CARB and/or the NSCAPCD, and/or any other regulatory agency.

Task 4.2 - LFG Production and Flare Operating Hours Report

Once each year the CONTRACTOR will prepare a written report detailing the total annual landfill gas production, total annual flare operating hours, and any source test results for tests conducted that year, in accordance with Condition E, Part 3, of the Permit to Operate No. 04-18. The annual report will be submitted via email to CARB, the NSCAPCD, and to the County's IWOM by March 1st of the year following the reporting period of January 1st through December 31st.

Task 4.3 – Source Test and Gas Characterization Report

Once every third year, Tetra Tech will conduct a performance test (source test) in accordance with Condition D, Part 1 of the Permit, to determine the emission rates and operating conditions of the BFS. The last Source Test was conducted on October 23, 2019. Therefore, the next source test will be performed in mid-2022. In addition, a characterization of the landfill gas will be performed concurrently with the source test in accordance with Condition D, Part 2 of the Permit. Tetra Tech will review the draft source test protocol (STP) and source test report provided by the source testing contractor against current regulations and permit limits and provide suggested edits to the source test contractor. The source test contractor will be responsible for incorporating all suggested edits into the final source test report. Once the source test contractor has incorporated Tetra Tech's edits, the source test contractor will make the revised report available to the County for final approval.

Deliverable: Results of the Source Test and LFG Characterization will be submitted electronically to the NSCAPCD and to the County's IWOM as part of the Annual Report.

Task 4.4 - AB32 – Landfill Methane Rule Report

Once each year the CONTRACTOR will prepare and submit the AB32 Landfill Methane Rule Annual Report in accordance with Article 4, Subarticle 6, Section 95470(b)(3), Title 17. At a minimum the annual report will contain the following:

- a. Site Information [§ 95470(b)(3)(A)];
- b. Total LFG Recovery Data [§ 95470(b)(3)(B), (C)];

SCOPE OF SERVICES

- c. Control Device I.D. [§ 95470(b)(3)(D), (E), (F)];
- d. Supplemental Fuels [§ 95470(b)(3)(G)];
- e. LFG Shipped Off Site (N/A) [§ 95470(b)(3)(H)];
- f. Topographic Map [§ 95470(b)(3)(I)];
- g. Additional Data [§ 95470(b)(3)(J)]:
 - i. Downtime [§ 95470(a)(1)(A),(B)]
 - ii. LFG Generation Model [§ 95470(a)(1)(C)];
 - iii. Surface Emissions Monitoring – Instantaneous and Integrated [§ 95470(a)(1)(D)];
 - iv. Component Leak Monitoring [§ 95470(a)(1)(D)];
 - v. Well Monitoring Data [§ 95470(a)(1)(E)];
 - vi. Waste Monitoring Data (N/A) [§ 95470(a)(1)(F)];
 - vii. Results of Source Tests Conducted pursuant to §95464(b)(4)) [§ 95470(a)(1)(H)]; and
 - viii. Boiler/Process Heater Data (N/A) [§ 95470(a)(1)(K)].

The LMR Annual Report will be submitted via email to the CARB, NSCAPCD and to the County's IWOM by March 1st of the year following the reporting period of January 1st through December 31st.

TASK 5: NON-ROUTINE SERVICES — Annapolis, Guerneville, Healdsburg, Roblar, and Sonoma Closed Landfills

Non-Routine services consist of, but are not limited to, the following tasks:

- a. Call-out by the BFS automated alarm notification system or by County personnel;
- b. Repair of pneumatic leachate extraction pumps and appurtenances beyond what is considered Routing Maintenance in Task 2.3;
- c. Repair of main LFG header brakes/leaks resulting in no or low gas flow to the flare;
- d. Repair or replacement of broken valves, flex hoses, positive pressure air lines and appurtenances;
- e. Repair of above or below grade LFG pipelines and appurtenances, leachate collection pipelines and appurtenances, and positive pressure air lines and appurtenances;
- f. Expansion of LFG extraction well system, headers, LCRS, pneumatic pipelines, and all GCCS/LCRS appurtenances (Non-routing expansion of the GCCS/LCRS is generally a result of the LMR or due to the detection of LFG constituents at perimeter wells).
- g. The CONTRACTOR will notify the County's IWOM by email of any new rules or regulations promulgated by local, state, or federal regulatory agencies that either could or will affect closed landfills in the state of California.
- h. Implementation of flare operations per the CARB issued ACO.
- i. Additional SEM Monitoring, beyond the required annual inspection, in response to exceedances.

Non-routine services will be performed at the request of the IWOM or the LFS. Non-routine, non-maintenance services may only proceed if the scope of the services does not exceed \$60,000, as required by the Uniform Public Construction Cost Accounting Act. In addition, Contractor's staff will be available to respond to non-routine services and emergencies, upon request, by the IWOM or the LFS, 24 hours per day, 7 days per week, including holidays.