EAST BAY
MUNICIPAL UTILITY DISTRICT

EILEEN M. WHITE
DIRECTOR OF WASTEWATER
(510) 287-1149
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January 31, 2019

Mr. Jeff Gove, Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
Attn. Title V Reports

Dear Mr. Gove:

RE: Semiannual Major Facility Review (Title V) Monitoring Report for EBMUD Main Wastewater Treatment Plant (Facility #A0591)

Attached is the semiannual monitoring report for the East Bay Municipal Utility District (EBMUD) Main Wastewater Treatment Plant (Facility #A0591) as required under Section I.F of the facilities Major Facility Review Permit issued December 19, 2012. The report covers the period from July 1 – December 31, 2018. Two issues of non-compliance were noted during this monitoring period, and are discussed below.

On July 12, 2018, during a routine BAAQMD inspection, a torn hose was found on gasoline dispenser number 3 at Source 48, the Gasoline Dispensing Facility. Notice of Violation A58247 was issued for the torn hose and the dispenser was locked out of service. The hose was replaced on July 18, 2018, and the dispenser was returned to service after the corrective action was completed. EBMUD accepted a settlement offer from BAAQMD in October 2018 regarding this violation.

On October 29, 2018, EBMUD reported to BAAQMD a small, underground digester gas leak after confirming that flammable gas detected in an underground vault near some underground digester piping was digester gas. The section of piping believed to have the leak was isolated on November 29, 2018, by the installation of a blind flange in the digester piping system. This abatement prevented delivery of digester gas to the cogeneration engines resulting in loss of ability to operate the engines. EBMUD is in the process of replacing the section of digester gas piping that was leaking. Construction work is expected to be complete around the end of February 2019, at which time the engines will be able to be brought on line.

Please note that the engine #2 (S-38) and the enclosed flares A-194 and A-195 did not operate during this reporting period. No annual source testing on engine #2 (S-38) was conducted since the engine was out of service.

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Based on information and belief formed after reasonable inquiry, I certify that the statements and information in this report are true, accurate and complete.

If you have any questions about this report, please call Chris Dembiczak at (510) 287-0509.

Sincerely,

Eileen M. White

EILEEN M. WHITE, P.E.
Director of Wastewater

EMW:CD:bmy

Attachment

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Major Facility Review (Title V)
Semi-Annual Monitoring Report

for

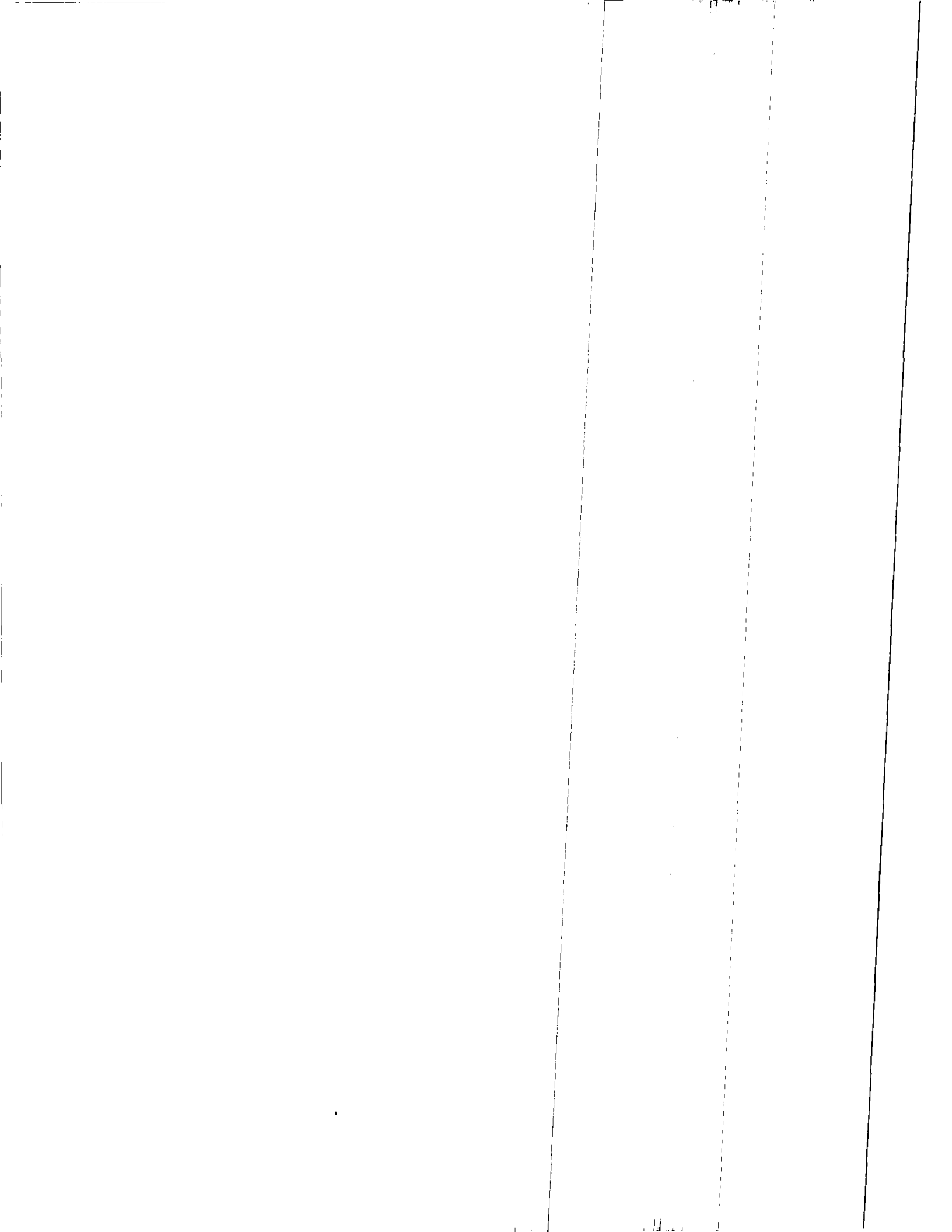
East Bay Municipal Utility District
Main Wastewater Treatment Plant
Facility #A0591

Reporting Period: July 1, 2018 – December 31, 2018

Source	Monitoring Requirement	Limit	Monitoring Results
S-55 Boiler	**Condition 20651**		
	2. Shall not operate S-55 boiler when more than two of the three cogen engines S-37, S-38, or S-39 are operating		Condition met. See Attachment 1 for boiler and engine data.
	3. Boiler gross heat input	20.41 MMBtu/hr	Condition met. See Attachment 2. Heat input ranged from 8.6-9.8 MMBtu/hr.
	5a. NOx emission from boiler 5b. CO emission from boiler	30ppm 50ppm	See 19 for test results if annual tests run in monitoring period
	18. Daily records of hours of operation, fuel consumption		See Attachment 1 for hours and gas consumption.
	19. Annual performance test for emission limits in 5		Condition met. Annual performance test completed on 12/17/18. Results below NOx and CO limits.
S-37, S-38, S-39 Cogeneration Engines	**Condition 20651**		
	Emission limits –		
	6. NOx emissions from S-38	1.25 g/hp-hr	For items 6-11 see 19 for test results if annual tests run in monitoring period
	7. POC emissions from S-38	0.6 g/hp-hr	
	8. CO emissions from S-38	3.0 g/hp-hr	
	9. Filterable particulate emissions from S-38	0.085 g/hp-hr	
	10. NOx emissions from S-37 & S-39	70 ppmvd	
	11. CO emissions from S-37 & S-39	2000 ppmvd	
	13. Thermal throughput per engine	25 MMBtu/hr	Condition met. See Attachment 2.
	14. Combined hours of operation for S-37, S-38, and S-39	25,316 hours in any rolling 365 day period	Condition met. 13,916 hours in last year. See Attachment 2. Jan-Jun 2018: 7,384 hours Jul-Dec 2018: 6,532 hours
	15. Combined diesel consumption for S-37, S-38, and S-39	150,000 gallons in any rolling 365 day period	Condition met. 23,621 gallons in last year. See Attachment 2. Jan-Jun 2018: 13,053 gallons Jul-Dec 2018: 10,568 gallons

Source	Monitoring Requirement	Limit	Monitoring Results
S-37, S-38, S-39 Cogeneration Engines **(continued)**	18. Daily records of hours of operation, fuel consumption 19. Annual performance test for emission limits in 6-11		Condition met. See Attachment 1 for records. Condition met. Annual performance tests completed 7/3/18 and 9/26/18 for engine #3. Engine #2 was out of service during calendar year 2018, so no annual test was conducted. See Attachment 3 for summary reports.
S-48 Gasoline Dispensing Facility	**Condition 25723** The Static Pressure Performance Test (CARB TP 201.3B) shall be successfully conducted at least once in each 12-month period.		Condition met. Completed on 10/3/18. Test record located in Attachment 4A.
	Condition 21663 Annual gasoline throughput	334,000 gal per year	Condition met. 25,858 gal in last year. See Attachment 4B. Jan-June 2018: 14,399 gal July-Dec 2018: 11,459 gal
S-50 Diesel Engine Back-up Generator	**Condition 22830** 1. Hours of operation	30 hours/year reliability-related hours	Condition met. Generator did not run in last 12 months. Refer to Attachment 5.
S-51 Diesel Engine Back-up Generator	**Condition 22850** 1. Hours of operation	50 hours/year reliability-related hours	Condition met. Generator ran 8.9 hours in last 12 months. Refer to Attachment 5.
S-53 Diesel Engine Back-up Generator	**Condition 22830** 1. Hours of operation	30 hours/year reliability-related hours	Condition met. Generator did not run in last 12 months. Refer to Attachment 5.
S-54 Diesel Engine Back-up Generator	**Condition 22850** 1. Hours of operation	50 hours/year reliability-related hours	Condition met. Generator did not run in last 12 months. Refer to Attachment 5.

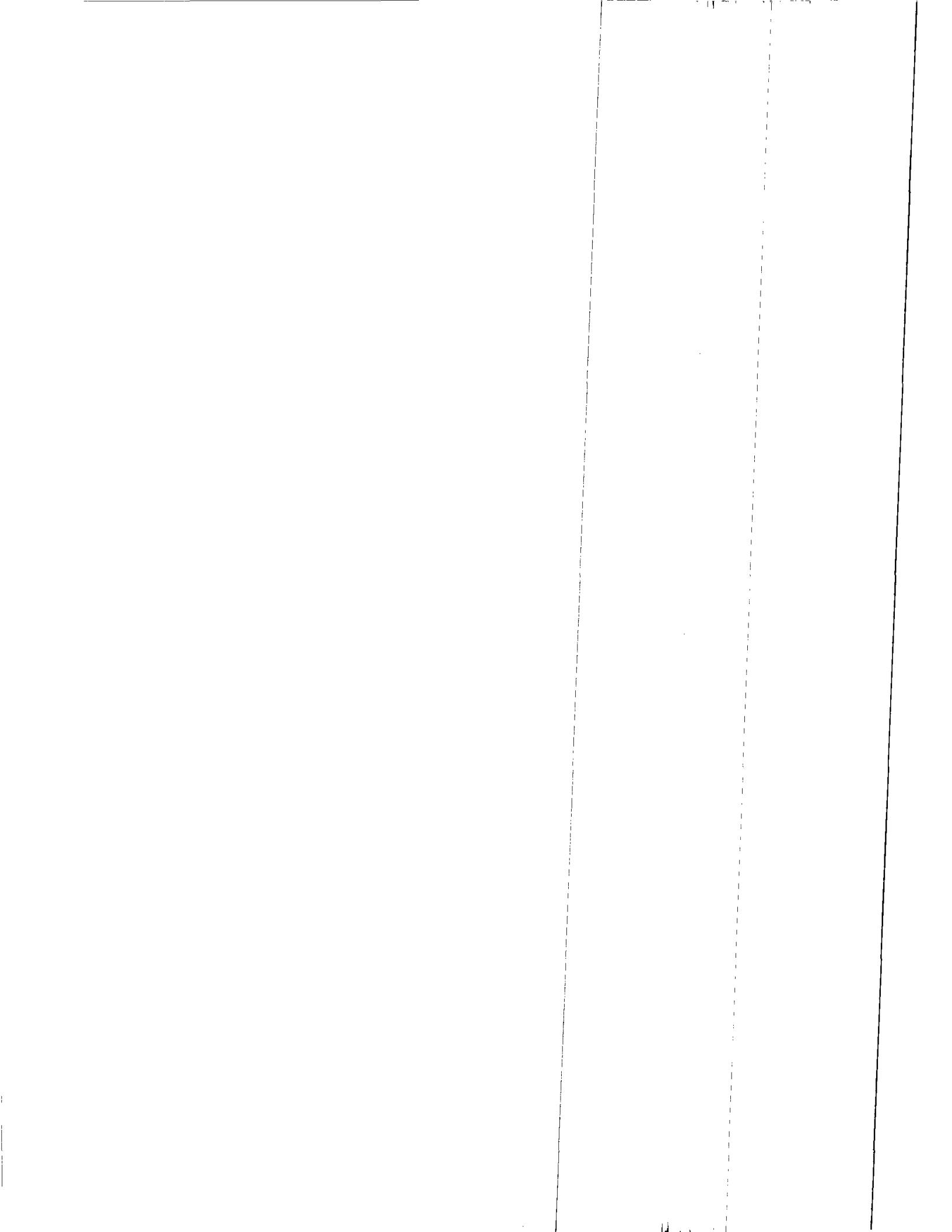
Source	Monitoring Requirement	Limit	Monitoring Results
S-56 Turbine	**Condition 24050**		
	2. Total combined heat input	389,820 MMBtu in any 12-month period	Condition met. 344,742 MMBtu in last 12 months. Refer to Attachment 2. Jan-Jun 2018: 175,623 MMBtu Jul-Dec 2018: 169,119 MMBtu
	3. NOx emission limits	23 ppm (15-min) 34,400 lb (12-mo)	Emission limits met. Refer to Attachments 2 and 6. Annual mass emission: 5,011 lb
	4. CO emission limit	100 ppm (15-min) 92,200 lb (12-mo)	Emission limits met. Refer to Attachments 2 and 6. Annual mass emission: 1,643 lb
	5. SO2 emission limit	150 ppmv	Emission limit met. Refer to Attachments 2 and 6.
	7. Annual turbine source test		Condition met. Turbine annual tests done on 7/26/18 by BAAQMD and 12/11/18 by Blue Sky Environmental.
	8. Monthly NOx and CO test		Condition met. Monthly test results are located in Attachment 6.
S-58 Diesel Engine Back-up Generator	**Condition 22850**		
	1. Hours of operation	50 hours/year reliability-related hours	Condition met. Generator ran 1.4 hours in last 12 months. Refer to Attachment 5.
S-100 Municipal Wastewater Treatment Plant	**Condition 21759**		
	1. Total wastewater flow	120 MGD monthly dry weather average 325 MGD monthly wet weather average	Condition met. Maximum wet weather monthly flow in period was 75 MGD influent. Maximum dry weather monthly flow was 49 MGD. See Attachment 7.
S-110 Headworks A-462 Carbon Scrubber A-463/A-464 Biotrickling Filters/Carbon Scrubbers	**Condition 17335** 3. Inlet and outlet H2S concentrations of carbon beds, as well as any other appropriate operating parameters shall be continuously monitored and reviewed on a daily basis to determine when carbon adsorption bed breakthrough is imminent or has been reached.		Monitoring results for inlet and outlet H2S and any noted outages are in Attachment 8. Maintenance records for scrubber are in Attachment 9.



Source	Monitoring Requirement	Limit	Monitoring Results
S-170 Sludge handling A-7/A-8 Atomized Mist Scrubbers	**Condition 18006** 1. Monitor and record on a daily basis the activated sewage sludge throughput through S-170.		Sludge throughput is recorded in Attachment 10. Maintenance records for the scrubber are in Attachment 9.
S-180 Anaerobic Digesters Note: A-194, A-195 are enclosed flares A-190, A-191, A-192, and A-193 are older "candlestick" flares	**Condition 18860** 2. Monthly inspection of digesters and gas management/venting prevention		Inspections conducted by Operations on daily rounds. A small, underground digester gas leak was discovered in October 2018 and was reported to BAAQMD.
	3. Sulfur content of digester gas	<200 ppmv annual average	Condition met. Refer to Attachment 11 for the H2S gas sampling records.
	4. Combined digester gas flow rate to combustion sources	<3,400 scfm annual average	Condition met. See Attachment 12 for combined digester gas flow rates.
	5. Combustion zone temperature monitoring to A-194, A-195	>1,500F, 3-hr average	A-194 and A-195 not operated in reporting period.
	6. Gas flow to A-194, A-195	<3,000 cfm, 1-hr average	A-194 and A-195 not operated in reporting period.
	7. Source testing of A-194, A-195 (every 8,760 hours of use or 5 years)		A-194 and A-195 not operated in reporting period.
	Emission limits for A-194, A-195 9. NOx limit 10. CO limit 11. H2S limit	 0.06 lb/MMBtu 0.20 lb/MMBtu 0.032 lb/hour	 A-194 and A-195 not operated in reporting period.
	12. Weekly sampling and testing of digester gas for H2S		Refer to Attachment 11.
	13. Hours of flaring per day		Refer to Attachment 1 for the hours of flaring per day.

