NOTICE OF CONSTRUCTION APPLICATION

El Oro Cattle Feeders Feedmill

18857 Road 2.7, Moses Lake

Grant County

Prepared For:

El Oro Cattle Feeders, LLC

18857 Road 2.7

Moses Lake, WA 98837

November 29, 2025

Prepared By:

ENVIRO–AG ENGINEERING, INC.

EAE

AMARILLO - STEPHENVILLE- ARTESIA

3404 Airway Boulevard ♦ Amarillo, Texas 79118 ♦ Tel 806/353-6123 ♦ Fax 806/353-4132

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III. Project Description

Narrative

El Oro Cattle Feeders, LLC (El Oro), owns and operates an existing beef cattle feedyard and feedmill located at 18857 SE Road 2.7 near Moses Lake, Grant County. Figure 1 is a vicinity map showing the location of the site. El Oro is seeking air permit authorization under a Notice of Construction to install and operate a diesel-fired standby generator engine at the feedmill site to provide emergency backup power for feedmill operations. No other changes to the permitted facilities are requested.

Construction and Startup

Construction will begin as soon as possible.

Operating Schedule and Production

The engine is intended for standby use only. Testing will occur on a schedule of 30 minutes once per month. For the purposes of calculating worse case emissions and analyzing ambient air impacts, a maximum operating schedule of 100 hours per year (2 hours per week, 50 weeks per year) is proposed.

Process Equipment

Available manufacturer documentation is attached.

Table 1. Throughputs

Operation	Rated Hourly Fuel Usage (gal/hr)	Max Daily Fuel Usage (gal/day)	Annual Fuel Usage (gal/yr)
Emergency Generator, Diesel usage	109.4	2626	10940

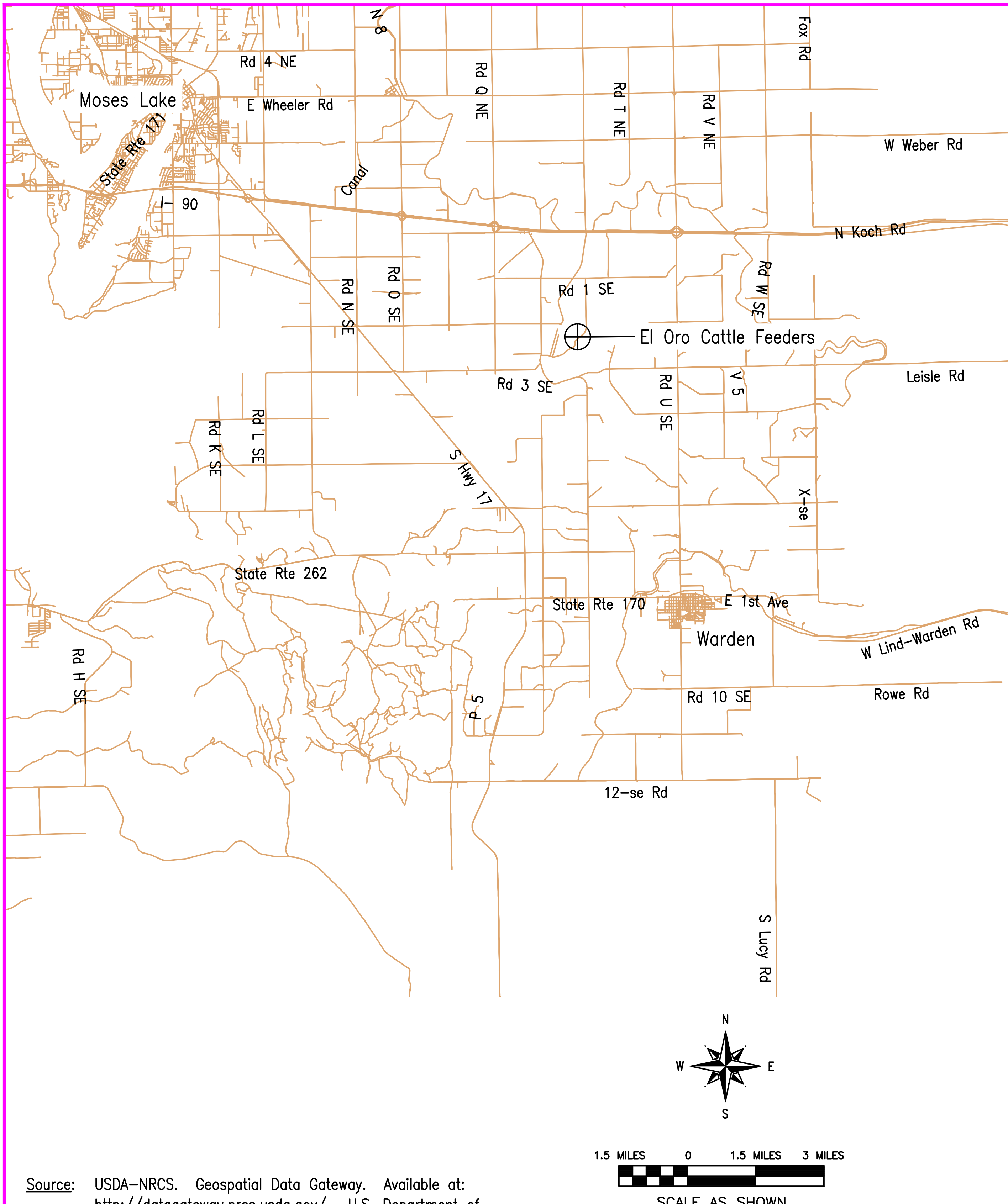
Process Flow Diagram and Process Description

Figure 2, Process Flow Diagram, corresponds to the following process description.

The proposed engine will be operated as a standby facility in case of emergency. The engine will be test-fired periodically for maintenance purposes, as noted above. In the event of a grid power failure, the engine will be operated to provide power to the feedmill.

