Proposed (1/7/04)

Covered Source Permit Review Summary (Renewal)

Application File No.: Renewal application no. 0215-04/Significant Modification application no. 0215-05/Minor Modification application no. 0215-06

Permit No.: 0215-01-C

Applicant: City and County of Honolulu
Department of Environmental Services

Facility Title: Honouliuli Wastewater Treatment Plant
91-1501 Geiger Road
Ewa Beach, Oahu 96706

UTM coordinates: 599,586 meters E, 2,359,144 meters N

Mailing Address: City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, Suite 303
Kapolei, HI 96707

Responsible Official: Mr. Frank J. Doyle
Director, Department of Environmental Services
Ph. (808) 692-5159

Point of Contact: Mr. Jared Lum
Engineer
Ph. (808) 523-4654

Application Date: Renewal application dated December 31, 2001
Significant Modification application dated December 31, 2001
Minor Modification application dated July 29, 2003

Proposed Project:

SICC 4952 (Sewerage System)

Application no. 0215-04 is a renewal application for Covered Source Permit No. 0215-01-C which expired on January 1, 2003. Application no. 0215-05 is a significant modification application that addresses the ambient air modeling exceedances for H_2S found in the Initial Title V permit application due to errors in the stack parameters in the Initial Title V permit application and shows compliance with the State ambient air quality standard for H_2S. Proposed modifications consist of lowering the odor control system stack limits and increasing the odor control system stack heights. Application no. 0215-06 is a minor modification application to install a second caustic scrubber tower for the Central Odor Control System. Only one scrubber is operated at a time. The nonoperating scrubber will be on standby and/or will be undergoing maintenance. Construction will consist of refurbishing an existing,

nonfunctional scrubber currently located at the Central Odor Control System and reconnecting existing ductlines. In addition, Application no. 0215-06 is requesting to use chemicals in the Secondary Odor Control System scrubber only when the H_2S entering the scrubber reaches a preset action level. This will save money because zero to very low (< 2ppm) H_2S enters the Secondary Odor Control System. The Secondary Odor Control System should be able to handle this low level of H_2S without chemicals.

The permit allows following the manufacturer's instructions. The manufacturer has agreed that the City should revise the O&M manual to indicate that chemicals do not need to be added if H_2S is below a predetermined action level. However, the permit still specifies tests should be done which are meaningful only if chemicals are used. This modification will indicate that such testing will only be required when chemicals are used.

The applicant is proposing that the action level when chemicals will be used would be when 5 ppm H_2S enters the Secondary Odor Control System. The carbon after the scrubbers should still be able to reduce the 5 ppm H_2S to less than 1 ppm. However, at this point, the scrubber would then be operated with chemicals to assist the carbon.

An application fee for the renewal/significant modification to a covered source of $3,000.00 was submitted and processed. The application fee of $200.00 for a minor modification to a major covered source was deducted from the balance owed to the City and County of Honolulu.

Process Description:

The Honouliuli WWTP is a publicly owned treatment works for the treatment of domestic sewage. Domestic sewage and pretreated industrial discharges are treated to remove solids and biochemical oxygen demand. The solids are removed by gravity settling. Some of that treated wastewater is further treated with sand filtration and ultraviolet disinfection. Some of that treated wastewater is further treated with fine filtration and reverse osmosis. The liquid products are either discharged into the ocean or taken offsite for irrigation or industrial water reuse.

The removed solids are processed and sent off-site to a separate reuse facility (as compost), disposed of in a landfill, or incinerated. On-site processing consists of gravity thickening, low pressure heat oxidation, and sludge drying. At the offsite facility, the solids are converted into compost through composting in naturally aerated windrows and piles with air forcibly blown through them. Currently, the majority of the solids are being composted. The next most-used alternative is landfill disposal. Incineration is the least used alternative and has not been done since the air permit became effective. Incineration will be used only if the landfill and composting options are not available.

In the processing, various chemicals or materials are used, including polymers and coagulants for liquid treatment; and activated carbon and caustic liquid for odor control treatment.

