SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 1	PAGE 1
ENGINEERING AND COMPLIANCE DIVISION	APPL NO 530144	DATE 4/26/2013
PERMIT APPLICATION EVALUATION AND CALCULATIONS	PROCESSED BY AK07	CHECKED BY CDC

TITLE V PERMIT (REV 04) EVALUATION
(Minor Revision)

APPLICANT'S NAME: LOS ANGELES COUNTY SANITATION DISTRICTS

MAILING ADDRESS: P. O. BOX 4998, WHITTIER, CA 90607

EQUIPMENT ADDRESS: 13130 CROSSROADS PARKWAY, CITY OF INDUSTRY, CA 91746

FACILITY ID NO.: **025070**

Background:

This application 530144 was submitted for Title V permit revision (No. 4) on 12/20/2011. In addition, Los Angeles County Sanitation Districts submitted one (1) application (537802) for alteration/modification of the landfill gas collection system.

Evaluation:

Application (537802) was filed for alteration/modification of the landfill gas collection system as the applicant has been placing Carbon adsorbers in the Gas collection system all over the site to adsorb H2S from the landfill gas stream to stay below Rule 431.1 limit for H2S in the landfill gas stream entering a combustion device. There are no emissions from these adsorbers as these are regenerated offsite.

The proposed revision is considered a minor revision since there is no increase in emissions of any pollutant and it meets the rest of the listed requirements for qualification as minor revision. Public notice is not required; however, it is subject to EPA 45-day review and comment period. For further information, please refer to the evaluations included in folder.

A/N 530144 was actually filed by applicant for Title V permit revision related to another permitting project but at that time we had another open Title V revision application, hence this application was not utilized and is being used now. Form A-2 has been updated as per current information.

Rules Evaluation:

Compliance with a Reg. XXX -Title V permits and applicable rules and regulations is expected.

Conclusions & Recommendations:

Issue the revised Title V permit upon completion of 45-day EPA review and commenting period.

Application for Permit to Construct/Operate

APPLICANT NAME: LA County Sanitation Districts (LACSD)
APPLICANT ADDRESS: PO Box 4998
Whittier, CA 90607

ID NUMBER: 25070

EQUIPMENT LOCATION: Puente Hills Landfill
13130 Crossroads Parkway South
City of Industry, CA 91745

CONTACT: Frank Caponi (Supervising Civil Engineer)
(562) 908-4288 ext.2460

BACKGROUND:

This application was filed by LACSD for Puente Hills Landfill to modify and operate the carbon Adsorber system for removal of H2S from raw landfill gas which was permitted under research permit A/N 532138 in Feb 2012. Since the system has performed with in desired level of satisfaction, applicant has decided to keep the system permanently and also potentially add additional carbon adsorbers. Copy of the research permit and the engineering evaluation completed prior to issuance of research permit have been attached in the application folder.

CHANGING THE APPLICATION TYPE:

Originally, the application was filed as a new construction for a carbon adsorber system. Since, the carbon adsorber system does not emit directly to atmosphere it was decided to add these adsorbers to the Gas Collection system permit. The applicant may have up to four adsorbers and they may change the location of these adsorbers at the site. These adsorbers have been made integral part of gas collection system as the H2S content in landfill gas has gone up. Therefore, the application type was changed to "Alteration/Modification for Gas Collection System application (A/N 341079)" application from "new construction of Carbon Adsorbtion system."

FUNCTION OF THE CARBON SYSTEM:

The purpose of this equipment is to reduce the content of H2S/Sulfur containing compounds in the landfill gas stream prior to combustion in various devices at the site. By doing this applicant can stay in compliance with SCAQMD Rule 431.1, individual Sox emissions for various permitted units, and also reduce overall Sox emissions from the site. Applicant is currently operating under alternate Rule 431.1 plan. As part of the alternate plan, applicant has installed SCAQMD certified sulfur analyzers which continuously measure the sulfur content of the landfill gas prior to combustion. The approved plan is located in Section I.