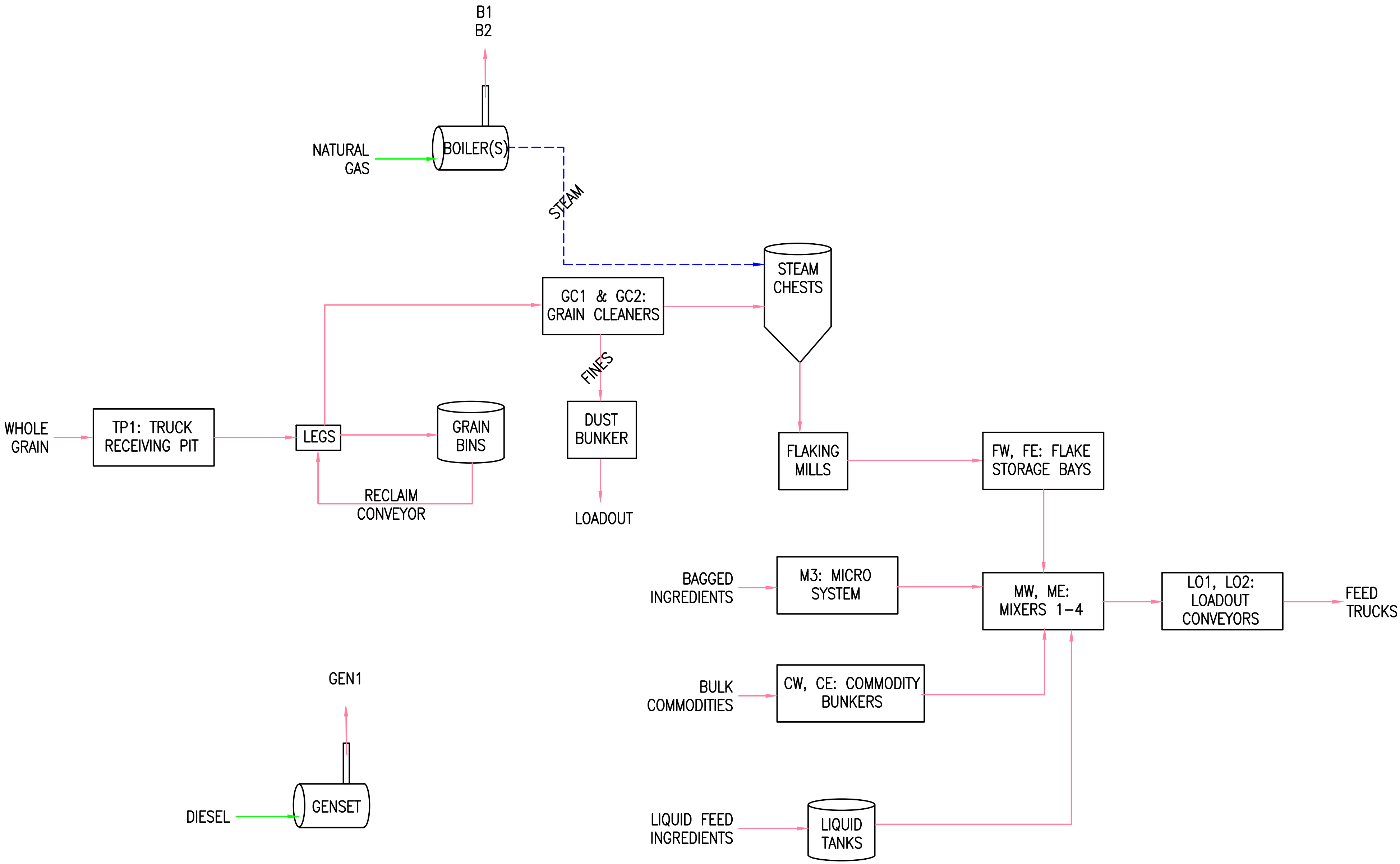
Plan View Site Map

Figure 3, Site Map is a view of the proposed feedmill in relation to the nearest property boundary and Figure 4, Site Map Detail is a detail view of the proposed feedmill equipment and structures.



Source: USDA-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. U.S. Department of Commerce, U.S. Census Bureau, Geography Division, Tiger Roads, 2015 - Accessed 2/2018.

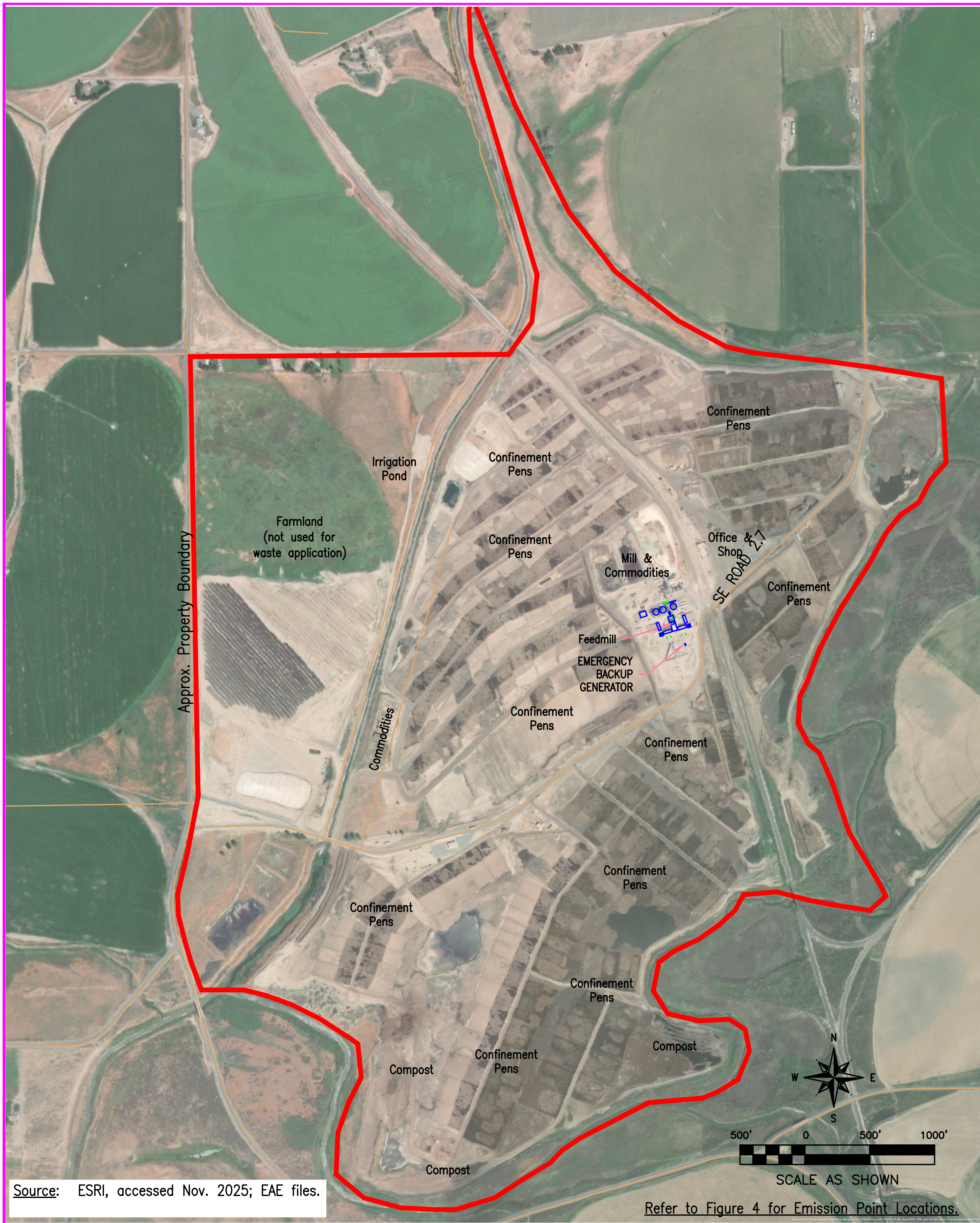
EL ORO CATTLE FEEDERS, LLC MOSES LAKE GRANT COUNTY, WA	FIGURE 1 VICINITY MAP	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