Attachment Index:

1	Combustion Source Air Permit Data
2	Combustion Summaries – Boiler, Engines, Turbine, Flares
3	Annual Source Test Summaries: Engine #1
4A	Gasoline Facility Annual Source Test Results
4B	Gasoline Facility Throughput
5	Hours of Operation for Stand-by Emergency Generators
6	Turbine Monthly Test Results
7	Monthly Wastewater Summary
8	IPS Carbon Bed Inlet/Outlet H2S Readings
9	Odor Scrubber Maintenance Records for S-170 and S-110
10	Activated Sludge Throughput for S-170
11	Digester Gas H2S Sampling
12	Combined Digester Gas Combustion Volumes



ATTACHMENT 1

COMBUSTION SOURCE AIR PERMIT DATA

(engines, turbine, boiler, flares)

DAILY REPORTS
JULY-DECEMBER 2018

EBMUD

July - 2018

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, FCI Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	0	0	8	8	0	0	13,260	13,260	0	0	14	14	0	0	225,101	225,101
2nd	0	0	14	14	0	0	28,872	28,872	0	0	42	42	0	0	480,526	480,526
3rd	18	0	24	42	35,290	0	46,497	81,788	42	0	36	78	595,005	0	783,961	1,378,967
4th	21	0	24	45	38,598	0	49,510	88,108	36	0	29	64	631,969	0	810,640	1,442,610
5th	0	0	22	22	0	0	44,269	44,269	0	0	35	35	0	0	725,628	725,628
6th	4	0	24	28	9,778	0	49,861	59,639	23	0	36	59	159,767	0	814,671	974,439
7th	24	0	24	48	40,191	0	45,473	85,664	39	0	28	66	677,540	0	766,593	1,444,133
8th	10	0	9	19	21,293	0	15,457	36,750	27	0	48	76	362,444	0	263,113	625,557
9th	24	0	2	26	46,408	0	1,716	48,124	40	0	0	40	793,410	0	29,344	822,754
10th	24	0	19	43	45,775	0	39,182	84,957	31	0	43	75	772,527	0	661,255	1,433,782
11th	24	0	24	48	43,336	0	44,874	88,210	40	0	30	70	734,352	0	760,403	1,494,755
12th	20	0	15	35	37,599	0	25,924	63,522	36	0	28	64	634,185	0	437,258	1,071,443
13th	24	0	24	48	46,600	0	47,838	94,439	37	0	31	68	770,316	0	790,786	1,561,102
14th	24	0	24	48	50,616	0	50,567	101,183	38	0	34	72	829,247	0	828,448	1,657,695
15th	24	0	3	27	45,579	0	4,067	49,646	36	0	3	39	774,596	0	69,120	843,715
16th	12	0	0	12	22,616	0	0	22,616	18	0	0	18	392,686	0	0	392,686
17th	24	0	13	37	51,010	0	24,697	75,708	35	0	20	55	873,082	0	422,718	1,295,800
18th	24	0	23	47	50,954	0	50,323	101,277	37	0	30	67	850,510	0	839,974	1,690,484
19th	24	0	24	48	50,982	0	52,414	103,396	31	0	33	64	823,185	0	846,305	1,669,490
20th	24	0	24	48	50,987	0	50,706	101,694	40	0	25	64	836,999	0	832,383	1,669,382
21st	24	0	24	48	51,033	0	50,532	101,566	33	0	37	70	839,025	0	830,789	1,669,814
22nd	24	0	24	48	50,910	0	49,791	100,701	37	0	39	76	842,056	0	823,556	1,665,612
23rd	24	0	12	36	49,889	0	23,997	73,887	36	0	29	65	836,857	0	402,535	1,239,391
24th	24	0	24	48	51,043	0	51,505	102,548	36	0	36	72	828,911	0	836,415	1,665,326
25th	24	0	24	48	51,093	0	51,490	102,582	36	0	29	65	829,513	0	835,963	1,665,477
26th	24	0	24	48	47,493	0	47,061	94,553	33	0	41	74	798,197	0	790,932	1,589,129
27th	24	0	24	48	44,274	0	45,327	89,601	39	0	28	66	756,978	0	774,972	1,531,950
28th	24	0	24	48	50,314	0	49,047	99,361	35	0	35	70	841,041	0	819,856	1,660,897
29th	24	0	24	48	47,627	0	48,216	95,843	38	0	37	75	788,480	0	798,221	1,586,701
30th	24	0	24	48	41,240	0	42,942	84,182	18	0	24	41	719,089	0	748,758	1,467,847
31st	24	0	24	48	50,997	0	49,157	100,154	37	0	35	72	854,065	0	823,255	1,677,320
Totals	613	0	596	1,209	1,223,525	0	1,194,572	2,418,097	962	0	915	1,877	20,446,033	0	19,873,479	40,319,512
	Sum of Engines		1,209		Sum of Engines		2,418,097		Sum of Engines		1,877		Sum of Engines		40,319,512	

EBMUD

July - 2018

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	5.8	42,442	0	0	0	24	94,698	1,502,861	17	252,992	8	25
2nd	9.3	83,019	0	0	0	24	99,435	1,568,468	9	122,298	14	23
3rd	13	151,742	0	0	0	24	96,984	1,534,339	0	0	42	42
4th	3.3	21,199	0	0	0	24	93,132	1,488,584	0	0	45	45
5th	15	150,468	0	0	0	24	95,175	1,525,803	1.3	19,869	22	23
6th	12	116,439	0	0	0	24	96,130	1,517,160	0	0	28	28
7th	1.9	12,494	0	0	0	24	92,323	1,457,885	0	0	48	48
8th	7.4	98,962	0	0	0	18	66,115	1,064,484	13	174,173	19	32
9th	11	186,194	0	0	0	13	47,159	782,033	11	191,976	26	37
10th	13	115,577	0	0	0	24	94,915	1,510,073	0	0	43	43
11th	2.4	29,685	0	0	0	24	94,784	1,483,571	0	0	48	48
12th	6.7	128,395	0	0	0	24	91,164	1,436,077	0	0	35	35
13th	8.3	94,627	0	0	0	24	98,579	1,506,650	0	0	48	48
14th	12	150,823	0	0	0	24	99,096	1,530,838	0	0	48	48
15th	6.1	79,750	0	0	0	18	63,539	982,792	6	80,750	27	33
16th	19	504,095	0	0	0	0	0	0	12	184,077	12	24
17th	24	1,405,046	0	0	0	0	0	0	24	342,921	37	61
18th	24	1,523,148	0	0	0	0	0	0	24	312,887	47	71
19th	24	1,356,148	0	0	0	6.7	26,524	432,100	17	225,928	48	65
20th	22	513,097	0	0	0	24	96,126	1,494,338	0	0	48	48
21st	12	156,325	0	0	0	24	96,230	1,537,453	0	0	48	48
22nd	20	578,085	0	0	0	3.9	15,940	244,431	0	0	48	48
23rd	9.4	209,501	0	0	0	20	75,551	1,272,333	0.6	8,810	36	37
24th	13	156,385	0	0	0	24	98,110	1,625,481	0	0	48	48
25th	0	0	0	0	0	24	94,509	1,582,606	0	0	48	48
26th	3.4	40,539	0	0	0	24	93,888	1,575,374	0	0	48	48
27th	0.7	9,971	0	0	0	24	85,252	1,479,097	0	0	48	48
28th	19	556,528	0	0	0	24	99,913	1,694,983	0	0	48	48
29th	4.4	67,956	0	0	0	24	92,773	1,533,654	0	0	48	48
30th	0.3	3,657	0	0	0	24	87,934	1,525,132	0	0	48	48
31st	19	312,878	0	0	0	24	100,703	1,715,132	0	0	48	48
Totals	341	8,855,176	0	0		607	2,386,683	38,603,734	134	1,916,679	1,209	1,343
				Maximum	0	Minimum					Maximum	71

EBMUD

August - 2018

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, FCI Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	24	0	24	48	50,939	0	48,066	99,005	41	0	27	68	862,621	0	813,960	1,676,581
2nd	24	0	24	48	51,068	0	51,076	102,144	36	0	35	72	832,840	0	832,982	1,665,822
3rd	24	0	24	48	46,791	0	47,150	93,942	44	0	34	78	784,107	0	790,123	1,574,230
4th	24	0	23	47	45,340	0	39,355	84,695	36	0	24	60	772,515	0	670,539	1,443,054
5th	24	0	5	29	46,483	0	12,506	58,989	41	0	39	80	792,713	0	213,281	1,005,994
6th	17	0	15	32	30,749	0	26,184	56,933	39	0	28	67	541,795	0	461,361	1,003,156
7th	24	0	24	48	50,768	0	50,405	101,173	40	0	30	70	831,655	0	825,720	1,657,375
8th	24	0	24	48	51,056	0	51,858	102,913	41	0	39	80	822,241	0	835,161	1,657,402
9th	24	0	24	48	51,100	0	52,056	103,155	36	0	32	69	819,909	0	835,245	1,655,154
10th	24	0	24	48	51,026	0	50,832	101,857	43	0	30	72	831,479	0	828,320	1,659,799
11th	24	0	24	48	49,147	0	49,275	98,421	37	0	45	82	804,909	0	807,010	1,611,919
12th	21	0	2	23	38,147	0	1,818	39,966	53	0	5	58	648,375	0	30,908	679,283
13th	3	0	17	20	7,097	0	36,597	43,694	9	0	52	61	118,884	0	613,048	731,932
14th	24	0	24	48	50,496	0	50,530	101,026	41	0	28	69	823,672	0	824,225	1,647,898
15th	24	0	24	48	51,003	0	49,970	100,973	38	0	38	76	833,448	0	816,560	1,650,008
16th	24	0	24	48	50,919	0	50,141	101,060	39	0	30	68	830,118	0	817,436	1,647,553
17th	24	0	24	48	51,002	0	50,175	101,177	43	0	35	77	831,169	0	817,680	1,648,849
18th	24	0	24	48	50,798	0	50,575	101,372	36	0	35	71	823,611	0	819,998	1,643,609
19th	22	0	24	46	38,907	0	44,618	83,525	44	0	29	74	657,950	0	754,518	1,412,468
20th	24	0	10	34	40,252	0	17,503	57,755	38	0	38	76	707,628	0	307,704	1,015,332
21st	24	0	24	48	44,913	0	44,243	89,155	41	0	30	71	768,722	0	757,260	1,525,982
22nd	24	0	24	48	50,931	0	48,681	99,612	40	0	34	74	838,045	0	801,036	1,639,080
23rd	24	0	24	48	47,891	0	46,391	94,282	39	0	40	79	800,159	0	775,087	1,575,245
24th	24	0	24	48	50,964	0	48,919	99,882	42	0	26	68	835,705	0	802,170	1,637,874
25th	24	0	24	48	47,927	0	47,141	95,068	37	0	38	75	795,736	0	782,688	1,578,424
26th	21	0	7	28	35,865	0	10,103	45,968	49	0	9	58	618,909	0	174,340	793,249
27th	20	0	12	32	34,299	0	21,774	56,073	44	0	38	82	598,195	0	379,750	977,944
28th	24	0	24	48	49,647	0	47,865	97,512	38	0	36	74	820,441	0	790,999	1,611,441
29th	24	0	24	48	51,046	0	48,839	99,885	37	0	36	73	835,892	0	799,760	1,635,653
30th	24	0	24	48	47,915	0	47,029	94,945	38	0	34	72	794,878	0	780,181	1,575,059
31st	24	0	24	48	50,935	0	47,808	98,743	31	0	32	62	845,379	0	793,481	1,638,860
Totals	704	0	643	1,347	1,415,419	0	1,289,482	2,704,902	1,212	0	1,006	2,218	23,523,702	0	21,352,529	44,876,231
	Sum of Engines		1,347		Sum of Engines		2,704,902		Sum of Engines		2,218		Sum of Engines		44,876,231	

EBMUD

August - 2018

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	24	586,298	0	0	0	24	101,051	1,738,184	0	0	48	48
2nd	17	422,327	0	0	0	24	98,889	1,640,254	0	0	48	48
3rd	6.3	117,720	0	0	0	24	92,176	1,550,841	0	0	48	48
4th	4.0	82,671	0	0	0	24	91,150	1,579,400	0	0	47	47
5th	11	254,589	0	0	0	18	67,299	1,187,007	0	0	29	29
6th	11	294,761	0	0	0	11	45,171	766,824	11	220,588	32	43
7th	23	583,882	0	0	0	24.0	100,939	1,673,106	0	0	48	48
8th	24	999,439	0	0	0	24	100,490	1,644,133	0	0	48	48
9th	24	825,847	0	0	0	24	99,345	1,632,801	0	0	48	48
10th	24	702,694	0	0	0	24	98,980	1,641,000	0	0	48	48
11th	12	153,166	0	0	0	24	94,428	1,596,147	0	0	48	48
12th	0	0	0	0	0	24	86,765	1,499,836	3.4	43,268	23	26
13th	11	180,910	0	0	0	24	97,954	1,638,442	6.1	78,703	20	26
14th	14	221,831	0	0	0	24	96,939	1,629,068	0	0	48	48
15th	23	687,896	0	0	0	24	97,696	1,635,613	0	0	48	48
16th	19	547,607	0	0	0	24	98,269	1,636,066	0	0	48	48
17th	24	1,023,024	0	0	0	24	100,191	1,661,766	0	0	48	48
18th	15	297,255	0	0	0	24	97,660	1,605,518	0	0	48	48
19th	1.0	18,801	0	0	0	24	87,793	1,479,302	0	0	46	46
20th	0.8	13,435	0	0	0	24	87,904	1,504,331	0	0	34	34
21st	3.2	35,408	0	0	0	24	89,936	1,540,491	0	0	48	48
22nd	5.9	87,575	0	0	0	24	98,579	1,642,345	0	0	48	48
23rd	3.0	89,844	0	0	0	24	95,870	1,598,449	0	0	48	48
24th	22	617,155	0	0	0	24	99,910	1,660,557	0	0	48	48
25th	8.1	125,765	0	0	0	24	96,251	1,624,112	0	0	48	48
26th	0	0	0	0	0	24	84,651	1,455,376	2.4	31,653	28	30
27th	2.0	31,501	0	0	0	23	87,005	1,506,223	13	157,965	32	45
28th	13	207,710	0	0	0	24	95,365	1,595,309	0	0	48	48
29th	4.3	41,975	0	0	0	24	93,567	1,573,926	0	0	48	48
30th	3.4	44,832	0	0	0	24	91,885	1,523,913	0	0	48	48
31st	23	813,912	0	0	0	24	98,395	1,663,237	0	0	48	48
Totals	375	10,109,830	0	0		724	2,872,504	48,323,581	35	532,177	1,347	1,382
				Maximum	0	Minimum					Maximum	48

EBMUD

September - 2018

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, FCI Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	24	0	24	48	51,067	0	49,667	100,734	43	0	16	58	827,303	0	804,619	1,631,921
2nd	24	0	10	34	44,023	0	13,925	57,948	36	0	21	58	751,085	0	237,585	988,669
3rd	17	0	12	29	31,045	0	23,362	54,407	32	0	39	71	537,542	0	404,507	942,049
4th	24	0	14	38	46,250	0	25,419	71,669	50	0	35	85	778,581	0	427,920	1,206,501
5th	24	0	24	48	50,658	0	49,360	100,018	38	0	37	75	827,273	0	806,075	1,633,348
6th	24	0	24	48	48,232	0	47,426	95,658	35	0	33	68	804,183	0	790,739	1,594,922
7th	24	0	24	48	47,362	0	46,792	94,154	29	0	31	60	793,287	0	783,745	1,577,033
8th	24	0	24	48	47,226	0	46,407	93,632	42	0	28	70	788,566	0	774,895	1,563,461
9th	23	0	24	47	33,474	0	39,560	73,034	37	0	33	70	593,306	0	701,182	1,294,488
10th	0	0	24	24	126	0	43,585	43,711	0	0	30	30	2,154	0	742,990	745,144
11th	23	0	24	47	46,943	0	45,349	92,292	37	0	39	76	790,657	0	763,808	1,554,465
12th	24	0	24	48	40,982	0	42,720	83,702	34	0	31	64	710,814	0	740,968	1,451,781
13th	24	0	24	48	45,979	0	45,613	91,592	39	0	42	81	776,121	0	769,934	1,546,055
14th	24	0	24	48	48,703	0	47,480	96,183	36	0	30	65	804,651	0	784,446	1,589,097
15th	24	0	23	47	37,890	0	36,669	74,559	41	0	46	87	667,484	0	645,974	1,313,458
16th	24	0	0	24	40,913	0	0	40,913	35	0	0	35	718,902	0	0	718,902
17th	24	0	6	30	45,813	0	11,698	57,512	38	0	27	65	782,121	0	199,713	981,835
18th	24	0	24	48	50,106	0	50,813	100,919	36	0	36	72	815,075	0	826,578	1,641,653
19th	24	0	24	48	50,015	0	51,012	101,027	35	0	31	66	810,552	0	826,704	1,637,256
20th	24	0	24	48	51,086	0	50,481	101,568	39	0	37	75	834,533	0	824,652	1,659,184
21st	24	0	24	48	51,038	0	51,666	102,705	32	0	30	62	822,666	0	832,786	1,655,452
22nd	24	0	24	48	50,758	0	51,908	102,666	42	0	38	80	815,836	0	834,308	1,650,144
23rd	14	0	24	38	23,513	0	47,173	70,686	38	0	35	73	390,266	0	782,963	1,173,228
24th	8	0	24	32	18,562	0	45,567	64,129	47	0	41	89	310,854	0	763,096	1,073,950
25th	24	0	24	48	50,985	0	51,463	102,448	35	0	34	69	823,401	0	831,109	1,654,510
26th	13	0	24	37	24,877	0	52,436	77,313	44	0	35	79	397,975	0	838,844	1,236,819
27th	24	0	24	48	48,673	0	49,476	98,149	52	0	28	80	796,059	0	809,193	1,605,253
28th	24	0	24	48	50,340	0	50,290	100,630	38	0	37	75	824,894	0	824,082	1,648,977
29th	21	0	24	45	40,398	0	48,132	88,530	34	0	31	65	678,120	0	807,934	1,486,053
30th	14	0	24	38	27,118	0	45,001	72,119	61	0	37	98	463,431	0	769,028	1,232,458
Totals	637	0	641	1,278	1,244,157	0	1,260,449	2,504,607	1,135	0	967	2,102	20,737,690	0	20,950,375	41,688,064
	Sum of Engines		1,278		Sum of Engines		2,504,607		Sum of Engines		2,102		Sum of Engines		41,688,064	

