Yakima Regional Clean Air Agency

Order of Approval No. NSRP-05-SSRNG-25

For a Renewable Natural Gas (RNG) production facility

IN THE MATTER OF approving a project which establishes a new air contaminant source at Parcel Number 22090141405 in Sunnyside, WA, WA. THIS ORDER OF APPROVAL IS HEREBY ISSUED TO:

Applicant/Permittee: Pacific Ag Renewables (PAR) dba. Sunnyside RNG, LLC.
Renewable Natural Gas (RNG) production

Located at: Vicinity of 2711 Sunnyside Mabton Highway
Sunnyside, WA 98944
Parcel Number: 22090141405
Latitude: 46.293967 Longitude: -120.00184

Responsible Official: Kipp Curtis – Vice President
Pacific Ag/Pacific Ag Renewables
1000 S. Hwy 395, Ste A #506
Hermiston, OR 97838
(541) 969-2913
kipp.curtis@pacificag.com

THIS ORDER OF APPROVAL IS ISSUED IN COMPLIANCE WITH THE PROVISIONS OF THE REVISED CODE OF WASHINGTON (RCW), CHAPTER 70A.15 WASHINGTON CLEAN AIR ACT SECTION, 2210, WASHINGTON ADMINISTRATIVE CODE (WAC) 173-400-110 and WAC 173-460-040.

ISSUE DATE:

THIS ORDER OF APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:

Installation and operation of the emission units and emission-generating activities must be conducted in compliance with all data and specifications, including any additional information submitted subsequent to the Notice of Construction (NoC) application under which this Order of Approval is issued unless otherwise specified herein. The conditions and limitations of this Order of Approval are attached as follows:

Yakima Regional Clean Air Agency

Table of Contents

1. GENERAL INFORMATION

1.1 Definitions

The following terms as used in this order shall be defined as set forth in this section except where otherwise defined at the time of use:

a. "**Acceptable Source Impact Analysis**" means a procedure that compares maximum incremental impacts to Ambient Air with applicable ASILs as defined in WAC 173-460-020(2) {app.leg.wa.gov/wac/default.aspx?cite=173-460-020}.

b. "**Acceptable Source Impact Level**" means a screening concentration of a Toxic Air Pollutant in the ambient air as defined in WAC 173-460-020(2) {app.leg.wa.gov/wac/default.aspx?cite=173-460-020} and set forth in WAC 173-460-150 {app.leg.wa.gov/wac/default.aspx?cite=173-460-150}.

c. "**Act of Nature**" means an event caused exclusively by natural forces such as an earthquake, flood, landslide, ice storm, volcanic eruption, or tornado.

d. "**Agency**" means the Yakima Regional Clean Air Agency.

e. "**Air Contaminant**" means dust, smoke, and other particulate matter, fumes, mist, vapor, gas, and/or odorous substance as defined in RCW 70A.15.1030(1) {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.1030}.

f. "**Air Pollutant**" means Air Contaminant.

g. "**Air Pollution Control Officer**" means the individual appointed by an air pollution control authority board of directors to observe and enforce the provisions of the WCAA and all orders, ordinances, resolutions, or rules and regulations of the authority pursuant to RCW 70A.15.2300 {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.2300}.

h. "**Ambient Air**" means the natural state of atmospheric air in the outdoor environment.

i. "**Applicant**" means the party having submitted a Notice of Construction to the YRCAA.

j. "**Best Available Control Technology**" means an emission limitation based on the maximum degree of reduction for each regulated air pollutant determined by the Agency as defined in WAC 173-400-030(13) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

k. "**Best Available Control Technology for Toxics**" means the Best Available Control Technology as applied to Toxic Air Pollutants as defined in WAC 173-460-020(3) {app.leg.wa.gov/wac/default.aspx?cite=173-460-020}.

l. "**Best Available Retrofit Technology**" means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant emitted by an existing stationary facility as defined in WAC 173-400-030(14) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

m. "**Biodigester**" means a sealed containment structure within which a process of anaerobic decomposition of organic matter (e.g. brewery waste, silage, manure) takes place.

n. "**Brake Horsepower**" means the measure of an engine's horsepower without the loss in power caused by the gearbox, alternator, differential, water pump, and other auxiliary components consistent with the definition set forth in WAC 173-400-030(15) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

o. "**British Thermal Unit**" means a quantity of heat approximately equal to 1,055 joules or 252 gram calories.

p. "**Business Day**" means any weekday (Monday through Friday) that is not an Agency holiday.

q. "**Calendar Day**" means any day that appears on a calendar including weekdays, weekend days, and holidays.

r. "**Candlestick Flare**" means an open flare.

s. "**Code of Federal Regulations**" means the regulations issued by federal agencies under the authority of the USC.

t. "**Continuous Monitoring System**" means the total equipment, required under the conditions of this Order, used to sample, condition (if applicable), and analyze emissions or process parameters.

u. "**Criteria Air Pollutant**" or "**Criteria Pollutant**" means any air pollutant set forth in 40 CFR 50 including carbon monoxide (CO), lead (Pb), particulate matter ($PM_{2.5}$ and PM_{10}), ozone (O_3), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) {www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-50?toc=1}.

v. "**Day**" means Calendar Day.

w. "**Ecology**" means the Washington Department of Ecology.

x. **"Electronic Ignition**" means a system using electric current to ignite a gas flare.

y. "**Emission Unit**" means any part of a Source that emits or has the potential to emit any pollutant subject to regulation under the FCAA or WCAA as defined in WAC 173-400-030(31) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

z. "**Emergency**" means a situation arising from a sudden and reasonably unforeseeable event beyond the control of the Permittee including an Act of Nature, war, terrorist attack, explosion, or civil unrest that requires corrective action to restore normal operation and results in an unavoidable increase in emissions. An emergency does not include situations resulting from improperly designed equipment, a lack of preventive maintenance, careless or improper operation, or operator error.

aa. "**Enclosed Flare**" means a gas flare comprised of multiple gas burners within a single enclosure or shroud.

bb. "**Environmental Protection Agency**" means the federal agency established to develop and enforce environmental protection standards consistent with national environmental goals pursuant to 42 USC 4321 {uscode.house.gov/view.xhtml?req=(title:42%20section:4321%20edition:prelim)}.

cc. "**Exterior Property Boundary**" means the combined outer property boundaries where the adjacent property is not in common ownership with that of the Facility.

dd. "**Facility**" means the parcel, or contiguous parcels under the same or related ownership or control, upon which the proposed project is located.

ee. "**Federal Clean Air Act**" means the set of national laws enacted to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and provide assistance to State and local governments in connection with the development and execution of their air pollution prevention and control programs as set forth in 42 USC 85 {uscode.house.gov/view.xhtml?path=/prelim@title42/chapter85&edition=prelim}.

ff. "**Feedstock**" means the organic matter (e.g. animal manure) introduced into a biodigester and upon which the source is dependent to operate.

gg. "**Flare Monitor**" means a device (e.g. thermocouple, ionization detector, ultraviolet or infrared scanner) that detects the presence or absence of flame.

hh. "**Flare Shutdown**" means the period after biogas flow to the flare has ceased.