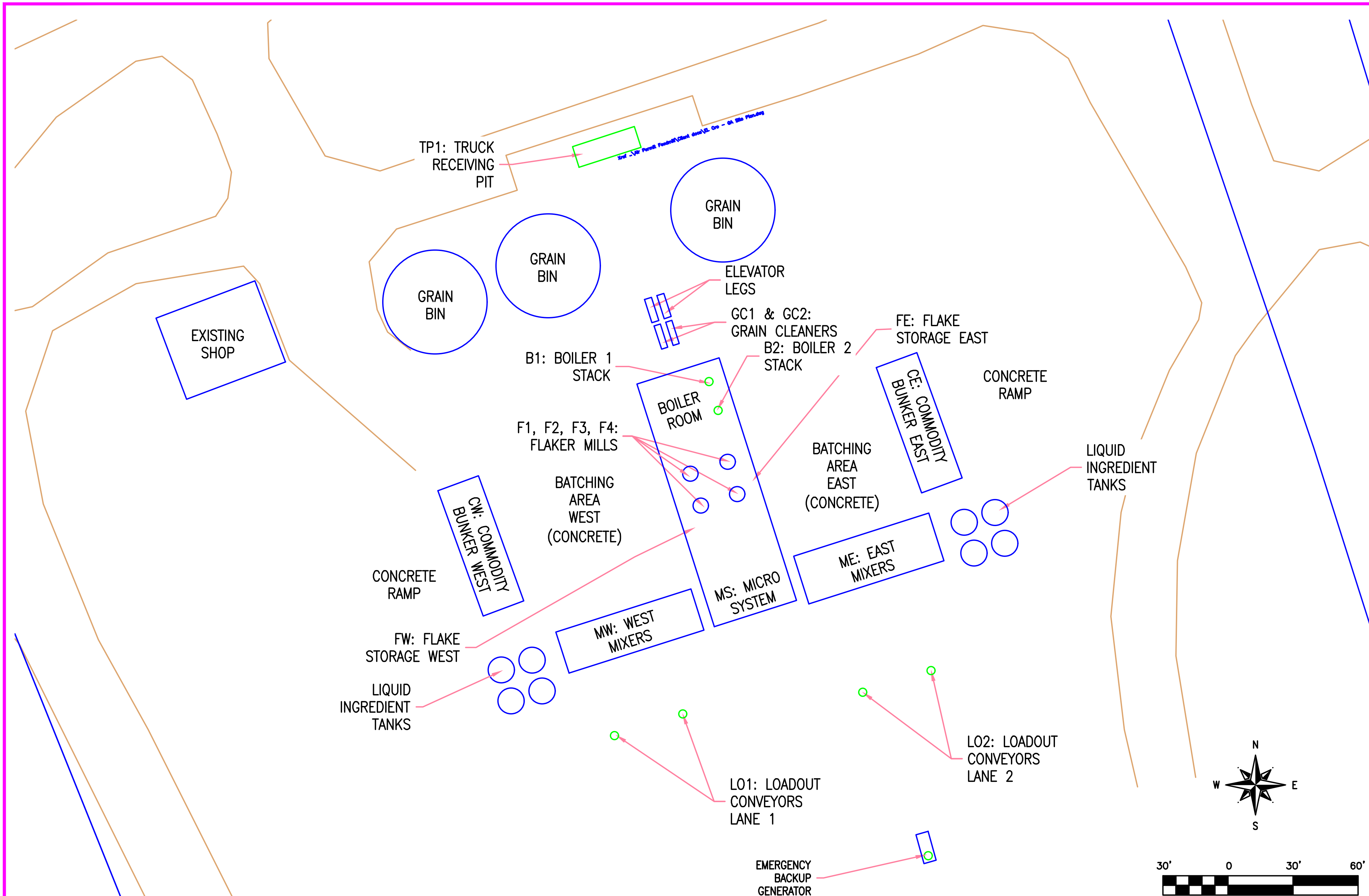
EL ORO CATTLE FEEDERS, LLC
MOSES LAKE
GRANT COUNTY, WA

FIGURE 2
PROCESS FLOW DIAGRAM
NOVEMBER 2025

ENVIRO–AG ENGINEERING, INC.
Enviro-Ag Engineering, Inc.
ENGINEERING CONSULTANTS
3404 Airway Boulevard
AMARILLO, TEXAS 79118
TEL (806) 353-6123 FAX (806) 353-4132



EL ORO CATTLE FEEDERS, LLC MOSES LAKE GRANT COUNTY, WA	SITE MAP FIGURE 3 NOVEMBER 2025	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Source: Regency Mill Services, LLC, design file, April 2023.

EL ORO CATTLE FEEDERS, LLC MOSES LAKE GRANT COUNTY, WA	FIGURE 4 PLOT PLAN NOVEMBER 2025	ENVIRO–AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

Manufacturer Specifications

These records may be available upon request. To find out if there are more records for this project, contact Ecology's Public Records Office.

- Online: https://ecology.wa.gov/footer-pages/public-records-requests
- Public Records Officer email: PublicRecordsOfficer@ecy.wa.gov • Call: 360-407-6040

Para averiguar si existen más registros sobre ese proyecto, póngase en contacto con la oficina de archivos públicos del Departamento de Ecología, envíe un correo electrónico a recordsofficer@ecy.wa.gov, o llame al 360-407-6040

Application & Performance Warranty Data

Project Information

Site Location:	NA
Project Name:	T4 System for Cummins DQGAB
Application:	Standby Power
Number Of Engines:	1
Operating Hours per Year:	200

Engine Specifications

Engine Manufacturer:	Cummins
Model Number:	QSK50-G4 NR2
Rated Speed:	1800 RPM
Type of Fuel:	Ultra-Low Sulfur Diesel (ULSD)
Type of Lube Oil:	1 wt% sulfated ash or less
Lube Oil Consumption:	0.1 % Fuel Consumption
Number of Exhaust Manifolds:	1

Engine Cycle Data

Load	Speed	Power	Exhaust Flow	Exhaust Temp.	Fuel Cons.	NO_x	CO	NMNEHC	PM_{10}	O_2	H_2O
%		*kW*	*m³/min*	*° C*		*g/bhp-hr*	*g/bhp-hr*	*g/bhp-hr*	*g/bhp-hr*	%	%
100	Rated	1,656	342	491		5.33	0.6	0.07	0.02	10	10

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	*g/bhp-hr*	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	
NO_x*	5.33	2.61	473	873	7.148	15.76	0.5	0.24	44	82	0.671	1.48	90.6%
CO	0.6	0.29	87	161	0.805	1.77	2.6	1.27	379	700	3.487	7.69	
NMNEHC**	0.07	0.03	18	33	0.094	0.21	0.14	0.07	36	66	0.188	0.41	
PM_{10}	0.02	0.01	7	13	0.027	0.06	0.02	0.01	7	14	0.03	0.07	
NH_3							0.04	0.02	10	18	0.056	0.12	

Greg Madsen
403 844 6582

Pollution Control Equipment

The engine Exhaust Emissions Data Sheet is provided. Emissions control devices include turbocharging, low temperature aftercooling and step timing control (STC).

Fuel Specifications

The engine will use low-sulfur diesel only.

Table 2. Fuel Consumption

Equipment	Hourly	Annual*
Emergency Generator, GEN1	109.4 gal/hr	10940 gal/yr

** Note: Annual usage estimated for engine testing and maintenance only, approximately 100 hours per year.*

IV. SEPA Compliance

A copy of the completed SEPA checklist is attached. The checklist is under review at the Grant County Planning Department.

