July 28, 2021

TV Tracking #: 269

1. ☐ RECEIVED IN ENFORCEMENT: 07/28/2021

Jeffrey Gove
Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale St. St. 600
San Francisco, CA 94105

ATTN: TITLE V REPORTS

RE: Semi-Annual Monitoring Report: January through June 2021 for City of Santa Rosa Wastewater Treatment Plant, Permit for Facility #A1403

Dear Mr. Gove:

In accordance with Permit Standard Conditions Section F, this letter is provided to fulfill semi-annual monitoring reporting required for the City of Santa Rosa Wastewater Treatment Facility during the period January 1, 2021 – June 30, 2021. Pursuant to the monitoring requirements specified in the Permit, please note the following items regarding monthly and annual emissions testing:

- The results of the annual source testing provided by Blue Sky Environmental on 05/18/2021 and draft report received by the City on 07/08/2021 showed an exceedance of the MMbtu/hr limit on Engine 3(S202). The reported average value of 9.35 is over the limit of 9.32 MMbtu/hr. The 10-day deviation notice was submitted on July 14 and is attached in Appendix A. The 30-day response will be submitted by the August 7, 2021 due date.

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Monthly Emission Testing and Annual Source Tests (Condition #24751)

During this period, monthly portable tests were conducted by Blue Sky Environmental for emissions from digester/natural gas fueled internal combustion engines S-200, S-201, S-202 and S-203 on January 27, February 24, March 24, April 26, May 18, and June 17, results are attached in Appendix B. Please note the following exceptions regarding engine testing:

- S-200 Engine 1 was not tested in April as it was out of service.
- S-201 Engine 2 was not tested in January, February, March, April or May as it was out of service.

Per the City of Santa Rosa's Title V permit, annual source testing is required to be conducted no later than 12 calendar months after the previous source test. The most recent source test dates and upcoming due dates are listed in the table below:

Source	Test Date	Next Due
S-200 Engine 1	October 8, 2020	October 7, 2021
S-201 Engine 2	June 17, 2021	June 16, 2022
S-202 Engine 3	May 18, 2021	May 17, 2022
S-203 Engine 4	November 19, 2020	November 18, 2021

Anaerobic Digesters Gas Conditioning (Condition #18871)
Weekly H_2S monitoring is conducted on the digester gas upstream of the iron sponge abatement device (A-200) for compliance with the sulfur limit of 1500 ppm and downstream of A-200 for compliance with the H_2S content limit of 50 ppm. Results of these tests are attached with this report in Appendix C.

Emergency Generators (Condition #22820)
During the reporting period, reliability-related activities performed on the emergency standby diesel generators (S-33 and S-34) were in compliance with the limitation of less than 20 hours/year.

Thank you for your consideration of this matter. Please contact Sean McNeil, Deputy Director of Environmental Services, at (707) 543-3938 for any information related to this report.

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

Sincerely,

Jennifer Burke

Jennifer Burke
Director of Santa Rosa Water

Enclosure:
Appendix A – 10-Day Deviation Notice
Appendix B - Monthly Emission Testing Results
Appendix C - Digester Gas Quality Results

cc. BAAQMD File

APPENDIX A

10-Day Deviation Notice

BAAQMD Title V Permit

10 Day Deviation Notification

Section I: Facility Information

Facility Name: **City of Santa Rosa** Facility ID **A1403**

Address: **4300 Llano Road**

City: **Santa Rosa** State: *CA* Zip Code: **95407**

Mailing Address: 4300 Llano Road

City: Santa Rosa State: *CA* Zip Code: 95407

Name, title and phone number of person to contact for further information:

Heather Johnson	**Env. Services Officer**	**707-543-3472**
Contact	*Title*	*Phone*

Section II: Event Information

Incident Occurred on: 5/18/2021 at

Incident Discovered on: * see dates below at

Incident Has Stopped? ☐ at

Total Duration: Days: Hours:

Event Description:

Results of annual source testing provided by Blue Sky Environmental on 05/18/2021 and draft report received by the City on 07/08/2021 showed an exceedance of the MMbtu/hr limit on Engine 3(S202). The reported average value of 9.35 is over the limit of 9.32 MMbtu/hr. Further details will be included with the 30-day response.