The air pollution control equipment is designed primarily to remove hydrogen sulfide (H_2S) which is released by domestic wastewater, but will remove other emissions. For example, foul air from the Solids Odor Control System is further combusted in either the incinerator or York-Shipley boiler to burn off various compounds and the carbon vessels in the Headworks, Central and Secondary Odor Control Systems will adsorb various compounds.

In addition, the sludge incinerator has a wet scrubber, impingement tray scrubber and mist eliminators for particulate control. The incinerator also has a continuous emissions monitor system (CEMS) to control the oxygen content, moisture content, etc. of the incineration. The incinerator has not been operated since the air permit went into effect. Since the incinerator has not been operating, annual emissions source performance testing has not been done. Therefore, prior to the incinerator being operated again, an emissions source performance test must be performed and the results approved by the Department of Health.

Compliance monitoring consists of weekly monitoring of carbon stack emissions and ambient air limits at the property lines. Jerome 631-X meters, which are manufactured by Arizona Instruments, are currently used for stack and ambient air monitoring. Previously Gas Tech meters were also used for stack monitoring, but they have a greater margin of error. The Gas Tech meters are still available for stack monitoring if the Jerome meters are not available.

Carbon stack monitoring is done by drawing air from plastic tubes which are embedded into the carbon units. One plastic tube draws air from the stack exit, and is used to determine compliance with the permit limits. Another plastic tube draws air from about a third of the way down from the stack exit. The readings from that tube are used to determine whether "breakthrough" is imminent and the carbon needs regeneration.

Ambient air monitoring for H_2S is done weekly at the property lines. If ambient H_2S limits are exceeded, the City voluntarily continues daily monitoring until the ambient H_2S limit has been met for 14 consecutive days.

In addition, if conditions are known which may produce adverse H_2S emissions, the City may voluntarily start "in-plant" monitoring. In-plant monitoring consists of monitoring points around the problem site. If any reading at the in-plant stations are above 20 ppb H_2S, then property line ambient air monitoring for H_2S is done that day.

The treatment plant is currently rated to treat 38 million gallons per day (mgd) of daily average flow, but is currently running about 24 mgd. With effluent reuse being implemented, the effluent being discharged out of the outfall will be of lower quality (due to water being removed for effluent reuse but more solids remaining). Due to this fact, the 38 mgd may not be achievable under the existing circumstances while still meeting NPDES limits for the outfall discharge. The primary treatment treats all flows, and can handle up to 38 mgd. The secondary treatment is designed to treat up to 13 mgd, but can treat more. The tertiary treatment is designed for up to 13 mgd but is currently treating about 5 mgd.

The liquid treatment processes are as follows:

1. Course screening, grit removal, and pre-aeration.
2. Primary treatment by settling in clarifier tanks.
3. Secondary treatment by re-aeration/solids contact and trickling over biofilters.
4. Final screening prior to discharge to the ocean outfall.
5. Tertiary treatment by U.S. Filter Operating Service plant prior to reuse. Tertiary treatment involves sand filtration, fine filters, reverse osmosis, and UV disinfection. The City is currently negotiating to purchase the U.S. Filter plant.

The solids treatment processes are as follows:

1. Gravity thickening of primary clarifier sludge.
2. Gravity belt filter thickening of secondary clarifier sludge.
3. Blending of thickened sludge.
4. Low pressure heat treatment (oxidation) of blended sludge.
5. Decant of liquid from heat-treated sludge.
6. Centrifuge drying or incineration of decanted sludge.
7. Chemical treatment and further decanting of: (a) the decanted liquid and (b) liquid from the centrifuges (alternative/new process for effluent reuse purposes).
8. Composting of centrifuge-dried sludge into a soil amendment product by the Navy's Barbers Point Composting Facility. The composting facility is offsite from the Honouliuli WWTP and is not covered by this permit.