V. Emissions Estimations of Criteria Pollutants

The generator engine will emit particulate matter (PM), PM10 and PM2.5, oxides of nitrogen (NOx), sulfur dioxide (SO2), carbon monoxide (CO), volatile organic compounds (VOCs) from natural gas combustion, and lead (Pb). Calculations of potential emissions are presented in Table 3a. Emission factors from EPA AP-42 and from the Cummins Exhaust Emissions Data Sheet were used to estimate emissions. An example calculation for the emission rate (ER) of PM using the Cummins data is provided:

ER (lb/hr) = 2220 kW * 0.02 g/HPhr / 453.59 lb/g = 0.10 lb/hr PM

An example calculation for the ER of generic VOCs from AP-42 is:

ER (lb/hr) = 14.99 MMBTU/hr * 0.09 lb/MMBTU = 1.35 lb/hr VOC

TABLE 3a: GENSET EMISSIONS CALCULATIONS
ENVIRO-AG ENGINEERING, INC.

El Oro Feedmill
Oct-25

Average Diesel Heating Value:	19300	BTU/lb		ULSD	15 ppm S
Average Diesel Density:	7.1	lb/gallon			0.0015 % S
MAX OPERATING SCHEDULE:	100	hr/yr	6 hr/yr*	* per client, 30 min each month testi	
Annual Fuel Usage:	10940	gal/yr (c)		Worst case for modeling: 2 hrs/week,	

EP ID	Emission Source	BTU Rating (MM BTU/hr)	Fuel Usage (gal/hr)	Pollutant	(units)	Emission Factor	Control Factor % or Reference	Estimated Emis Hourly lb/hr	PTE lb/day
GEN1	Emergency Generator	14.99	109.4	PM	g/HPhr	0.02	Cummins (b)	0.10	2.35
	Diesel		Full Load	PM10	g/HPhr	0.02	Cummins (b)	0.10	2.35
	2220 HP			PM2.5	% of PM	68.7%	AP-42 (a)	0.07	1.61
	1656 kW			VOC	lb/MMBTU	0.0900	AP-42 (a)	1.35	32.38
	EPA Tier 2 rated			NOX	g/HPhr	5.330	Cummins (b)	26.09	626.08
	Cummins QSK50-G4 NR2/DQGAB			SO2	lb/MMBTU	1.52E-03	AP-42 (a)	0.023	0.55
	Standby Operation			CO	g/HPhr	0.600	Cummins (b)	2.94	70.48

(a) AP-42, Chapter 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines, Tables 3.4-1 and 3.4.-2 (>600 HP)
(b) Cummins Engine Company, Inc., Exhaust Emissions Data Sheet, Model DQGAB.
(c) Annual estimate for testing maintenance approximately 100 hours per year.

VI. Emissions Estimations of Toxic Air Pollutants

Emissions of hazardous air pollutants (HAPs) and toxic air pollutants for the generator engine were estimated using AP-42 and/or South Coast Air Quality Management District AB2588 emission factors for diesel combustion. Speciation of generator engine emissions is provided in Table 4a.

Table 4a: Genset Emission Speciation

ENVIRO-AG ENGINEERING, INC.

		Emission Factors		Genset Emissions				WDOE					
		AP-42 Diesel Engines	AB2588 Diesel Engines	2 hr/day			tpy	Air Toxic List	lb/avg period				Impact
CAS No.	Diesel Combustion:	lb/MMBTU (Note A)	lb/10^3gal (Note B)	lb/hr	lb/day	lb/yr	Requested	Avg Period	SQER	DeMin	<SQER?	<DeMin?	Assessment?
83-32-9	Acenaphthene	4.68E-06		7.02E-05	1.40E-04	7.02E-03	3.51E-06	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
208-96-8	Acenaphthylene	9.23E-06		1.38E-04	2.77E-04	1.38E-02	6.92E-06	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
75-07-0	Acetaldehyde		7.83E-01	8.57E-02	1.71E-01	8.57E+00	4.28E-03	year	6.00E+01	3.00E+00	y	n	n
107-02-8	Acrolein		3.39E-02	3.71E-03	7.42E-03	3.71E-01	1.85E-04	24-hr	2.60E-02	1.30E-03	y	n	n
120-12-7	Anthracene	1.23E-06		1.84E-05	3.69E-05	1.84E-03	9.22E-07	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
7440-38-2	Arsenic & inorganic arsenic compounds, NOS		1.60E-03	1.75E-04	3.50E-04	1.75E-02	8.75E-06	year	4.90E-02	2.50E-03	y	n	n
71-43-2	Benzene		1.86E-01	2.04E-02	4.08E-02	2.04E+00	1.02E-03	year	2.10E+01	1.00E+00	y	n	n
56-55-3	Benz(a)anthracene	6.22E-07		9.32E-06	1.86E-05	9.32E-04	4.66E-07	year	8.90E-01	4.50E-02	y	y	n
50-32-8	Benzo(a)pyrene	2.57E-07		3.85E-06	7.71E-06	3.85E-04	1.93E-07	year	1.60E-01	8.20E-03	y	y	n
205-99-2	Benzo(b)fluoranthene	1.11E-06		1.66E-05	3.33E-05	1.66E-03	8.32E-07	year	8.90E-01	4.50E-02	y	y	n
191-24-2	Benzo(g,h,i)perylene	5.56E-07		8.34E-06	1.67E-05	8.34E-04	4.17E-07	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
207-08-9	Benzo(k)fluoranthene	2.18E-07		3.27E-06	6.54E-06	3.27E-04	1.63E-07	year	8.90E-01	4.50E-02	y	y	n
7440-43-9	Cadmium & compounds, NOS		1.50E-03	1.64E-04	3.28E-04	1.64E-02	8.21E-06	year	3.90E-02	1.90E-03	y	n	n
18540-29-9	Chromium(VI) & compounds, NOS		1.00E-04	1.09E-05	2.19E-05	1.09E-03	5.47E-07	year	6.50E-04	3.30E-05	n	n	y
218-01-9	Chrysene	1.53E-06		2.29E-05	4.59E-05	2.29E-03	1.15E-06	year	8.90E+00	4.50E-01	y	y	n
7440-50-8	Copper & compounds		4.10E-03	4.49E-04	8.97E-04	4.49E-02	2.24E-05	1-hr	1.90E-01	9.30E-03	y	y	n
53-70-3	Dibenzo(a,h)anthracene	3.46E-07		5.19E-06	1.04E-05	5.19E-04	2.59E-07	year	8.20E-02	4.10E-03	y	y	n
100-41-4	Ethylbenzene		1.09E-02	1.19E-03	2.38E-03	1.19E-01	5.96E-05	year	6.50E+01	3.20E+00	y	y	n
206-44-0	Fluoranthene	4.03E-06		6.04E-05	1.21E-04	6.04E-03	3.02E-06	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
86-73-7	Fluorene	1.28E-05		1.92E-04	3.84E-04	1.92E-02	9.59E-06	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
110-54-3	Hexane		2.69E-02	2.94E-03	5.89E-03	2.94E-01	1.47E-04	24-hr	5.20E+01	2.60E+00	y	y	n
193-39-5	Indeno(1,2,3-cd)pyrene	4.14E-07		6.21E-06	1.24E-05	6.21E-04	3.10E-07	year	8.90E-01	4.50E-02	y	y	n
7439-92-1	Lead & compounds, NOS		8.30E-03	9.08E-04	1.82E-03	9.08E-02	4.54E-05	year	1.40E+01	1.00E+01	y	y	n
7439-96-5	Manganese & compounds		3.10E-03	3.39E-04	6.78E-04	3.39E-02	1.70E-05	24-hr	2.20E-02	1.10E-03	y	y	n
7439-97-6	Mercury and compounds		2.00E-03	2.19E-04	4.38E-04	2.19E-02	1.09E-05	24-hr	2.20E-03	1.10E-04	y	n	n
1151	PAH (incl. naphthalene)		3.62E-02	3.96E-03	7.92E-03	3.96E-01	1.98E-04	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
91-20-3	Naphthalene		1.97E-02	2.16E-03	4.31E-03	2.16E-01	1.08E-04	year	4.80E+00	2.40E-01	y	y	n
7440-02-0	Nickel & compounds, NOS		3.90E-03	4.27E-04	8.53E-04	4.27E-02	2.13E-05	year	6.20E-01	3.10E-02	y	n	n
85-01-8	Phenanthrene	4.08E-05		6.12E-04	1.22E-03	6.12E-02	3.06E-05	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
115-07-1	Propylene	2.79E-03		4.18E-02	8.37E-02	4.18E+00	2.09E-03	24-hr	2.20E+02	1.10E+01	y	y	n
129-00-0	Pyrene	3.71E-06		5.56E-05	1.11E-04	5.56E-03	2.78E-06	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
7782-49-2	Selenium & selenium compounds (other than hydrogen selenide)		2.20E-03	2.41E-04	4.81E-04	2.41E-02	1.20E-05	24-hr	1.50E+00	7.40E-02	y	y	n
108-88-3	Toluene		1.05E-01	1.15E-02	2.31E-02	1.15E+00	5.77E-04	24-hr	3.70E+02	1.90E+01	y	y	n
1330-20-7	Xylenes		4.24E-02	4.64E-03	9.28E-03	4.64E-01	2.32E-04	24-hr	1.60E+01	8.20E-01	y	y	n
50-00-0	Formaldehyde		1.73E+00	1.89E-01	3.78E-01	1.89E+01	9.44E-03	year	2.70E+01	1.40E+00	y	n	n
106-99-0	1,3-Butadiene		0.2174	2.38E-02	4.76E-02	2.38E+00	1.19E-03	year	5.40E+00	2.70E-01	y	n	n
7664-41-7	Ammonia		2.9	3.17E-01	6.35E-01	3.17E+01	1.59E-02	24-hr	3.70E+01	1.90E+00	y	n	n
7647-01-0	Hydrogen Chloride		0.1863	2.04E-02	4.08E-02	2.04E+00	1.02E-03	24-hr	6.70E-01	3.30E-02	n	n	y