EBMUD

September - 2018

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	16	281,900	0	0	0	24	97,094	1,606,039	0	0	48	48
2nd	0	0	0	0	0	24	83,994	1,433,825	0	0	34	34
3rd	3	55,631	0	0	0	24	90,019	1,521,809	6.5	82,814	29	36
4th	7	76,049	0	0	0	24	90,082	1,550,599	0	0	38	38
5th	13	143,371	0	0	0	24	97,720	1,599,779	0	0	48	48
6th	10	239,325	0	0	0	24	92,499	1,561,764	0	0	48	48
7th	11	162,944	0	0	0	24	93,075	1,572,396	0	0	48	48
8th	9	119,326	0	0	0	24	95,579	1,603,876	0	0	48	48
9th	0.2	2,053	0	0	0	24	81,577	1,417,732	0	0	47	47
10th	1.1	23,684	0	0	0	24	91,006	1,570,608	0	0	24	24
11th	2.3	30,934	0	0	0	24	92,049	1,577,125	0	0	47	47
12th	0.2	2,809	0	0	0	24	91,850	1,555,931	0	0	48	48
13th	10	163,871	0	0	0	24	97,458	1,619,301	0	0	48	48
14th	18	460,493	0	0	0	24	99,322	1,656,942	0	0	48	48
15th	0.3	3,975	0	0	0	24	91,990	1,559,425	0	0	47	47
16th	0.2	3,642	0	0	0	24	89,934	1,523,105	0	0	24	24
17th	13	323,154	0	0	0	23	87,891	1,549,616	0	0	30	30
18th	18	1,380,109	0	0	0	6.8	23,226	431,101	0	0	48	48
19th	6	68,317	0	0	0	24	91,988	1,558,197	0	0	48	48
20th	19	493,517	0	0	0	24	97,225	1,623,531	0	0	48	48
21st	19	573,122	0	0	0	24	99,990	1,652,307	0	0	48	48
22nd	19	496,983	0	0	0	24	99,744	1,623,511	0	0	48	48
23rd	11	246,051	0	0	0	18	65,626	1,098,798	0	0	38	38
24th	11	256,563	0	0	0	14	55,722	946,345	8.6	162,488	32	41
25th	22	486,132	0	0	0	24	101,223	1,611,373	0	0	48	48
26th	17	598,503	0	0	0	24	98,859	1,500,218	0	0	37	37
27th	2	29,333	0	0	0	24	95,562	1,467,797	0	0	48	48
28th	5	75,308	0	0	0	24	94,011	1,486,179	0	0	48	48
29th	3.8	60,638	0	0	0	24	91,328	1,446,453	0	0	45	45
30th	5.8	174,194	0	0	0	18	62,228	1,022,727	5.9	73,926	38	44
Totals	274	7,031,931	0	0		681	2,639,875	43,948,413	21	319,229	1,278	1,299
				Maximum	0	Minimum					Maximum	48

EBMUD

October - 2018

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, FCI Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	24	0	24	48	41,424	0	42,754	84,178	30	0	30	60	730,927	0	754,406	1,485,333
2nd	24	0	24	48	47,616	0	47,811	95,427	39	0	35	74	794,226	0	797,467	1,591,693
3rd	24	0	24	48	51,044	0	49,975	101,019	33	0	32	65	837,546	0	820,008	1,657,554
4th	24	0	24	48	51,000	0	52,181	103,182	38	0	31	68	816,314	0	835,216	1,651,531
5th	24	0	24	48	49,962	0	50,170	100,132	33	0	33	66	816,662	0	820,060	1,636,723
6th	24	0	24	48	48,030	0	47,903	95,934	38	0	29	67	799,288	0	797,175	1,596,463
7th	20	0	15	35	34,946	0	26,365	61,310	41	0	27	68	604,927	0	456,386	1,061,313
8th	13	0	24	37	21,422	0	43,588	65,011	35	0	32	67	375,128	0	763,272	1,138,400
9th	24	0	24	48	45,855	0	45,896	91,751	37	0	32	69	777,282	0	777,975	1,555,257
10th	24	0	24	48	49,825	0	49,101	98,925	34	0	28	62	822,627	0	810,671	1,633,298
11th	24	0	24	48	51,007	0	49,689	100,696	37	0	36	72	839,233	0	817,548	1,656,780
12th	24	0	24	48	50,973	0	49,198	100,170	33	0	31	63	842,859	0	813,510	1,656,369
13th	24	0	24	48	50,832	0	49,174	100,006	64	0	51	115	841,758	0	814,304	1,656,062
14th	24	0	24	48	38,837	0	40,617	79,454	34	0	35	69	692,380	0	724,105	1,416,485
15th	24	0	24	48	44,412	0	45,175	89,587	37	0	31	68	761,629	0	774,725	1,536,354
16th	24	0	24	48	48,697	0	47,647	96,345	34	0	30	64	815,890	0	798,296	1,614,186
17th	24	0	24	48	50,972	0	50,509	101,481	32	0	31	62	830,926	0	823,386	1,654,312
18th	23	0	23	46	49,669	0	50,093	99,761	37	0	49	86	800,061	0	806,890	1,606,951
19th	24	0	24	48	50,984	0	50,672	101,656	38	0	34	72	827,875	0	822,819	1,650,694
20th	24	0	24	48	49,211	0	49,480	98,691	35	0	31	66	805,093	0	809,497	1,614,590
21st	24	0	7	31	46,686	0	8,756	55,442	37	0	7	45	796,398	0	149,356	945,754
22nd	24	0	0	24	49,266	0	3,213	52,478	37	0	41	77	822,608	0	53,648	876,256
23rd	24	0	24	48	41,281	0	39,920	81,201	35	0	49	84	724,525	0	700,650	1,425,175
24th	24	0	24	48	49,372	0	47,835	97,206	35	0	38	73	827,049	0	801,301	1,628,350
25th	24	0	24	48	50,978	0	50,266	101,245	38	0	30	68	838,395	0	826,690	1,665,084
26th	24	0	24	48	50,973	0	51,187	102,160	36	0	32	68	827,591	0	831,057	1,658,648
27th	24	0	24	48	50,166	0	49,451	99,617	33	0	29	63	833,569	0	821,694	1,655,263
28th	18	0	24	42	29,610	0	46,809	76,419	44	0	36	80	506,051	0	799,987	1,306,038
29th	8	0	24	32	18,309	0	50,060	68,369	25	0	27	52	302,396	0	826,787	1,129,182
30th	24	0	24	48	51,059	0	49,885	100,944	40	0	35	75	844,766	0	825,347	1,670,113
31st	24	0	24	48	50,990	0	50,501	101,491	33	0	34	66	839,032	0	830,978	1,670,010
Totals	706	0	693	1,399	1,415,407	0	1,385,880	2,801,287	1,130	0	1,026	2,156	23,595,011	0	23,105,211	46,700,222
	Sum of Engines		1,399		Sum of Engines		2,801,287		Sum of Engines		2,156		Sum of Engines		46,700,222	

EBMUD

October - 2018

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	6.6	146,763	0	0	0	12	41,058	713,394	12	151,682	48	60
2nd	12	356,916	0	0	0	24	90,536	1,439,734	0	0	48	48
3rd	24	1,347,225	0	0	0	24	96,345	1,507,942	0	0	48	48
4th	21	737,598	0	0	0	24	97,984	1,492,704	0	0	48	48
5th	16	270,156	0	0	0	24	95,432	1,478,913	0	0	48	48
6th	4.0	53,892	0	0	0	24	90,208	1,434,001	0	0	48	48
7th	2.3	40,618	0	0	0	24	80,473	1,338,852	0	0	35	35
8th	4.0	37,587	0	0	0	24	79,303	1,351,222	0	0	37	37
9th	8.1	88,776	0	0	0	24	86,719	1,398,233	0	0	48	48
10th	16	477,537	0	0	0	24	98,223	1,536,466	0	0	48	48
11th	24	797,831	0	0	0	24	99,631	1,557,302	0	0	48	48
12th	24	605,584	0	0	0	24	98,000	1,545,015	0	0	48	48
13th	18	469,478	0	0	0	24	96,126	1,511,857	0	0	48	48
14th	0.3	3,126	0	0	0	24	77,085	1,248,980	0	0	48	48
15th	0	0	0	0	0	24	76,381	1,283,540	0	0	48	48
16th	12	322,659	0	0	0	24	88,724	1,426,948	0	0	48	48
17th	22	843,667	0	0	0	24	101,258	1,558,090	0	0	48	48
18th	24	740,670	0	0	0	24	100,465	1,547,188	0	0	46	46
19th	24	749,860	0	0	0	24	99,784	1,551,519	0	0	48	48
20th	10	141,637	0	0	0	24	94,850	1,468,326	0	0	48	48
21st	3.0	41,659	0	0	0	24	90,476	1,449,050	0	0	31	31
22nd	9.0	114,616	0	0	0	21	83,689	1,339,786	2.7	40,516	24	27
23rd	0.8	11,203	0	0	0	24	85,388	1,370,717	0	0	48	48
24th	5.8	89,444	0	0	0	24	96,937	1,544,136	0	0	48	48
25th	22	555,059	0	0	0	24	99,415	1,576,772	0	0	48	48
26th	20	428,039	0	0	0	24	99,236	1,564,183	0	0	48	48
27th	14	192,610	0	0	0	24	94,841	1,511,812	0	0	48	48
28th	1.2	17,583	0	0	0	24	90,908	1,473,837	0	0	42	42
29th	5.5	115,326	0	0	0	24	95,671	1,527,558	0	0	32	32
30th	11	184,392	0	0	0	24	100,492	1,597,630	0	0	48	48
31st	8.5	135,253	0	0	0	24	99,342	1,558,361	0	0	48	48
Totals	371	10,116,764	0	0		729	2,824,980	44,904,065	14	192,198	1,399	1,413
				Maximum	0	Minimum					Maximum	60

EBMUD

November - 2018

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, FCI Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	24	0	24	48	50,271	0	49,456	99,727	39	0	34	73	834,441	0	820,922	1,655,363
2nd	24	0	24	48	50,717	0	50,491	101,208	42	0	34	76	833,137	0	829,429	1,662,566
3rd	24	0	24	48	48,124	0	48,402	96,526	38	0	32	70	800,254	0	804,879	1,605,133
4th	25	0	25	50	45,954	0	45,428	91,382	36	0	35	72	788,004	0	778,991	1,566,995
5th	24	0	8	32	47,935	0	13,556	61,491	41	0	65	106	793,347	0	224,365	1,017,712
6th	24	0	24	48	46,469	0	46,960	93,429	34	0	33	68	787,466	0	795,796	1,583,261
7th	24	0	24	48	50,145	0	51,040	101,185	37	0	30	67	821,901	0	836,572	1,658,474
8th	24	0	24	48	50,926	0	52,391	103,317	37	0	32	69	816,199	0	839,677	1,655,876
9th	24	0	24	48	50,892	0	52,464	103,355	32	0	34	65	824,409	0	849,871	1,674,280
10th	24	0	24	48	50,763	0	52,398	103,161	50	0	30	80	819,684	0	846,098	1,665,782
11th	24	0	23	47	40,147	0	37,733	77,880	35	0	45	81	698,355	0	656,373	1,354,728
12th	24	0	14	38	41,385	0	26,733	68,118	34	0	35	70	725,880	0	468,889	1,194,769
13th	24	0	24	48	46,684	0	47,454	94,138	37	0	32	68	788,418	0	801,422	1,589,840
14th	24	0	24	48	51,013	0	51,539	102,551	19	0	29	49	838,227	0	846,876	1,685,103
15th	24	0	24	48	48,473	0	49,769	98,242	39	0	36	74	802,397	0	823,856	1,626,253
16th	24	0	24	48	50,986	0	51,110	102,095	38	0	29	67	842,388	0	844,433	1,686,821
17th	24	0	24	48	50,222	0	50,886	101,109	37	0	38	75	830,082	0	841,054	1,671,136
18th	24	0	16	40	47,352	0	27,397	74,749	33	0	40	73	803,301	0	464,764	1,268,065
19th	24	0	19	43	48,901	0	38,409	87,311	42	0	34	76	831,233	0	652,887	1,484,120
20th	24	0	24	48	50,220	0	49,878	100,099	34	0	35	70	835,513	0	829,829	1,665,341
21st	24	0	24	48	50,984	0	50,201	101,185	37	0	29	67	860,085	0	846,867	1,706,953
22nd	24	0	24	48	50,987	0	51,081	102,068	37	0	34	71	851,371	0	852,933	1,704,304
23rd	24	0	24	48	48,303	0	49,650	97,953	30	0	34	64	812,210	0	834,858	1,647,068
24th	24	0	24	48	41,268	0	42,775	84,044	43	0	31	74	734,216	0	761,025	1,495,241
25th	24	0	10	34	44,994	0	13,984	58,978	37	0	26	62	802,149	0	249,300	1,051,449
26th	24	0	9	33	46,834	0	19,510	66,344	39	0	40	79	807,208	0	336,263	1,143,471
27th	24	0	24	48	51,060	0	51,230	102,290	36	0	38	74	854,938	0	857,775	1,712,713
28th	24	0	24	48	51,112	0	51,882	102,993	35	0	32	66	795,472	0	807,455	1,602,927
29th	11	0	10	21	19,172	0	18,609	37,781	36	0	65	100	282,238	0	273,960	556,198
30th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	684	0	614	1,298	1,372,293	0	1,242,417	2,614,709	1,065	0	1,041	2,106	22,914,525	0	20,677,418	43,591,943
	Sum of Engines		1,298		Sum of Engines		2,614,709		Sum of Engines		2,106		Sum of Engines		43,591,943	

EBMUD

November - 2018

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	8.6	199,088	0	0	0	24	93,681	1,512,571	0	0	48	48
2nd	18	454,471	0	0	0	23	90,290	1,438,575	0.8	11,987	48	49
3rd	0.7	9,047	0	0	0	24	90,958	1,426,504	0.7	10,580	48	49
4th	5.5	61,026	0	0	0	19	63,490	1,056,436	0	0	50	50
5th	8.6	159,990	0	0	0	12	47,124	737,882	7.9	132,231	32	40
6th	11	331,969	0	0	0	24	99,002	1,581,103	0	0	48	48
7th	24	864,198	0	0	0	24	100,541	1,564,559	7.0	99,841	48	55
8th	20	351,830	0	0	0	23	95,302	1,487,723	0	0	48	48
9th	24	2,003,824	0	0	0	0	0	0	24	333,045	48	72
10th	17	933,182	0	0	0	12	49,988	782,347	12	168,786	48	60
11th	0	0	0	0	0	24	85,786	1,366,282	0	0	47	47
12th	1.3	24,939	0	0	0	24	90,344	1,460,157	0	0	38	38
13th	2.3	89,517	0	0	0	22	84,744	1,342,836	0	0	48	48
14th	13	631,707	0	0	0	18	77,145	1,212,582	6.4	89,486	48	54
15th	12	414,848	0	0	0	13	55,959	878,749	11	219,705	48	59
16th	23	647,342	0	0	0	24	103,535	1,634,112	0	0	48	48
17th	5.9	85,695	0	0	0	24	98,487	1,554,010	0	0	48	48
18th	0	0	0	0	0	18	65,825	1,035,181	6.7	91,609	40	47
19th	13	262,474	0	0	0	0	0	0	6.3	74,850	43	49
20th	21	966,651	0	0	0	3.7	14,158	240,085	0	3,785	48	48
21st	18	656,801	0	0	0	24	100,106	1,616,923	0	0	48	48
22nd	24	1,036,976	0	0	0	24	100,212	1,603,528	0	0	48	48
23rd	7.7	129,386	0	0	0	24	85,853	1,384,590	0	0	48	48
24th	0	0	0	0	0	24	77,866	1,324,667	2.7	25,760	48	51
25th	0	0	0	0	0	24	86,683	1,462,746	0	0	34	34
26th	4.4	132,872	0	0	0	22	84,732	1,401,151	0	0	33	33
27th	24	749,167	0	0	0	24	101,307	1,643,422	0	0	48	48
28th	24	827,302	0	0	0	24	99,649	1,604,995	11	102,400	48	59
29th	24	1,774,871	0	0	0	24	99,619	1,589,710	24	293,822	21	45
30th	24	2,074,889	0	0	0	24	102,584	1,633,082	24	381,657	0	24
Totals	377	15,874,063	0	0		595	2,344,969	37,576,507	144	2,039,545	1,298	1,442
				Maximum	0	Minimum					Maximum	72