ii. "**Flare Startup**" means the first ten (10) minutes after biogas is introduced to the flare and before the minimum combustion temperature is achieved.

jj. "**Gas Flare**" means a combustion device used for flaring.

kk. "**Gas Moving Equipment**" means any device (e.g. blower, compressor, fan) used to transport gas from one location in a system to another.

ll. "**Good Housekeeping**" means taking one or more actions—often in accordance with manufacturer or industry best practices—to reduce the quantity of organic compounds and/or odors emitted including, but not be limited to, the following: (i) preventing and promptly cleaning up spills; (ii) preventing evaporation (e.g. ensuring containers are properly sealed and not left open; and (iii) storing and disposing of waste materials in a manner that reduces or eliminates emissions.

mm. "**Hazardous Air Pollutant**" means any air pollutant set forth in 42 USC 7412 {uscode.house.gov/view.xhtml?req=(title:42%20section:7412%20edition:prelim)}.

nn. "**Major Source**" means any Stationary Source, or group of Stationary Sources belonging to a single major industrial grouping (i.e. have the same two-digit code) described in the *1987 Standard Industrial Classification Manual*, as set forth in WAC 173-401-200(19) {app.leg.wa.gov/wac/default.aspx?cite=173-401-200} and 40 CFR 52.21(b)(1). {www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21}.

oo. "**Major Stationary Source**" means Major Source.

pp. "**Minor Source**" means a Source that is not a Major Source or a Synthetic Minor Source consistent with the definition set forth in 40 CFR 49.152(d) {www.ecfr.gov/current/title-40/chapter-I/subchapter-B/part-49/subpart-C/section-49.152}.

qq. "**Modification**" means any physical change in, or change in the method of operating, a Stationary Source that increases the amount of any Air Contaminant emitted by such Source or results in the emission of any Air Contaminant not previously emitted consistent with the definitions set forth in RCW 70A.15.1030(16) {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.1030} and 42 CFR 7411(4) {uscode.house.gov/view.xhtml?req=(title:42%20section:7411%20edition:prelim)}.

rr. "**Momentary**" means temporary and continuing for a very short period of time (i.e. occurring briefly).

ss. "**National Ambient Air Quality Standards**" means the limits established by the U.S. Environmental Protection Agency for Criteria Pollutants pursuant to 42 USC 7409 {uscode.house.gov/view.xhtml?req=(title:42%20section:7409%20edition:prelim)}.

tt. "**New Source Review**" means an analysis conducted by the Agency of a proposed new Source (described in a Notice of Construction) consistent with the definition set forth in WAC 173-400-030 {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

uu. "**Notice of Construction**" means a written application submitted to the Agency for the construction of a new Source, the modification of an existing Source, or the replacement or substantial alteration of control technology at an existing Source consistent with the definition set forth in WAC 173-400-030(84) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

vv. "**Online UPS**" means a UPS that supplies power to the load through the battery at all times.

ww. "**Open Flare**" means a gas flare that is not contained within an enclosure or shroud. Also known as a "Candlestick Flare".

xx. "**Operation and Maintenance Plan**" means one or more documents submitted with a Notice of Construction for each Emission Unit, or group of operationally equivalent Emission Units, comprised of not less than: (i) Procedures for proper operation and maintenance of the Emission Unit and associated air pollution control device(s) necessary to comply with emission limits and other conditions, including maintenance

schedules, control measures for fugitive emissions, fallout, and odors—when applicable, recordkeeping, and training; (ii) Corrective actions to be taken when required; (iii) Procedures to be used during inspection of the Emission Unit and/or air pollution control devices; (iv) Training; and (v) Recordkeeping.

yy. "**Order**" means this Order of Approval.

zz. "**Order of Approval**" means a regulatory order issued by a permitting authority to approve a Notice of Construction application (e.g. this document) as set forth in RCW 70A.15.2210(3) {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.2210} and consistent with the definition set forth in WAC 173-400-030(64) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

aaa. "**Owner/Operator**" means any person who owns, leases, operates, controls, or supervises a Source consistent with the definition set forth in 42 USC 7411(5) {uscode.house.gov/view.xhtml?req=(title:42%20section:7411%20edition:prelim)}.

bbb. "**Permittee**" means the party to whom an Order of Approval or Air Operating Permit is issued or any subsequent Owner/Operator of the Source.

ccc. "**Pilot**" means a continuously burning flame used to ignite a gas flare. Also known as a "Standing Pilot".

ddd. "**Pollution Control Hearings Board**" means the Washington State board granted jurisdiction to hear and decide appeals from air pollution control authorities pursuant to Chapter 43.21B RCW {app.leg.wa.gov/rcw/default.aspx?cite=43.21B}.

eee. "**Portable Source**" means a Source capable of being transported to various locations (e.g. portable crusher, portable asphalt plant) consistent with the definition set forth in RCW 70A.15.1030(75) {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.1030}, excluding mobile sources (e.g. motor vehicles, non-road engines, non-road vehicles) as defined in 40 USC 51.50 {www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-51/subpart-A}

fff. "**Potential to Emit**" means the maximum capacity of a source to emit a pollutant under its physical and operational design or any physical or operational limitation that is enforceable, excluding secondary emissions, consistent with the definition set forth in WAC 173-400-030(76) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

ggg. "**Project**" means the construction or modification proposed in the Notice of Construction submitted by the applicant.

hhh. "**Records**" means all reports, logs, notifications, written communications, and other documents and all sampling, monitoring, and other data, whether in paper or electronic form, required under this Order.

iii. "**Responsible Official**" means one of the following consistent with 40 CFR 70.2 {http://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-70/section-70.2}: (1) For a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function; (2) For a partnership, a general partner; (3) For a sole proprietorship, the proprietor; or (4) For a municipality, state, federal, or other public agency, either a principal executive officer, ranking elected official, or for federal agencies, the chief executive officer for a principal geographic unit.

jjj. "**Revised Code of Washington**" means the permanent laws enacted by the Washington State legislature {app.leg.wa.gov/rcw}.

kkk. "**Shutdown**" means the period of time beginning when a biodigester is no longer receiving feedstock and ending when the quantity of gas produced has declined to the point the biodigester has become stable and consistent.

lll. "**Significant Emissions Increase**" means, for a regulated NSR pollutant, an increase in emissions that is significant for a regulated NSR pollutant as defined in WAC 173-400-

810(28) and as set forth in WAC 173-400-810(27) {app.leg.wa.gov/WAC/default.aspx?cite=173-400-810}.

mmm. "**Small Quantity Emission Rate**" means a level of emissions below which dispersion modeling is not required to demonstrate compliance with acceptable source impact levels set forth in WAC 173-460-150 {app.leg.wa.gov/wac/default.aspx?cite=173-460-150} consistent with the definition set forth in WAC 173-460-020(7) {app.leg.wa.gov/wac/default.aspx?cite=173-460-020}.

nnn. "**Source**" means all of the emission units, including quantifiable fugitive emissions, located on one or more contiguous or adjacent properties and under the control of the same person, or persons under common control, whose activities are ancillary to the production of a single product or functionally-related group of products as defined in RCW 70A.15.1030(23) {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.1030}.