Notes:

A) Toxic Air Pollutant emission factors obtained from AP-42, Tables 3.4-3 and 3.4-4, Oct. 1996.

B) Toxic Air Pollutant emission factors obtained from AB2588 Quadrennial Air Toxics Emissions InventoryReporting Procedures, June 2020, South Coast Air Quality Management District.

VII. Emission Standard Compliance

40 CFR Part 60, Subpart DD

The maximum one-time storage capacity of the feedmill facility is approximately 170,000 bushels of grain, and is not subject to 40 CFR Part 60, Subpart DD for grain elevators.

40 CFR Part 60, Subpart Dc

The existing boilers are subject to 40 CFR Part 60, Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units, for boilers greater than 10 MMBTU/hr but less than 100 MMBTU/hr heat input. The boilers are fueled by pipeline-quality sweet natural gas only, and fuel usage records are maintained.

40 CFR Part 60, Subpart IIII

The emergency backup generator engine is subject to 40 CFR Part 60, Subpart IIII with a manufacture date of 2011. The specified engine meets Tier 2 standards. Engine manufacturer specifications are attached.

40 CFR Part 63, Subpart ZZZZ

The emergency backup generator engine is not subject to 40 CFR Part 63, Subpart ZZZZ since it is considered an emergency engine.

40 CFR Part 63, Subpart JJJJJJ

The existing boilers are not subject to area source standards since they are only fueled by pipeline-quality sweet natural gas.

Washington State Clean Air Act

The facility is designed to achieve compliance with all applicable emissions standards in Chapter 173-400 WAC.

VIII. Best Available Control Technology

Project Description

No changes are requested to the grain handling and feed milling equipment. The emission unit considered in this BACT analysis is a 2220 HP (1500 kW) diesel-fired stationary EPA Tier 2 engine to be used for backup power during electrical outages. The engine will be limited to emergency and maintenance testing only.

BACT Determination Process

The evaluation follows the five-step process specified in WAC 173-400-113, as outlined below, for each criteria pollutant.

Step 1: Identify Available Control Technologies

NOx: Selective Catalytic Reduction (SCR)

PM: Diesel Particulate Filter (DPF) or Catalyzed DPF; Ultra-Low Sulfur Diesel (ULSD) usage

CO: Diesel Oxidation Catalyst (DOC)

SO2: ULSD usage

General Options: ULSD usage; SCR retrofit package for Tier 2 engine (rejected below); and Engine replacement with Tier 4 Final unit (rejected below)

Step 2: Technical Feasibility

- ULSD is commercially available, technically feasible and economically justified.
- SCR, DPF and DOC technologies are commercially available and technically feasible for retrofitting Tier 1/Tier 2 engines with adequate integration and space but are not economically justified given the emergency-only operational limits for this facility.
- Replacement with a Tier 4 Final engine is technically feasible but not economically justified given the emergency-only operational limits for this facility.

Step 3: Control Effectiveness Ranking

The control options are ranked in the table based on expected effectiveness of emissions as compared to the selected uncontrolled Tier 2 engine.

Ranking	Control Options	NOx Reduction	PM Reduction	CO Reduction	SO2 Reduction
1	Tier 4 Engine	Up to 95%	Up to 90%	Up to 95%	~97%
2	SCR+DPF+DOC	Up to 90%	Up to 85%	Up to 90%	~97%
3	Tier 2/ULSD				~97%
4	Tier 2/LSD				

Step 4: Economic and Energy Impacts

The engine vendor provided estimated costs to upgrade the base Tier 2 engine with the SCR retrofit or substitute a Tier 4-rated engine.

Retrofit cost estimate: add $186,000 to base Tier 2 engine cost

Tier 4 Engine cost estimate: add $162,500 to base Tier 2 engine cost

Conclusion: A comparison of emissions reductions for the control technologies outlined above shows only minimal reductions in NOx emissions compared to the costs to achieve those reductions, as shown in Table 5 below. Based on this, both the SCR retrofit and the Tier 4 engine can be rejected based on economic impact.

Step 5: Selected BACT

The selected BACT for this facility includes:

- Tier 2-rated engine for standby operation only
- ULSD usage
- Engine operation limited to up to 100 hours/year under emergency definition.

