

Lane Regional Air Protection Agency

**STANDARD AIR CONTAMINANT DISCHARGE PERMIT
REVIEW REPORT**

Eugene Water & Electric Board
500 East 4th Avenue
Eugene, Oregon

REASONS FOR PERMIT ACTION

1. Eugene Water and Electric Board (EWEB) operates a process listed in Table 1, Part C.3 of LRAPA Rule 37, and is, therefore, required to have a Standard Air Contaminant Discharge Permit (ACDP). In addition, LRAPA Title 37 requires that EWEB renew its existing air contaminant discharge permit (ACDP) every five years. The primary reason for this action is to issue the renewed permit as a Standard ACDP.

FACILITY DESCRIPTION

2. EWEB operates a steam and electricity generating facility at 500 East 4th Avenue in Eugene, Oregon. The operation was first installed in 1931, with additional boilers installed in 1941, 1950, 1994, 1995, and 2010. During the previous permit term requirements for the addition of a 28.5 MMBtu/hr boiler (Boiler 6) were incorporated into the permit (Application received February 25, 2010). The boiler is subject to the New Source Performance Standard (NSPS), Subpart Dc. At the request of the facility (Supplemental Application received March 18, 2005); LRAPA has eliminated the option of burning bunker C fuel.

EMISSIONS UNIT AND POLLUTION CONTROL DEVICE IDENTIFICATION

3. The current operation consists of the following emission units and pollution control:
 - 3.a. **Boiler 1 (B1):** This is a refractory walled water-tube boiler that burns Diesel #2. This boiler has a maximum rated capacity of 90,000 pounds of steam per hour (171 MMBtu/hr). There are no emissions controls on this boiler that was installed in 1931. This boiler has not been operated for several years. EWEB indicates it probably will not be operated again because it would take expensive repair and maintenance to make it operable again.
 - 3.b. **Boiler 3 (B3):** This is a water-tube boiler with traveling grates that burns Diesel #2. This boiler has a maximum rated capacity of 190,000 pounds of steam per hour (375.3 MMBtu/hr). Emissions controls include a Western Precipitator Multiclone Precipitator (MC3) with 120 8-inch tubes as particulate control and was installed in 1950. This boiler has not been operated for several years. EWEB indicates it probably will not be operated again because it would take expensive repair and maintenance to make it operable again.
 - 3.c. **Boiler 4 (B4):** This is a Cleaver Brooks packaged gas boiler with bent water tubes that burns natural gas and Diesel #2 fuel oil. This boiler has a maximum rated capacity of 65,000 pounds of steam per hour (82 MMBtu/hr). It is equipped with LoNO_x burners for NO_x control and was installed in 1994. This boiler is subject to NSPS requirements (40CFR60 subpart Dc).
 - 3.d. **Boiler 5 (B5):** This is a Zurn Industries "O"-type boiler that burns natural gas and diesel #2 fuel oil. This boiler has a maximum rated capacity of 100,000 pounds of steam per hour (120 MMBtu/hr). It is equipped with LoNO_x burners for NO_x control and was installed in 1995. This boiler is subject to NSPS requirements (40CFR60 subpart Db).

- 3.e. **Boiler 6 (B6):** This is a Cleaver Brooks fire tube packaged boiler that burns natural gas. This boiler has a maximum rated capacity of 24,150 pounds of steam per hour (28.5 MMBtu/hr). It is equipped with LoNO_x burners for NO_x control and will be installed by June 1, 2010. This boiler is subject to NSPS requirements (40CFR60 subpart Dc).
- 3.f. **Storage Tank T1:** This above-ground tank has a capacity of 20,000 gallons, an annual throughput of 496,102 gallons, and stores diesel #2 fuel oil at ambient temperature (emissions are assumed to be negligible).
- 3.g. **Storage Tank T2:** This is an underground tank with a capacity of 100,000 gallons. It is empty and unused.
4. EWEB has permanently shutdown the following boiler, which is no longer has a permit to operate under the existing ACDP:
 - 4.a. **Boiler 2 (B2):** This is a water-tube boiler with stationary grates that burns Diesel #2. This boiler has a maximum rated capacity of 120,000 pounds of steam per hour (229 MMBtu/hr). Emissions controls include a Western Precipitator Multiclone Precipitator (MC2) with 190 9-inch tubes as particulate control and was installed in 1941. Boiler 2 operated during the baseline period, but is not allowed to be operated unless a permit modification is issued.
5. The permit allows the combustion of on-specification used oil, as defined in 40 CFR 279, in lieu of diesel fuel (or fuel oil) in the boilers.

