

CITY OF LOS ANGELES

BUREAU OF SANITATION

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Current Status of Generation and Mitigation of Landfill Gas (LFG) at City Owned Closed Landfills

Date: 5/4/14
Submitted in E&E Committee
Council File No: 14-0469
Item No.: 2
Deputy Adam R. Lid

Summary

The City of Los Angeles, Bureau of Sanitation (BOS) is charged with the post closure maintenance of the City's five (5) closed landfills, namely Bishops, Gaffey Street, Lopez, Toyon, and Sheldon-Arleta. Ninety-Three percent (93%) of the estimated landfill gas (methane) generation from these sites is utilized to produce electricity (Lopez and Toyon landfills). All City-owned landfills are closed and the last site to receive refuse was the Lopez Canyon Landfill that stopped receiving refuse in 1996. In aggregate, the refuse placed in these sites reached a maximum level of gas production in 1997 and has steadily decreased since that time. Each site can be viewed as a refuse cell that produces a finite quantity of methane gas while undergoing decomposition. Generally the production of gas reaches a maximum within one year of being placed in the landfill and reduces exponentially thereafter.

The surface and perimeter of each landfill is monitored for methane gas. The surface is monitored using a portable methane detection device. A continuous sample is taken three inches from the surface of the landfill over the whole surface. Perimeter wells have been drilled around each landfill and monitored to determine if underground gas is escaping around the boundary of the landfill. If gas is detected on the surface greater than 500 parts per million (ppm) then the cover is re-sealed by adding soil and water then compacting. Also, if the site has a gas system then gas wells are adjusted in the area to better capture gas. If gas is detected in the perimeter wells then the gas system is used to mitigate the gas migration.

Each landfill site is discussed individually with regard to methane production, current usage, potential utilization and mitigation.

Bishops Landfill

This site received 1.7 million tons of municipal refuse for four (4) years between 1966-1969. The landfill gas management system consists of a passive gas collection trench at the toe of the south slope, nine (9) gas migration probes to monitor for gas migration and an air curtain system consisting of several injection wells connected to a blower that's activated if landfill gas migration is detected. There is no need for an active gas collection system at this landfill. Landfill gas generation is insignificant. Currently the site usage is open space for active recreation, including multi-use athletic fields, open meadows for various forms of free play, extensive covered and open air picnic areas, four children's play lots and interconnecting trails. There have been no methane detected in the perimeter probes in a decade at the site.

Gaffey Street Landfill

This site received approximately 1 million tons of street sweepings and refuse for twenty-two (22) years between 1955 and 1977. Between 1955 and 1963, the landfill was operated by the Bureau of Sanitation as a municipal refuse disposal facility. Much of the collected refuse was routinely burned in the Gaffey Street incinerator, located on the landfill property and the resulting ash deposited in the landfill. In 1963, the incinerator was taken out of service and the landfill was operated by the Bureau of Street Services for the disposal of street sweepings. The landfill gas management system consist of a combination of vertical and horizontal wells feeding an activated carbon scrubber system and exhausted to the atmosphere through a 20 foot stack. The activated carbon removes trace toxic compounds of the approximately 20 CFM released through the stack. The small quantity of gas and its poor quality (less than 5%) make the site unfeasible for any type of gas utilization. The site has been converted to a soccer field complex known as "Field of Dreams". There have been no off-site migration detected in over a decade.

Lopez Canyon Landfill

This site received 19 million tons of refuse for 22 years from 1975 to 1996. The landfill has an active gas management system consisting of 450 gas collection wells and several miles of gas collection header line. The site currently produces 2,400 standard cubic feet per minute (SCFM) of landfill gas with 45% methane gas concentration. The majority of the generated gas is currently processed in a 6 MW electrical generating facility owned and operated by Fortistar Inc.. A small portion is processed in a series of micro-turbines owned and operated by Los Angeles Department of Water and Power (DWP). The power generated by the 6 MW plant is currently sold to Target Inc. and transmitted through Southern California Edison's power lines. The power generated by the micro-turbines (0.3MW), is transmitted into DWP grid. Gas is flared intermittently during emergency or maintenance shutdowns. The City currently receives a royalty payment of \$20,000 per month from the sale of electricity. The site is regularly monitored for surface emissions which are repaired following SCAQMD protocols. Underground probes on the perimeter of the landfill are monitored to contain gas within the landfill boundary. There has been no offsite migration due to the efficiency of the gas collection system.

Toyon Canyon Landfill

This site received 16 million tons of refuse for 29 years from 1957 to 1985. The landfill gas management system consists of vertical extraction wells feeding a 4 MW electrical generating station owned by Toyon Canyon Gas Conversion LLC and operated by operated by SCS Field Services Inc.. The site currently produces about 900 standard cubic feet per minute (SCFM) of landfill gas with 50% methane gas concentration. The power generated from the plant is

currently sold to Southern California Edison. Royalty payments from the sale of power are currently being made to the Department of Recreation and Parks. Gas is flared intermittently during emergency or maintenance shutdowns. The site's current planned use is low intensity open meadow area intended for passive recreational activities. This site is regularly monitored and surface emissions greater than 500 ppm that are detected are repaired. All SCAQMD protocols are followed for monitoring and repair of the cover. Underground probes on the perimeter of the landfill are monitored to ensure gas from the landfill does not move underground and is contained within the boundary of the landfill. There has been no offsite migration due to the efficiency of the gas collection system.

Sheldon-Arleta Landfill

This site received 5.5 million tons for 12 years between 1962 and 1974. The landfill gas management system consists of vertical extraction wells feeding a flare station. The site currently produces between 250 standard cubic feet per minute (SCFM) of landfill gas with 25% methane gas concentration. A new gas collection system was installed in 2007. All the generated gas at the site is currently being flared. Given the small quantity of gas and its poor quality, it would be difficult to attract investment because of the negative return. The site is being converted into Cesar Chavez Recreational Complex. When the development currently underway, is complete, it will include two soccer fields, a baseball field, a basketball court, free play area, restrooms and parking. Before Sheldon Landfill was filled the site was a quarry pit, therefore, the underground strata is rocky and porous. The Tujunga Water Spreading Grounds that are adjacent to the landfill can displace underground air when county is spreading water. The displaced air pressurizes the strata and landfill refuse cell. This pressurization can push underground gas beyond the landfill boundary. When this occurs landfill gas is detected in underground probes around the perimeter of the landfill and the gas system vacuum is increased in the locations where the gas is migrating. This abates the underground migration. The new gas system when fully operating has consistently contained the landfill gas without underground migration during Tujunga spreading events.