Table 5. BACT Summary

Emission Unit	Pollutant	Uncontrolled Emissions (tpy)	Top-Ranked Alternative & Control Factor	Resulting Emission Reduction (tpy)	Cost per Ton Reduction ($/ton)	Notes
GEN1: Emergency Engine	TSP PM10 PM2.5	0.005 0.005 0.003	Tier 2/ULSD	0	$0	ULSD readily available and economically feasible; No additional cost.
	VOC	0.067	Tier 2/ULSD	0	$0	
	NOx	1.30	Tier 2/ULSD	0	$0	
	SO2	0.038	Tier 2/ULSD 97%	0.037	$0	
	CO	0.15	Tier 2/ULSD	0	$0	
		Rejected Control Options				
	NOx	1.30	Tier 4 Engine	1.182	$137,476	Not economically feasible
	NOx	1.30	SCR retrofit	0.130	$1,426,022	Not economically feasible
	CO	0.15	SCR retrofit	0.015	$12,667,829	Not economically feasible

IX. Ambient Air Impacts Analyses

MODELING PROTOCOL

El Oro Cattle Feeders Feedmill

18857 Road 2.7, Moses Lake

Grant County

Prepared For:

El Oro Cattle Feeders, LLC

18857 Road 2.7

Moses Lake, WA 98837

November 29, 2025

Prepared By:

ENVIRO–AG ENGINEERING, INC.

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LIST OF FIGURES

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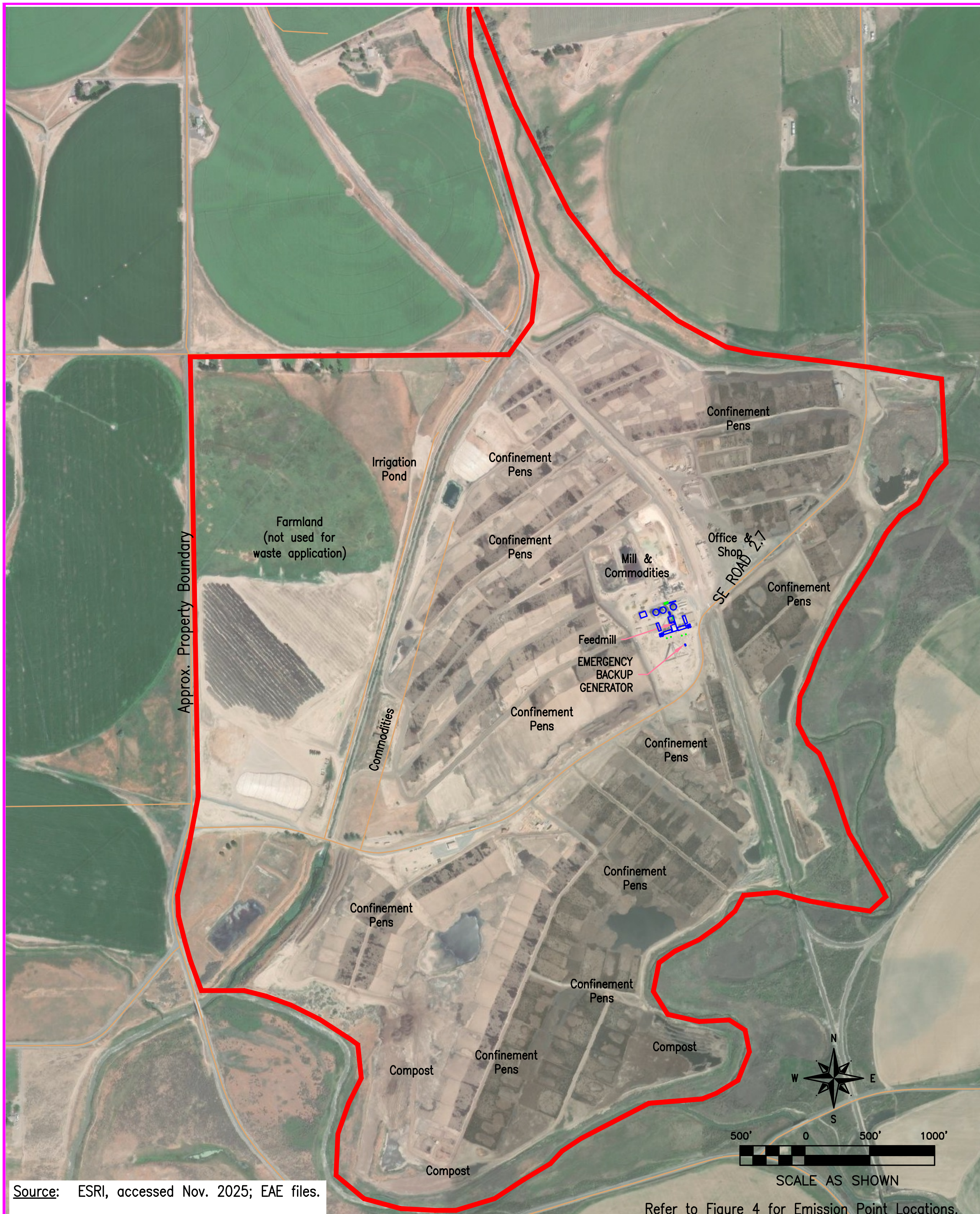
1.0: PROJECT DESCRIPTION

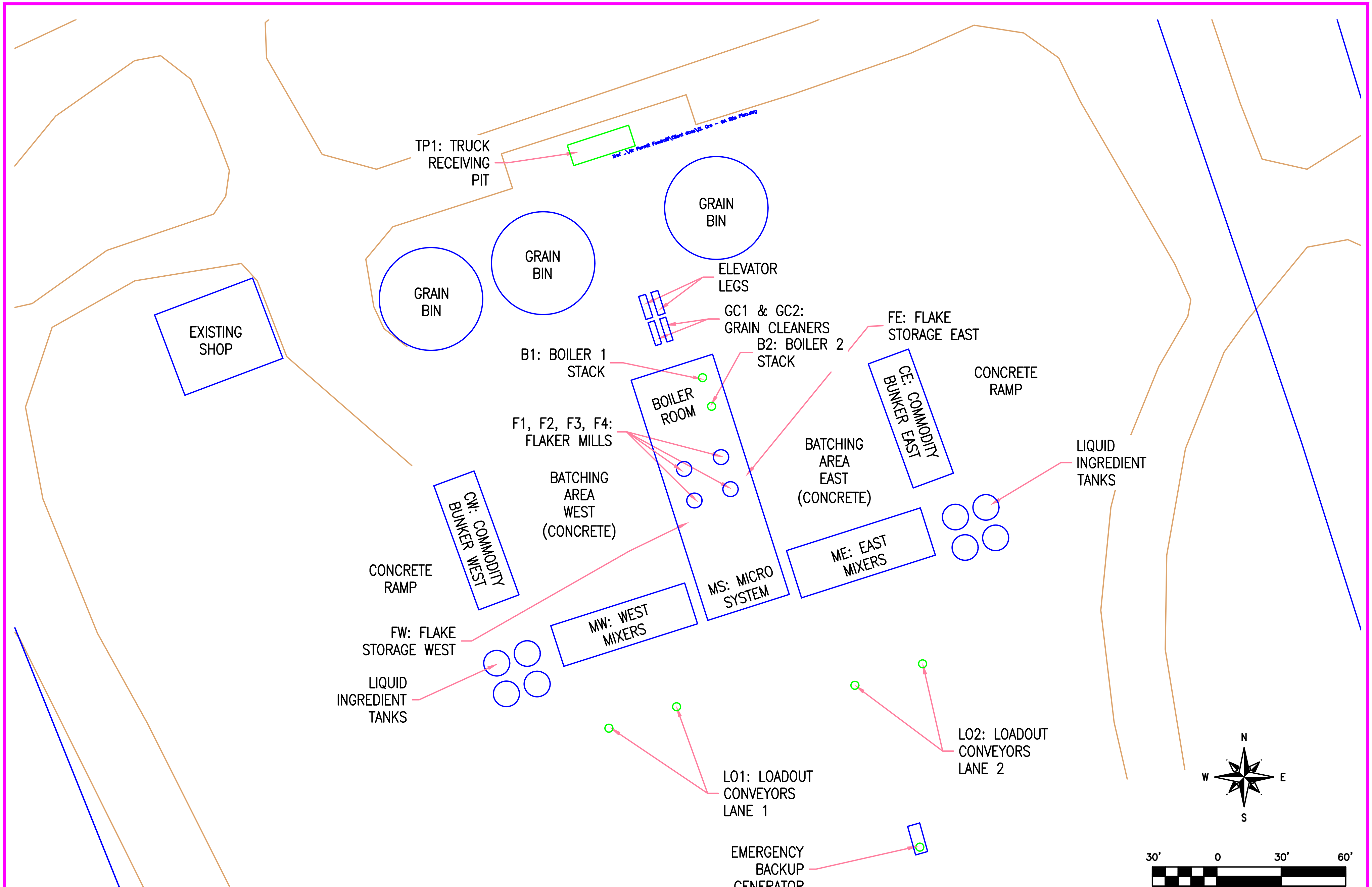
El Oro Cattle Feeders, LLC (El Oro) owns and operates an existing beef cattle feedyard located 18857 SE Road 2.7 near Moses Lake, Grant County. El Oro is seeking air permit authorization under a Notice of Construction to install and operate a diesel-fired standby generator engine at the feedmill site to provide emergency backup power for feedmill operations. The feedmill consists of a truck receiving pit, enclosed conveyors, grain and feed storage bins, grain cleaners, steam flakers (served by natural gas-fired boilers), steam chests, feed batch mixers, a feed micro-ingredient system, bulk commodity and flake storage bays and truck loading conveyors. No changes are proposed to these processes.

