State of Oregon
Department of Environmental Quality Memorandum

Date: July 26, 2022

To: Kenzie Billings
From: Thomas Rhodes

Subject: Source Test Review Report
EcoLube Recovery, LLC
Permit Number: 26-3021-ST-01

Test Date: January 26-27, 2022
Date Report Received: April 11, 2022
Date Revised Report Received: June 7, 2022
Source Testers: Montrose Air Quality Services
DEQ Observed: Yes

I) Source Description: A flash tank (water/No.2 distillate boiled off) and one wiped film evaporator are operated under vacuum. The discharge from the vacuum system is sent through Oil Heater No. 3 for combustion. The outlet of Oil Heater No. 3 is piped to the inlet of the regenerative thermal oxidizer (RTO). Air effluent from the sulfonation plant and lube polishing system are also routed to the RTO.

II) Process (es)/Emissions Unit(s) Tested: The outlet of the RTO was tested.

III) Test Purpose: Source testing to develop Toxic Air Contaminant (TAC) emission factors for dioxins, furans, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), chlorophenols, and chlorobenzenes to use in the Cleaner Air Oregon Emissions Inventory.

IV) Testing Location:

RTO Outlet:

Diameter:	19.5”
Distance A (Method 1):	33” (1.7 Diameter)
Distance B (Method 1):	146” (7.5 Diameters)
Number traverse points utilized:	16

V) Testing Methodology: The following testing methods were utilized during the testing program:

Flow Rate, O_2 & CO_2, & Moisture Content: EPA Methods 1, 2, 3A & 4
Dioxins and Furans (D/F): EPA Method 23
Polycyclic Aromatic Hydrocarbons (PAHs): EPA Method 23
Polychlorinated Biphenyls (PCBs): EPA Method 23
Chlorophenols and Chlorobenzenes: EPA Method 23

VI) Summary of Results: The testing parameters, test results and operating parameters are summarized in the Tables below:

Table 1: Dioxin and Furan Emissions
Table 2: PAH Emissions
Table 3: PCB Emissions
Table 4: Chlorophenol and Chlorobenzene Emissions
Table 5: Operating Parameters

TABLE 1: Dioxin and Furan Emissions

Parameters	Run 1	Run 2	Run 3	Average
Test Date	1/26/2022	1/27/2022	1/27/2022	--
Test Times	14:10-18:27	9:27-13:39	14:41-19:05	--
Exhaust Gas Temperature (°F)	404	405	393	**401**
Exhaust Gas Moisture (%)	5.03	5.67	5.32	**5.34**
Exhaust O_2 (% dry vol)	14.41	13.12	13.69	**13.74**
Exhaust CO_2 (% dry vol)	4.81	5.71	4.16	**4.89**
Exhaust Gas Flow Rate (dscf/min)	2,927	2,676	2,816	**2,807**
Sample Volume (dscf)	181.462	171.548	171.548	**174.853**
Isokinetic Variation	98.0	101.3	96.3	**98.5**
2,3,7,8-TCDD Emissions:	--	--	--	--
· ng/dscm	< 7.55E-04	< 8.07E-04	< 8.85E-04	**< 8.16E-04**
· lb/hr	< 8.26E-12	< 8.07E-12	< 9.32E-12	**< 8.55E-12**
1,2,3,7,8-PeCDD Emissions:	--	--	--	--
· ng/dscm	< 1.10E-03	< 1.31E-03	< 1.33E-03	**< 1.25E-03**
· lb/hr	< 1.21E-11	< 1.31E-11	< 1.40E-11	**< 1.30E-11**
1,2,3,4,7,8-HxCDD Emissions:	--	--	--	--
· ng/dscm	< 1.08E-03	< 9.06E-04	< 1.03E-03	**< 1.01E-03**
· lb/hr	< 1.19E-11	< 9.06E-12	< 1.09E-11	**< 1.06E-11**
1,2,3,6,7,8-HxCDD Emissions:	--	--	--	--
· ng/dscm	< 1.13E-03	< 8.99E-04	< 1.04E-03	**< 1.02E-03**
· lb/hr	< 1.24E-11	< 9.00E-12	< 1.10E-11	**< 1.08E-11**
1,2,3,7,8,9 HxCDD Emissions:	--	--	--	--
· ng/dscm	< 1.04E-03	< 8.36E-04	< 1.08E-03	**< 9.86E-04**
· lb/hr	< 1.14E-11	< 8.36E-12	< 1.14E-11	**< 1.04E-11**
1,2,3,4,6,7,8-HpCDD Emissions:	--	--	--	--
· ng/dscm	1.53E-02	1.29E-02	1.57E-02	**1.46E-02**
· lb/hr	1.68E-10	1.29E-10	1.65E-10	**1.54E-10**
OCDD Emissions:	--	--	--	--
· ng/dscm	3.25E-02	3.27E-02	3.93E-02	**3.48E-02**
· lb/hr	3.56E-10	3.27E-10	4.14E-10	**3.66E-10**