ENFORCEMENT HISTORY

6. There have been no enforcement actions performed against the facility since the last renewal.

PERFORMANCE TEST RESULTS

7. Boiler 5 was tested on February 11, 2008, while firing No. 2 diesel. The results showed that PM emissions were emitted at 0.0003 gr/dscf; NO_x (as NO₂) was emitted at 0.11.91 lb/Mgal #2 oil, and CO was emitted at below the detection limits of EPA Method 10. All emissions were within allowable limits.

Previously, Boiler 5 was tested on February 17-19, 1999, while firing No. 2 diesel. The results showed that PM emissions were emitted at 0.01 gr/dscf; opacity was less than 5%; NO_x (as NO₂) was emitted at 0.11 lb/MMBtu, and SO₂ was emitted at 0.03 lb/MMBtu. All emissions were within allowable limits.

PLANT SITE EMISSION LIMITS (PSELS)

8. **Baseline Emission Rates (BER)**

Actual fuel usage data from 1971 was used to establish baseline emissions in the previous permit except for PM_{2.5}. The year 1971 was used as baseline year because it was more representative of normal operation than either 1977 or 1978. LRAPA rules allow an earlier year to be used as baseline if it is more representative of normal operation. The year 2007 was used as baseline year for PM_{2.5} in accordance with temporary changes to the definition of "Baseline Period" adopted by LRAPA August 23, 2010. A baseline emission rate for PM_{2.5} was established using the assumption that all PM₁₀ is PM_{2.5}. Refer to the detail sheets for a break out of the emissions by emissions unit.

Pollutant	Baseline Emission Rate (tons/year)
PM	216
PM ₁₀	120
PM _{2.5}	0.5
CO	963
NO _x	151
SO ₂	18
VOC	63

9. The attachment to this Review Report contains the calculations of the PSELs and BERs. The baseline emission rates were set during previous permit actions, except PM_{2.5}. To reflect normal baseline operations, LRAPA approved a 1971 baseline year. Baseline emissions are based on EWEB having one boiler firing Bunker and two boilers firing hogged fuel.

The PM_{2.5} baseline emission rate of 0.5 tons/hrs/yr based on a 12-month rolling period in the last 10 years (between 2000 and 2010). The selected 12-month baseline is calendar year 2006, with reported fuel use of 371 million cubic feet natural gas and 7,409 gallons fuel oil. (See Detail Sheet Attachment for calculations).

8. Components of the PSEL – The annual PSEL has been set at the Generic PSEL level as defined by LRAPA Title 12 and in accordance with Section 42-0040. The facility has a netting basis and can request source specific PSEL but since the facility has a capacity less than the Significant Emission Rates, the Generic PSEL is used.

Hourly PSELs were removed from the permit in accordance with Title 42. The attachment to this report contains calculations of the PSELs.

The following annual PSELs will be in the permit.

Annual (12-month rolling) PSEL
(tons/year)

	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Totals	24	14	9	41	71	99	39

9. The annual PSELs for SO₂, NO_x, and CO is based on the annual usage of 496,102 gallons of #2 diesel, and 1,190 million cubic feet of natural gas. Any changes in operation that may increase the emissions or the PSEL must be approved by LRAPA.

10. **Unassigned Emissions**

In accordance with LRAPA 42-005, *the Unassigned emissions shall expire and are reduced to no more than the SER on July 1, 2010* (see below Table for EWEB). The resultant unassigned emissions are available for internal use by the permittee for increases in emissions, consistent with LRAPA Rules and Regulations upon receipt of written permit approval by the Director.

Pollutant	Unassigned Emissions Before July 1, 2010 (tons/yr)	Unassigned Emissions After July 1, 2010 (tons/yr)	Emission Reduction Credits (tons/yr)
PM	192	24	N/A
PM ₁₀	106	14	N/A
PM _{2.5}	0	0	N/A
SO ₂	0	0	N/A
NO _x	80	39	N/A
CO	864	99	N/A
VOC	24	24	N/A

11. **Emission Factors**

The following table of emission factors was used to set the Synthetic Minor limitations and the PSEs listed above. Emission factors were changed as part of this renewal to reflect updates in the accepted emission factors for the processes covered by this permit. These same emission factors shall be used to demonstrate compliance with the Synthetic Minor and PSEL limitations.