EBMUD

December - 2018

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, FCI Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st				0				0				0				0
2nd				0				0				0				0
3rd				0				0				0				0
4th				0				0				0				0
5th				0				0				0				0
6th				0				0				0				0
7th				0				0				0				0
8th				0				0				0				0
9th				0				0				0				0
10th				0				0				0				0
11th				0				0				0				0
12th				0				0				0				0
13th				0				0				0				0
14th				0				0				0				0
15th				0				0				0				0
16th				0				0				0				0
17th	0.6			1	19			19	109			109				0
18th				0				0				0				0
19th				0				0				0				0
20th				0				0				0				0
21st				0				0				0				0
22nd				0				0				0				0
23rd				0				0				0				0
24th				0				0				0				0
25th				0				0				0				0
26th				0				0				0				0
27th				0				0				0				0
28th				0				0				0				0
29th				0				0				0				0
30th				0				0				0				0
31st				0				0				0				0
Totals	0.6	0	0	0.6	19	0	0	19	109	0	0	109	0	0	0	0
	Sum of Engines		0.6		Sum of Engines		19		Sum of Engines		109		Sum of Engines		0	

EBMUD

December - 2018

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	24	1,176,323	0	0	0	24	103,472	1,666,721	24	525,750	0	24
2nd	14	308,102	0	0	0	24	105,154	1,699,546	24	247,680	0	24
3rd	24	1,340,076	0	0	0	24	105,137	1,731,881	24	247,680	0	24
4th	24	1,760,826	0	0	0	24	104,419	1,736,237	24	247,680	0	24
5th	24	1,764,057	0	0	0	24	104,243	1,678,113	24	247,680	0	24
6th	24	2,039,989	0	0	0	24	102,224	1,619,448	24	247,680	0	24
7th	24	1,941,206	0	0	0	24	104,841	1,638,610	24	247,680	0	24
8th	24	1,124,210	0	0	0	24	104,827	1,626,084	24	247,680	0	24
9th	20	479,338	0	0	0	24	106,482	1,673,652	24	247,680	0	24
10th	22	484,465	0	0	0	24	105,518	1,683,375	24	247,680	0	24
11th	24	1,336,900	0	0	0	24	105,472	1,687,405	24	247,680	0	24
12th	24	1,376,445	0	0	0	24	103,854	1,669,852	24	268,875	0	24
13th	24	1,678,959	0	0	0	24	103,644	1,640,539	24	247,680	0	24
14th	24	1,855,066	0	0	0	24	101,937	1,559,672	24	247,680	0	24
15th	24	1,652,066	0	0	0	24	100,937	1,558,390	24	247,680	0	24
16th	24	738,110	0	0	0	24	100,494	1,553,522	24	247,680	0	24
17th	24	983,577	0	0	0	24	103,593	1,595,504	24	386,247	0.6	25
18th	24	1,844,960	0	0	0	15	65,416	1,021,883	15	263,165	0	15
19th	24	2,706,557	0	0	0	18	76,493	1,206,067	24	496,699	0	24
20th	24	2,617,220	0	0	0	14	59,795	922,094	24	553,123	0	24
21st	24	1,960,618	0	0	0	24	102,735	1,607,336	24	453,600	0	24
22nd	24	1,164,219	0	0	0	24	105,035	1,646,311	24	453,600	0	24
23rd	24	971,717	0	0	0	24	104,843	1,657,982	24	453,600	0	24
24th	22	469,547	0	0	0	24	102,842	1,643,043	24	415,133	0	24
25th	3.9	35,871	0	0	0	24	103,716	1,662,058	24	266,413	0	24
26th	18	1,093,522	0	0	0	19	80,951	1,318,385	24	342,829	0	24
27th	24	1,413,508	0	0	0	14	60,047	965,835	24	423,195	0	24
28th	24	1,882,773	0	0	0	24	104,520	1,621,939	24	247,680	0	24
29th	24	1,606,388	0	0	0	24	105,729	1,599,783	24	343,919	0	24
30th	13	279,890	0	0	0	24	103,059	1,586,243	24	370,088	0	24
31st	13	481,769	0	0	0	24	96,908	1,552,271	24	247,680	0	24
Totals	677	40,568,273	0	0		705	3,038,339	48,029,783	735	9,979,116	0.6	736
				Maximum	0	Minimum					Maximum	25

Attachment 2 - Combustion Device Summaries **EBMUD Main Wastewater Plant** **July 1 - December 31, 2018**

Engine Thermal Throughput - Thermal Mass Meter, Common Engine Digester Gas Line

Turbine Operation			Data Source	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Semi-annual Totals	Limits	
Run Time	Total	hrs	metered	607	724	681	729	595	705	4,041		
Digester Gas	Total	cu ft	metered	38,603,734	48,323,581	43,948,413	44,904,065	37,576,507	48,029,783	261,386,082		
Thermal Throughput[3]	Total	MMBTU		25,118	31,550	28,134	28,676	25,159	30,482	169,119	389,820	MMBTU HHV per 12-Month period
	Total	MMBTU/hr		41.4	43.6	41.3	39.3	42.3	43.3	x		
Nitrogen Oxide[4]	Max	ppm	sampled	4.7	5.3	4.5	4.9	5.9	7.7	x	23	ppm at any time
Carbon Monoxide[4]	Max	ppm	sampled	2.8	3.8	1.1	1.0	5.6	4.1	x	100	
Sulfur Dioxide[4]	Max	ppm	sampled	1.2	1.8	4.6	7.2	3.1	4.2	x	150	
Nitrogen Oxide	Total	lbs	calc'd	Last annual source test mass flow rate (0.61 lbs/hr) x last 12 mo run time (4,173+4,041 hrs)---->						5,011	34,400	lbs per 12-Month period
Carbon Monoxide	Total	lbs	calc'd	Last annual source test mass flow rate (0.2 lbs/hr) x last 12 mo run time (4,173+4,041 hrs)---->						1,643	92,200	
Engine Operation												
Run Time	Eng #1	hrs	metered	613	704	637	706	684	0.6	3,345		
	Eng #2	hrs	metered	-	-	-	-	-	-	-		
	Eng #3	hrs	metered	596	643	641	693	614	-	3,187		
	Total	hrs	sum	1,209	1,347	1,278	1,399	1,298	0.6	6,532	25,316	hr/365 days
Diesel Fuel[1]	Eng #1	gal	calc'd	962	1,212	1,135	1,130	1,065	109	5,613		
	Eng #2	gal	calc'd	-	-	-	-	-	-	-		
	Eng #3	gal	calc'd	915	1,006	967	1,026	1,041	-	4,955		
	Total	gal	sum	1,877	2,218	2,102	2,156	2,106	109	10,568	150,000	gal/365 days
Digester Gas[2]	Eng #1	cu ft	metered	20,446,033	23,523,702	20,737,690	23,595,011	22,914,525	-	111,216,961		
	Eng #2	cu ft	metered	-	-	-	-	-	-	-		
	Eng #3	cu ft	metered	19,873,479	21,352,529	20,950,375	23,105,211	20,677,418	-	105,959,011		
	Total	cu ft	sum	40,319,512	44,876,231	41,688,064	46,700,222	43,591,943	-	217,175,972		
Thermal Throughput[3]	Eng #1	MMBTU/hr		21.9	22.1	21.1	21.6	22.6	24.5	x	25	MMBTU/hr
	Eng #2	MMBTU/hr		-	-	-	-	-	-	x	25	MMBTU/hr
	Eng #3	MMBTU/hr		21.9	21.9	21.1	21.5	22.8	-	x	25	MMBTU/hr
Natural Gas	Total	cu ft	metered	-	-	-	-	-	-	-		
Boiler Operation												
Run Time	Boiler	hrs	metered	134	35	21	14	144	735	1,084		
Digester Gas	Boiler	cu ft	metered	1,916,679	532,177	319,229	192,198	2,039,545	9,979,116	14,978,944		
Thermal Thruput[3]	Boiler	MMBTU/hr		9.3	9.8	9.7	8.6	9.5	8.6	x	20.41	MMBTU/hr
Flare Operation (A-190,191,192,193)												
Run Time	Flares	hrs	metered	341	375	274	371	377	677	2,415		
Digester Gas	Flares	cu ft	metered	8,855,176	10,109,830	7,031,931	10,116,764	15,874,063	40,568,273	92,556,039		
Thermal Thruput[3]	Flares	MMBTU/hr		16.9	17.6	16.4	17.4	28.2	38.0	x		
Flare Operation (A-194,195)												
Run Time	Flares	hrs	metered	-	-	-	-	-	-	-		
Digester Gas	Flares	cu ft	metered	-	-	-	-	-	-	-		
Thermal Thruput[3]	Flares	MMBTU/hr		-	-	-	-	-	-	x		
Max Total Flow	Flares	scfm	metered	-	-	-	-	-	-	x	3,000	scfm
Digester Gas HHV	Grab	BTU/scf	sampled	651	653	640	639	670	635	x		

(1) Diesel use per engine (gal) = diesel withdrawn from common storage tank daily (gal) x ratio of fuel used per engine (single day tank level / sum of all day tanks)

(2) Digester gas usage (cf) = DCS/PI flow data from common engine line meter (scfm) x minutes of gas flow x (engine hours/sum of engine hours)

(3) Thermal Throughput calculations use High Heat Value of the monthly Digester Gas Sample combined with Diesel High Heat Value of 138,690 BTU/gal or Natural Gas HHV of 1020 BTU/scf as applicable.

(4) Monthly turbine exhaust check - ppm corrected to 15% O2

ATTACHMENT 3

ANNUAL SOURCE TEST RESULTS

- Engine #3 (S-39), 7/3/18 by BAAQMD
- Turbine (S-56), 7/25/18 by BAAQMD
- Engine #3 (S-39), 9/26/18 by Blue Sky Environmental
- Turbine (S-56), 12/11/18 by Blue Sky Environmental
- Boiler (S-55), 12/17/18 by Blue Sky Environmental

Distribution:
Firm
Permit Services
Requester

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

375 Beale Street, Suite 600
San Francisco, California 94105
(415) 771-6000

SUMMARY OF SOURCE TEST RESULTS

Report No. 19058
Test Date: 07/03/18

Test Times:
Run A: 1101 - 1151
Run B: 1207 - 1301
Run C:

Source Information		BAAQMD
Firm Name and Address: East Bay Municipal Utility District 2020 Wake Avenue Oakland, CA 94607	Firm Representative and Title: Maura Bonnerens Wastewater Treatment Division Manager Phone No. (510) 287-1023	Source Test Team: B. Kino G. Bradbury
Permit Conditions: NO_X < 70 ppmv at 15% O_2 CO < 2000 ppmv at 15% O_2 TRS in Fuel < 200 ppmv Heat Input < 25 MM BTU / Hr	Sources: Multi-Fuel Cogeneration Engine #3 (S-39) Site No. A0591 Permit Con. # 20651/18860 Operates 24 hr/day & 365 day/year	Permit Services / Enforcement A. Borja Test Requested by: J. Bovee (CDS, Title V)

Operating Parameters: The engine's average output was 1,666 KW. The engine consumed an estimated average of 497 SCFM of digester gas fuel, with an average heating value of 619 BTU/SCF.

Applicable Regulations:	2-6-307, 9-1-302 & 9-8-302	Further Evaluation Recommended:	NO

Source Test Results and Comments:

METHOD	PARAMETER	OUTLET RESULTS	BAAQMD LIMITS Regulation / Permit
ST-17	Volumetric Flowrate, SCFM	5,516	
	Estimated Heat Input, mmbtu/hr	15	None / 25
ST-14	Oxygen, dry volume %	12.4	
ST- 5	Carbon Dioxide, dry volume %	6.8	
	Carbon Dioxide, lb/hr	2,574	
ST- 6	Carbon Monoxide, dry ppmv	591	
	Carbon Monoxide, dry ppmv Corrected To 15% Oxygen	410	2,000 / 2,000
	Carbon Monoxide, lb/hr	14.2	
	Carbon Monoxide, g/hp-hr	2.9	
ST- 7	Methane, dry ppmv	3,863	
	Methane, lb/hr	52.9	
	Non-Methane Organic Compounds (NMOC), dry ppmv (as C_1)	<100	
	NMOC, lb/hr	<1.4	
	NMOC, g/hp-hr	<0.28	
ST-13A	Nitric Oxide, dry ppmv	6.6	
	Nitrogen Dioxide, dry ppmv	15.1	
	Oxides of Nitrogen, dry ppmv	21.6	
	Oxides of Nitrogen, dry ppmv Corrected To 15% Oxygen	15.0	70 / 70
	Oxides of Nitrogen, lb/hr	0.85	
	Oxides of Nitrogen, g/hp-hr	0.17	
ST-19A	Sulfur Dioxide, dry ppmv	<5	300 / None
	Sulfur Dioxide, lb/hr	<0.27	
	TRS in Fuel, Estimated ppmv	<56	None / 200

Notes: A "<" indicates values that are less than the method detection limit.

NO COMMERCIAL USE OF THESE RESULTS IS AUTHORIZED

Air Quality Engineer	Date	Supervising Air Quality Engineer	Date	Air Quality Engineering Manager	Date
B. Kino	11/15/18	E. Ko	11/19/18	J. Bovee	11/20/18

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Distribution:
Firm
Permit Services
Requester

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

375 Beale Street, Suite 600
San Francisco, California 94105
(415) 771-6000

SUMMARY OF SOURCE TEST RESULTS

Report No. 19063
Test Date: 07/26/18

Test Times:
Run A: 1101 – 1151
Run B: 1205 – 1255
Run C:

Source Information

Firm Name and Address:
East Bay Municipal Utility District
2020 Wake Avenue
Oakland, CA 94607

Firm Representative and Title:
Maura Bonnerens
Wastewater Treatment Division Manager
Phone No. (510) 287-1407

Permit Conditions:

	Corrected to 15% O2	lb/yr
NOx	23	34,400
CO	100	92,200
SO2	150	

TRS in Fuel < 200 ppmv
Heat Input < 44.5 MMBTU/Hr

Sources:
Digester Gas Turbine #1 (S-56)

Site No. A0591 Permit Con. # 24050/18860

Operates 24 hr/day & 365 day/year

BAAQMD

Source Test Team:
B. Kino
G. Bradbury

Permit Services / Enforcement
A. Borja

Test Requested by:
J. Bovee (CDS; Title V)

Operating Parameters: The turbine's average output was 4,170 KW. The engine consumed an estimated average of 1,181 SCFM of fuel, with an average heating value of 629 BTU/SCF.

Applicable Regulations: 2-6-307, 9-1-302 & 9-9-301

Further Evaluation Recommended: NO

Source Test Results and Comments:

METHOD	PARAMETER	OUTLET RESULTS	BAAQMD LIMITS Regulation / Permit
	Volumetric Flowrate, SCFM	29,598 [1]	
	Estimated Heat Input, mmbtu/hr	44.5	None / 44.5
ST-14	Oxygen, dry volume %	16.1	
ST- 5	Carbon Dioxide, dry volume %	3.9	
	Carbon Dioxide, lb/hr	7,825	
ST- 6	Carbon Monoxide, dry ppmv	< 5	
	Carbon Monoxide, dry ppmv Corrected To 15% Oxygen	< 5	None / 100
	Carbon Monoxide, lb/hr	< 0.64	
	Carbon Monoxide, Estimated lbs/yr	< 5,629	None / 92,200
	Carbon Monoxide, g/hp-hr	< 0.05	
ST- 7	Total Organic Carbon (includes methane), dry ppmv as C_1	< 1	
	Total Organic Carbon (TOC), lbs/hr as Carbon	< 0.07	
ST-13A	Oxides of Nitrogen, dry ppmv	3.1	
	Oxides of Nitrogen, dry ppmv Corrected To 15% Oxygen	3.8	50 / 23
	Oxides of Nitrogen, lbs/hr	0.64	
	Oxides of Nitrogen, Estimated lbs/yr	5,648	None / 34,400
	Oxides of Nitrogen, g/hp-hr	0.05	
	Nitric Oxide, ppmv	2.8	
	Nitrogen Dioxide, ppmv	0.3	
ST-19A	Sulfur Dioxide, dry ppmv	< 5	300 / None
	Sulfur Dioxide, dry ppmv Corrected To 15% Oxygen	< 6	None / 150
	Sulfur Dioxide, lb/hr	< 1.47	
	TRS in Fuel, Estimated ppmv	< 125	None / 200

Notes: A "<" indicates values that are less than the method detection limit.
[1] Calculated value based on fuel flow rate and an EPA "F_d" factor.