'<' denotes results calculated using the EDL for results that were non-detect.

TABLE 1 continued: Dioxin and Furan Emissions

Parameters	Run 1	Run 2	Run 3	Average
2,3,7,8-TCDF Emissions:	--	--	--	--
· **ng/dscm**	1.41E-02	6.05E-03	< 7.06E-04	**< 6.95E-03**
· **lb/hr**	1.54E-10	6.05E-11	< 7.43E-12	**< 7.40E-11**
1,2,3,7,8-PeCDF Emissions:	--	--	--	--
· **ng/dscm**	< 9.59E-04	< 7.00E-04	< 8.07E-04	**< 8.22E-04**
· **lb/hr**	< 1.05E-11	< 7.00E-12	< 8.49E-12	**< 8.66E-12**
2,3,4,7,8-PeCDF Emissions:	--	--	--	--
· **ng/dscm**	< 9.73E-04	< 7.08E-04	< 8.32E-04	**< 8.38E-04**
· **lb/hr**	< 1.06E-11	< 7.08E-12	< 8.75E-12	**< 8.83E-12**
1,2,3,4,7,8-HxCDF Emissions:	--	--	--	--
· **ng/dscm**	< 6.09E-04	< 5.91E-04	< 5.97E-04	**< 5.99E-04**
· **lb/hr**	< 6.66E-12	< 5.91E-12	< 6.28E-12	**< 6.29E-12**
1,2,3,6,7,8-HxCDF Emissions:	--	--	--	--
· **ng/dscm**	< 6.03E-04	< 5.70E-04	< 5.85E-04	**< 5.86E-04**
· **lb/hr**	< 6.60E-12	< 5.70E-12	< 6.15E-12	**< 6.15E-12**
2,3,4,6,7,8-HxCDF Emissions:	--	--	--	--
· **ng/dscm**	< 5.82E-04	< 5.37E-04	< 5.76E-04	**< 5.65E-04**
· **lb/hr**	< 6.37E-12	< 5.37E-12	< 6.07E-12	**< 5.94E-12**
1,2,3,7,8,9 HxCDF Emissions:	--	--	--	--
· **ng/dscm**	< 6.87E-04	< 6.48E-04	< 6.46E-04	**< 6.61E-04**
· **lb/hr**	< 7.52E-12	< 6.49E-12	< 6.80E-12	**< 6.94E-12**
1,2,3,4,6,7,8-HpCDF Emissions:	--	--	--	--
· **ng/dscm**	< 5.20E-04	< 6.17E-04	< 7.97E-04	**< 6.45E-04**
· **lb/hr**	< 5.69E-12	< 6.18E-12	< 8.39E-12	**< 6.75E-12**
1,2,3,4,7,8,9-HpCDF Emissions:	--	--	--	--
· **ng/dscm**	< 5.58E-04	< 7.29E-04	< 1.05E-03	**< 7.79E-04**
· **lb/hr**	< 6.11E-12	< 7.29E-12	< 1.11E-11	**< 8.15E-12**
OCDF Emissions:	--	--	--	--
· **ng/dscm**	< 1.38E-03	< 1.01E-03	< 1.17E-03	**< 1.19E-03**
· **lb/hr**	< 1.51E-11	< 1.01E-11	< 1.23E-11	**< 1.25E-11**