The site is located approximately 9 miles southeast of Moses Lake, WA, in Grant County. The terrain surrounding the site is generally flat to gently rolling. A review of Google Earth imagery shows the land use in the area is mostly irrigated farmland.

Figure 1 is an area map/aerial image of the site and Figure 2 is a plot plan showing existing sources and the proposed location of the generator engine.



EL ORO CATTLE FEEDERS, LLC MOSES LAKE GRANT COUNTY, WA	AREA MAP FIGURE 1 NOVEMBER 2025	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Source: Regency Mill Services, LLC, design file, April 2023.

EL ORO CATTLE FEEDERS, LLC MOSES LAKE GRANT COUNTY, WA	FIGURE 2 PLOT PLAN NOVEMBER 2025	ENVIRO–AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

2.0: PROCESS INFORMATION

2.1: Process Description

The proposed engine will be operated as a standby facility in case of emergency. The engine will be test-fired periodically for maintenance purposes. Testing will occur on a schedule of 30 minutes once per month. For the purposes of calculating worse case emissions and analyzing ambient air impacts, a maximum operating schedule of 100 hours per year (2 hours per week, 50 weeks per year) is proposed. In the event of a grid power failure, the engine will be operated to provide power to the feedmill.

The purpose of this modeling protocol is to fully outline and describe the components of the modeling to be conducted to demonstrate that the facility will meet all applicable ambient air quality standards for the below-listed criteria pollutants.

2.2: Pollutants

The pollutants being evaluated are the criteria pollutants: particulate matter with aerodynamic size of 10 microns or less (PM10), particulate matter with an aerodynamic size of 2.5 microns or less (PM2.5), nitrogen dioxide (NO2), carbon monoxide (CO), and sulfur dioxide (SO2). The pollutants and their respective averaging periods and level of the standards are shown in Table 1.

Table 1 - National Ambient Air Quality Standards (NAAQS) (µg/m³)

Pollutant	1-hour	3-hour	8-hour	24-hour	Annual
CO	40,000		10,000		
NO2	188				100
PM10				150	
PM2.5				35	9
SO2	196	1300			

2.3: Models Used

The most recent version of the US Environmental Protection Agency's (EPA's) AERMOD model, version 24142, will be used in this modeling study. AERMOD is a steady-state Gaussian plume model that can calculate concentrations in flat to complex terrain from a variety of source types and averaging times. For point sources, building wake effects (downwash) will be included. The regulatory default switch of AERMOD will be used. For setting up all model inputs, executing the model and reviewing the results, Providence Engineering and Environmental's BEEST Suite software package will be used, which is a Windows-based graphical user interface (GUI). BEEST Suite uses the EPA-compiled executable of AERMOD that can be found at https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models#aermod

2.4: Source Data

The existing emission sources at this facility are a combination of point sources, area sources and volume sources. The sources and their release parameters are shown in Tables 2-1, 2-2, and 2-3. The emergency standby generator engine will be modeled as a point source.

Table 2-1 – Point Sources

Source ID	Description	Stack Height, m	Temperature, K	Exit Velocity, m/s	Stack Diameter, m
BOILER1	Boiler 1	6.4008	494.26	20.024	0.610
BOILER2	Boiler 2	6.4008	494.26	20.024	0.610
GEN1	Emergency Generator	3.6576	764.15	312.4748	0.1524

Table 2-2 – Area Sources

Source ID	Description	Release Height, m	Easterly Length, m	Northerly Length, m	Angle from North, deg
CW	Commodity Bunker West	1.5	6	17	-13.5
CE	Commodity Bunker East	1.5	6	17	-15
MS	Micro-Ingredient System fugitive	1	11	6	-14
MW2	West Mixer 2	1	5	3	-14
MW1	West Mixer 1	1	5	3	-14
ME3	East Mixer 3	1	5	3	-14
ME4	East Mixer 4	1	5	3	-14

Table 2-3 – Volume Sources

Source ID	Description	Release Height, m	Initial Horizontal Dimension, m	Initial Vertical Dimension, m
LOW1	Loadout Conveyor West 1	4.42	0.47	0.35
LOW2	Loadout Conveyor West 2	4.42	0.47	0.35
LOE1	Loadout Conveyor East 1	4.42	0.47	0.35
LOE2	Loadout Conveyor East 2	4.42	0.47	0.35
TP1	Truck Receiving Pit	1	0.65	0.93
GC1	Grain Cleaner 1	22.86	0.47	0.93
GC2	Grain Cleaner 2	22.86	0.47	0.93
F1	Steam Flaker 1	20	0.47	2.33
F2	Steam Flaker 2	20	0.47	2.33
F3	Steam Flaker 3	20	0.47	2.33
F4	Steam Flaker 4	20	0.47	2.33
W1	West Flake Storage Bay 1	3.2	0.47	1.49
W2	West Flake Storage Bay 2	3.2	0.47	1.49
E1	East Flake Storage Bay 1	3.2	0.47	1.49
E2	East Flake Storage Bay 2	3.2	0.47	1.49

Emissions rates for all criterial pollutants will be used for the modeling analyses and will be included in the final modeling report.