NO COMMERCIAL USE OF THESE RESULTS IS AUTHORIZED

Air Quality Engineer	Date	Supervising Air Quality Engineer	Date	Air Quality Engineering Manager	Date
B. Kino	12/14/18	E. Ko	12/27/18	J. Bovee	1/2/19

h:\tech\srstst\summary\fy2019\ST19063.docx

TABLE #1

EBMUD
Engine #3 (S-39)
2272 kW

RUN	1	2	3	AVERAGE	LIMITS
Test Date	9/26/18	9/26/18	9/26/18		
Test Time	0811-0841	0855-0925	0944-1014		
Standard Temp., °F	70	70	70		
Generator kW	2,299	2,191	1,985	2,158	
Engine kW	2,420	2,306	2,089	2,272	
Engine BHp	3,243	3,090	2,800	3,044	
Fuel Flow Rate, DSCFM (nat gas)	0.0	0.0	0.0	0.0	
Fuel Flow Rate, DSCFM (dig gas)	566.9	536.0	587.8	563.5	
WOBBE Btu/cf	652	654	657	655	
Gas Fd-Factor @ 68°F, DSCFM	9,148	9,144	9,137	9,143	
Flow Rate, DSCFM (Method 19)	8,563	8,120	8,939	8,541	
Oxygen, O_2, %	12.6	12.6	12.6	12.6	
Carbon Dioxide, CO_2, %	8.2	8.2	8.2	8.2	
NOx, ppm	35.4	37.0	35.3	35.9	
NOx, ppm @ 15% O_2	**25.2**	**26.3**	**25.1**	**25.5**	**70**
NOx, lbs/hr (M19)	2.16	2.14	2.25	2.19	
NOx, lbs/day	51.87	51.45	54.02	52.45	
NOx, gm/BHp-hr	0.30	0.31	0.36	0.3	
CO, ppm	430.8	424.5	429.3	428.2	
CO, ppm @ 15% O_2	**306.7**	**302.3**	**305.7**	**304.9**	**2000**
CO, lbs/hr (M19)	16.03	14.97	16.67	15.89	
CO, lbs/day	384.63	359.35	400.07	381.3	
CO, gm/BHp-hr	2.24	2.20	2.70	2.38	

WHERE,

ppm = Parts Per Million Concentration
Lbs/hr = Pound Per Hour Emission Rate
Tstd. = Standard Temp. (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
PPM @ 3% O_2 = ppm * 17.9 / (20.9 - %O_2)
Lbs/hr = ppm x 8.223 E-05 x DSCFM x MW / Tstd. °R
Lbs/day = Lbs/hr * 24
gm/BHp-hr = Lbs/hr * 453.6 / BHp
Engine BHp = Engine kW * 1.34
Engine kW = Generator kW / 0.95

TABLE # 1

EBMUD
DG TURBINE #1 (S-56)
4,501 kW

RUN	1	2	3	AVERAGE	LIMITS
Test Date	12/11/18	12/11/18	12/11/18		
Test Time	0844-0914	0926-0956	1007-1037		
Standard Temp., °F	70	70	70	70	
Turbine kW	4,494	4,514	4,495	4,501	
Fuel Flow Rate, DSCFM	1,171	1,181	1,173	1,175	
Fuel Flow Rate, MMBtu/hr	38.7	39.1	38.8	38.9	
Exhaust Flow Rate, DSCFM (Method 19)	25,285	25,218	25,892	25,465	
Oxygen, O_2, %	16.0	15.9	16.1	16.0	
Carbon Dioxide, CO_2, %	4.4	4.4	4.2	4.3	
NOx, ppm	3.4	3.3	3.4	3.4	
NOx, ppm @ 15% O_2	**4.1**	**3.9**	**4.2**	**4.0**	**23**
NOx, lbs/hr	0.61	0.59	0.63	0.61	
NOx, lbs/MMBtu	0.016	0.015	0.016	0.016	
CO, ppm	1.9	1.0	1.4	1.4	
CO, ppm @ 15% O_2	**2.2**	**1.2**	**1.7**	**1.7**	**100**
CO, lbs/hr	0.2	0.1	0.2	0.2	
CO, lbs/MMBtu	0.005	0.003	0.004	0.004	
SO_2, ppm	5.0	5.0	4.9	5.0	
SO_2, ppm @ 15% O_2	**6.0**	**6.0**	**6.0**	**6.0**	**150**
SO_2, lbs/hr	1.3	1.3	1.3	1.3	
SO_2, lbs/MMBtu	0.03	0.03	0.03	0.03	
THC, ppm	2.3	2.4	2.5	2.4	
THC, lbs/hr as CH_4	0.14	0.15	0.16	0.15	
CH_4, ppm	<2.3	<2.4	<2.5	<2.4	
TNMHC, ppm as CH_4	<2.3	<2.4	<2.5	<2.4	
TNMHC, ppm @ 15% O_2	<2.7	<2.9	<3.0	<2.9	
TNMHC, lbs/hr as CH_4	<0.14	<0.15	<0.16	<0.15	
TNMHC, lbs/MMBtu as CH_4	<0.004	<0.004	<0.004	<0.004	

WHERE,

ppm = Parts Per Million Concentration
Lbs/hr = Pound Per Hour Emission Rate
Tstd. = Standard Temp. (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
THC = Total Hydrocarbons as Methane (MW = 16)
TNMHC = Total Non-Methane Hydrocarbons as Methane (MW = 16)
SO_2 - Sulfur Dioxide (MW=64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
PPM @ 3% O_2 = ppm * 17.9 / (20.9 - %O_2)
Lbs/hr = ppm x 8.223 E-05 x DSCFM x MW / Tstd. °R
Lbs/day = Lbs/hr * 24
Lbs/MMBtu = Lbs-hr / MMBtu-hr

TABLE #1

EBMUD
BOILER (S-55)
Normal Operations
S/N OL104755

TEST	1	2	3	AVERAGE	LIMITS
Test Location	Outlet	Outlet	Outlet		
Test Date	12/17/18	12/17/18	12/17/18		
Test Condition	0826-0856	0908-0945	0957-1027		
Standard Temp., °F	70	70	70		
Boiler Rating, MMBtu/Hr	20.41	20.41	20.41		
Boiler Fire Rate, MMBtu/Hr	9.3	9.2	9.2		
Firing Rate	45%	45%	45%	45%	
Flow Rate, DSCFM (M19)	1,640	1,743	1,670	1,684	
O_2, %	2.9	4.0	3.3	3.4	
NOx, ppm	16.6	14.8	26.4	19.3	
NOx, ppm @ 3% O_2	**16.5**	**15.7**	**26.9**	**19.7**	**30**
NOx, lbs/MMBtu	0.020	0.019	0.033	0.024	
NOx, lbs/hr	0.19	0.18	0.32	0.23	
CO, ppm	<1.0	<1.0	<1.0	<1.0	
CO, ppm @ 3% O_2	**<1.0**	**<1.1**	**<1.0**	**<1.0**	**50**
CO, lbs/MMBtu	<0.001	<0.001	<0.001	<0.001	
CO, lbs/hr	<0.01	<0.01	<0.01	<0.01	

WHERE,

NO_X = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
ppm = Parts Per Million Concentration

CALCULATIONS,

3% O_2 correction = ppm (NOx, CO) * 17.95/(20.95 - %O_2)
lbs/hr =ppm * 8.223 E-5 * SDCFM * MW of pollutant / Tstd. °R
lbs/MMBtu = Fd * MW * ppm * 2.59E-9 * 20.9/(20.9 - %O_2)

ATTACHMENT 4A

Phase 1 Enhanced Vapor Recovery Maintenance (EVR) Inspection Report

This form is used to document annual maintenance inspections of Phase 1 EVR equipment.

1. FACILITY INFORMATION

Facility name:	EBMUD – Main Wastewater Treatment Plant	GDF #: 9008
Facility address:	2020 Wake Avenue, Oakland, California, 94607	
Site contact:	Chris Dembiczak	
Telephone number:	510-278-0509	
Date of inspection:	10/03/18	

2. TESTING/MAINTENANCE CONTRACTOR INFORMATION

Company name:	Reinholdt Engineering Construction
Technician conducting inspection:	Darin Reinholdt
Credentials:	CSLB licensed contractor; Morrison Brothers Phase 1 EVR installer
License / certification numbers:	671177; 000250

3. ABOVERGROUND STORAGE TANK INFORMATION

Phase 1 Enhanced Vapor Recovery equipment manufacturer: Morrison Brothers

Associated aboveground storage tank product grade:	**87**			
Fill adaptor inspection for large dents, cracks or deformations:	OK			
Vapor adaptor inspection for large dents, cracks or deformations:	OK			
Fill dust cap inspection for nicks, tears or deformations:	OK			
Vapor dust cap inspection for nicks, tears or deformations:	OK			
Spill container inspection and cleaning:	OK			
Pressure/vacuum valve inspection and screens cleaning:	OK			
Hanging hardware inspection:	OK			
Static Pressure Performance Test:	Pass			
Repairs needed:	**No**			

Comments – *(include information on repairs made or recommended):*

None

CERTIFICATION OF TECHNICIAN RESPONSIBLE FOR CONDUCTING THIS INSPECTION

I hereby certify that all the information contained in this report is true, accurate, and in full compliance with legal requirements.

Technician's Signature: Darin Reinholdt Date: 11/3/18

Summary of Source Test Data

Static Pressure Performance Test

GDF Name and Address	GDF Representative and Title	PHASE II SYSTEM TYPE
EBMUD – Main Wastewater Treatment Plant **2020 Wake Avenue** **Oakland, CA, 94607**	**Chris Dembiczak** **Environmental Specialist** GDF Phone No. ( )	Balance ☒ Assist ☐ Other ☐
Number of Gasoline Nozzles: 2 Phase I Type: Two Point GDF # 9008		Permit Conditions:
Manifolded: Yes ☐ No ☒		

TANK #:	1	2	3	4
1. Product Grade	87			
2. Actual Compartment Capacity, gallons	3000			
3. Gasoline Volume	2226			
4. Ullage, gallons (ullage = capacity-volume)	774			
5. Initial Pressure (inches water column)	2.00			
6. Pressure After 1 Minute	1.91			
7. Pressure After 2 Minutes	1.87			
8. Pressure After 3 Minutes	1.83			
9. Pressure After 4 Minutes	1.81			
10. Final Pressure After 5 Minutes	1.79			
11. Allowable Final Pressure	1.49			

Test Conducted by: **Darin Reinholdt** Date of Test: **10/03/18** Time of Test: **11:41**	Test Company: **Reinholdt Engineering Construction**

Attachment 4B
Gasoline Facility Throughput (S-48)

SD-1 GASOLINE DISPENSING FACILITY
Maintenance Center (4,000 Gal)
As of December 31, 2018

MONTH	GALLONS RECEIVED	RECEIVED YR-TO-DATE	GALLONS ISSUED	ISSUED YR-TO-DATE	COMMENTS
JAN 18	3547	3547	2396	2396	
FEB 18	2250	5797	2162	4558	
MAR 18	1700	7497	2633	7191	
APR 18	2500	9997	2370	9561	
MAY 18	2000	11997	2539	12100	
JUN 18	2884	14881	2299	14399	
JUL 18	2375	17256	2223	16622	
AUG 18	2603	19859	2772	19394	
SEP 18	2502	22361	1760	21154	
OCT 18	900	23261	1739	22893	
NOV 18	1521	24782	2071	24964	
DEC 18	1400	26182	894	25858	
Total		26182		25858	

ATTACHMENT 5

Hours of Operation for Stand-by Emergency Generators

July 1, 2018 – December 31, 2018

Source	Location	Hours Meter Begin	Hours Meter End	Emergency Use Hours	Reliability-related Hours	Limit on reliability-related Hours
S-50	North of PGS	138.0	138.0	0	0	30
S-51	Dechlorination	700.9	706.0	0	5.1	50
S-53	West of Admin Bldg	105.9	105.9	0	0	30
S-54	East Bayshore RWP	36	36	0	0	50
S-58	North of Maintenance	17.0	17.0	0	0	50

January 1, 2018 – June 30, 2018

Source	Location	Hours Meter Begin	Hours Meter End	Emergency Use Hours	Reliability-related Hours	Limit on reliability-related Hours
S-50	North of PGS	138.0	138.0	0	0	30
S-51	Dechlorination	697.1	700.9	0	3.8	50
S-53	West of Admin Bldg	105.9	105.9	0	0	30
S-54	East Bayshore RWP	36	36	0	0	50
S-58	North of Maintenance	15.6	17.0	0	1.4	50

January 1, 2018 – December 31, 2018 (last 12 months total)

Source	Location	Hours Meter Begin	Hours Meter End	Emergency Use Hours	Reliability-related Hours	Limit on reliability-related Hours
S-50	North of PGS	138.0	138.0	0	0	30
S-51	Dechlorination	697.1	706.0	0	8.9	50
S-53	West of Admin Bldg	105.9	105.9	0	0	30
S-54	East Bayshore RWP	36	36	0	0	50
S-58	North of Maintenance	15.6	17.0	0	1.4	50

ATTACHMENT 6

TURBINE MONTHLY TEST RESULTS

TABLE # 1

EBMUD-JULY
DG TURBINE #1 (S-56)
4052 kW

RUN	1	LIMITS
Test Date	7/31/18	
Test Time	1450-1505	
Turbine kW	4,052	
Fuel Flow Rate, DSCFM	1,154	
Oxygen, O_2, %	16.4	
NOx, ppm	3.6	
NOx, ppm @ 15% O_2	**4.7**	**23**
CO, ppm	2.1	
CO, ppm @ 15% O_2	**2.8**	**100**
SO_2, ppm	0.9	
SO_2, ppm @ 15% O_2	**1.2**	**150**

WHERE,

ppm = Parts Per Million Concentration

NOx = Oxides of Nitrogen as NO_2 (MW = 46)

CO = Carbon Monoxide (MW = 28)

SO_2 = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)

TABLE # 1

EBMUD-AUGUST
DG TURBINE #1 (S-56)
4118 kW

RUN	1	LIMITS
Test Date	8/27/18	
Test Time	1230-1245	
Turbine kW	4,118	
Fuel Flow Rate, DSCFM	1,175	
Oxygen, O_2, %	16.3	
NOx, ppm	4.1	
NOx, ppm @ 15% O_2	**5.3**	**23**
CO, ppm	3.0	
CO, ppm @ 15% O_2	**3.8**	**100**
SO_2, ppm	1.4	
SO_2, ppm @ 15% O_2	**1.8**	**150**

WHERE,

ppm = Parts Per Million Concentration

NOx = Oxides of Nitrogen as NO_2 (MW = 46)

CO = Carbon Monoxide (MW = 28)

SO_2 = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)

TABLE # 1

EBMUD-SEPTEMBER 2018
DG TURBINE #1 (S-56)
4290 kW

RUN	1	LIMITS
Test Date	9/26/18	
Test Time	1101-1116	
PGS-2 Turbine kW	4,214	
PGS-2 Fuel Flow Rate, DSCFM	1,061	
Oxygen, O_2, %	16.2	
NOx, ppm	3.6	
NOx, ppm @ 15% O_2	**4.5**	**23**
CO, ppm	0.9	
CO, ppm @ 15% O_2	**1.1**	**100**
SO_2, ppm	3.7	
SO_2, ppm @ 15% O_2	**4.6**	**150**

WHERE,

ppm = Parts Per Million Concentration

NOx = Oxides of Nitrogen as NO_2 (MW = 46)

CO = Carbon Monoxide (MW = 28)

SO_2 = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)

TABLE # 1

EBMUD-OCTOBER 2018
DG TURBINE #1 (S-56)
3500 kW

RUN	1	LIMITS
Test Date	10/23/18	
Test Time	1600-1615	
PGS-2 Turbine kW	3500 kW	
PGS-2 Fuel Flow Rate, DSCFM	2,194	
Oxygen, O_2, %	16.5	
NOx, ppm	3.7	
NOx, ppm @ 15% O_2	**4.9**	**23**
CO, ppm	0.7	
CO, ppm @ 15% O_2	**1.0**	**100**
SO_2, ppm	5.4	
SO_2, ppm @ 15% O_2	**7.2**	**150**

WHERE,

ppm = Parts Per Million Concentration

NOx = Oxides of Nitrogen as NO_2 (MW = 46)

CO = Carbon Monoxide (MW = 28)

SO_2 = Sulfur Dioxide (MW= 64)

TABLE # 1

EBMUD-NOVEMBER
DG TURBINE #1 (S-56)
4193 kW

RUN	1	LIMITS
Test Date	11/27/18	
Test Time	1455-1510	
Turbine kW	4,193	
Fuel Flow Rate, DSCFM	1,118	
Oxygen, O_2, %	16.5	
NOx, ppm	4.4	
NOx, ppm @ 15% O_2	**5.9**	**23**
CO, ppm	4.2	
CO, ppm @ 15% O_2	**5.6**	**100**
SO_2, ppm	2.3	
SO_2, ppm @ 15% O_2	**3.1**	**150**

WHERE,

ppm = Parts Per Million Concentration

NOx = Oxides of Nitrogen as NO_2 (MW = 46)

CO = Carbon Monoxide (MW = 28)

SO_2 = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)

TABLE # 1

EBMUD-DECEMBER
DG TURBINE #1 (S-56)
4320 kW

RUN	1	LIMITS
Test Date	12/22/18	
Test Time	1345-1400	
Turbine kW	4,320	
Fuel Flow Rate, DSCFM	1,139	
Oxygen, O_2, %	16.4	
NOx, ppm	5.9	
NOx, ppm @ 15% O_2	**7.7**	**23**
CO, ppm	3.1	
CO, ppm @ 15% O_2	**4.1**	**100**
SO_2, ppm	3.2	
SO_2, ppm @ 15% O_2	**4.2**	**150**