'<' denotes results calculated using the EDL for results that were non-detect.

TABLE 2: PAH Emissions

Parameters	Run 1	Run 2	Run 3	Average
Acenaphthene Emissions:	--	--	--	--
· **ng/dscm**	2.14E+02	1.75E+02	2.24E+02	**2.04E+02**
· **lb/hr**	2.34E-06	1.75E-06	2.36E-06	**2.15E-06**
Acenaphthylene Emissions:	--	--	--	--
· **ng/dscm**	5.27E+02	4.51E+02	5.37E+02	**5.05E+02**
· **lb/hr**	5.77E-06	4.51E-06	5.65E-06	**5.31E-06**
Anthracene Emissions:	--	--	--	--
· **ng/dscm**	4.32E+02	< 2.12E+00	3.83E+02	**< 2.72E+02**
· **lb/hr**	4.72E-06	< 2.12E-08	4.03E-06	**< 2.92E-06**
Benz[a]anthracene Emissions:	--	--	--	--
· **ng/dscm**	1.88E+02	6.46E+01	1.76E+02	**1.43E+02**
· **lb/hr**	2.06E-06	6.46E-07	1.86E-06	**1.52E-06**
Benzo[a]pyrene Emissions:	--	--	--	--
· **ng/dscm**	4.90E+00	< 2.26E+00	< 1.71E+00	**< 2.96E+00**
· **lb/hr**	5.36E-08	< 2.26E-08	< 1.80E-08	**< 3.14E-08**
Benzo[b]fluoranthene Emissions:	--	--	--	--
· **ng/dscm**	8.08E+01	4.73E+01	8.64E+01	**7.15E+01**
· **lb/hr**	8.83E-07	4.73E-07	9.10E-07	**7.55E-07**
Benzo[e]pyrene Emissions:	--	--	--	--
· **ng/dscm**	2.04E+01	9.45E+00	2.26E+01	**1.75E+01**
· **lb/hr**	2.23E-07	9.45E-08	2.38E-07	**1.85E-07**
Benzo[g,h,i]perylene Emissions:	--	--	--	--
· **ng/dscm**	6.44E+00	8.87E+00	1.40E+01	**9.76E+00**
· **lb/hr**	7.04E-08	8.87E-08	1.47E-07	**1.02E-07**
Benzo[k]fluoranthene Emissions:	--	--	--	--
· **ng/dscm**	1.64E+01	1.11E+01	1.43E+01	**1.39E+01**
· **lb/hr**	1.80E-07	1.11E-07	1.51E-07	**1.47E-07**
Chrysene Emissions:	--	--	--	--
· **ng/dscm**	2.35E+02	1.68E+02	2.41E+02	**2.15E+02**
· **lb/hr**	2.58E-06	1.68E-06	2.53E-06	**2.26E-06**
Dibenz[a,h]anthracene Emissions:	--	--	--	--
· **ng/dscm**	< 2.00E+00	< 2.35E+00	< 1.97E+00	**< 2.11E+00**
· **lb/hr**	< 2.19E-08	< 2.35E-08	< 2.07E-08	**< 2.20E-08**
Fluoranthene Emissions:	--	--	--	--
· **ng/dscm**	7.88E+02	3.95E+02	6.98E+02	**6.27E+02**
· **lb/hr**	8.62E-06	3.95E-06	7.34E-06	**6.64E-06**
Fluorene Emissions:	--	--	--	--
· **ng/dscm**	1.05E+03	6.61E+02	8.44E+02	**8.51E+02**
· **lb/hr**	1.15E-05	6.61E-06	8.88E-06	**8.99E-06**

'<' denotes results calculated using the EDL for results that were non-detect.