ooo. "**Startup**" means the period of time beginning when a biodigester first receives feedstock or when it receives feedstock after a shutdown and ending thirty (30) days thereafter.

ppp. "**State Environmental Policy Act**" means the set of state laws enacted to prevent or eliminate damage to the environment and biosphere as set forth in Chapter 43.21C RCW {app.leg.wa.gov/rcw/default.aspx?cite=43.21C} and Chapter 197-11 WAC {app.leg.wa.gov/wac/default.aspx?cite=197-11 }.

qqq. "**Stationary Source**" means a Source that is a building, structure, facility, or installation that emits or may emit any air contaminant consistent with the definition set forth in RCW 70A.15.1030(24) {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.1030} and 42 USC 7411(3) {uscode.house.gov/view.xhtml?req=(title:42%20section:7411%20edition:prelim)}.

rrr. "**Synthetic Minor Source**" means a Source with a PTE limited below applicable thresholds by means of an enforceable order, rule, or approval condition consistent with the definition set forth in WAC 173-400-030(93) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

sss. "**Toxic Air Pollutant**" means any pollutant set forth in WAC 173-460-150 {app.leg.wa.gov/wac/default.aspx?cite=173-460-150} consistent with the definition set forth in WAC 173-400-030(96) {app.leg.wa.gov/wac/default.aspx?cite=173-400-030}.

ttt. "**Uncombined Water**" means water in a gaseous state that is not bound to a compound and does not contain dissolved solids (e.g. steam).

uuu. "**Uniform Resource Locator**" means the address of a unique resource (e.g. document, page, image) available on the Internet, in the form *scheme://domain/path/parameters* (e.g. http://app.leg.wa.gov/rcw/default.aspx?cite=70A.15.2210) and commonly entered into the address bar of an "Internet browser" application. Also known as a "web address".

vvv. "**Uninterruptible Power Supply**" means a device that uses a rechargeable battery to provide electrical power to a load when the primary power source fails.

www. "**United States Code**" means the consolidation and codification of the general and permanent laws enacted by the Congress of the United States {uscode.house.gov}.

xxx. "**Volatile Organic Compound**" means a chemical that evaporates easily (e.g. paint, lacquer, solvent, adhesive).

yyy. "**Washington Administrative Code**" means the regulations issued by state agencies under the authority of the RCW {app.leg.wa.gov/wac/default.aspx}.

zzz. "**Washington Clean Air Act**" means the set of state laws enacted to preserve, protect, and enhance the air quality for current and future generations as set forth in Chapter 70A.15 RCW {app.leg.wa.gov/rcw/default.aspx?cite=70A.15}.

aaaa. "**Washington Department of Ecology**" means the state agency established to manage and develop the air and water resources of the state and to carry out a coordinated program of pollution control as set forth in Chapter 43.21A RCW {app.leg.wa.gov/rcw/default.aspx?cite=43.21A}.

bbbb. "**Written**" means a document, excluding voice mail, text, and electronic mail messages, comprised of visible letters and characters, signed by a Responsible Official, and provided to the recipient by hand delivery, the U.S. Postal Service, or a commercial carrier or delivery service.

cccc. "**Yakima Regional Clean Air Agency**" means the local air pollution control authority for Yakima County established pursuant to RCW 70A.15.1500 {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.1500}.

dddd. "**YRCAA Regulation 1**" means the regulations adopted by the Board of Directors of the YRCAA pursuant to RCW 70A.15.2040(1) {app.leg.wa.gov/rcw/default.aspx?cite=70A.15.2040}.

1.2 Acronyms

The following acronyms as used in this order shall mean the terms set forth in this section and defined in the prior section:

a. APCO – Air Pollution Control Officer
b. ASIL – Acceptable Source Impact Level
c. BACT – Best Available Control Technology
d. BART – Best Available Retrofit Technology
e. BTU – British Thermal Unit
f. CAP(s) – Criteria Air Pollutant(s)
g. CFR – Code of Federal Regulations
h. CMS – Continuous Monitoring System
i. EPA – Environmental Protection Agency
j. FCAA – Federal Clean Air Act
k. HAP(s) – Hazardous Air Pollutant(s)
l. GAC – Granulated Activated Carbon
m. NO – Nitric Oxide
n. NO_2 – Nitrogen Dioxide
o. NO_X – Nitrogen Oxides (includes NO and NO_2)
p. NSR – New Source Review
q. OMP – Operations and Maintenance Plan
r. Pb – Lead
s. PCHB – Pollution Control Hearings Board
t. $PM_{2.5}$ – Particulate Matter less than 2.5 microns in diameter
u. PM_{10} – Particulate Matter less than 10 microns in diameter (includes $PM_{2.5}$)
v. PTE – Potential to Emit
w. RCW – Revised Code of Washington
x. SEPA – State Environmental Policy Act
y. SO_2 – Sulpher Dioxide
z. SO_X – Sulpher Oxides (includes SO_2)
aa. SQER – Small Quantity Emission Rate

bb. TAP(s) – Toxic Air Pollutant(s)
cc. tBACT – Best Available Control Technology for Toxics
dd. TPY – Tons per year
ee. UPS - Uninterruptible Power Supply
ff. URL – Uniform Resource Locator
gg. USC – United States Code
hh. VOC – Volatile Organic Compound
ii. WAC – Washington Administrative Code
jj. WCAA – Washington Clean Air Act
kk. YR1 – YRCAA Regulation 1
ll. YRCAA – Yakima Regional Clean Air Agency

2. SOURCE DESCRIPTION

2.1 Pacific Ag Renewable dba Sunnyside RNG, LLC, hereafter referred to as the Permittee, is the owner and operator of Sunnyside RNG, hereafter referred to as the Facility or the Source.

2.2 The Permittee submitted a Notice of Construction (NoC) application on April 25, 2025, proposing the construction and operation of a Facility to produce renewable natural gas (RNG) from agricultural waste, including dairy manure slurry and agricultural crop residues, through anaerobic digestion, hereafter referred to as the Project. The proposed Facility will be located within the Port of Sunnyside Midvale Industrial Park, parcel number 22090141405, in Sunnyside, WA.

2.3 The Project is designed to produce approximately 1,800,000 million British thermal units (MMBtu) of RNG per year through anaerobic digestion of feedstocks delivered from nearby dairies. Five anaerobic digester trains, each composed of four digester tanks operated in series or parallel, will generate biogas from feedstock. Carbon dioxide (CO2), hydrogen sulfide (H_2S), and other trace compounds will be removed from the biogas to obtain pipeline quality RNG to be injected into a nearby natural gas pipeline.

2.4 Feedstocks, including dairy manure slurry and cellulosic material, will be delivered to the Facility by truck. Manure slurry will be pumped to mix tanks while cellulosic material will be ground in an enclosed structure using an electric grinder equipped with a baghouse for dust control. The ground material will then be conveyed in an enclosed system to the mix tanks. Mix tanks will feed the digester trains. Roadways and work areas with expected truck traffic will be paved to minimize fugitive dust emissions. A work area that will be used by vehicles with a gross vehicle weight of no more than 5,000 pounds will remain unpaved.