WHERE,

ppm = Parts Per Million Concentration

NOx = Oxides of Nitrogen as NO_2 (MW = 46)

CO = Carbon Monoxide (MW = 28)

SO_2 = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)

ATTACHMENT 7

MAIN WASTEWATER TREATMENT PLANT FLOWS

East Bay Municipal Utility District
MONTHLY WASTEWATER MONITORING SUMMARY DECEMBER/ANNUAL 2018

STATION: WWTP INFLUENT - INF-001
STATION: WWTP EFFLUENT - EFF-001
FLOWS & CONVENTIONAL POLLUTANTS (R2-2015-0018)

	INFLUENT (MGD)				EFFLUENT (MGD)				CBOD						TSS						Oil and Grease	
	Mo. Avg	Max Daily Avg	Min Daily Avg	3-mo Dry Season Avg	Mo. Avg	Max Daily Avg	Min Daily Avg	3-mo Dry Season Avg	Inf (INF-001) mg/L Month Avg	Eff mg/L Month Avg	Eff mg/L Max Week Avg	# excs/ # of Analyses Mo. Avg	# excs/ # of Analyses Week Avg	% Removal Month Avg	Inf (INF-001 mg/L Month Avg	Eff mg/L Month Avg	Eff mg/L Max Week Avg	# excs/ # of Analyses Mo. Avg	# excs/ # of Analyses Week Avg	% Removal Month Avg	Eff mg/L Month Avg	Eff mg/L Daily Max
Limits:				**120**						**25**	**40**			**Min 85**		**30**	**45**			**Min 85**	**10**	**20**
Jan	65	192	47		62	189	44		268	9	15	0/1	0/4	97%	349	11	15	0/1	0/4	97%		
Feb	50	56	46		49	53	45		356	9	13	0/1	0/4	98%	388	12	17	0/1	0/4	97%	< 2.3	< 2.3
Mar	75	122	51		72	124	51		271	11	13	0/1	0/5	96%	330	10	11	0/1	0/5	97%		
Apr	68	225	51		67	227	48		254	8	10	0/1	0/4	97%	351	12	17	0/1	0/4	97%		
May	49	53	44		49	52	44		316	9	10	0/1	0/4	97%	364	11	12	0/1	0/4	97%	< 2.4	< 2.4
Jun	46	51	42		46	50	41		343	10	13	0/1	0/5	97%	458	14	16	0/1	0/5	97%		
Jul	46	50	41		45	48	39		331	9	11	0/1	0/4	97%	427	11	15	0/1	0/4	97%		
Aug	46	50	41	46	45	48	40		326	8	11	0/1	0/4	98%	432	11	12	0/1	0/4	97%	< 2.2	< 2.2
Sep	47	54	43		45	50	42		312	8	9	0/1	0/5	97%	414	15	18	0/1	0/5	97%		
Oct	46	49	43		44	48	42		366	9	11	0/1	0/4	97%	441	11	15	0/1	0/4	98%		
Nov	55	119	43		52	116	42		327	9	9	0/1	0/4	97%	439	10	10	0/1	0/4	98%	< 2.4	< 2.4
Dec	58	104	49		54	103	45		266	13	18	0/1	0/5	95%	383	12	16	0/1	0/5	97%		
																					4x/year	
Avg	54	94	45		53	92	44		311	9	12			97%	398	12	15			97%	< 2.4	< 2.4
Max	75	225	51		72	227	51		366	13	18			98%	458	15	18			98%	< 2.4	< 2.4
Min	46	49	41		44	48	39		254	8	9			95%	330	10	10			97%	< 2.3	< 2.3
Exc/Analyses				0/1								0/12	0/52	0/12				0/12	0/52	0/12	0/4	0/4

Exc / Analyses = number of exceedances / number of analyses

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings, ppm

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Jul-18	1.4	0.0	0.0	0.0	4.0	0.0	0.0	0.0
02-Jul-18	4.6	0.0	0.0	0.0	15.6	0.0	0.0	0.0
03-Jul-18	7.3	0.0	0.0	0.0	14.8	0.0	0.0	0.0
04-Jul-18	6.8	0.0	0.0	0.0	15.2	0.0	0.0	0.0
05-Jul-18	5.9	0.0	0.0	0.0	9.9	0.0	0.0	0.0
06-Jul-18	4.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0
07-Jul-18	4.6	0.0	0.0	0.0	7.5	0.0	0.0	0.0
08-Jul-18	4.8	0.0	0.0	0.0	17.3	0.0	0.0	0.0
09-Jul-18	7.6	0.0	0.0	0.0	16.9	0.0	0.0	0.0
10-Jul-18	7.7	0.0	0.0	0.0	26.5	0.0	0.0	0.0
11-Jul-18	7.4	0.0	0.0	0.0	17.0	0.0	0.0	0.0
12-Jul-18	2.7	0.0	0.0	0.0	7.6	0.0	0.0	0.0
13-Jul-18	1.9	0.0	0.0	0.0	8.4	0.0	0.0	0.0
14-Jul-18	2.9	0.0	0.0	0.0	6.1	0.0	0.0	0.0
15-Jul-18	3.0	0.0	0.0	0.0	11.1	0.0	0.0	0.0
16-Jul-18	4.7	0.0	0.0	0.0	11.5	0.0	0.0	0.0
17-Jul-18	6.2	0.0	0.0	0.0	18.2	0.0	0.0	0.0
18-Jul-18	0.1	0.0	0.0	0.0	4.4	0.0	0.0	0.0
19-Jul-18	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0
20-Jul-18	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0
21-Jul-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-Jul-18	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0
23-Jul-18	3.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0
24-Jul-18	3.9	0.0	0.0	0.0	14.0	0.0	0.0	0.0
25-Jul-18	1.6	0.0	0.0	0.0	8.8	0.0	0.0	0.0
26-Jul-18	3.3	0.0	0.0	0.0	11.8	0.0	0.0	0.0
27-Jul-18	0.4	0.0	0.0	0.0	4.9	0.0	0.0	0.0
28-Jul-18	0.4	0.0	0.0	0.0	6.9	0.0	0.0	0.0
29-Jul-18	0.3	0.0	0.0	0.0	3.3	0.0	0.0	0.0
30-Jul-18	1.0	0.0	0.0	0.0	17.0	0.0	0.0	0.0
31-Jul-18	0.8	0.0	0.0	0.0	5.8	0.0	0.0	0.0
Monthly Avg	3.2	0.0	0.0	0.0				
Monthly Max					26.5	0.0	0.0	0.0

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Aug-18	0.8	0.0	0.0	0.0	5.8	0.0	0.0	0.0
02-Aug-18	3.3	0.0	0.0	0.0	10.0	0.0	0.0	0.0
03-Aug-18	5.3	0.0	0.0	0.0	12.0	0.0	0.0	0.0
04-Aug-18	4.8	0.0	0.0	0.0	14.7	0.0	0.0	0.0
05-Aug-18	6.2	0.0	0.0	0.0	43.8	0.0	0.0	0.0
06-Aug-18	1.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0
07-Aug-18	3.8	0.0	0.0	0.0	11.2	0.0	0.0	0.0
08-Aug-18	5.5	0.0	0.0	0.0	14.4	0.0	0.0	0.0
09-Aug-18	7.9	0.0	0.0	0.0	15.5	0.0	0.0	0.0
10-Aug-18	7.1	0.0	0.0	0.0	21.4	0.0	0.0	0.0
11-Aug-18	4.4	0.0	0.0	0.0	9.3	0.0	0.0	0.0
12-Aug-18	3.5	0.0	0.0	0.0	9.2	0.0	0.0	0.0
13-Aug-18	5.7	0.0	0.0	0.0	9.7	0.0	0.0	0.0
14-Aug-18	6.6	0.0	0.0	0.0	11.1	0.0	0.0	0.0
15-Aug-18	7.3	0.0	0.0	0.0	13.0	0.0	0.0	0.0
16-Aug-18	8.2	0.0	0.0	0.0	27.5	0.0	0.0	0.0
17-Aug-18	5.7	0.0	0.0	0.0	10.7	0.0	0.0	0.0
18-Aug-18	1.6	0.0	0.0	0.0	4.9	0.0	0.0	0.0
19-Aug-18	2.7	0.0	0.0	0.0	5.3	0.0	0.0	0.0
20-Aug-18	7.2	0.0	0.0	0.0	18.5	0.0	0.0	0.0
21-Aug-18	9.5	0.0	0.0	0.0	13.1	0.0	0.0	0.0
22-Aug-18	7.5	0.0	0.0	0.0	16.9	0.0	0.0	0.0
23-Aug-18	9.0	0.0	0.0	0.0	42.0	0.0	0.0	0.0
24-Aug-18	9.0	0.0	0.0	0.0	17.7	0.0	0.0	0.0
25-Aug-18	8.4	0.0	0.0	0.0	13.2	0.0	0.0	0.0
26-Aug-18	2.3	0.0	0.0	0.0	7.1	1.1	0.0	0.0
27-Aug-18	2.2	0.0	0.0	0.0	6.1	0.0	0.0	0.0
28-Aug-18	1.5	0.0	0.0	0.0	7.2	0.0	0.0	0.0
29-Aug-18	3.5	0.0	0.0	0.0	19.0	0.3	0.0	0.0
30-Aug-18	6.9	0.0	0.0	0.0	17.6	0.0	0.0	0.0
31-Aug-18	8.0	0.0	0.0	0.0	11.1	0.0	0.0	0.0
Monthly Avg	5.4	0.0	0.0	0.0				
Monthly Max					43.8	1.1	0.0	0.0

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings, ppm

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Sep-18	13.5	0.0	0.0	0.0	20.9	1.5	0.0	0.0
02-Sep-18	15.1	0.0	0.0	0.0	25.8	0.0	0.0	0.0
03-Sep-18	12.5	0.0	0.0	0.0	16.9	1.4	0.0	0.0
04-Sep-18	9.2	0.0	0.0	0.0	23.9	0.0	0.0	0.0
05-Sep-18	13.0	0.0	0.0	0.0	22.6	0.0	0.0	0.0
06-Sep-18	12.2	0.0	0.0	0.0	22.0	0.0	0.0	0.0
07-Sep-18	16.5	0.0	0.0	0.0	25.7	1.4	0.0	0.0
08-Sep-18	14.6	0.0	0.0	0.0	28.6	1.9	0.0	0.0
09-Sep-18	14.3	0.0	0.0	0.0	21.7	0.0	0.0	0.0
10-Sep-18	15.9	0.0	0.0	0.0	24.5	0.6	0.0	0.0
11-Sep-18	11.3	0.0	0.0	0.0	32.4	0.0	0.0	0.0
12-Sep-18	17.6	0.0	0.0	0.0	30.3	0.0	0.0	0.0
13-Sep-18	16.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0
14-Sep-18	18.3	0.0	0.0	0.0	30.5	0.0	0.0	0.0
15-Sep-18	16.7	0.0	0.0	0.0	31.6	0.9	2.2	0.0
16-Sep-18	15.7	0.0	0.0	0.0	27.9	0.0	0.0	0.0
17-Sep-18	14.2	0.0	0.0	0.0	27.9	0.0	0.0	0.0
18-Sep-18	25.5	0.0	0.0	0.0	37.9	0.0	0.0	0.0
19-Sep-18	23.4	0.0	0.0	0.0	39.9	0.0	0.0	0.0
20-Sep-18	19.3	0.0	0.0	0.0	29.7	0.0	0.0	0.0
21-Sep-18	19.3	0.0	0.0	0.0	36.6	0.0	1.5	0.0
22-Sep-18	18.7	0.0	0.0	0.0	32.4	0.0	0.0	0.0
23-Sep-18	25.7	0.0	0.0	0.0	37.1	0.0	0.0	0.0
24-Sep-18	13.6	0.0	0.0	0.0	29.6	0.0	0.0	0.0
25-Sep-18	16.1	0.0	0.0	0.0	25.4	0.0	0.0	0.0
26-Sep-18	17.2	0.0	0.0	0.0	33.9	0.0	0.0	0.0
27-Sep-18	14.5	0.0	0.0	0.0	24.8	0.0	0.0	0.0
28-Sep-18	12.8	0.0	0.0	0.0	26.4	0.0	0.0	0.0
29-Sep-18	20.2	0.0	0.0	0.0	29.8	0.0	0.0	0.0
30-Sep-18	21.5	0.0	0.0	0.0	33.1	0.0	0.0	0.0
Monthly Avg	16.5	0.0	0.0	0.0				
Monthly Max					39.9	1.9	2.2	0.0

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Oct-18	18.2	0.2	0.0	0.0	35.3	12.5	0.0	0.0
02-Oct-18	11.3	0.0	0.0	0.0	33.7	0.6	0.0	0.0
03-Oct-18	0.0	0.1	0.0	0.0	0.0	5.3	0.0	0.0
04-Oct-18	4.7	0.4	0.0	0.0	16.7	4.6	0.0	0.0
05-Oct-18	10.1	0.0	0.0	0.0	19.5	0.0	0.0	0.0
06-Oct-18	5.9	0.0	0.0	0.0	15.1	0.7	0.0	0.0
07-Oct-18	4.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0
08-Oct-18	7.3	0.3	0.0	0.0	16.2	2.1	0.0	0.0
09-Oct-18	5.2	0.1	0.0	0.0	15.3	1.0	0.0	0.0
10-Oct-18	12.1	0.0	0.0	0.0	24.3	0.0	0.0	0.0
11-Oct-18	14.3	0.0	0.0	0.0	27.5	0.0	0.0	0.0
12-Oct-18	11.4	0.0	0.0	0.0	34.5	0.7	0.0	0.0
13-Oct-18	11.5	0.0	0.0	0.0	35.2	0.6	1.5	0.0
14-Oct-18	7.1	0.0	0.0	0.0	13.2	0.0	0.0	0.0
15-Oct-18	8.6	0.0	0.0	0.0	18.0	0.0	0.0	0.0
16-Oct-18	9.9	0.0	0.0	0.0	28.0	0.0	0.0	0.0
17-Oct-18	12.8	0.0	0.0	0.0	24.6	0.0	0.0	0.0
18-Oct-18	7.2	0.0	0.0	0.0	21.0	0.0	0.0	0.0
19-Oct-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-Oct-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-Oct-18	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0
22-Oct-18	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0
23-Oct-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-Oct-18	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
25-Oct-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-Oct-18	3.0	0.0	0.0	0.0	6.8	0.0	1.5	0.0
27-Oct-18	3.6	0.0	0.0	0.0	7.3	0.0	0.0	0.0
28-Oct-18	2.7	0.0	0.0	0.0	7.4	0.0	0.0	0.0
29-Oct-18	2.4	0.0	0.0	0.0	6.3	1.2	0.0	0.0
30-Oct-18	2.1	0.0	0.0	0.0	6.6	0.0	0.0	0.0
31-Oct-18	0.9	0.0	0.0	0.0	4.6	0.0	0.0	0.0
Monthly Avg	5.7	0.0	0.0	0.0				
Monthly Max					35.3	12.5	1.5	0.0

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings, ppm

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Nov-18	2.9	0.0	0.0	0.0	7.8	0.0	0.0	0.0
02-Nov-18	2.4	0.0	0.0	0.0	10.8	0.0	0.0	0.0
03-Nov-18	2.6	0.0	0.0	0.0	8.9	0.0	0.0	0.0
04-Nov-18	6.5	0.0	0.0	0.0	12.6	0.0	0.0	0.0
05-Nov-18	3.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0
06-Nov-18	2.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
07-Nov-18	2.7	0.0	0.0	0.0	9.0	0.0	0.0	0.0
08-Nov-18	2.9	0.0	0.0	0.0	8.8	0.0	1.5	0.0
09-Nov-18	2.2	0.0	0.0	0.0	10.5	1.3	0.0	0.0
10-Nov-18	3.2	0.0	0.0	0.0	14.8	0.0	2.0	0.0
11-Nov-18	3.3	0.0	0.0	0.0	9.5	0.0	0.0	0.0
12-Nov-18	2.9	0.0	0.0	0.0	8.5	0.0	0.0	0.0
13-Nov-18	2.5	0.0	0.0	0.0	7.5	0.0	0.0	0.0
14-Nov-18	7.1	0.0	0.0	0.0	16.2	0.0	0.0	0.0
15-Nov-18	1.4	0.0	0.0	0.0	12.3	0.0	0.0	0.0
16-Nov-18	3.1	0.0	0.0	0.0	11.3	0.6	0.0	0.0
17-Nov-18	3.1	0.0	0.0	0.0	10.1	0.0	0.0	0.0
18-Nov-18	5.0	0.0	0.0	0.0	10.6	0.6	0.0	0.0
19-Nov-18	0.9	0.0	0.0	0.0	8.8	0.0	0.0	0.0
20-Nov-18	2.3	0.0	0.0	0.0	5.7	0.8	0.0	0.0
21-Nov-18	2.8	0.0	0.0	0.0	12.1	1.0	0.0	0.0
22-Nov-18	2.4	0.0	0.0	0.0	6.9	0.0	0.0	0.0
23-Nov-18	0.2	0.0	0.0	0.0	3.2	1.2	0.0	0.0
24-Nov-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-Nov-18	0.2	0.0	0.0	0.0	1.7	0.0	0.0	0.0
26-Nov-18	1.3	0.0	0.0	0.0	2.9	0.0	0.0	0.0
27-Nov-18	2.7	0.0	0.0	0.0	4.9	0.0	0.0	0.0
28-Nov-18	3.0	0.0	0.0	0.0	5.9	0.0	0.0	0.0
29-Nov-18	0.3	0.0	0.0	0.0	3.9	0.0	0.0	0.0
30-Nov-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly Avg	2.5	0.0	0.0	0.0				
Monthly Max					16.2	1.3	2.0	0.0