TABLE 2 continued: PAH Emissions

Parameters	Run 1	Run 2	Run 3	Average
Indeo[1,2,3-cd]pyrene Emissions:	--	--	--	--
· **ng/dscm**	< 1.85E+00	< 2.43E+00	< 2.37E+00	**< 2.22E+00**
· **lb/hr**	< 2.03E-08	< 2.43E-08	< 2.49E-08	**< 2.32E-08**
2-Methyl naphthalene Emissions:	--	--	--	--
· **ng/dscm**	1.98E+04	2.20E+04	1.95E+04	**2.05E+04**
· **lb/hr**	2.17E-04	2.20E-04	2.05E-04	**2.14E-04**
Naphthalene Emissions:[a]	--	--	--	--
· **ng/dscm**	*2.06E+04*	*3.33E+04*	*2.68E+04*	***2.69E+04***
· **lb/hr**	*2.26E-04*	*3.33E-04*	*2.82E-04*	***2.80E-04***
Perylene Emissions:	--	--	--	--
· **ng/dscm**	< 2.02E+00	< 2.68E+00	< 5.31E+00	**< 3.34E+00**
· **lb/hr**	< 2.21E-08	< 2.68E-08	< 5.59E-08	**< 3.49E-08**
Phenanthrene Emissions:	--	--	--	--
· **ng/dscm**	3.09E+03	1.93E+03	2.37E+03	**2.47E+03**
· **lb/hr**	3.38E-05	1.93E-05	2.49E-05	**2.60E-05**
Pyrene Emissions:	--	--	--	--
· **ng/dscm**	5.84E+02	1.82E+02	4.84E+02	**4.16E+02**
· **lb/hr**	6.38E-06	1.82E-06	5.09E-06	**4.43E-06**

[a] Naphthalene emissions are presented as estimates only. See Comment 1 for more detail.
'<' denotes results calculated using the EDL for results that were non-detect.