The incident may have resulted in a:

Deviation from Permit Conditions(s): **Condition #24751, part 1.e (after construction of permit to operate pursuant to 28928)**

Deviation from BAAQMD Rules(s):

Other deviations (CFR, CARB, etc.) :

Source (S#): S202

Source (S#):

Abatement Device (A#):

Emission Point (#P):

APPENDIX B

Monthly Emission Testing Results

TABLE #1

BAAQMD FACILITY # 1403
LAGUNA - Monthly-JAN
Engines #1, #3 & #4

ENGINE	Eng-1	ACTION LIMITS	Eng-3	Eng-4	ACTION LIMITS
Test Date	1/27/21	NG/DG	1/27/21	1/27/21	NG/DG
Test Time	0908-0923		0739-0754	0802-0817	
Standard Temp., °F	70		70	70	
Engine kW	801		789	808	
Engine Bhp	1,073		1,057	1,083	
Total Fuel Flow Rate, DSCFM (nat gas) NG	20		23	33	
Total Fuel Flow Rate, DSCFM (dig gas) DG	427		424	405	
Engine Blended DSCFM	224		221	221	
Stack Flow Rate, DSCFM (Method 19)	2,250		2,133	2,162	
Oxygen, O_2, %	8.8		8.3	8.3	
NOx, ppm	98.4		1.1	1.0	
NOx, ppm @ 15% O_2	48.1	65/70	0.5	0.5	
NOx, lbs/hr	1.58		0.017	0.02	
NOx, lbs/day	37.9		0.4	0.4	
NOx, g/Bhp-hr	**0.67**	**0.75**	**0.007**	**0.007**	**0.12**
CO, ppm	476.8		0.5	0.5	
CO, ppm @ 15% O_2	233.0	348	0.2	0.2	
CO, lbs/hr	4.66		0.004	0.005	
CO, lbs/day	111.9		0.11	0.1	
CO, g/Bhp-hr	**1.97**	**3.10**	**0.002**	**0.002**	**0.12**

* g/BHP-hr based on Digester gas analysis dated 1/27/2021

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
g/BHp-hr = Lbs/hr * 453.6 / BHp
Engine BHp = Engine kW * 1.34

TABLE #1

BAAQMD FACILITY # 1403
LAGUNA - Monthly-February
Engines #1, #3 & #4

ENGINE	Eng-1	ACTION LIMITS	Eng-3	Eng-4	ACTION LIMITS
Test Date	2/24/21	NG/DG	2/24/21	2/24/21	NG/DG
Test Time	1054-1108		0822-0836	0913-0927	
Standard Temp., °F	70		70	70	
Engine kW	536		795	805	
Engine Bhp	718		1,065	1,079	
Total Fuel Flow Rate, DSCFM (nat gas) NG	0		1	0	
Total Fuel Flow Rate, DSCFM (dig gas) DG	325		466	465	
Engine Blended DSCFM	162		232	234	
Fuel Methane% facility readout	57.9		58.0	57.7	
Stack Flow Rate, DSCFM (Method 19)	1,498		2,179	2,181	
Oxygen, O_2, %	7.9		8.0	8.0	
NOx, ppm	84.6		0.1	11.4	
NOx, ppm @ 15% O_2	38.3	65/70	0.1	5.2	
NOx, lbs/hr	0.91		0.002	0.18	
NOx, lbs/day	21.7		0.05	4.2	
NOx, g/Bhp-hr	**0.57**	**0.75**	**0.001**	**0.07**	**0.12**
CO, ppm	512.3		0.01	0.1	
CO, ppm @ 15% O_2	231.6	348	0.005	0.04	
CO, lbs/hr	3.33		0.0001	0.001	
CO, lbs/day	80.0		0.002	0.02	
CO, g/Bhp-hr	**2.11**	**3.10**	**0.00004**	**0.0004**	**0.12**