2.5 Inside the digester tanks, microorganisms will break down feedstock under anaerobic conditions to generate biogas. Each digester tank will include pressure relief valves (PRVs) for safety. The generated biogas will be collected and transferred by pipelines to the biogas upgrading system. The remaining material (aka digestate) will be pumped to buffer tanks and separated into fiber (solid) and thin (water) fractions. The fiber fraction will be stored under a covered area before shipment off-site, while the thin fraction will be directed to an on-site covered lagoon.

2.6 Collected biogas will be cooled before entering the amine-based biogas upgrading system. This system utilizes an absorption column containing a lean amine solution that removes CO2, H_2S, and other trace gases from the biogas. The cleaned methane (scrubbed methane), obtained from the top of the absorption column, is dehydrated, compressed, and injected into the natural gas pipeline.

2.7 The used amine solution which now contains CO2, H_2S, and other trace gases, obtained from the bottom of the absorption column, is heated to separate these gases from the solution so that the amine solution can be recycled. The separated gases obtained from this process, known as tailgas, will pass through a Thiopaq scrubber, with a manufacturer specification of ninety-nine percent (99%) of H_2S removal from the tailgas, followed by activated carbon beds to further reduce H_2S concentrations to below nine parts per million by volume (9 ppmv) before being released to the atmosphere.

2.8 Four enclosed flares will be installed to combust excess biogas when the upgrading or pipeline injection systems are not operational.

2.9 Two natural gas-fired hot water boilers, each rated at 24.13 MMBtu/hr, will provide process heat. A 2,923 brake horsepower (bhp), diesel-fired emergency generator, certified to EPA Tier 2 standards, will provide backup power.

2.10 The Permittee submitted a vicinity map, facility emissions layout, simplified process flow diagram, site plan, and equipment specifications as part of the NoC application. These materials were used to evaluate applicability, emission estimates, air dispersion modeling assumptions, and compliance with applicable air quality regulations. Figures 1 through 4 illustrate these materials as submitted by the Permittee.

3. DETERMINATIONS

3.1 The installation and operation of this Project constitute a new source of air contaminants required to obtain an Order of Approval (Order) pursuant to the Revised Code of Washington (RCW) 70A.15.2210, WAC 173 400-110 and 173-460-040.

3.2 Air emissions from the operation of this Project include criteria air pollutants (CAPs), greenhouse gases, and volatile organic compounds (VOCs), some of which are known as hazardous air pollutants (HAPs) and toxic air pollutants (TAPs) in accordance with the Federal Clean Air Act (FCAA) or Washington Administrative Code (WAC), respectively.

3.3 This Project is subject to the requirements of the State Environmental Policy Act (SEPA), which have been satisfied with a Revised Mitigated Determination of Non Significance (MDNS), issued by the City of Sunnyside with File No. 2023-0200 (2022-0200), on March 22, 2024. This MDNS was confirmed to be applicable to this Project per City of Sunnyside's signature dated October 13, 2025.

3.4 This Project is subject to the requirements of WAC 173-400-171. Since YRCAA has determined that significant public interest exists for this Project, a mandatory public comment period, pursuant to WAC 173-400-171(3)(n), is required. This requirement has been satisfied with the advertisement of a public notice for this Project on YRCAA's website, along with NOC

application materials and the draft permit, on February 12, 2026. This public notice announced a 46-day public comment period starting on February 13, 2026 through March 30, 2026 and a public hearing to be held on March 25, 2026, at 6:00 p.m., at the Agency office.

3.5 The Facility is located in an area designated as in attainment with all state and federal air quality standards for criteria pollutants, as defined in 40 CFR 81.348.

3.6 The Facility is deemed as an area source (minor source) based on potential emissions of CAPs and HAPs that fall below the thresholds of a major source under Section 501 of the FCAA.

3.7 The Facility is not subject to the Compliance Assurance Monitoring (CAM) requirements pursuant to 40 CFR Part 64 as it is not a major stationary source.

3.8 The Facility is not subject to the Prevention of Significant Deterioration (PSD) permitting requirements under WAC 173-400-700 through WAC 173-400-750, as it is not a major stationary source.

3.9 The natural gas-fired boilers used in this Project are subject to 40 CFR Part 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, since the proposed boilers have a maximum heat input capacity greater than 10 MMBtu per hour each.

3.10 The diesel-fired emergency backup engine used in this Project is subject to 40 CFR Part 60 Subpart IIII – Stationary Compression Ignition Internal Combustion Engines, and 40 CFR Part 63 Subpart ZZZZ – NESHAP for Reciprocating Internal Combustion Engines.

3.11 The Facility is subject to the requirements of Chapter 173-441 WAC – Reporting of Emissions of Greenhouse Gases.

3.12 The Facility is subject to the requirements of 40 CFR Part 98 – Mandatory Greenhouse Gas Reporting.

3.13 The Facility is subject to the requirements of RCW 70A.15.2210, WAC 173-400-113 and WAC 173-460-060, which require application of Best Available Control Technology (BACT) and toxic BACT (t-BACT) for all pollutants not previously emitted or for which emissions would increase as a result of the new source or modification. The Facility meets these requirements by employing BACT and t-BACT, provided the applicable conditions set forth in this Order are met.

3.14 The Facility is subject to the requirements of WAC 173-460-040, as installation and operation of the Project require submittal of a NoC application under WAC 173-400-110, and actual pre-control emissions exceed the applicable de minimis emission threshold listed in WAC 173-460-150.

3.15 In accordance with WAC 173-460-080, an acceptable source impact level (ASIL) analysis was included with the NoC application. The Permittee evaluated TAP emissions using both the Small Quantity Emission Rate (SQER) screening method and air dispersion modeling. After application of t-BACT, emissions of most TAPs were less than the SQER thresholds listed in WAC 173-460-

150, thereby satisfying the ASIL requirement for those pollutants.

3.16 For TAPs exceeding the SQER threshold, the Permittee performed an air dispersion modeling using facility-specific parameters and the U.S. EPA-approved AERMOD dispersion model. The modeling demonstrates that the modeled ambient impact of the aggregate emissions of TAPs exceeding the SQER threshold do not exceed the applicable ASILs listed in WAC 173-460-150.

3.17 Pursuant to WAC 173-400-111 and WAC 173-400-113, the Permittee evaluated the potential ambient air quality impacts of CAP emissions from the Project to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). The Permittee performed air dispersion modeling using facility-specific emission rates and release parameters and the U.S. EPA-approved AERMOD dispersion model, consistent with the EPA Guideline on Air Quality Models (40 CFR Part 51, Appendix W). The modeling evaluated worst-case operating scenarios and predicted ambient pollutant concentrations at receptors located beyond the Facility property boundary.

3.18 Modeled project impacts were combined with regional background concentrations to assess cumulative ambient concentrations. The modeling results demonstrate that the cumulative impacts of the Project emissions do not exceed or will not cause or contribute to a violation of any NAAQS.