SITE HISTORY:

The Puente Hills landfill is the largest landfill in the AQMD jurisdiction in terms of disposed tonnage and as a result more landfill gas is generated and collected than any other landfill in AQMD jurisdiction. Its operator, LACSD, utilizes nearly all the gas for energy recovery in boilers, engines, and a turbine, generating approximately 50 MW of electricity for onsite use (blowers), operations at the LACSD water plant at Whittier Narrows, and sale to the grid. Additional landfill gas is piped to boilers at the Rio Hondo College and the Whittier Narrows plant.

The combustion emissions make the landfill a major source and subject to Title V. Year 2010 reported emissions of criteria pollutants, in tons/year, were:

CO	NOx	ROG	SOx	TSP
161	103	21	142	36

COMPLIANCE WITH SCAQMD RULE 431.1:

The subject of this application is increased landfill gas sulfur content and resulting emissions of SOx. Landfill gas sulfur (primarily H2S, with other reduced sulfur compounds) results from the decomposition of wastes containing elemental sulfur and sulfur compounds. In general, high sulfur containing wastes in the presence of high moisture conditions will lead to elevated sulfur contents in the generated gas. In AQMD, where the climate is arid and surface watering is generally limited, landfills have been able to meet Rule 431.1 which limits combusted landfill gas to 150 ppmv. This rule also requires landfills to monitor the sulfur content continuously or by an approved alternative.

Puente Hills landfill has two Gas to energy facilities and the two landfill gas headers feeding these facilities have different H2S content.

- Facility no. 1 (Puente Hills Energy Recovery facility, PERG) has two boilers, one gas turbine and 26 permitted flares. Landfill gas flowmeter FT-100 (McCrometer, V-cone type), is for PERG. H2S is being monitored by Advanced Pollution Instrumentation (API) Model 152-N/ SN. 318.

- Facility No. 2 (also called western Blower station, WBS) has three Landfill gas fired ICE's. Landfill gas flowmeter FT- 2401 (FCI, MT 86 – 2 Single point sensing elements) is for WBS. H2S is being monitored by Thermo Electron Corporation Model 43i – AMSCB / SN. 0617117195.

The Puente Hills landfill is the only landfill in AQMD jurisdiction utilizing continuous sulfur monitors (csm). All the gas collected for combustion in these two facilities is routed through these two main lines, each fitted with a csm.

In 2011, the Puente Hills landfill gas from parts of the landfill, as measured by one of the two csms, exceeded 150 ppm. LACSD applied for, and received approval, to average the readings between the two cms, to show on a daily basis that the flow weighted average was less than 150 ppmv. In December, 2011, the site wide average was exceeded. Although the exact cause is not known, LACSD attributes the increased sulfur contents to disposal of digested sludge from their sewage treatment plant(s).

Last year LACSD received a research permit to put into place an immediate means of controlling sulfur. Their proposal was to use one or two of their carbon adsorbers, permitted for use with the landfill trenching tent control system, to take about 1200 cfm of landfill gas (per system) from one or more locations along the landfill gas collection header, adsorb H2S and other compounds, and return treated gas to that header. Since the adsorbers were upstream of the csms, LACSD was easily able to determine the effectiveness (absorbance, flow rate, time to saturation) of the temporary treatment system.

The treatment system permitted under the research permit worked well and LACSD has decided to install up to four carbon adsorbers at different locations and treat up to 15,000 scfm of landfill gas.

EMISSIONS:

Applicant has proposed that the maximum flow through these carbon adsorbers shall not be more than 15,000 scfm. There are no emissions at the landfill site from this unit as the treated gas is sent back to the landfill gas collection header. The exhausted carbon is taken offsite and is never regenerated onsite.