TABLE 3: PCB Emissions

Parameters	Run 1	Run 2	Run 3	Average
PCB-5/8 Emissions:	--	--	--	--
· **ng/dscm**	2.69E+00	4.57E-01	1.88E-01	**1.11E+00**
· **lb/hr**	2.94E-08	4.57E-09	1.98E-09	**1.20E-08**
PCB-18 Emissions:	--	--	--	--
· **ng/dscm**	1.89E+00	1.99E-01	1.13E-01	**7.32E-01**
· **lb/hr**	2.06E-08	1.99E-09	1.19E-09	**7.94E-09**
PCB-28 Emissions:	--	--	--	--
· **ng/dscm**	1.52E+00	2.53E-01	9.04E-02	**6.22E-01**
· **lb/hr**	1.67E-08	2.53E-09	9.51E-10	**6.71E-09**
PCB-44 Emissions:	--	--	--	--
· **ng/dscm**	6.46E-01	5.45E-02	4.24E-02	**2.48E-01**
· **lb/hr**	7.07E-09	5.46E-10	4.46E-10	**2.69E-09**
PCB-52/69 Emissions:	--	--	--	--
· **ng/dscm**	6.62E-01	7.12E-02	4.69E-02	**2.60E-01**
· **lb/hr**	7.24E-09	7.13E-10	4.94E-10	**2.82E-09**
PCB-66/76 Emissions:	--	--	--	--
· **ng/dscm**	3.15E-01	3.44E-02	2.37E-02	**1.24E-01**
· **lb/hr**	3.45E-09	3.44E-10	2.49E-10	**1.35E-09**
PCB-77 Emissions:	--	--	--	--
· **ng/dscm**	3.37E-02	8.46E-03	3.95E-03	**1.54E-02**
· **lb/hr**	3.68E-10	8.46E-11	4.16E-11	**1.65E-10**
PCB-81 Emissions:	--	--	--	--
· **ng/dscm**	2.82E-03	< 9.63E-04	< 1.28E-03	**< 1.69E-03**
· **lb/hr**	3.09E-11	< 9.64E-12	< 1.35E-11	**< 1.80E-11**
PCB-90/101 Emissions:	--	--	--	--
· **ng/dscm**	3.06E-01	3.73E-02	3.77E-02	**1.27E-01**
· **lb/hr**	3.34E-09	3.73E-10	3.97E-10	**1.37E-09**
PCB-105 Emissions:	--	--	--	--
· **ng/dscm**	6.91E-02	1.12E-02	1.03E-02	**3.02E-02**
· **lb/hr**	7.56E-10	1.12E-10	1.08E-10	**3.26E-10**
PCB-114 Emissions:	--	--	--	--
· **ng/dscm**	< 3.27E-03	< 1.68E-03	< 1.71E-03	**< 2.22E-03**
· **lb/hr**	< 3.58E-11	< 1.68E-11	< 1.80E-11	**< 2.35E-11**
PCB-106/118 Emissions:	--	--	--	--
· **ng/dscm**	1.84E-01	2.37E-02	2.24E-02	**7.67E-02**
· **lb/hr**	2.01E-09	2.37E-10	2.36E-10	**8.28E-10**
PCB-123 Emissions:	--	--	--	--
· **ng/dscm**	4.67E-03	< 1.21E-03	< 1.20E-03	**< 2.36E-03**
· **lb/hr**	5.11E-11	< 1.21E-11	< 1.26E-11	**< 2.53E-11**

'<' denotes results calculated using the EDL or EMPC for results that were non-detect.