3.19 Expected air emissions associated with this Project, summarized in Appendix A, were calculated using the parameters in Table 1. These include proposed operating hours, equipment specifications, and emission factors obtained from Environmental Protection Agency (EPA) AP-42, and California's air toxics program (Ventura County Air Pollution Control District [VCAPCD] 2001), as specified in Table 1.

3.20 The Facility is subject to the annual Registration Program pursuant to WAC 173-400-099 and YRCAA Regulation 1, Section 4.01. The Facility will be classified and assessed fees according to the annual approved YRCAA registration classification.

Table 1: Parameters used in air emissions calculations.

Emission unit or activity	Hourly	Daily	Annual
Enclosed flares	Maximum biogas generation rate, biogas heat content, total heat input, maximum expected H_2S concentration, destruction efficiency, and emission factors.	Continuous operation (i.e. 24 hours per day) at the hourly rate.	Annual operation for up to 5% of the year (i.e. 438 hours/year) at the hourly rate.
Biogas upgrading system	Process flow rate and maximum expected H_2S concentration.	Continuous operation (i.e. 24 hours per day) at the hourly rate.	Continuous annual operation (i.e. 8,760 hours per year) at the hourly rate.
Boilers	Maximum heat input and emission factors.	Continuous operation (i.e. 24 hours per day) at the hourly rate.	Continuous annual operation (i.e. 8,760 hours per year) at the hourly rate.
Cellulose grinder	Daily rate converted to hourly rate (i.e. working 24 hours per day).	Maximum daily processed mass and emission factors.	Continuous annual operation (i.e. 365 days/year) at the daily rate.
Emergency generator set	Maximum generator rating, engine fuel use rate and emission factors. Operation limited to 30 minutes in one hour.	Same as hourly rate since a 30-minute operation was considered per day.	Annual operation for up to 80 hours at the hourly rate.
Solid digestate storage	NH4-N content in material, ammonia volatilization rate and surface area of storage piles.	Continuous storage (i.e. 24 hours per day) at hourly rate.	Continuous annual storage (i.e. 8,760 hours per year) at hourly rate.
Use of roadways (paved and unpaved)	Site-specific trucks specifications, road characteristics, travel distances, daily and annual trips, and emission factors		

THEREFORE, pursuant to the authority granted under Chapter 70A.15 RCW, YRCAA hereby issues this Order of Approval for the Notice of Construction submitted (including all detailed plans, specifications, and other information submitted) for this Facility, subject to the conditions that follow.

4. AUTHORIZED EQUIPMENT AND ACTIVITIES

4.1 This Order authorizes installation and operation of the emission units and conduction of the emission-generating activities identified in Table 2 and described below, which collectively comprise the Project.

Table 2: Authorized emission units and emission-generating activities list. [1]

# of units	Emission unit (EU) [2]	Emission unit or activity	Associated air pollution control device(s) or measure
NA	EU7 [3]	Use of roadways	Water application and dust palliative materials.
1	EU4	Cellulose grinder	Enclosed building with cyclone and baghouse (aka. dust collection system)
2	EU3	Boilers	Low-NOx burners, ultralow sulfur fuel (natural gas).
3	NA [4]	Mix tanks (pre-tanks)	Enclosed tanks and leak detection and repair activities.
20	NA [4]	Anaerobic digester tanks	Enclosed tanks and leak detection and repair activities.
2	NA [4]	Digestate buffer tanks (out-tanks)	Enclosed tanks and leak detection and repair activities.
1	EU2	Biogas upgrading system	Amine solution bioscrubber, GAC beds, and leak detection and repair activities.
1	EU5	Emergency generator set	EPA Tier 2 certified engine, limited hours of operation.
4	EU1	Enclosed flares	Enclosed design and ultralow sulfur fuel (biogas).
1	EU6	Processed digestate storage	Covered storage and good housekeeping.
2	NA [5]	Covered lagoons	Lagoon covers.

NA – Not Applicable

[1] Ordered by process flow.

[2] EU corresponds to Emission Points (EP) as submitted with the NoC and shown in Figures 2 and 3.

[3] Roadways are not shown in Figure 3 but are identified here as EP7 to represent fugitive emissions.

[4] Anaerobic digester tanks and associated process tanks (mix and digestate buffer tanks) are enclosed; all biogas is routed to the upgrading system or enclosed flares. PRVs are for emergency use only and not part of normal operation.

[5] Since the lagoon maintains a liquid-based digester mixture and is equipped with a cover, fugitive gaseous emissions are expected to be limited under normal operating conditions.

4.1.1 Use of roadways (EU7)

a. Description: paved areas for truck traffic. Unpaved area in north section of the Facility for employees and truck drivers' personal vehicles.

4.1.2 Cellulose grinder (EU4)

a. Description: electric-powered cellulose grinder located in an enclosed building equipped with a dust collection system. Material transfer via enclosed conveyors.

b. Manufacturer/Model/Serial #:
   i. Grinder: BioPrep West Salem Machinery, unknown, unknown
   ii. Cyclone: Kice Industries, Inc., CK 78, unknown
   iii. Baghouse: Kice, R132-10N, unknown

c. Specifications:
   i. Cyclone: flow rate = 9300 cfm.
   ii. Baghouse: PM2.5 removal efficiency = 99.9%, flow rate = 11,000cfm.

4.1.3 Boilers (EU3)
- a. Description: natural gas-fired boilers providing heat to the digesters.
- b. Manufacturer/Model/Serial #: Cleaver-Brooks, CB (LE), Unknown
- c. Specifications: heat capacity = 24.126 MMBtu/hr each.

4.1.4 Mix tanks (pre-tanks)
- a. Description: enclosed tanks with PRV providing feed to the digester trains.
- b. Dimensions: 106'x83' (DxH) each.

4.1.5 Anaerobic digester tanks
- a. Description: enclosed tanks with PRV that process feedstock to produce biogas.
- b. Dimensions: 80'x83' (DxH) each.

4.1.6 Digestate buffer tanks (out-tanks)
- a. Description: enclosed tanks with PRV.
- b. Dimensions: 106'x83' (DxH) each.

4.1.7 Biogas upgrading system (EU2)
- a. Description: system to clean and upgrade biogas to pipeline-quality RNG.
- b. Manufacturer/Model/Serial #:
- c. Bioscrubber: Paques THIOPAQ, unknown, unknown.
- d. GAC beds: Green Tech, LLC, unknown, unknown.
- e. Specifications: flow rate = 2,662 standard cubic feet per minute (scfm), H_2S removal efficiency ≥ 98%, GAC beds H_2S emissions ≤ 9 ppmv.

4.1.8 Emergency generator set (EU5)
- a. Description: equipped with a diesel-fired engine used for emergency power.
- b. Manufacturer/Model/Serial #:
  - i. Emergency generator set: Kohler, KD2000, unknown.
  - ii. Diesel engine: Kohler, KD62V12, unknown.
- c. Specifications:
  - i. Diesel engine: maximum engine power = 2,923 brake horse power (bhp).

4.1.9 Enclosed flares (EU1)
- a. Description: enclosed flares used to combust excess biogas when the upgrading or pipeline injection systems are not operational.
- b. Manufacturer/Model/Serial #: Gastechnik Himmel, MTU 3000, unknown.
- c. Specifications: heat input = 59 MMBtu/hr each, minimum H_2S destruction efficiency = 98%.