* g/BHP-hr based on Digester gas analysis dated 2/24/2021

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
g/BHp-hr = Lbs/hr * 453.6 / BHp
Engine BHp = Engine kW * 1.34

TABLE #1

BAAQMD FACILITY # 1403
LAGUNA - Monthly-March
Engines #1, #3 & #4

ENGINE	Eng-1	ACTION LIMITS	Eng-3	Eng-4	ACTION LIMITS
Test Date	3/24/21	NG/DG	3/24/21	3/24/21	NG/DG
Test Time	1128-1143		0925-0940	0858-0913	
Standard Temp., °F	70		70	70	
Engine kW	755		801	802	
Engine Bhp	1,012		1,073	1,075	
Total Fuel Flow Rate, DSCFM (nat gas) NG	10		33	18	
Total Fuel Flow Rate, DSCFM (dig gas) DG	431		401	437	
Engine Blended DSCFM	219		217	228	
Stack Flow Rate, DSCFM (Method 19)	2,160		2,192	2,232	
Oxygen, O_2, %	8.5		8.4	8.3	
NOx, ppm	85.3		0.4	0.2	
NOx, ppm @ 15% O_2	40.7	65/70	0.2	0.1	
NOx, lbs/hr	1.31		0.006	0.00	
NOx, lbs/day	31.5		0.2	0.1	
NOx, g/Bhp-hr	**0.59**	**0.75**	**0.003**	**0.002**	**0.12**
CO, ppm	503.4		-0.3	-0.3	
CO, ppm @ 15% O_2	240.0	348	-0.1	-0.1	
CO, lbs/hr	4.72		-0.003	-0.003	
CO, lbs/day	113.4		-0.07	-0.1	
CO, g/Bhp-hr	**2.12**	**3.10**	**-0.001**	**-0.001**	**0.12**

* g/BHP-hr based on Digester gas analysis dated 3/24/2021

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
g/BHp-hr = Lbs/hr * 453.6 / BHp
Engine BHp = Engine kW * 1.34

TABLE #1

BAAQMD FACILITY # 1403
LAGUNA - Monthly-April
Engines #3 & #4

ENGINE	Eng-3	Eng-4	ACTION LIMITS
Test Date	4/26/21	4/26/21	NG/DG
Test Time	0823-0838	0758-0813	
Standard Temp., °F	70	70	
Engine kW	903	913	
Engine Bhp	1,210	1,223	
Total Fuel Flow Rate, DSCFM (nat gas) NG	115	116	
Total Fuel Flow Rate, DSCFM (dig gas) DG	302	295	
Engine Blended DSCFM	208	208	
Stack Flow Rate, DSCFM (Method 19)	2,429	2,449	
Oxygen, O_2, %	9.0	9.0	
NOx, ppm	0.2	0.4	
NOx, ppm @ 15% O_2	0.1	0.2	
NOx, lbs/hr	0.003	0.01	
NOx, lbs/day	0.1	0.2	
NOx, g/Bhp-hr	**0.001**	**0.003**	**0.12**
CO, ppm	0.4	0.7	
CO, ppm @ 15% O_2	0.2	0.4	
CO, lbs/hr	0.004	0.008	
CO, lbs/day	0.09	0.2	
CO, g/Bhp-hr	**0.001**	**0.003**	**0.12**

* g/BHP-hr based on Digester gas analysis dated 4/26/2021

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)