Assuming 15000 cfm and 180 ppm, adsorbers could remove

15000 cfm x 180 ppm x 34 lb/mole /379/ 1000000	=	0.24 lbs/min H2S
In 60 min	=	14.5 lbs/hr
In 24 hours	=	348.79 lbs/day

Assuming they only have 24,000 lbs of total carbon
Estimated time before saturation, at 0.15 lbs H2S/lb adsorbent:

24000 lbs x 0.15 lb/lb/ 348.79 lb/day = 10 days

Similarly for 48,000 lbs, the saturation time would be at least 20 days.

These numbers represent worst case scenarios.

The flow through the carbon adsorbers is not going to be 15,000 in reality, please look at the attached monitoring data sheets obtained from the applicant. 15,000 scfm is extremely conservative number.

Applicant is not going to completely remove H2S from the incoming landfill gas rather trying to stay in compliance with Rule 431.1 sulfur limit which limits the inlet H2S PPMV to 150 PPMV.

Applicant has mentioned that not all of the adsorber units have a condensate drainage connected to gas collection system. The applicant drains the condensate if it does not get drained to gas collection system by itself.

DATA COLLECTED FROM RESEARCH PERMIT:

Applicant has sent us the data collected during the period the system operated so far. Applicant will be required to keep records of the monitoring data and carbon change out dates and amount of carbon used, adsorbtion capacity of H2S and other parameters. Please see the permit folder for details.

ADDITIONAL CHANGES IN THE EQUIPMENT DESCRIPTION:

Few minor changes were made in the equipment description for the gas collection system in order to keep the description updated, please see the attached draft version of the gas collection system permit.

RULE EVALUATION:

Rule 212—Public Notification

212(c)(1)— No school is located within 1000 feet. Therefore, public notice is not required pursuant to this section.

212(c)(2)—There is no increase in emissions. Therefore, public notice is not required pursuant to this section.

212(c)(3)—There is no increase in emission of toxic air contaminants from this equipment and this facility as a whole. Therefore, public notice is not required pursuant to this section.

Rule 401—Visible Emissions

This equipment is not expected to discharge air contaminants for more than three minutes in any one hour which is of such opacity as to obscure an observer's view to a degree equal to or greater than No. 2 on the Ringleman Chart. Compliance expected.

Rule 402-Nuisance

This equipment is not expected to cause or contribute to a nuisance.

Rule 431.1

Applicant has met the requirements set forth in the Rule 431.1 for bringing the non-compliant facilities back in compliance. Original plan to demonstrate compliance was submitted (December 9, 2011) within 30 days of first exceedance (Nov 12, 2011) event when Rule 431.1 limit for H2S in landfill gas was exceeded. Then applicant applied (02-24-2011) for site wide averaging plan (A/N 519253) for various landfill gas headers in order to stay below 150 PPMV threshold and as part of site wide averaging plan they installed continuous in line SCAQMD certified H2S analyzers. Applicant received the final approval for site wide H2S averaging plan in October, 2011. In December, 2011 they submitted a research permit to install in line carbon adsorber to reduce the H2S in the landfill gas. Now they are expanding the carbon adsorber system permitted under research permit by installing additional adsorbers. Facility has met the deadlines specified in the rule 431.1 to demonstrate compliance/path towards compliance.

Reg XIII

Rule 1303(a): BACT–
No increase, not applicable.
Rule 1303(b)(1): Modeling—no increase - does not apply

Rule 1303(b)(2): Emission offsets— (30-Day Average)
No increase, not applicable.

Reg XIV **Rule 1401:**
No increase, not applicable.

Reg XXX: The proposed revision is considered a minor revision since there is no increase in emissions of any pollutant and it meets the rest of the listed requirements for qualification as minor revision. Public notice is not required; however, it is subject to EPA 45-day review and comment period.

CONCLUSIONS AND RECOMMENDATIONS:

This project is expected to comply with all applicable AQMD rules and regulations. Recommend issuing a permit to operate after EPA 45 day review.