Environmental Report Palos Verdes Landfill – Fourth Quarter 2016

At the January 23, 2012 meeting of the Palos Verdes Landfill Citizens' Advisory Committee (CAC), the Committee decided that regularly-scheduled quarterly meetings were no longer necessary. Instead, the Committee decided to meet on an "as-needed" schedule. The Committee requested the Sanitation Districts' staff prepare a quarterly Environmental Report that updates the Committee on the results of routine temperature and landfill gas monitoring. This report covers the Fourth Quarter of 2016.

Landfill Gas Well Temperature Monitoring

As discussed at the May 3, 2010 CAC meeting, household refuse includes organic matter that can generate heat as it decomposes (similar to the heat generated in an active backyard compost pile). The composting process and the temperature of the waste can be controlled by limiting the amount of air available within the landfill. The Sanitation Districts control the air available in the Palos Verdes Landfill by monitoring the integrity of the soil cap and by controlling the draw rate at individual gas collection wells (i.e., preventing conditions that could draw excess air into the waste mass). The Sanitation Districts monitor the temperature of the landfill gas collection wells to determine if adjustments are needed. These procedures have been shown to effectively control the temperature of the waste.

At the CAC's request, the Sanitation Districts have shared the results of the temperature monitoring with the CAC on a quarterly basis. Specifically, the Sanitation Districts have been asked to include a discussion in the environmental report whenever the temperature in any well exceeds 170 degrees Fahrenheit. In that case, the Sanitation Districts would also discuss the follow-up actions that were taken to control composting at that location.

During the Fourth Quarter of 2016, there were no gas collection wells where temperature measurements exceeded 170 degrees Fahrenheit.

For more information about landfill gas temperature control, please see Appendix I of the Five-Year Review for the Palos Verdes Landfill.

Surface Gas Monitoring

As discussed at the April 25, 2011 CAC meeting, the surface of the landfill is monitored for evidence of landfill gas emissions on a quarterly basis. Monitoring is conducted by continuously recording the methane content of the air immediately above the cover surface while traversing the landfill area in a systematic grid pattern. If methane readings are above prescribed action levels, the Sanitation Districts are required to make gas system adjustments or soil cover repair within the time limits specified in the South Coast Air Quality Management District (SCAQMD) Rule 1150.1 Compliance Plan.

At the CAC's request, the Sanitation Districts provide a summary of action level exceedances and the Sanitation Districts' response. Routine surface gas monitoring conducted by site staff in the Fourth Quarter of 2016 did not show any areas of the site where action levels were exceeded.

For more information about surface monitoring of landfill gas, please see Appendix B of the Five-Year Review for the Palos Verdes Landfill.

Perimeter Probe Monitoring

As discussed at the October 25, 2010 CAC meeting, the subsurface zone around the perimeter of the landfill is monitored for evidence of landfill gas migration on a monthly basis. If methane is detected at greater than five percent by volume in any boundary probe, the Sanitation Districts are required to adjust the gas system to clear the probe within the time limits specified in the SCAQMD Rule 1150.1 Compliance Plan.

At the CAC's request, the Sanitation Districts provide a summary of action level exceedances in boundary probes and the Sanitation Districts' response to clear the probe. On December 1, 2016 during routine boundary probe monitoring, site technicians detected methane at a concentration above the action level in a boundary probe at the Botanic Garden along Crenshaw Boulevard. Adjustments were made to the gas collection system in the area of the probe and the detection was cleared by December 2, 2016.

For more information about boundary probe monitoring, please see Appendix C of the Five-Year Review for the Palos Verdes Landfill.

Other Issues of Interest to the CAC

The Sanitation Districts are currently researching landfill gas pretreatment methods at the site. A small pilot plant has been constructed at the maintenance buildings on the Crenshaw side of the main site. Further information will be forthcoming as the project proceeds.

On November 11, 2016, what is believed to have been a momentary power outage at approximately 7:30 AM caused the programmable logic controller (PLC) for the backup flare at the Flare Station to lose communication with the rest of the control system (including Flare 7, the main flare) during a relight cycle[1]. A temporary loss of power should have been mitigated by the uninterruptible power supply (UPS) attached to the PLC, but the UPS failed. When the power came back, communication was not able to be reestablished with the backup flare PLC. The backup flare PLC controlled the flow of landfill gas (i.e., gas flow was stopped and could not be reestablished without the PLC) and the alarms that would trigger a call-out. The failure of that PLC caused an unusually long gas extraction system outage lasting approximately 27 hours. Because gas extraction was halted, excess gas built up within the landfill and may have caused some landfill gas to escape from the surface in some areas. The potential landfill gas emissions resulting from this incident would not be expected to be significant since the landfill gas generation rate is very low (landfill gas generation drops over time and the landfill has been closed for 37 years).

[1] During normal operation, Flare 7 has to relight periodically. This tends to happen more frequently during cold weather when air currents within the flare can cause the control system to measure a falsely low temperature. When low temperature is measured, the control system shuts off the flow of landfill gas (to prevent a release) and begins a relight cycle. Each cycle takes a few minutes to complete, and the flow of landfill gas is stopped until the pilot for the flare is up to the appropriate temperature.

The unusually long outage resulted in an odor complaint from someone walking onsite on the morning of November 12, 2016. A landfill technician was called into the site in response and found the flare was not operating. As the technician worked to relight the flare, the initial landfill gas reaching the flare had a higher methane content than usual that, when burned off at the Flare Station, resulted in visible flame. In response, the technician adjusted the oxygen levels in the flare to match the higher fuel content, and the visible flame ceased. The flare stabilized into its normal operating condition shortly thereafter.

In response to this incident, several modifications were made to both the control system and routine testing procedures to prevent a reoccurrence. The programming for the call-out system was modified to generate call-outs whenever one or more of the following occur: there is a loss of power, an uninterruptible power supply (UPS) battery is low, the PLC for either flare is not communicating, or the blower is down for longer than the typical flare relight cycle. To ensure redundancy, any of the above will trigger a call-out from either the Flare 7 PLC or the backup flare PLC. Both flare PLCs are equipped with a UPS that will be tested monthly by Sanitation Districts' electrical and instrumentation staff, and tests will include switching the unit to battery back-up and back to normal source to ensure there is no power interruption or load loss. In addition, although power consumption is not believed to have been a cause of failure, modifications were made to the UPS wiring to ensure critical circuits would have exclusive use of the UPS during an outage. Furthermore, although there was no indication that the Ethernet switch attached to the backup flare PLC that controlled communication between the PLC and the control system failed, the switch was replaced as a precaution. Scenarios similar to the fail conditions were created to test the improved control system – and confirm proper call-outs – through live, on-line conditions (removing power, severing communication channels, etc.) which proved field wiring, connections, and all associated software logic were operating properly.