TABLE 3 continued: PCB Emissions

Parameters	Run 1	Run 2	Run 3	Average
PCB-126 Emissions:	--	--	--	--
· **ng/dscm**	< 3.58E-03	< 1.74E-03	< 1.87E-03	**< 2.40E-03**
· **lb/hr**	< 3.92E-11	< 1.74E-11	< 1.97E-11	**< 2.54E-11**
PCB-128/162 Emissions:	--	--	--	--
· **ng/dscm**	1.62E-02	< 2.53E-03	< 2.72E-03	**< 7.16E-03**
· **lb/hr**	1.78E-10	< 2.53E-11	< 2.86E-11	**< 7.72E-11**
PCB-138/163/164 Emissions:	--	--	--	--
· **ng/dscm**	1.13E-01	2.00E-02	2.10E-02	**5.13E-02**
· **lb/hr**	1.24E-09	2.00E-10	2.21E-10	**5.53E-10**
PCB-153 Emissions:	--	--	--	--
· **ng/dscm**	1.07E-01	1.58E-02	1.56E-02	**4.62E-02**
· **lb/hr**	1.17E-09	1.58E-10	1.65E-10	**4.98E-10**
PCB-156 Emissions:	--	--	--	--
· **ng/dscm**	1.03E-02	< 2.14E-03	< 2.76E-03	**< 5.05E-03**
· **lb/hr**	1.12E-10	< 2.14E-11	< 2.90E-11	**< 5.42E-11**
PCB-157 Emissions:	--	--	--	--
· **ng/dscm**	< 2.39E-03	< 2.33E-03	< 2.68E-03	**< 2.47E-03**
· **lb/hr**	< 2.62E-11	< 2.33E-11	< 2.82E-11	**< 2.59E-11**
PCB-167 Emissions:	--	--	--	--
· **ng/dscm**	< 2.10E-03	< 2.06E-03	2.31E-03	**< 2.16E-03**
· **lb/hr**	< 2.30E-11	< 2.06E-11	2.43E-11	**< 2.26E-11**
PCB-169 Emissions:	--	--	--	--
· **ng/dscm**	< 3.62E-03	< 3.05E-03	3.50E-03	**3.39E-03**
· **lb/hr**	< 3.96E-11	< 3.05E-11	3.68E-11	**3.56E-11**
PCB-170 Emissions:	--	--	--	--
· **ng/dscm**	1.21E-02	< 2.49E-03	< 3.93E-03	**< 6.18E-03**
· **lb/hr**	1.33E-10	< 2.49E-11	< 4.14E-11	**< 6.63E-11**
PCB-180 Emissions:	--	--	--	--
· **ng/dscm**	3.31E-02	1.12E-02	1.46E-02	**1.96E-02**
· **lb/hr**	3.62E-10	1.12E-10	1.54E-10	**2.09E-10**
PCB-182/187 Emissions:	--	--	--	--
· **ng/dscm**	1.87E-02	4.88E-03	< 1.91E-03	**< 8.49E-03**
· **lb/hr**	2.04E-10	4.88E-11	< 2.01E-11	**< 9.11E-11**
PCB-189 Emissions:	--	--	--	--
· **ng/dscm**	< 1.66E-03	< 2.94E-03	< 3.79E-03	**< 2.80E-03**
· **lb/hr**	< 1.81E-11	< 2.94E-11	< 3.99E-11	**< 2.92E-11**
PCB-195 Emissions:	--	--	--	--
· **ng/dscm**	< 3.21E-03	< 4.94E-03	< 6.05E-03	**< 4.73E-03**
· **lb/hr**	< 3.51E-11	< 4.94E-11	< 6.37E-11	**< 4.94E-11**