4.1.10 Processed digestate storage (EU6)
- a. Description: fiber storage building for processed digestate.
- b. Dimensions: 85'x200'x40' (WxLxH)
- c. Specifications: two sides covered, one side partially enclosed by equipment, open west-facing end.

4.1.11 Covered lagoons

a. Description: covered basin for thin (water) fraction storage from digestate buffer tanks.

5. EMISSION LIMITS

5.1 Total air emissions from the operation of emission units and emission-generating activities listed in Table 2 shall not exceed the applicable emission limits identified below. These emission limits are based on the operational parameters and emission factors identified in Section 2.0 of this Order.

Pollutant	Totals (tpy)
NOX	7.49
CO	24.4
PM10	4.24
PM2.5	2.78
SO3	13.36
VOC	0.85
CO2e	115,900
HAPs	0.04

Pollutant	CAS	Averaging Period	Emissions (lb/ave. period)
Diesel Particulate Matter	DPM	year	51
Chromium VI	18540-29-9	year	1.2E-03
Hydrogen Sulfide	7783-06-4	24-hr	18.52

A comprehensive list of all air pollutants emitted by the Facility, including each emission unit and its corresponding emission limits, is provided in Appendix A of this Order.

5.2 Opacity from any emission unit or emission-generating activity listed in Table 2, excluding uncombined water vapor, shall not exceed twenty percent (20%) at any time, including during normal operation, startup, an shutdown, as determined in accordance with 40 CFR Part 60, Appendix A, Method 9 (Method 9).

6. SPECIFIC CONDITIONS

6.1 The anaerobic digester tanks, mix tanks, digestate buffer tanks, biogas upgrading system, and all associated component shall not vent directly to the atmosphere under normal operating conditions. Momentary opening of a safety relief valve due to overpressure or an emergency event is exempt from this prohibition; however, such event shall be documented in the annual emissions inventory and may be considered an upset or excess emissions event. Except during emergencies as defined in this Order, biogas shall not be vented directly to the atmosphere under any circumstances.

6.2 Good housekeeping practices shall be implemented at all times. Liquid and/or solid material spills shall be cleaned as soon as practicable, but no later than twenty-four (24) hours after occurrence.

6.3 All valves, pumps, compressors, pressure relief valves, connectors, and other components with the potential to release CH_4, H_2S, or VOCs shall be operated and sufficiently maintained so as to minimize any leaks in accordance with the Operations and Maintenance Plan (O&M) required by this Order.

6.4 Access hatches, covers, or other openings shall remain closed at all times except when access is necessary for normal operation or maintenance.

6.5 Sufficient replacement and repair parts for all emission units and associated air pollution control device(s) listed in Table 2 shall be maintained on site and readily available. Repairs or replacements shall be performed in accordance with manufacturer-recommended intervals or more frequently, as necessary to ensure proper operation.

6.6 All exhaust stacks associated with emission units listed in Table 2 shall discharge vertically and unobstructed into the ambient air, with minimum stack heights (measured from ground level) and stack diameters as shown in Table 3. Rain caps or other obstructions that impede vertical exhaust flow are prohibited.

Table 3: Stack parameters.

EU	Stack ID	Description	Stack height (m)	Stack diameter (m)
EU1	FLARE1	Enclosed Flare No. 1	11	2.0
EU1	FLARE2	Enclosed Flare No. 2	11	2.0
EU1	FLARE3	Enclosed Flare No. 3	11	2.0
EU1	FLARE4	Enclosed Flare No. 4	11	2.0
EU2	THIO	Thiopaq bioscrubber	12.8	0.3
EU3	BLR1	Boiler No. 1	20	0.6
EU3	BLR 2	Boiler No. 2	20	0.6
EU4	BAGH	Cellulose grinder dust collector system	6.1	0.6
EU5	EGEN	Emergency generator	10.7	0.5

6.7 The Permittee shall install and operate emission units and conduct emission-generating activities identified in Table 2 at the Facility consistent with the overall emissions layout and facility site plan shown in Figures 2 and 4, as submitted with the NoC application. Any changes to the location of emission units or emission-generating activities that may affect modeled ambient impacts or invalidate the assumptions used in the air dispersion modeling shall be evaluated and approved by YRCAA prior to implementation.

6.8 The Permittee shall develop and implement an O&M plan for the emission units and emission-generating activities listed in Table 2. This plan shall be sufficient to verify operational practices and procedures (e.g. operation, training, monitoring), and to verify that emission units are operated in accordance with manufacturer specifications and recommendations, and the requirements of this Order. The plan shall be submitted to YRCAA within thirty (30) days after

issuance of this Order, but prior to startup of the Project. Implementation of the plan does not preclude or limit enforcement action by YRCAA. At minimum, the plan shall include the following components:

6.8.1 General O&M section

a. Startup, normal operation, and shutdown procedures and operational parameters;
b. Scheduled inspections, calibrations, routine preventive and corrective maintenance procedures, including replacement or repair of emission units and components subject to wear and tear;
c. Monitoring and inspection procedures and frequencies used for routine quality assurance and quality control checks (QA/QC);
d. A list of spare parts and tools maintained on site;
e. Emergency and malfunction contingency procedures, including descriptions of potential failure scenarios, immediate response actions, troubleshooting steps, incident reporting, and post-incident review;
f. Operator training and certification requirements specific to operation of the emission units listed in Table 2 and compliance with conditions in this Order; and
g. Recordkeeping procedures, including the types of records maintained at the Facility, the frequency of record generation, retention period, format (paper and/or electronic), and procedures for storage, retrieval, and availability of records to YRCAA upon request

6.8.2 Odor Management and Response Action plan or equivalent

This plan shall address H_2S, CH_4, and other odors potentially generated by the Project. The plan shall be implemented immediately upon receipt of an odor complaint by the Permittee or upon notification from YRCAA, and it shall include at minimum:

a. Complaint investigation and response procedures, including response timing, responsible personnel, and documentation;
b. Corrective actions to be taken based on the nature and source of the odor;
c. Monitoring or verification steps following implementation of corrective actions; and
d. Recordkeeping procedures documenting all complaints, investigations, corrective actions, and outcomes.

6.8.3 Leak Detection and Repair (LDAR) program or equivalent

This program shall address gaseous and liquid leaks from equipment and components associated with emission-generating activities. The program shall be implemented on an ongoing basis and shall include, at a minimum:

a. Procedures for routine inspection and monitoring of potential leak sources;
b. Methods for minimizing leaks through proper equipment design, operation, and maintenance;
c. Procedures and timelines for corrective actions when a leak is detected; and
d. Recordkeeping requirements documenting inspections, leaks detected, corrective actions taken, and follow-up verifications.