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Dec-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02-Dec-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
03-Dec-18	0.2	0.0	0.0	0.0	1.8	0.0	0.0	0.0
04-Dec-18	1.9	0.0	0.0	0.0	4.5	0.0	0.0	0.0
05-Dec-18	0.6	0.0	0.0	0.0	3.7	0.0	0.0	0.0
06-Dec-18	0.4	0.0	0.0	0.0	4.7	0.0	0.0	0.0
07-Dec-18	0.8	0.0	0.0	0.0	3.0	0.0	0.0	0.0
08-Dec-18	0.8	0.0	0.0	0.0	3.5	0.0	0.0	0.0
09-Dec-18	0.3	0.0	0.0	0.0	1.6	0.0	0.0	0.0
10-Dec-18	0.8	0.0	0.0	0.0	3.3	0.0	0.0	0.0
11-Dec-18	1.1	0.0	0.0	0.0	2.4	0.0	0.0	0.0
12-Dec-18	1.3	0.0	0.0	0.0	2.8	0.0	0.0	0.0
13-Dec-18	2.5	1.4	0.0	0.0	5.7	6.1	0.0	0.0
14-Dec-18	1.3	0.1	0.0	0.0	3.3	0.3	0.0	0.0
15-Dec-18	1.4	0.0	0.0	0.0	4.7	0.2	0.0	0.0
16-Dec-18	3.3	0.0	0.0	0.0	8.2	0.0	0.0	0.0
17-Dec-18	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
18-Dec-18	0.1	0.0	0.0	0.0	1.7	0.0	0.0	0.0
19-Dec-18	2.1	0.0	0.0	0.0	4.6	0.0	0.0	0.0
20-Dec-18	0.8	0.0	0.0	0.0	5.8	0.0	0.0	0.0
21-Dec-18	1.7	0.0	0.0	0.0	4.5	0.0	0.0	0.0
22-Dec-18	0.7	0.0	0.0	0.0	3.1	0.0	0.0	0.0
23-Dec-18	1.9	0.0	0.0	0.0	5.1	0.0	0.0	0.0
24-Dec-18	1.9	0.0	0.0	0.0	8.4	0.0	0.0	0.0
25-Dec-18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-Dec-18	2.0	0.0	0.0	0.0	11.8	0.0	0.0	0.0
27-Dec-18	1.1	0.1	0.0	0.0	12.4	2.6	0.0	0.0
28-Dec-18	1.7	0.0	0.0	0.0	3.9	0.0	0.0	0.0
29-Dec-18	1.1	0.0	0.0	0.0	4.2	0.0	0.0	0.0
30-Dec-18	1.1	0.0	0.0	0.0	4.0	0.0	0.0	0.0
31-Dec-18	1.2	0.0	0.0	0.0	4.6	0.0	0.0	0.0
Monthly Avg	1.1	0.1	0.0	0.0				
Monthly Max					12.4	6.1	0.0	0.0

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings - Related Outages

Influent Pump Station Odor Scrubber Outage Table

Start	Finish	Duration	Reason
23-Jul-18 11:10	23-Jul-18 15:00	3:50	Biotrickling filter in bypass for contractor sampling of sump pump biomass
28-Jun-18 09:48	12-Sep-18 10:00	1824:12	A462 - EF10 belts broken, EF09 will not start
13-Dec-18 08:00	13-Dec-18 14:45	6:45	Biotrickling filter in bypass for contractor replacement of pipework
	Total Down Time	1828:02	

Aug-08 to Oct-25 H2S Inlet sensor readings were taken from alternate meters during commisionning of new odor control unit.
Aug-08 to Dec-31 H2S Outlet sensor readings were taken from alternate meters during commisionning of new odor control unit.

ATTACHMENT 9 - ODOR SCRUBBER MAINTENANCE RECORDS - S-170, S-110

Headworks Odor Scrubber Maintenance Work Orders Jul - Dec 2018

Area	Wonum	Description	Assetnum	Dept	Status	Type	Report Date	Reported By
W-12	2018079884	IPS H2S sensor has a bad signal on DCS. The IPS H2S sensor is showing a bad signal on DCS. The local reading at the unit (@ IPS Sample trough) still works.	W-12-INS-001-02	IN	APPR	CM	7/1/2018	JASONLEE
W-12	2018107514	Fine screen room odor scrubber supply fan EF10 belts are broken <> secured fan; <> 2nd issue: attempted to start EF09 fan and could not get fan to start; possible DCS issue, fan switch is in REMOTE but showing LOCAL on DCS, same issue for EF10 as well	W-12-MSL-OCS-01	MEN	CLOSE	BD	9/8/2018	SZUBRZYC
W-12	2018107549	IPS Exhaust Fan 9- return to service. IPS Exhaust fan 9, for Fine Screen room, has been LOTO for 5 years. Has Jerry Ogden's red lock plus an EBMUD brass lock. Needs to be brought back into service, now that the new odor scrubber project is done. There was a recent work order (by Zubrzycki) for Exhaust Fans 9 and 10, but Fan 10 is now back in service. So this possible repeat request is to clarify that now only Fan 9 needs service, thanks. *(EF 9 has frozen damper and requires replacement)*	W-12-FAN-EF-9	EL	APPR	PJ	9/13/2018	JCOHEN
W-12	2018107547	Cracked fan belt for IPS control room supply fan SF-9 IPS control room's supply fan SF-9 on the roof has a badly cracked belt. Still running as of today, 9/12.	W-12-FAN-SF9-00	MEN	CLOSE	CM	9/13/2018	JCOHEN
W-12	2018121237	Fan not running Fan SF-02 will not run and is setting off the atmospheric alarm for the fine screen room. We have tried reseting the fan at the breaker with no results. We changed the bulb on the breaker itself and it doesn't illuminate. The fans breaker might not be recieving any power. *(Breaker replaced)*	W-12-FAN-SF2-01	EL	COMP	CM	10/16/2018	RMAGUIRE
W-12	2018121344	Unable to run fan <> Fine screen fan SF-02 is not running and will not respond to DCS or local commands. I tried to throw the breaker and reset the unit but it didn't work <> Note: Already completed by Bart on 10/25/18.	W-12-FAN-SF-02	EL	COMP	CM	10/25/2018	RMAGUIRE
W-12	2018134531	Fan inoperable This fan is currently inoperable I've attempted to reset the unit at the breaker with no results. This fan has had repeated problems in the last few months. It frequently trips off, Bart was able to repair it about a month ago but it failed again. When this fan is inoperable it sets off the atmospheric alarms for the fine screen room at IPS and we cannot clear them until the fan is back in operation.	W-12-FAN-SF-13	EL	APPR	CM	11/28/2018	RMAGUIRE
W-12	2018136649	has two broken belts (motor is running but fan is not)	W-12-FAN-EF3-00	MEN	INPRG	BD	12/2/2018	JMOUNT
W-12	2018147735	IPS fan W12-FAN-SF-13 not working. *(Smoke detector failure cause of failure, same issue as 2018134531, waiting for warranty repair on new smoke detector)*	W-12-MISC-000-00	EL	APPR	CM	12/26/2018	JCOHEN

Thickening/Dewatering Odor Scrubber Maintenance Work Orders Jul - Dec 2018

Area	Wonum	Description	Assetnum	Dept	Status	Type	Report Date	Reported By
W-30	2018094518	Inline exhaust fan 1 rattling and making noise. Informed by mechanics that Inline exhaust fan 1 is making noise and rattling. Coming from shroud and ducting.	W-30-FAN-ILE-01	MEN	CLOSE	CM	8/9/2018	ZTHIEME
W-25	2018094690	shroud is coming apart and is rubbing on shaft. and has 2 cracked belts	W-25-FAN-SF1-01	MEN	INPRG	BD	8/29/2018	JMOUNT
W-25	2018097754	shroud is coming apart and is rubbing on shaft. and has 2 cracked belts	W-25-FAN-SF1-01	MEN	INPRG	BD	8/30/2018	JMOUNT
W-30	2018121122	Hypo drain leaks at base of Scrubber #1 control box. Please repair	W-30-TKS-301-00	MEN	CLOSE	CM	10/2/2018	JBERGSTR
W-30	2018134354	North calvert odor scrubber hypo drain line leaking downstream of isolation valve. North calvert odor scrubber hypo drain line leaking downstream of isolation valve. Isolation valve broken. Valve keeps rotating past stops.	W-30-TKS-301-00	MEN	COMP	CM	11/6/2018	MSTIMSON
W-30	2018134506	Hypo leaking out of the pressure gauge at the Odor scrubber.	W-30-TKS-301-00	MEN	COMP	CM	11/26/2018	HTON

ATTACHMENT 10 -- S-170 Waste Activated Sludge Throughput

2018 July - December Gravity Belt Thickener Summary Flow Table

Daily Flows	July Kgal	August Kgal	September Kgal	October Kgal	November Kgal	December Kgal
1st	1,250	1,384	1,803	704	1,028	2,232
2nd	1,216	1,411	1,928	910	1,027	1,854
3rd	1,238	1,337	1,867	669	1,023	2,305
4th	1,299	1,463	1,622	692	1,017	2,336
5th	1,205	1,404	1,968	762	589	2,066
6th	1,317	841	1,502	1,096	982	2,082
7th	1,215	1,686	1,716	1,185	896	1,846
8th	1,221	1,380	1,690	1,150	853	2,028
9th	836	1,626	1,668	1,121	813	1,517
10th	1,465	2,078	1,764	1,895	812	2,233
11th	1,214	1,775	1,824	1,698	908	2,269
12th	879	1,249	1,791	1,784	889	2,347
13th	1,509	1,374	1,681	1,547	983	2,306
14th	1,067	1,870	1,688	1,257	951	2,265
15th	734	1,636	1,752	1,234	839	1,850
16th	602	1,753	1,700	1,030	1,143	1,736
17th	1,788	1,762	1,646	835	1,165	2,142
18th	1,159	1,659	1,684	665	1,080	2,273
19th	742	1,783	1,160	1,253	659	1,798
20th	1,138	1,855	1,231	939	1,304	1,398
21st	981	1,967	1,405	896	1,234	1,750
22nd	1,007	2,009	1,897	921	1,352	1,773
23rd	871	2,042	1,665	990	1,477	1,701
24th	1,190	2,023	875	970	2,161	1,570
25th	1,381	1,925	1,177	958	2,176	1,631
26th	1,326	1,896	752	927	1,766	1,702
27th	1,510	2,133	734	1,009	2,074	931
28th	1,761	1,952	796	1,041	1,621	1,244
29th	1,544	1,785	777	993	1,825	1,102
30th	1,381	1,721	614	1,001	2,400	1,292
31st	1,439	1,921		914		1,752
Monthly Total	37,485	52,699	44,374	33,048	37,047	57,329
Semi-Annual Total	261,982					

Gravity Belt Thickener and Dewatering Centrifuge Odor Scrubber Outage Table

Start	Finish	Duration	Reason
	Total Down Time, DWB	0:00	
11-Aug-18 08:30	11-Aug-18 12:30	4:00	THK scrubber off-line, WO 201812122, Hypo leak repair
11-Aug-18 08:30	11-Aug-18 12:30	4:00	THK scrubber off-line, WO 201834506, Pressure gauge replacement
	Total Down Time, THK	8:00	

ATTACHMENT 11 - DIGESTER GAS SAMPLING DATA

EBMUD Biogas H2S
July - December 2018

2018	Cogen Feed H2S (ppm)	365 Day Avg H2S (ppm)
7/1/2018	106	138
7/2/2018	104	138
7/3/2018	108	138
7/4/2018	100	138
7/5/2018	104	137
7/6/2018	110	137
7/7/2018	146	137
7/8/2018	94	137
7/9/2018	94	136
7/10/2018	104	136
7/11/2018	110	136
7/12/2018	126	136
7/13/2018	130	135
7/14/2018	152	135
7/15/2018	124	135
7/16/2018	106	134
7/17/2018		134
7/18/2018		134
7/19/2018		134
7/20/2018	306	134
7/21/2018	240	134
7/22/2018	140	134
7/23/2018	108	134
7/24/2018	138	134
7/25/2018	104	134
7/26/2018	120	133
7/27/2018	120	133
7/28/2018	182	133
7/29/2018	126	133
7/30/2018	126	133
7/31/2018	172	133
8/1/2018	140	133
8/2/2018	146	133
8/3/2018	134	133
8/4/2018	128	133
8/5/2018	84	133
8/6/2018	96	133
8/7/2018	132	133
8/8/2018	134	133
8/9/2018	120	133
8/10/2018	160	133
8/11/2018	144	133
8/12/2018	124	132
8/13/2018	100	132
8/14/2018	126	132
8/15/2018	144	131
8/16/2018	130	131
8/17/2018	144	131
8/18/2018	140	131
8/19/2018	110	131
8/20/2018	90	131
8/21/2018	112	130
8/22/2018	144	130
8/23/2018	156	130
8/24/2018	200	130
8/25/2018	154	130
8/26/2018	108	130
8/27/2018	118	130
8/28/2018	148	130
8/29/2018	136	130
8/30/2018	142	130
8/31/2018	148	130

2018	Cogen Feed H2S (ppm)	365 Day Avg H2S (ppm)
9/1/2018	122	130
9/2/2018	112	130
9/3/2018	98	130
9/4/2018	82	130
9/5/2018	116	130
9/6/2018	124	130
9/7/2018	116	130
9/8/2018	124	130
9/9/2018	124	130
9/10/2018		130
9/11/2018	126	130
9/12/2018	142	130
9/13/2018	138	130
9/14/2018	182	130
9/15/2018	138	129
9/16/2018	134	129
9/17/2018	112	129
9/18/2018	112	129
9/19/2018	142	129
9/20/2018	134	128
9/21/2018	130	128
9/22/2018	178	128
9/23/2018	138	128
9/24/2018	126	128
9/25/2018	224	128
9/26/2018	172	128
9/27/2018	136	128
9/28/2018	132	128
9/29/2018	180	127
9/30/2018	154	127
10/1/2018	116	127
10/2/2018	184	126
10/3/2018	240	126
10/4/2018	168	126
10/5/2018	204	126
10/6/2018	244	126
10/7/2018	274	127
10/8/2018	206	127
10/9/2018	210	127
10/10/2018	232	127
10/11/2018	338	127
10/12/2018	334	127
10/13/2018	408	127
10/14/2018	252	128
10/15/2018	310	128
10/16/2018	302	127
10/17/2018	320	127
10/18/2018	298	127
10/19/2018	246	128
10/20/2018	246	128
10/21/2018	288	128
10/22/2018	242	129
10/23/2018	196	129
10/24/2018	244	129
10/25/2018	244	129
10/26/2018	300	129
10/27/2018	334	129
10/28/2018	224	129
10/29/2018	186	130
10/30/2018	354	130
10/31/2018	362	130

2018	Cogen Feed H2S (ppm)	365 Day Avg H2S (ppm)
11/1/2018	250	131
11/2/2018	262	131
11/3/2018	280	131
11/4/2018	480	131
11/5/2018	372	132
11/6/2018	575	132
11/7/2018	442	133
11/8/2018	254	134
11/9/2018	254	134
11/10/2018	376	134
11/11/2018	290	134
11/12/2018	232	135
11/13/2018	244	135
11/14/2018	294	135
11/15/2018	256	136
11/16/2018	166	136
11/17/2018	154	136
11/18/2018	130	135
11/19/2018	98	135
11/20/2018	120	135
11/21/2018	98	135
11/22/2018	116	135
11/23/2018	92	135
11/24/2018	82	134
11/25/2018	88	134
11/26/2018	80	134
11/27/2018	120	134
11/28/2018	110	134
11/29/2018	140	134
11/30/2018	124	134
12/1/2018	104	133
12/2/2018	128	133
12/3/2018		133
12/4/2018	140	133
12/5/2018	186	133
12/6/2018	244	134
12/7/2018	300	134
12/8/2018	254	135
12/9/2018	224	135
12/10/2018		135
12/11/2018	200	135
12/12/2018	188	136
12/13/2018	196	136
12/14/2018	164	136
12/15/2018	162	136
12/16/2018	196	136
12/17/2018	180	137
12/18/2018		137
12/19/2018	190	137
12/20/2018	266	137
12/21/2018	246	138
12/22/2018	266	138
12/23/2018	228	139
12/24/2018	244	139
12/25/2018	222	140
12/26/2018	208	140
12/27/2018		140
12/28/2018	256	140
12/29/2018	286	141
12/30/2018	170	141
12/31/2018	192	142