Besides emissions from the wastewater and waste solids, air emissions are also from:

1. Diesel fuel-powered emergency pumps and generators.
2. Diesel fuel-powered boilers used in the solids handling process.
3. Incineration of the sludge.
4. Odor control equipment which scrub foul air from the system with chemicals or water and activated carbon prior to discharge to the atmosphere. The odor control equipment consists of the following systems:

    a. Headworks Odor Control System
    Two activated carbon vessels. Double bed vessel draws air from bar screens area. Single bed vessel draws air from influent line. The significant modification application proposes changing this stack limit to 3 ppm and raising the stack height to 20 feet.

    b. Central Odor Control System
    Caustic scrubber and five activated carbon vessels connected in parallel. Draws foul air from the pre-aeration tank, clarifiers, and part of the sludge blend tank and the two sludge thickener tanks. The significant modification application proposes changing this stack limit to 2 ppm and raising the stack height to 22 feet. The minor modification application adds a second caustic scrubber as a backup.

    c. Solids Odor Control System
    Pretreatment unit consisting of two water scrubbers in series and two activated carbon vessels in parallel. Main treatment unit consisting of combustion of foul air in the combustion chamber of the York-Shipley Boiler or the incinerator's waste heat boiler. Draws air from the decant tanks, blend tanks, and centrifuges.

    d. Secondary Odor Control System
    Two catalytic scrubbers in parallel and five activated carbon vessels in parallel. Draws foul air from the biotower pump station, the biotower, and the solids contactors/solids re-aeration tanks. The significant modification application proposes changing this stack limit to 1 ppm, raising the stack height to 20 feet and decreasing the diameter to 1 foot. The minor modification allows chemicals not to be used in the scrubbers when possible.

Equipment Description:

Unit No.	Emission Source	Usage	Hrs/yr
1	Clayton Boiler - 150 hp	Fulltime	8760
2	York-Shipley Boiler - 200 hp	Fulltime	8760
3	Incinerator - 1.6 tons/hr dry sludge	Fulltime	8760
4	Diesel Engine Pump - 450 hp	Emergency	500
5	Diesel Engine Pump - 400 hp	Emergency	500
6	Emergency Generator - 700 kW	Emergency	500
7	Emergency Generator - 900 kW	Emergency	500
8	Headworks Odor Control - Activated Carbon Unit No. 1	Fulltime	8760
9	Headworks Odor Control - Activated Carbon Unit No. 2	Fulltime	8760
9A	Headworks Odor Control - Activated Carbon Unit No. 2	Fulltime	8760
10	Central Odor Control - Calgon Odor Unit No. 1	Fulltime	8760
11	Central Odor Control - Calgon Odor Unit No. 2	Fulltime	8760
12	Central Odor Control - Calgon Odor Unit No. 3	Fulltime	8760
13	Central Odor Control - Calgon Odor Unit No. 4	Fulltime	8760
14	Central Odor Control - Calgon Odor Unit No. 5	Fulltime	8760
15	Solids Odor Control Unit	Normally Combusted	8760
16	Secondary Odor Control - Calgon Odor Unit No. 1	Fulltime	8760
17	Secondary Odor Control - Calgon Odor Unit No. 2	Fulltime	8760
18	Secondary Odor Control - Calgon Odor Unit No. 3	Fulltime	8760
19	Secondary Odor Control - Calgon Odor Unit No. 4	Fulltime	8760
20	Secondary Odor Control - Calgon Odor Unit No. 5	Fulltime	8760
21	Emergency Generator - 2000 kW	Emergency	500

Air Pollution Control Equipment:

H_2S

The wastewater treatment plant has the following systems to reduce H_2S emissions:

1. Headworks Odor Control System
2. Central Odor Control System
3. Solids Odor Control System
4. Secondary Odor Control System

$\underline{SO_2}$
The use of low sulfur diesel no. 2 (less than 0.33% by weight) is used to reduce SO_2 emissions in the boilers, incinerator (supplemental fired) and diesel engines.