Table of Emission Factors

Emission Unit	Fuel	Units	PM	PM ₁₀	PM _{2.5}	CO	NO _x	SO ₂	VOC
Boiler 1	#2	lbs/Mgal ¹	3.3	2.3	2.3	5.0	24	78.5	0.76
Boiler 3	#2	lbs/Mgal	3.3	2.3	2.3	5.0	24	78.5	0.76
Boiler 4	NG	lbs/MMcf ²	2.5	2.5	2.5	156	104	2.6	5.5
	#2	lbs/Mgal	3.3	2.3	2.3	21	14	78.5	0.34
Boiler 5	NG	lbs/MMcf	2.5	2.5	2.5	156	104	2.6	5.5
	#2	lbs/Mgal	3.3	2.3	2.3	21	14	78.5	0.34
Boiler 6	NG	lbs/MMcf	2.5	2.5	2.5	84	50	2.6	5.5

¹Mgal = 1000 gallons

²MMcf = million cubic feet

SIGNIFICANT EMISSION RATE (SER)

12. All allowed emissions are less than the BER, except for SO₂, which is above the baseline, but less than an SER.

Pollutant	Proposed PSEL (tons/year)	BER (tons/yr)	Increase from BER (tons/year)	SER (tons/year)
Particulate, PM	24	216	-192	25
Particulate, PM ₁₀	14	120	-106	15
Particulate, PM _{2.5}	9	0.5	8.5	10
CO	99	963	-864	100
NO _x	71	151	-80	40
VOC	39	63	-24	40
SO ₂	41	18	23	40
Pb	NA	NA	NA	0.6

HAZARDOUS AIR POLLUTANTS (HAP)

13. The projected HAP emissions from the facility are below the major source thresholds. Calculations are included in attached detail sheets.

TYPICALLY ACHIEVABLE CONTROL TECHNOLOGY (TACT)

14. LRAPA Title 32-008 requires an existing emission unit at a facility to meet TACT if the emissions unit has emissions of criteria pollutants greater than ten (10) tons per year of any gaseous pollutant or five (5) tons per year of particulate, and the emissions unit is not subject to the emissions standards under LRAPA Title 32, Title 33, Title 39, or Title 46 for the pollutants emitted, and the facility is required to have a permit. The boilers emit more than ten (10) tons per year of gaseous pollutants and are, therefore, required to meet TACT. Boilers 4, 5 and 6 were installed in 1994, 1995, and 2010 respectively; these boilers comply with the NSPS (40CFR60 Subparts Db and Dc) and therefore TACT is not required for these boilers. Boilers 1 and 3 were installed in 1931 and 1950 respectively; TACT for these boilers is the use of best combustion practices.

NEW SOURCE REVIEW (NSR) AND PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

15. Because the proposed PSELs for all regulated pollutants are below the Significant Emission Rates (SERs) in LRAPA Title 38, the facility is neither subject to LRAPA's NSR requirements for PM₁₀ nor subject to the PSD requirements for SO_x, NO_x, CO, PM_{2.5}, and VOC.

NEW SOURCE PERFORMANCE STANDARDS (NSPS)

16. Boiler 4 and 6 are subject to the NSPS requirements of 40 CFR 60 Subpart Dc – Standards of Performance for Small Boilers, and Boiler 5 is subject to the NSPS requirements of 40 CFR 60 Subpart Db – Standards of Performance for Boilers at or more 100 MMBtu/hr. The permit contains limits on sulfur emissions, sulfur content, monitoring for sulfur, and opacity for each boiler.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS)

17. Currently, there are no NESHAPS that apply to the facility. However, EPA is expected to promulgate 40 CFR 63 Subpart DDDDD that would apply to U of O's small and large boilers. If and when that rule is promulgated any applicable sections will have to be incorporated by application for permit modification and addendum to the facility permit.

CONTINUOUS COMPLIANCE

18. To ensure compliance with the hourly and annual PSELs, the facility is required to keep a record of the following information for a period of two (2) years.

Parameter	Frequency	Monitoring Equipment
Amount of natural gas combusted by each boiler (cubic feet)	Daily	Gas Meter
Amount of No. 2 fuel oil and specification used oil combusted by each boiler (gallons)	Daily	Oil Flow Meter
Certification of sulfur content of diesel fuel oil	Each Delivery	Fuel Supplier certificate.

REPORTING REQUIREMENTS

19. The facility is required to submit annual reports to LRAPA.

PUBLIC NOTICE

20. This permit was on public notice from January 18, 2011 to February 21, 2011. No comments were submitted in writing during the comment period.

MTL
9/27/10

SLL/cmw Revised 11/10/2010

Emission Factors

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¹Mgal = 1000 gallons
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 #2 = Diesel No. 2
 NG = natural gas

Boiler 5:

Steam Production (Klbs/hour) (X)	NO _x Emissions Rate(lb/MMBtu) (Y) $Y = 8.42 \times 10^{-5} (X) + 0.072$
0 to 9	0.072
10 to 19	0.073
20 to 29	0.074
30 to 39	0.075
40 to 49	0.075
50 to 59	0.076
60 to 69	0.077
70 to 79	0.078
80 to 89	0.079
90 to 99	0.080
100	0.080