2.4: Building Downwash

All solid structures at the proposed El Oro facility have been identified and each structure's height and corner coordinates will be input to EPA's Building Profile Input Program for PRIME (BPIP-Prime) (v04274), along with three large grain bins and several cylindrical tanks. Point source stack height and location will also be input to BPIP-Prime. BPIP-Prime will identify the dominant structure for each point source for all 36 wind flow vectors. The output from BPIP-Prime will include an SO file, which will contain these direction-specific downwash parameters.

2.5: Receptors and Terrain

A complex array of receptors will be placed around the El Oro site, summarized in Table 3.

Table 3 – Receptor Grid Design

Distance from Property Line	Spacing
Property Line	25 m
200 m	25 m
1 km	100 m
5 km	500 m
10 km	1000 m

This array of receptors should be enough to identify the maximum concentrations, as well as fully define any area of significant impact for any of the criteria pollutants. When all receptors, structures, and source locations are defined, the AERMAP processor will be used to assign base elevations and define the hill height scale for each of the receptors. The hill height scale is the height of the terrain feature that will most affect dispersion of the plume at/near a receptor in stable atmospheric conditions.

2.6: Meteorological Data

Raw surface meteorological data for the nearby Grant County (WA) International Airport (KMWH, WBAN ID 24110) will be downloaded, along with raw upper air data from Spokane, WA (WMO ID 72786) for the years 2022-2024. The KMWH surface data will include the standard Integrated Surface Hourly Database (ISHD) data, as well as the 1-minute Automated Surface Observation Station (ASOS) data. The Spokane upper air data will be downloaded in Forecast Systems Lab (FSL) format.

The 1-minute ASOS data will be processed in the AERMINUTE program. This processor will read in the rolling 1-minute ASOS data and calculate hourly scalar-averaged wind speeds and vector-averaged wind directions. The final output from AERMINUTE will be a "Winds" file which contains these hourly- averaged wind data. The most recent version of AERMINUTE, v15272, will be run from within the BEEST Suite modeling software.

The raw ISHD surface data, raw FSL upper air data, and AERMINUTE Winds file will be input for the AERMET preprocessor. The most recent version of AERMET is v24142. AERMET takes these inputs, as well as spatial and temporal values of surface roughness length (z_0), albedo (a), and Bowen ratio (B) and creates AERMOD-ready meteorological files for each of the five (5) years (2022-2024). AERMET is run in two (2) stages:

1. In Stage 1, AERMET unpacks the raw ISHD and FSL data and extracts meteorological data from archive data files and processes the data through various quality assessment checks.
2. In Stage 2, AERMET reads in the quality assured Stage 1 output, and using output from the AERSURFACE processor (see below), calculates several planetary boundary layer parameters for each hour and writes two AERMOD-ready meteorological files: a file of the standard meteorological parameters (wind speed/direction, ambient temperature, etc.) and the hourly boundary layer parameter estimates for each hour, plus a file of multiple-level observations of wind speed and direction, temperature, and standard deviation of the fluctuating components of the wind for each hour.

AERSURFACE is a separate processor that reads in land cover, impervious cover, and canopy cover data, and with user input regarding spatial and temporal components and information related to the meteorological station's winter snow cover, aridity, and how wet or dry the year was relative to its 30-year precipitation climatological record, generates values of z_0, a, and B. These values can be determined for 1 to 12 sectors about the site, and either a single "annual", seasonal, or monthly temporal mode. The user also must tell AERSURFACE which sectors about the site are at an airport or not. For this study, a spatial resolution of 12 30-degree sectors about the meteorological station, and 12 monthly temporal modes will be used. To determine the wetness/dryness of the year being processed, precipitation data for the 30-year climatological period ending with the year being processed will be downloaded from the National Center for Environmental Information (NCEI) Climate Data Online database. The 30 years of precipitation data will be sorted from wettest to driest. The nine wettest years (30%) will be considered "wet", the 9 driest years (30%) will be considered "dry", and the intervening 12 years (40%) will be considered "average". For the land cover, impervious cover, and canopy cover, a set of files covering the entire State of Washington will be downloaded from a US EPA ftp site:

ftp://newftp.epa.gov/Air/aqmg/nlcd/2016/2016_R10_OR-WA.zip

In addition to the five individual years of meteorological data, a concatenated meteorological data set will also be generated, for modeling 1-hour SO2, 1-hour NO2, 24-hour PM2.5 and annual PM2.5.

2.7: Background Data

To account for the impact of any pre-existing sources upon El Oro's ambient impacts, El Oro proposes to use a data set from NW-Airquest. This is a consortium of the Washington State Department of Ecology (WSDE), the Idaho Department of Environmental Quality (IDEQ), and the Oregon Department of Environmental Quality (ODEQ). NW-Airquest hosts a web site that provides background concentrations of all criteria pollutants for the years 2014-2017. This tool incorporates ambient monitored data and grid model impacts (using emissions data for all sources located in Washington, Idaho, Oregon, other nearby States, Alberta, and British Columbia. The website includes evenly spaced nodes where the user can click on to get pollutant Design Values – the user selects the node closest to their location. Alternatively, the user can click another tab/map that has the Design Value listed for that specific monitoring station. To ensure that the data from NW-Airquest is appropriate, ambient data from the most recent years (2022-2024) for nearby stations will be reviewed and compared to the monitored design values in the 2014-2017 NW-Airquest data set.

2.8: Modeling Methodology

The new emissions of criteria pollutants from the emergency generator engine stack will generally be modeled at their proposed maximum allowable emission rates (for 1, 3, 8 and 24-hour average pollutant standards), with exceptions for the intermittent source criteria for NO2 and SO2 emissions. The generator will also be modeled using the proposed annual emission rates (for annual standards) over the entire receptor grid. For each pollutant, a Significant Impact Level (SIL) analysis will be conducted. For this analysis, the 1st high ranked concentration for each pollutant/averaging time will be used. The applicable Significant Impact Levels are shown in Table 4.

Table 4 – Significant Impact Levels (ug/m3)

Pollutant	1-hr SIL	3-hr SIL	8-hr SIL	24-hr SIL	Annual SIL
CO	2,000		500		
NO2	7.5				1
PM10				5	
PM2.5				1.2	0.13
SO2	7.8	25			

For any cases where the generator's initial impacts are greater than a respective SIL, that pollutant will be remodeled, incorporating existing emissions sources and background data, and using the form of that pollutant's NAAQS. The form/rank of the NAAQS are shown in Table 5.

Table 5 – Form and Rank of the NAAQS

Pollutant	1-hr	3-hr	8-hr	24-hr	Annual
CO	High 2nd High (H2H)		H2H		
NO2	High 8th High (H8H)				High
PM10				High 6th High	
PM2.5				H8H	High
SO2	High 4th High	H2H			

The predicted cumulative concentrations will then be compared to the level of the NAAQS in Table 1.

3.0: DOCUMENTATION/RESULTS

At the completion of this modeling project, a detailed report will be prepared and submitted to WSDE. The report will include a narrative describing the study, along with tabular and graphical results if needed. El Oro will also submit to WSDE all electronic modeling files via file transfer protocol (ftp) or a medium acceptable to the agency.