$\underline{PM/PM_{10}}$
The incinerator has the following devices to reduce PM/PM_{10} emissions:
1. Venturi Wet Scrubbing System
2. Impingement Tray Scrubber
3. Mist Eliminators

Insignificant Activities:

1. Two (2) Gravity Belt Sludge Thickeners *(per HAR 11-60.1-82 (f)(7))*
2. Gravity Belt Sludge Thickeners Odor Control System (Two GACs) *(per HAR 11-60.1-82(f)(7))*
3. Biofilter Demonstration Project *(per HAR 11-60.1-82 (*f)(7))
4. Caterpillar 450 hp diesel engine pump *(per HAR 11-60.1-82 (f)(5))*
5. Waukesha 400 hp diesel engine pump *(per HAR 11-60.1-82 (f)(5))*
6. Caterpillar 700 kW emergency generator *(per HAR 11-60.1-82 (f)(5))*
7. Caterpillar 900 kW emergency generator *(per HAR 11-60.1-82 (f)(5))*
8. 2000 kW emergency generator (U.S. Filter Plant) *(per HAR 11-60.1-82 (f)(5))*
9. 8000 gallon Influent Pumping Station diesel storage tank *(per HAR 11-60.1-82 (f)(1))*
10. 8000 gallon Solids Handling Unit diesel storage tank *(per HAR 11-60.1-82 (f)(1))*
11. 6000 gallon Secondary Treatment Unit diesel storage tank *(per HAR 11-60.1-82 (f)(1))*
12. 2000 gallon emergency generator diesel storage tank (U.S. Filter Plant)*(per HAR 11-60.1-82 (f)(1))*

Alternate Operating Scenarios:

No alternate operating scenarios were proposed.

Site Inspection:

A site inspection of the Honouliuli WWTP was made on September 29, 2003, at 10:00 am. Representing the City and County of Honolulu was Jared Lum from the City and County Environmental Services and the Honouliuli WWTP's plant superintendent. The purpose of the inspection was to verify the permitted equipment and insignificant activities in the renewal application. The incinerator, York-Shipley and Clayton boilers and Central, Headworks, Solids and Secondary Odor Control Systems and the insignificant activities were verified. The only changes were the removal of the primary/secondary splitter box from the list of areas served by the Central Odor Control System and the removal of Blend Tanks No. 3 and 4 from the areas served by the Solids Odor Control System. Other than these changes, the renewal application was correct.

Applicable Requirements:

Hawaii Administrative Rules (HAR).

Chapter 11-59 Ambient Air Quality Standards
Chapter 11-60.1 Air Pollution Control
- Subchapter 1 General Requirements
- Subchapter 2 General Prohibitions
  - 11-60.1-31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
- Subchapter 5 Covered Sources
- Subchapter 6 Fees for Covered Sources, Noncovered Sources & Agricultural Burning
  - 11-60.1-111 Definitions
  - 11-60.1-112 General Fee Provisions for Covered Sources
  - 11-60.1-113 Application Fees for Covered Sources
  - 11-60.1-114 Annual Fees for Covered Sources
- Subchapter 8 Standards of Performance for Stationary Sources
- Subchapter 9 Hazardous Air Pollutant Sources

Federal Requirements
40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)
- Subpart A - General Provisions
- Subpart O - Standards of Performance for Sewage Treatment Plants

40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants (NESHAPS)
- Subpart A - General Provisions
- Subpart C - National Emission Standard for Beryllium
- Subpart E - National Emission Standard for Mercury

Non-applicable Requirements:

Hawaii Administrative Rules (HAR)
Chapter 11-60.1 Air Pollution Control
- Subchapter 7 Prevention of Significant Deterioration

Federal Requirements
40 CFR Part 52.21 - Prevention of Significant Deterioration of Air Quality
40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technologies (MACT) Standards)

Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is required for new covered sources or significant modifications to covered sources that have the potential to cause a net increase in air pollutant emissions above significant levels as defined in HAR §11-60.1-1. Since there are no proposed modifications that increase emissions to this existing covered source for this renewal application, a BACT analysis is not applicable.

Prevention of Significant Deterioration (PSD):

This source is not a major stationary source nor are there modifications proposed that by itself constitute a major stationary source that is subject to PSD review. Therefore, PSD is not applicable.