'<' denotes results calculated using the EDL or EMPC for results that were non-detect.

TABLE 3 continued: PCB Emissions

Parameters	Run 1	Run 2	Run 3	Average
PCB-206 Emissions:	--	--	--	--
· **ng/dscm**	< 2.84E-03	< 6.83E-03	< 9.84E-03	**< 6.50E-03**
· **lb/hr**	< 3.11E-11	< 6.84E-11	< 1.04E-10	**< 6.77E-11**
PCB-209 Emissions:	--	--	--	--
· **ng/dscm**	< 1.98E-03	< 3.64E-03	< 6.20E-03	**< 3.94E-03**
· **lb/hr**	< 2.17E-11	< 3.65E-11	< 6.52E-11	**< 4.11E-11**
Total PCB Emissions:	--	--	--	--
· **ng/dscm**	2.65E+01	4.84E+00	2.98E+00	**1.14E+01**
· **lb/hr**	2.90E-07	4.84E-08	3.14E-08	**1.23E-07**

'<' denotes results calculated using the EDL or EMPC for results that were non-detect.

TABLE 4: Chlorophenol and Chlorobenzene Emissions

Parameters	Run 1	Run 2	Run 3	Average
2-Chlorophenol Emissions:	--	--	--	--
· **ng/dscm**	< 8.27E+01	< 8.75E+01	< 8.75E+01	**< 8.59E+01**
· **lb/hr**	< 9.04E-07	< 8.75E-07	< 9.21E-07	**< 9.00E-07**
1,3-Dichlorobenzene Emissions:	--	--	--	--
· **ng/dscm**	< 1.10E+02	< 1.17E+02	< 1.17E+02	**< 1.14E+02**
· **lb/hr**	< 1.20E-06	< 1.17E-06	< 1.23E-06	**< 1.20E-06**
1,4-Dichlorobenzene Emissions:	--	--	--	--
· **ng/dscm**	< 1.83E+02	< 1.93E+02	< 1.93E+02	**< 1.90E+02**
· **lb/hr**	< 2.00E-06	< 1.93E-06	< 2.04E-06	**< 1.99E-06**
1,2-Dichlorobenzene Emissions:	--	--	--	--
· **ng/dscm**	< 2.08E+02	< 2.20E+02	< 2.20E+02	**< 2.16E+02**
· **lb/hr**	< 2.28E-06	< 2.20E-06	< 2.32E-06	**< 2.27E-06**
2,4-Dichlorophenol Emissions:	--	--	--	--
· **ng/dscm**	< 1.62E+02	< 1.72E+02	< 1.72E+02	**< 1.69E+02**
· **lb/hr**	< 1.78E-06	< 1.72E-06	< 1.81E-06	**< 1.77E-06**
1,2,4-Trichlorobenzene Emissions:	--	--	--	--
· **ng/dscm**	< 1.40E+02	< 1.48E+02	< 1.48E+02	**< 1.45E+02**
· **lb/hr**	< 1.53E-06	< 1.48E-06	< 1.56E-06	**< 1.52E-06**
2,4,6-Trichlorophenol Emissions:	--	--	--	--
· **ng/dscm**	< 1.64E+02	< 1.73E+02	< 1.73E+02	**< 1.70E+02**
· **lb/hr**	< 1.79E-06	< 1.73E-06	< 1.82E-06	**< 1.78E-06**
2,4,5-Trichlorophenol Emissions:	--	--	--	--
· **ng/dscm**	< 1.95E+02	< 2.06E+02	< 2.06E+02	**< 2.02E+02**
· **lb/hr**	< 2.13E-06	< 2.06E-06	< 2.17E-06	**< 2.12E-06**
2,3,4,6-Tetrachlorophenol Emissions:	--	--	--	--
· **ng/dscm**	< 2.67E+02	< 2.82E+02	< 2.82E+02	**< 2.77E+02**
· **lb/hr**	< 2.92E-06	< 2.82E-06	< 2.97E-06	**< 2.90E-06**
Hexachlorobenzene Emissions:	--	--	--	--
· **ng/dscm**	< 2.49E+02	< 2.63E+02	< 2.63E+02	**< 2.59E+02**
· **lb/hr**	< 2.72E-06	< 2.63E-06	< 2.77E-06	**< 2.71E-06**
Pentachlorophenol Emissions:	--	--	--	--
· **ng/dscm**	< 1.74E+02	< 1.84E+02	< 1.84E+02	**< 1.81E+02**
· **lb/hr**	< 1.90E-06	< 1.84E-06	< 1.94E-06	**< 1.89E-06**

'<' denotes results calculated using the EDL for results that were non-detect.

TABLE 5: Operating Parameters

Parameters	Run 1	Run 2	Run 3	Average
Natural gas usage (cf/test)	1,540	1,460	1,900	**1,633**
Fuel oil consumed by Oil Heater No. 3 (gal/test)	173	167	165	**168.3**
Flash Tank Oil Feed Rate (gal/min)	14	14	14	**14**
Wiped Film Evaporator Oil Feed Rate (gal/min)	12.8	12.7	12.8	**12.8**
Sulfonation Oil Feed Rate (gal/min)	6	6	6	**6**
OPS Oil Feed Rate (gal/min)	8	8	8	**8**
RTO Combustion Chamber Temperature (ºF)	1,538	1,553	1,542	**1,544**

VII) Concerns & Comments:

1) In the analytical report for PAHs, pages 139-141, naphthalene results for all three test runs are marked with SAT in the Qualifiers column. In the General Reporting Notes on page 153, SAT indicates an analyte saturated the detector. Naphthalene emissions presented in the source test report therefore are likely to be under reported from actual emissions.

VIII) Overall Evaluation: The test methods conducted, and the data provided are sufficient to evaluate TAC emissions of dioxins, furans, PCBs, chlorophenols, chlorobenzenes, and PAHs (excluding naphthalene) from the RTO at the operating condition tested.

The data provided is not sufficient to evaluate emissions of naphthalene from the RTO.