TABLE #1

BAAQMD FACILITY # 1403
LAGUNA - Monthly-May
Engines #1, #3 & #4

ENGINE	Eng-1	ACTION LIMITS	Eng-3	Eng-4	ACTION LIMITS
Test Date	5/18/21	NG/DG	5/18/21	5/18/21	NG/DG
Test Time	1423-1439		1314-1329	1337-1352	
Standard Temp., °F	70		70	70	
Engine kW	741		894	905	
Engine Bhp	993		1,198	1,213	
Total Fuel Flow Rate, DSCFM (nat gas) NG	0		33	43	
Total Fuel Flow Rate, DSCFM (dig gas) DG	438		459	437	
Engine Blended DSCFM	216		245	242	
Stack Flow Rate, DSCFM (Method 19)	2,109		2,490	2,503	
Oxygen, O_2, %	8.5		8.5	8.6	
NOx, ppm	90.4		5.3	0.1	
NOx, ppm @ 15% O_2	43.0	65/70	2.5	0.0	
NOx, lbs/hr	1.36		0.095	0.00	
NOx, lbs/day	32.6		2.3	0.0	
NOx, g/Bhp-hr	**0.62**	**0.75**	**0.036**	**0.001**	**0.12**
CO, ppm	500.9		0.5	0.4	
CO, ppm @ 15% O_2	238.4	348	0.3	0.2	
CO, lbs/hr	4.59		0.006	0.005	
CO, lbs/day	110.1		0.14	0.1	
CO, g/Bhp-hr	**2.10**	**3.10**	**0.002**	**0.002**	**0.12**

* g/BHP-hr based on Digester gas analysis dated 5/18/2021

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
g/BHp-hr = Lbs/hr * 453.6 / BHp
Engine BHp = Engine kW * 1.34

TABLE #1

BAAQMD FACILITY # 1403
LAGUNA - Monthly-June
Engines #1, #2, #3 & #4

ENGINE	Eng-1	Eng-2	ACTION LIMITS	Eng-3	Eng-4	ACTION LIMITS
Test Date	6/17/21	6/17/21	NG/DG	6/17/21	6/17/21	NG/DG
Test Time	0947-1002	1438-1453		0808-0823	0740-0755	
Standard Temp., °F	70	70		70	70	
Engine kW	848	854		942	961	
Engine Bhp	1,136	1,144		1,262	1,288	
Total Fuel Flow Rate, DSCFM (nat gas) NG	38	66		58	55	
Total Fuel Flow Rate, DSCFM (dig gas) DG	411	366		429	438	
Engine Blended DSCFM	224			242	249	
Stack Flow Rate, DSCFM (Method 19)	2,359	2,274		2,588	2,662	
Oxygen, O_2, %	8.8	8.3		8.8	8.9	
NOx, ppm	61.8	59.8		8.4	0.4	
NOx, ppm @ 15% O_2	30.2	28.0	65/70	4.1	0.2	
NOx, lbs/hr	1.04	0.97		0.156	0.01	
NOx, lbs/day	25.0	23.3		3.7	0.2	
NOx, g/Bhp-hr	**0.42**	**0.38**	**0.75**	**0.056**	**0.003**	**0.12**
CO, ppm	513.5	416.0		0.4	0.2	
CO, ppm @ 15% O_2	251.2	194.9	348	0.2	0.1	
CO, lbs/hr	5.26	4.11		0.004	0.003	
CO, lbs/day	126.3	98.6		0.10	0.1	
CO, g/Bhp-hr	**2.10**	**1.63**	**3.10**	**0.001**	**0.001**	**0.12**

* g/BHP-hr based on Digester gas analysis dated 5/18/2021

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
g/BHp-hr = Lbs/hr * 453.6 / BHp
Engine BHp = Engine kW * 1.34

APPENDIX C

Digester Gas Quality Results

Digester Gas Quality
1/1/2021 - 6/30/2021

	Hydrogen Sulfide
	mg/l
Date	Gas Skid
1/4/21	11
1/11/21	11
1/18/21	11
1/25/21	10
2/1/21	13
2/8/21	0
2/15/21	0
2/22/21	0
3/1/21	0
3/8/21	2
3/15/21	1
3/22/21	1
3/29/21	4
4/5/21	3
4/12/21	5
4/19/21	6
4/26/21	6
5/3/21	9
5/10/21	20
5/17/21	11
5/24/21	18
5/31/21	1
6/7/21	0
6/14/21	1
6/21/21	0
6/28/21	0
AVG	5
MIN	0
MAX	20

Semi Annual Monitoring Report Jan-June 2021_Final

Final Audit Report 2021-07-28

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