Consolidated Emissions Reporting Rule (CERR):

40 CFR Part 51, Subpart A - Emission Inventory Reporting Requirements, determines CER based on the emissions of criteria air pollutants from Type B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the CER triggering levels as shown in the table below.

Pollutant	Type B CER Triggering Levels [1] (tpy)	Pollutant	In-house Total Facility Triggering Levels [2] (tpy)
NO_x	≥100	NO_x	≥25
SO_x	≥100	SO_x	≥25
CO	≥1000	CO	≥250
PM_{10}	≥100	PM/PM_{10}	≥25
VOC	≥100	VOC	≥25
Pb	≥ 5	HAPS	≥5

[1] Based on actual emissions
[2] Based on potential emissions

This facility does not emit at the CER triggering levels. Therefore, CER requirements are not applicable.

Although CER for the facility is not triggered, the Clean Air Branch requests annual emissions reporting from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels. Annual emissions from these facilities are used within the Department and are not inputted into the AIRS database. Since the total emissions of NO_x and SO_2 within the facility is greater than 25 tons per year, annual emissions reporting for the facility will be required for in-house recordkeeping purposes.

Compliance Data System (CDS):

Compliance Data System (CDS) is an inventory system used to track covered sources subject to annual inspections. This source is subject to CDS because it is a covered source.

Compliance Assurance Monitoring (CAM):

40 CFR Part 64

Applicability of the CAM Rule is determined on a pollutant specific basis for each affected emission unit. Each determination is based upon a series of evaluation criteria. In order for a source to be subject to CAM, each source must:

- Be located at a major source per Title V of the Clean Air Act Amendments of 1990;
- Be subject to federally enforceable applicable requirements;
- Have pre-control device potential emissions that exceed applicable major source thresholds;
- Be fitted with an "active" air pollution control device; and
- Not be subject to certain regulations that specifically exempt it from CAM.

Emission units are any part or activity of a stationary source that emits or has the potential to emit any air pollutant.

This source is subject to CAM because all of the requirements for CAM are triggered. Specifically, the incinerator is subject to the CAM requirements. The incinerator is equipped with monitors for continuously monitoring opacity, oxygen concentration, temperature, pressure drop across the wet scrubber, fuel flow and mass flow (sludge) for compliance assurance.

Synthetic Minor Source:

Not applicable, this source is a major source due to the emissions of CO from the incinerator.

Project Emissions:

The applicant's emission calculations were corrected and updated and are shown in the table below.

Emission Source	**Unit No.**	**Pollutants**						
		SO_2 (tpy)	**NO_x (tpy)**	**CO (tpy)**	**PM_{10} (tpy)**	**VOC (tpy)**	**H_2S (tpy)**	**Total HAPS (tpy)**
Clayton Boiler and York-Shipley Boiler [1,5]	1 and 2	20.53	8.76	2.19	0.88	0.25		0.0189
Incinerator [2,7]	3	1.40	35.04	217.25	15.4	11.91		1.54
Diesel Engine Pump - 450 hp [3,6]	4	0.23	3.49	0.75	0.25	0.28		3.05 E-03
Diesel Engine Pump - 400 hp [3,6]	5	0.21	3.10	0.67	0.22	0.25		2.71 E-03
Emergency Generator - 700 kW [4,6]	6	0.63	5.63	1.29	0.16	0.17		0.0026