Rolling 365-Day limit: 200 ppm

ATTACHMENT 12 - TOTAL DIGESTER GAS COMBUSTION

EBMUD Biogas to Combustion Devices
January - June 2018

2018	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
1/1/2018	1,992	1,531	2,245
1/2/2018	2,186	1,586	2,246
1/3/2018	2,693	2,254	2,248
1/4/2018	3,031	2,476	2,248
1/5/2018	3,179	2,929	2,250
1/6/2018	3,114	2,703	2,251
1/7/2018	2,321	1,827	2,250
1/8/2018	2,706	1,997	2,250
1/9/2018	2,824	2,164	2,251
1/10/2018	2,925	2,482	2,254
1/11/2018	3,031	2,627	2,255
1/12/2018	2,528	2,007	2,255
1/13/2018	2,500	1,919	2,254
1/14/2018	2,075	1,623	2,252
1/15/2018	1,990	1,666	2,252
1/16/2018	2,588	1,934	2,253
1/17/2018	2,592	2,165	2,253
1/18/2018	2,944	2,237	2,253
1/19/2018	2,625	2,198	2,253
1/20/2018	2,543	1,955	2,252
1/21/2018	2,580	1,675	2,251
1/22/2018	2,498	1,895	2,252
1/23/2018	3,582	2,545	2,255
1/24/2018	3,266	2,361	2,256
1/25/2018	2,720	2,418	2,256
1/26/2018	3,519	2,784	2,257
1/27/2018	2,528	2,040	2,256
1/28/2018	2,559	1,983	2,255
1/29/2018	2,842	2,046	2,256
1/30/2018	3,114	1,982	2,257
1/31/2018	3,045	2,554	2,257
2/1/2018	3,026	2,475	2,257
2/2/2018	3,913	2,438	2,256
2/3/2018	2,248	1,966	2,254
2/4/2018	2,421	1,762	2,252
2/5/2018	2,926	1,837	2,252
2/6/2018	3,549	2,882	2,255
2/7/2018	2,979	2,454	2,256
2/8/2018	2,979	2,682	2,257
2/9/2018	2,937	2,581	2,257
2/10/2018	2,865	2,233	2,256
2/11/2018	2,462	1,823	2,256
2/12/2018	2,449	1,816	2,256
2/13/2018	3,168	2,507	2,257
2/14/2018	3,226	3,027	2,260
2/15/2018	3,046	2,640	2,261
2/16/2018	3,194	2,485	2,262
2/17/2018	2,523	2,158	2,262
2/18/2018	1,972	1,588	2,260
2/19/2018	2,427	1,701	2,260
2/20/2018	3,352	2,419	2,262
2/21/2018	2,837	2,400	2,263
2/22/2018	3,815	2,999	2,265
2/23/2018	3,618	3,416	2,268
2/24/2018	3,443	2,710	2,270
2/25/2018	2,065	1,577	2,269
2/26/2018	2,689	2,093	2,270
2/27/2018	2,931	2,544	2,273
2/28/2018	3,125	2,713	2,273

3,400 Annual Average Limit

2018	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
3/1/2018	3,334	2,905	2,275
3/2/2018	3,081	2,703	2,276
3/3/2018	2,935	2,353	2,276
3/4/2018	2,718	2,284	2,275
3/5/2018	2,805	2,101	2,275
3/6/2018	3,080	2,426	2,276
3/7/2018	2,791	2,555	2,278
3/8/2018	3,013	2,556	2,276
3/9/2018	2,912	2,515	2,274
3/10/2018	4,690	2,039	2,273
3/11/2018	2,147	1,814	2,272
3/12/2018	3,196	1,988	2,272
3/13/2018	3,429	2,961	2,276
3/14/2018	3,808	3,066	2,278
3/15/2018	3,522	3,091	2,277
3/16/2018	3,753	2,875	2,278
3/17/2018	3,387	2,706	2,279
3/18/2018	2,610	1,932	2,279
3/19/2018	2,495	1,849	2,280
3/20/2018	2,782	2,322	2,281
3/21/2018	3,121	2,630	2,282
3/22/2018	3,122	2,677	2,284
3/23/2018	3,475	2,866	2,286
3/24/2018	2,817	2,334	2,286
3/25/2018	2,264	1,719	2,284
3/26/2018	2,567	1,759	2,284
3/27/2018	3,264	2,402	2,286
3/28/2018	3,160	2,644	2,287
3/29/2018	3,254	2,862	2,288
3/30/2018	3,177	2,599	2,288
3/31/2018	2,818	2,244	2,287
4/1/2018	2,417	1,773	2,285
4/2/2018	2,448	1,702	2,284
4/3/2018	3,131	2,427	2,285
4/4/2018	3,423	2,825	2,288
4/5/2018	3,051	2,471	2,288
4/6/2018	3,029	2,578	2,289
4/7/2018	2,517	1,998	2,289
4/8/2018	2,261	1,450	2,287
4/9/2018	2,860	2,014	2,287
4/10/2018	3,329	2,666	2,290
4/11/2018	3,680	3,036	2,293
4/12/2018	3,620	2,884	2,295
4/13/2018	3,655	3,045	2,297
4/14/2018	2,722	2,283	2,296
4/15/2018	2,281	1,736	2,294
4/16/2018	2,715	1,981	2,294
4/17/2018	3,391	2,559	2,296
4/18/2018	3,144	2,557	2,297
4/19/2018	2,605	2,251	2,296
4/20/2018	2,662	2,271	2,295
4/21/2018	2,916	2,273	2,293
4/22/2018	2,182	1,759	2,291
4/23/2018	2,461	1,874	2,291
4/24/2018	2,962	2,281	2,293
4/25/2018	3,223	2,754	2,294
4/26/2018	2,914	2,520	2,294
4/27/2018	2,832	2,325	2,295
4/28/2018	2,623	2,006	2,293
4/29/2018	2,137	1,620	2,291
4/30/2018	2,612	1,838	2,291

2018	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
5/1/2018	2,570	2,121	2,292
5/2/2018	2,554	2,031	2,292
5/3/2018	2,824	2,294	2,288
5/4/2018	3,677	2,932	2,288
5/5/2018	3,082	2,651	2,288
5/6/2018	2,366	1,866	2,286
5/7/2018	2,370	1,781	2,286
5/8/2018	3,029	2,471	2,288
5/9/2018	3,043	2,430	2,287
5/10/2018	2,581	2,199	2,284
5/11/2018	2,788	2,216	2,282
5/12/2018	2,693	2,091	2,280
5/13/2018	1,969	1,522	2,278
5/14/2018	2,536	1,798	2,279
5/15/2018	2,541	2,167	2,279
5/16/2018	2,586	2,212	2,279
5/17/2018	2,889	2,548	2,279
5/18/2018	2,683	2,335	2,279
5/19/2018	2,511	1,941	2,278
5/20/2018	1,787	1,466	2,276
5/21/2018	2,487	1,650	2,275
5/22/2018	2,485	1,988	2,275
5/23/2018	2,504	2,160	2,272
5/24/2018	3,063	2,510	2,271
5/25/2018	3,096	2,680	2,271
5/26/2018	2,759	2,201	2,270
5/27/2018	2,089	1,650	2,268
5/28/2018	2,317	1,755	2,267
5/29/2018	2,627	2,030	2,268
5/30/2018	2,773	2,278	2,268
5/31/2018	2,494	2,022	2,268
6/1/2018	2,636	1,963	2,267
6/2/2018	2,667	2,205	2,266
6/3/2018	1,961	1,473	2,262
6/4/2018	2,749	1,721	2,260
6/5/2018	2,785	2,337	2,260
6/6/2018	2,637	2,216	2,259
6/7/2018	3,150	2,762	2,259
6/8/2018	3,086	2,759	2,259
6/9/2018	2,514	2,082	2,257
6/10/2018	2,206	1,653	2,253
6/11/2018	3,294	1,937	2,253
6/12/2018	2,530	2,224	2,253
6/13/2018	2,602	2,210	2,253
6/14/2018	2,518	2,088	2,250
6/15/2018	2,654	2,382	2,249
6/16/2018	3,041	2,499	2,248
6/17/2018	2,296	1,702	2,247
6/18/2018	4,142	1,604	2,246
6/19/2018	2,628	2,147	2,247
6/20/2018	3,098	2,601	2,247
6/21/2018	2,751	2,308	2,246
6/22/2018	2,821	2,443	2,245
6/23/2018	2,686	2,070	2,244
6/24/2018	2,033	1,566	2,241
6/25/2018	2,784	1,738	2,241
6/26/2018	2,948	2,580	2,242
6/27/2018	3,367	2,632	2,243
6/28/2018	2,745	2,331	2,243
6/29/2018	2,612	2,209	2,242
6/30/2018	2,412	1,869	2,239

ATTACHMENT 13 - TOTAL DIGESTER GAS COMBUSTION

EBMUD Biogas to Combustion Devices
July - December 2018

2018	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
7/1/2018	1,809	1,405	2,236
7/2/2018	1,947	1,566	2,235
7/3/2018	2,533	2,129	2,235
7/4/2018	2,530	2,050	2,235
7/5/2018	2,061	1,682	2,235
7/6/2018	2,381	1,811	2,232
7/7/2018	2,389	2,024	2,231
7/8/2018	2,023	1,364	2,227
7/9/2018	2,088	1,377	2,224
7/10/2018	2,617	2,125	2,223
7/11/2018	2,620	2,089	2,221
7/12/2018	2,657	1,831	2,218
7/13/2018	2,611	2,196	2,215
7/14/2018	2,668	2,319	2,213
7/15/2018	2,284	1,380	2,210
7/16/2018	1,715	884	2,207
7/17/2018	2,706	2,114	2,206
7/18/2018	2,659	2,449	2,206
7/19/2018	3,361	2,558	2,206
7/20/2018	3,017	2,553	2,206
7/21/2018	2,679	2,336	2,205
7/22/2018	2,267	1,728	2,203
7/23/2018	2,910	1,896	2,202
7/24/2018	2,830	2,410	2,203
7/25/2018	2,588	2,360	2,204
7/26/2018	2,995	2,343	2,205
7/27/2018	2,661	2,108	2,204
7/28/2018	3,496	2,772	2,206
7/29/2018	2,842	2,214	2,206
7/30/2018	2,709	2,081	2,206
7/31/2018	3,062	2,573	2,209
8/1/2018	3,122	2,779	2,210
8/2/2018	3,030	2,589	2,210
8/3/2018	3,003	2,252	2,209
8/4/2018	2,873	2,156	2,207
8/5/2018	2,429	1,700	2,205
8/6/2018	2,560	1,587	2,205
8/7/2018	3,163	2,718	2,208
8/8/2018	3,347	2,987	2,210
8/9/2018	3,280	2,857	2,212
8/10/2018	3,142	2,780	2,213
8/11/2018	2,757	2,334	2,213
8/12/2018	2,016	1,543	2,212
8/13/2018	2,415	1,826	2,212
8/14/2018	2,921	2,430	2,214
8/15/2018	3,227	2,759	2,215
8/16/2018	3,137	2,661	2,216
8/17/2018	3,543	3,009	2,217
8/18/2018	2,925	2,463	2,217
8/19/2018	2,522	2,021	2,216
8/20/2018	2,441	1,759	2,216
8/21/2018	2,562	2,154	2,217
8/22/2018	2,821	2,340	2,217
8/23/2018	3,047	2,266	2,217
8/24/2018	3,152	2,719	2,219
8/25/2018	2,823	2,311	2,219
8/26/2018	2,103	1,584	2,217
8/27/2018	2,568	1,857	2,217
8/28/2018	2,819	2,371	2,218
8/29/2018	2,546	2,258	2,218
8/30/2018	2,613	2,183	2,217
8/31/2018	3,398	2,858	2,218

2018	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
9/1/2018	2,995	2,444	2,218
9/2/2018	2,171	1,682	2,216
9/3/2018	2,570	1,807	2,217
9/4/2018	2,671	1,967	2,218
9/5/2018	2,778	2,345	2,220
9/6/2018	3,079	2,358	2,220
9/7/2018	2,790	2,300	2,219
9/8/2018	2,806	2,282	2,218
9/9/2018	2,425	1,885	2,217
9/10/2018	2,344	1,625	2,217
9/11/2018	2,694	2,196	2,218
9/12/2018	2,459	2,091	2,218
9/13/2018	2,840	2,312	2,217
9/14/2018	3,097	2,574	2,218
9/15/2018	2,531	1,998	2,216
9/16/2018	2,088	1,559	2,215
9/17/2018	3,199	1,982	2,216
9/18/2018	3,052	2,398	2,217
9/19/2018	2,744	2,267	2,217
9/20/2018	3,100	2,622	2,218
9/21/2018	3,170	2,695	2,218
9/22/2018	3,102	2,618	2,218
9/23/2018	2,596	1,749	2,217
9/24/2018	2,807	1,694	2,217
9/25/2018	3,030	2,606	2,219
9/26/2018	2,800	2,316	2,219
9/27/2018	2,733	2,154	2,219
9/28/2018	2,727	2,229	2,219
9/29/2018	2,700	2,079	2,217
9/30/2018	2,547	1,738	2,215
10/1/2018	2,436	1,734	2,215
10/2/2018	3,226	2,353	2,216
10/3/2018	3,490	3,134	2,219
10/4/2018	3,199	2,696	2,219
10/5/2018	2,783	2,351	2,219
10/6/2018	2,656	2,142	2,219
10/7/2018	2,276	1,695	2,218
10/8/2018	2,246	1,755	2,218
10/9/2018	2,661	2,113	2,219
10/10/2018	3,068	2,533	2,220
10/11/2018	3,131	2,786	2,222
10/12/2018	3,087	2,644	2,222
10/13/2018	3,135	2,526	2,221
10/14/2018	2,360	1,853	2,220
10/15/2018	2,154	1,958	2,220
10/16/2018	3,168	2,336	2,221
10/17/2018	3,227	2,817	2,222
10/18/2018	3,213	2,705	2,222
10/19/2018	2,978	2,744	2,222
10/20/2018	2,767	2,239	2,222
10/21/2018	2,143	1,692	2,221
10/22/2018	2,166	1,647	2,220
10/23/2018	2,634	1,949	2,220
10/24/2018	2,747	2,265	2,221
10/25/2018	2,936	2,637	2,221
10/26/2018	2,905	2,535	2,221
10/27/2018	2,804	2,333	2,220
10/28/2018	2,688	1,943	2,219
10/29/2018	2,753	1,925	2,219
10/30/2018	2,809	2,397	2,220
10/31/2018	2,726	2,336	2,221

3,400 Annual Average Limit

2018	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
11/1/2018	2,814	2,338	2,221
11/2/2018	4,383	2,478	2,222
11/3/2018	2,619	2,119	2,221
11/4/2018	2,212	1,809	2,220
11/5/2018	2,286	1,422	2,219
11/6/2018	3,166	2,428	2,220
11/7/2018	3,369	2,908	2,222
11/8/2018	3,176	2,427	2,222
11/9/2018	3,129	2,786	2,222
11/10/2018	2,958	2,465	2,222
11/11/2018	2,123	1,890	2,222
11/12/2018	2,377	1,861	2,222
11/13/2018	3,053	2,099	2,222
11/14/2018	3,229	2,513	2,223
11/15/2018	3,049	2,180	2,223
11/16/2018	3,097	2,756	2,224
11/17/2018	2,753	2,299	2,223
11/18/2018	2,101	1,663	2,221
11/19/2018	1,812	1,266	2,220
11/20/2018	2,739	1,997	2,220
11/21/2018	3,270	2,764	2,221
11/22/2018	3,446	3,017	2,222
11/23/2018	2,773	2,195	2,223
11/24/2018	2,272	1,976	2,223
11/25/2018	1,878	1,746	2,222
11/26/2018	2,938	1,859	2,223
11/27/2018	3,222	2,851	2,225
11/28/2018	3,387	2,873	2,227
11/29/2018	3,304	2,927	2,229
11/30/2018	3,282	2,840	2,230
12/1/2018	3,061	2,339	2,231
12/2/2018	1,975	1,566	2,229
12/3/2018	3,151	2,305	2,231
12/4/2018	3,738	2,601	2,234
12/5/2018	3,034	2,562	2,234
12/6/2018	3,181	2,713	2,233
12/7/2018	3,526	2,658	2,232
12/8/2018	2,447	2,082	2,231
12/9/2018	2,265	1,667	2,229
12/10/2018	2,129	1,677	2,228
12/11/2018	3,029	2,272	2,229
12/12/2018	2,853	2,302	2,229
12/13/2018	3,159	2,477	2,230
12/14/2018	3,102	2,543	2,230
12/15/2018	2,809	2,401	2,231
12/16/2018	2,111	1,763	2,228
12/17/2018	2,536	2,059	2,229
12/18/2018	2,751	2,174	2,229
12/19/2018	3,866	3,062	2,231
12/20/2018	3,523	2,842	2,232
12/21/2018	3,145	2,793	2,233
12/22/2018	2,734	2,267	2,232
12/23/2018	2,507	2,141	2,232
12/24/2018	2,198	1,755	2,232
12/25/2018	1,789	1,364	2,232
12/26/2018	3,119	1,913	2,233
12/27/2018	2,883	1,946	2,231
12/28/2018	2,871	2,606	2,231
12/29/2018	3,014	2,465	2,231
12/30/2018	2,168	1,553	2,230
12/31/2018	2,209	1,585	2,229

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Mr. Jeff Gove, Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale Street, Suite 600
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Attn. Title V Reports

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