6.8.4 H_2S Monitoring plan or equivalent

This plan shall assist in verifying compliance with applicable H_2S limits established in this Order. The plan shall be implemented on an ongoing basis and shall describe, at a minimum:

a. The monitoring method(s) and device(s) to be used, including demonstration that the selected device(s) are capable of measuring H_2S concentrations over the expected operating range and at levels necessary to verify compliance with the applicable limits in this Order;

b. Monitoring locations, operational procedures, and monitoring frequency, including identification of the specific process streams or exhaust points monitored;

c. Calibration, maintenance, and quality assurance/quality control (QA/QC) procedures, consistent with manufacturer recommendations;

d. Data management procedures, including data recording, handling of instrument downtime, invalid or missing data, and corrective actions taken in response to monitoring issues; and

e. Procedures for updating the plan if monitoring methods, devices, or monitoring locations change. Any such updates shall be submitted to YRCAA prior to implementation

6.9 Enclosed flares

6.9.1 All enclosed flares shall be fired on biogas only.

6.9.2 The Permittee shall not exceed the following flaring limits for the enclosed flares:

a. No more than 438 hours of operation per enclosed flare during any 12-month period; and

b. No more than 158.07 million standard cubic feet (MMscf) of biogas combusted, in total from all enclosed flares combined, during any 12-month period.

6.9.3 Flaring hours shall include all period of flare operation, including flare startup and flare shutdown.

6.9.4 The concentration of H_2S in the biogas routed to any enclosed flare shall not exceed 991 ppmv, calculated as a 30-day rolling average, monitored in accordance with the monitoring requirements set forth in this Order.

6.9.5 Except during flare startup and flare shutdown, each enclosed flare shall be operated in compliance with the following combustion requirements:

a. The combustion chamber temperature shall be maintained at or above 1,832 °F, calculated as a 1-hour rolling average; and

b. A combustion flame shall be present at all times when biogas is being combusted.

6.10 Biogas upgrading system

6.10.1 Total biogas processed in the biogas upgrading system shall not exceed 2,662 scfm, calculated as a 1-hour rolling average, monitored in accordance with the monitoring requirements set forth in this Order.

6.10.2 The concentration of H_2S in the tailgas discharged from the biogas upgrading system shall not exceed 9 ppmv, calculated as a 30-day rolling average, monitored in accordance with the monitoring requirements set forth in this Order.

6.10.3 The biogas upgrading system shall include, within its process configuration, a Thiopaq® bio-scrubber and GAC adsorption beds for the control of H_2S emissions.

6.10.4 The GAC beds media shall be maintained and replaced in accordance with manufacturer specifications or more frequently as needed to ensure effective H_2S removal.

6.10.5 The Thiopaq bio-scrubber and GAC beds shall be operated at all times when biogas is being processed to produce RNG.

6.11 Boilers

6.11.1 Each boiler shall be fired exclusively on natural gas.

6.11.2 Each boiler shall be equipped with low NOx burners.

6.11.3 Each boiler shall not exceed a maximum heat input capacity of 24.13 MMBtu/hr.

6.11.4 Combined natural gas usage for both boilers shall not exceed 414.40 MMscf (4,226,875.20 therms) during any 12-month period.

6.11.5 Emissions from each boiler shall not exceed the following performance-based limits, corrected to a dry basis at 3 percent (3%) oxygen (O2):

Pollutant	**Emission limit**
Nitrogen oxides (NOX)	9 ppmv
Carbon monoxide (CO)	50 ppmv
Fine particulate matter (PM2.5), filterable	0.45 lb/hr
Fine particulate matter (PM2.5), condensable	0.135 lb/hr

6.12 Cellulose grinder

6.12.1 Total feed rate to the cellulose grinder shall not exceed 200 tons per calendar day.

6.12.2 The cellulose grinder shall be installed and operated within a fully enclosed building maintained under negative pressure relative to ambient air at all times while the grinder is operating. All cellulose grinding operations shall occur within this building.

6.12.3 All emissions from the cellulose grinder building shall be vented to the dust collection system consisting of the cyclone and baghouse specified in Table 2. Bypassing or venting emissions around the dust collection system is prohibited.

6.12.4 The dust collection system shall be operated at all times when the cellulose grinder is in operation.

6.12.5 The baghouse shall be equipped with filter media achieving a minimum PM2.5 removal efficiency of 99.9 percent (99.9%).

6.12.6 Fully enclosed conveyors shall be used to transfer ground cellulosic material to the mix tanks.

6.12.7 Operation of the cellulose grinder shall not commence or continue if:

a. The dust collection system is not operating or is malfunctioning; or
b. Differential pressure readings for the baghouse or enclosed building, monitored in accordance with the monitoring requirements set forth in this Order, are outside the acceptable operating ranges specified in the manufacturer specifications and O&M plan.

6.12.8 The acceptable operating pressure drop ranges for the baghouse and enclosed building shall be clearly posted near each differential pressure gauge in a location easily visible and accessible to any person reading the gauge and operating the baghouse.

6.13 Emergency generator set

6.13.1 The emergency generator set shall be fueled only with ultra-low sulfur diesel (ULSD) with a maximum sulfur content of 15 parts per million (ppm) or 0.0015% sulfur by weight or less.

6.13.2 The diesel engine shall be EPA Tier 2 certified and have a manufacturer's emission certificate demonstrating that emissions are equal to or less than the performance-based limits specified in this Order.

6.13.3 Operation of the emergency generator set is limited as follows, in any 12-month period:

a. Annual maintenance and testing shall not exceed 50 hours.
b. Operation during emergency periods, including maintenance and testing, shall not exceed 80 hours total.

6.13.4 During emergency operation, the generator set shall not operate more than 30 minutes in any 24-hour period.

6.13.5 Total diesel consumption for the emergency generator set shall not exceed 11,920 gallons in any 12-month period.

6.13.6 The emergency generator set shall comply with the applicable requirements of 40 CFR Part 60 Subpart IIII and 40 CFR Part 63 Subpart ZZZZ at all times, including, but not limited to 40 CFR 60.4211(f) to be considered an emergency stationary ICE.

6.13.7 Emissions from the emergency generator set shall not exceed the following performance-based limits:

Pollutant	**Emission limit (g/kWh)**
Nitrogen Oxides (NOX)	9.1
Carbon Monoxide (CO)	8.3
Particulate Matter (PM)	0.53

6.14 Processed digestate storage

6.14.1 The Permittee shall store the processed digestate in an area not to exceed 12,917 ft2 within the covered storage building, which shall be clearly delimited.

6.14.2 All processed digestate shall be stored within the covered storage building identified in the NoC application. Piles of digestate shall be maintained and managed to minimize fugitive dust and odors, including:

a. Covering piles during high wind events or when odors are detected beyond the property boundary;
b. Maintaining pile height and spacing in accordance with the O&M plan to minimize wind entrainment and odor generating; and
c. Implementing appropriate handling practices to avoid unnecessary disturbance of the material.

6.15 Roadways

6.15.1 The Permittee shall apply water or dust-suppressant material to all unpaved roads and unpaved areas associated with this Project at a frequency sufficient to prevent visible dust emissions caused by vehicle traffic or wind action.

6.15.2 Vehicle speeds on unpaved roads and unpaved areas shall not exceed five (5) miles per hour (mph) unless the road surface has been treated with water or dust-suppressant material such that no visible dust emissions are generated by moving vehicles.