Emergency Generator - 900 kW [4,6]	7	0.81	7.24	1.66	0.21	0.21		0.0033
Emergency Generator - 2000 kW [4,6]	21	1.80	16.09	3.69	0.47	0.47		0.0040
Headworks Odor Control - Activated Carbon Unit No. 1[7]	8						0.22 [8]	
Headworks Odor Control - Activated Carbon Unit No. 2[7]	9						0.21	
Headworks Odor Control - Activated Carbon Unit No. 2[7]	9A						0.21	
Central Odor Control - Calgon Odor Unit No. 1[7]	10						0.11	
Central Odor Control - Calgon Odor Unit No. 2[7]	11						0.11	
Central Odor Control -Calgon Odor Unit No. 3[7]	12						0.11	
Central Odor Control - Calgon Odor Unit No. 4[7]	13						0.11	
Central Odor Control - Calgon Odor Unit No. 5[7]	14						0.11	
Solids Odor Control Unit[7]	15						routed to boiler	
Secondary Odor Control - Calgon Odor Unit No. 1[7]	16						0.11	
Secondary Odor Control - Calgon Odor Unit No. 2[7]	17						0.11	
Secondary Odor Control - Calgon Odor Unit No. 3[7]	18						0.11	
Secondary Odor Control - Calgon Odor Unit No. 4[7]	19						0.11	
Secondary Odor Control - Calgon Odor Unit No. 5[7]	20						0.11	
TOTAL		25.61	79.35	227.50	17.59	13.54	1.74	1.57

[1] Emission factors for boilers from AP-42 (9/98) Table 1.3 Fuel Oil Combustion, S=0.33
[2] Emission factors for incinerator - AP-42 (1/95) Table 2.2 Sewage Sludge Incineration
[3] Emission factors for diesel engines < 600 hp from AP-42 (10/96) Table 3.3 Gasoline and Diesel Industrial Engines
[4] Emission factors for diesel engines > 600 hp from AP-42 (10/96) Table 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines, S=0.33
[5] Based on a total combined fuel limitation for both boilers of 876,000 gal/yr
[6] Based on 500 hrs/yr operation
[7] Based on 8760 hrs/yr operation
[8] tpy = 8760 hrs/yr x 1 ton/2000 lbs x 3 ppm x 34 g/mol x 1000 liters/m^3 x 1 mol/24.46 liters x 1.51 m^3/s x 0.002205 lb/g x 60 s/min x 60 min/hr

Air Quality Assessment:

An ambient air quality impact analysis (AAQIA) for NO_x, SO_2, CO and PM/PM_{10} was not required for the combustion equipment for the renewal application, since there were no proposed modifications to these units. However, as explained in the significant modification application, the applicant performed an ambient air quality impact analysis for H_2S to show compliance after errors in the stack parameters of the odor control systems in the initial Title V application were found and corrected. In order to show compliance with the ambient air standard for H_2S, the applicant selected the best combination (Model 5) among five different combinations of various stack heights, stack diameters and H_2S outlet concentrations (ppm) for the headworks, central and secondary odor control systems and performed an ambient air quality modeling analysis. These changes are summarized below:

Model	Increase stack height to	Decrease H_2S ppm concentration to	Decrease stack diameter to
Model 1			
Headworks (single and dual)	no change	1.70 ppm	no change
Central	no change	1.10 ppm	no change
Secondary	no change	0.85 ppm	no change
Model 2			
Headworks (single and dual)	25.00 ft	no change	no change
Central	36.00 ft	no change	no change
Secondary	52.00 ft	no change	no change
Model 3			
Headworks (single and dual)	20.00 ft	3.00 ppm	no change
Central	23.00 ft	2.00 ppm	no change
Secondary	32.00 ft	1.00 ppm	no change
Model 4			
Headworks (single and dual)	20.00 ft	3.00 ppm	no change
Central	22.00 ft	2.00 ppm	no change
Secondary	31.00 ft	1.00 ppm	no change
Model 5 (selected)			
Headworks (single and dual)	20.00 ft	3.00 ppm	no change
Central	22.00 ft	2.00 ppm	no change
Secondary	20.00 ft	1.00 ppm	1.00 ft

The ambient air quality impact analysis for the odor control units used Bee-Line's version of EPA's ISCST3 modeling (BEEST) for the analysis. The input parameters used in the modeling analysis included the following:

a. Simple and complex elevated terrain
b. Rural land use parameter
c. Ambient temperature of 298 deg K.
d. Meteorological data
   Five years of National Weather Service meteorological data from Honolulu Airport (1990 - 1991, 1993 -1995) was used. The 1992 data set was not utilized by the applicant due to excessive missing data.

e. Terrain
The applicant utilized actual terrain heights at the selected receptor points from Hawaii USGS Digital Elevation Model (DEM) data, 7.5 minute maps.

f. Receptor locations
Receptors were located in areas considered ambient air. Receptors were placed every 30 meters along the fenceline surrounding the property and also using fine and coarse rectangular receptor grids. The fine receptor grid extended out 100 meters from the site with a coordinate spacing of 30 meters and the coarse receptor grid extended out 1000 meters from the site with a coordinate spacing of 100 meters. There were 1121 receptors in total.

g. Downwash
The EPA Building Profile Input Program (BPIP) was used to derive the direction specific building dimensions for importing into the ISCST3 model. The program was used to determine the GEP stack height, analyze potential structure-induced downwash effects for the odor control stacks and calculate the building downwash parameters for ISCST3. All structures near the stacks that could cause downwash were assessed for downwash effects.

Stack Parameters for Odor Control Systems

Emission Source	Unit No.	H_2S Emission Rate (g/s)	Height (m)	Diameter (m)	Temp. (deg K)	Velocity (m/s)	Flow Rate (m^3/s)
Headworks OCU No. 1	8	0.630 E-02	6.096	0.457	298	9.21	1.51
Headworks OCU No. 2	9	0.590 E-02	6.096	0.305	298	19.38	1.42
Headworks OCU No. 2	9A	0.590 E-02	6.096	0.305	298	19.38	1.42
Central OCU No. 1	10	0.315 E-02	6.705	0.914	298	1.73	1.13
Central OCU No. 2	11	0.315 E-02	6.705	0.914	298	1.73	1.13
Central OCU No. 3	12	0.315 E-02	6.705	0.914	298	1.73	1.13
Central OCU No. 4	13	0.315 E-02	6.705	0.914	298	1.73	1.13
Central OCU No. 5	14	0.315 E-02	6.705	0.914	298	1.73	1.13
Secondary OCU No. 1	16	0.328 E-02	6.096	0.305	298	32.34	2.36
Secondary OCU No. 2	17	0.328 E-02	6.096	0.305	298	32.34	2.36
Secondary OCU No. 3	18	0.328 E-02	6.096	0.305	298	32.34	2.36
Secondary OCU No. 4	19	0.328 E-02	6.096	0.305	298	32.34	2.36
Secondary OCU No. 5	20	0.328 E-02	6.096	0.305	298	32.34	2.36

Total Ambient Air Quality Impacts from Odor Control Systems

Air Pollutant	Averaging Period	Impact (µg/m3)	Background (µg/m3)	Total Impact (µg/m3)	SAAQS (µg/m3)	% of SAAQS
H_2S	1-hr	34.68	0	34.68	35	99.1

Significant Permit Conditions:

There were no major changes to the existing permit conditions except for the following:

1. The Central Odor Control System operation was changed because of the addition of the backup caustic scrubber.
2. The Secondary Odor Control System operation allows reducing the use of chemicals in the catalytic scrubbing towers if the H_2S entering the system is less than 5 ppm as specified in O&M manual. Since the incoming H_2S is less than 2 ppm, the carbon vessels are able to reduce the H_2S to less than 1 ppm and still meet the H_2S outlet emission limits.
3. The H_2S outlet emission limits were lowered for the Central, Headworks and Secondary Odor Control Systems to 2.0 ppm, 3.0 ppm and 1.0 ppm, respectively.

Conclusion and Recommendations:

Recommend issuing the renewal for Covered Source Permit (NSP) No. 0215-01-C subject to the significant permit conditions above. The wastewater treatment plant should have less exceedances of the H_2S ambient standard due to changes in the stack heights and emission limits of the odor control systems. Emission calculations are conservative since the facility does not plan to operate the incinerator and the hours of operation for the equipment is highly conservative. A 30-day public comment period and 45-day EPA review period are also required.

Reviewer: Darin Lum
Date: 1/04