6.15.3 Use of unpaved roads by trucks for hauling or other routine operational activities shall be prohibited, except for infrequent maintenance or emergency access.

6.15.4 All paved roads within the Project boundary shall be swept at a frequency sufficient to prevent visible dust from vehicle traffic.

6.15.5 Any modification or addition to the paved or unpaved road network identified in the NoC application and shown in Figure 4 shall be evaluated for potential changes in particulate matter emissions and air dispersion modeling results prior to construction or use.

7. MONITORING REQUIREMENTS

7.1 Enclosed flares

7.1.1 Each enclosed flare shall be equipped with, and continuously operate, while the flare is operating, the following monitoring devices:

a. A temperature monitoring device capable of continuously measuring and recording

the combustion chamber temperature with a minimum accuracy of ±15 °F. Data shall be recorded at intervals not greater than ten (10) minutes;

b. A non-resettable gas flow meter capable of continuously measuring and recording the volumetric flow rate of biogas combusted, with a minimum accuracy of ±5 percent; and

c. A non-resettable hour meter to record total hours of flare operation.

7.1.2 Each enclosed flare shall be equipped with a continuous flame-presence detection system and an alarm capable of alerting operators if combustion at any enclosed flare ceases and does not automatically re-light within five (5) minutes. If operators are not on-site, the alarm system shall automatically notify an off-site operator or responsible person. Activation of this alarm constitutes an excess emissions event and shall be reported to YRCAA in accordance with the requirements in this Order.

7.1.3 All monitoring devices required for the enclosed flares shall be manufacturer-certified for operation within the expected operating ranges identified in the manufacturer specifications and the O&M plan, and shall be calibrated at least once every twelve (12) months, or more frequently if specified by the manufacturer.

7.2 Biogas upgrading system

7.2.1 The biogas upgrading system shall be equipped with a gas flow meter capable of continuously measuring and recording the volumetric flow rate of biogas entering the system while in operation. Data shall be recorded at intervals not greater than ten (10) minutes. The monitoring device shall:

a. Have a minimum accuracy of ±5 percent (5%) for flow rate;

b. Be manufacturer-certified for operation within the expected operating range; and

c. Be calibrated at least once every twelve (12) months, or more frequently if specified by the manufacturer.

7.3 Boilers

7.3.1 Each boiler shall be equipped with a non-resettable natural gas flow meter capable of continuously measuring and recording the volumetric flow rate of fuel while the boiler is operating. Each flow meter shall:

a. Have a minimum accuracy of ±5 percent (5%) for flow rate;

b. Be manufacturer-certified for operation within the expected operating range; and

c. Be calibrated at least once every twelve (12) months, or more frequently if specified by the manufacturer.

7.4 Cellulose grinder

7.4.1 The cellulose grinder shall be equipped with a device capable of measuring and recording the daily quantity of material processed. The device shall have a minimum accuracy of ±5 percent (5%) of reading.

7.4.2 The enclosed building and baghouse shall be equipped with differential pressure gauges capable of continuously measuring the pressure difference between the building interior and ambient air, and the pressure drop across the baghouse filter media, respectively.

7.4.3 The differential pressure gauges for the enclosed building and baghouse shall be properly installed, maintained, clearly visible, and operational whenever the cellulose grinder is in use. The gauges shall be manufacturer-certified for operation within the expected operating ranges identified in the O&M plan and shall be calibrated at least once every twelve (12) months, or more frequently if specified by the manufacturer.

7.4.4 The Permittee shall monitor the differential pressure gauges for the enclosed building and baghouse at least once per calendar day, while the grinder is in operation, to verify the pressure is not outside of the acceptable operating ranges specified in the manufacturer specifications and O&M plan.

7.5 Emergency generator set

7.5.1 The emergency generator set shall be equipped with a non-resettable hour meter, easily accessible and be operational at all times when the engine is in use. The hour meter shall be capable of recording fractions of hours to at least 0.1 hours.

7.6 Processed digestate storage

7.6.1 The Permittee shall conduct visual inspections of all processed digestate piles at least once per calendar day, whenever piles are present in the designated storage area, to verify that:

a. Piles remain within designated storage area;
b. Piles are covered as required; and
c. No dust or odors are migrating beyond the property boundary.

7.7 Roadways

7.7.1 The Permittee shall conduct visual inspection of all paved and unpaved roads associated with the Project at least once per calendar day, while the Facility is in operation, to verify that:

a. Dust suppression measures are in place and effective;
b. Vehicle speeds comply with the limits specified in this Order;
c. No visible dust emissions are observed beyond the property boundary.

7.8 H_2S monitoring

7.8.1 The Permittee shall monitor H_2S concentrations in the biogas at the following locations:

a. Between the diverter valve from the digester and the enclosed flare inlet, at a location representative of the biogas entering the enclosed flare; and
b. At the outlet of the GAC beds exhaust stack in the biogas upgrading system.

7.8.2 The Permittee shall monitor H_2S concentrations using standard methods and devices capable of verifying compliance with the applicable H_2S concentration limits established in this Order. Monitoring devices shall be suitable for the expected concentration ranges, detection limits, and operating conditions at the monitoring locations. Acceptable monitoring devices include, but are not limited to, one or more of the following:

a. Continuous emission monitoring systems (CEMS);
b. Portable handheld H_2S analyzers;
c. Colorimetric gas detection tubes; or
d. Other YRCAA-approved equivalent devices.

7.8.3 All H_2S monitoring devices shall be calibrated, operated, and maintained in accordance with manufacturer specifications.

7.8.4 If non-continuous (manual) sampling is used, the Permittee shall specify monitoring method(s), device specifications, measurement range, detection limits, calibration procedures, result interpretation, and monitoring frequency in the O&M plan.

7.8.5 The Permittee shall monitor H_2S concentrations at the locations specified in this Order at least once per calendar day, or more frequently as specified in the O&M plan, when biogas is present at the applicable monitoring location, beginning at facility startup and continuing for the duration of facility operation, including periods of startup, normal operation, and shutdown.

7.8.6 Compliance with the H_2S concentration limit established in this Order shall be determined based on the 30-day rolling average of valid daily H_2S monitoring results at each required monitoring location.

7.8.7 If three consecutive individual daily H_2S monitoring result exceeds the H_2S concentration limit established by this Order at any required monitoring location, the Permittee shall notify YRCAA in writing within seven (7) business days, including a brief explanation of the cause and any corrective actions taken or planned.

7.8.8 During periods of facility shutdown, the Permittee shall continue daily H_2S monitoring at the locations specified in this Order until biogas production has ceased and measured H_2S concentrations remain below the detection limit of the monitoring device for a minimum of five (5) consecutive monitoring days, with no increasing trend observed.

7.9 Opacity

7.9.1 The Permittee shall conduct opacity evaluations of the emergency generator set in accordance with Method 9 at least twice per calendar year. One evaluation shall be conducted no later than ten (10) days following completion of annual maintenance service. The second evaluation shall be conducted no less than 165 days and no more than 195 days after the first evaluation.

7.9.2 If opacity observations of the emergency generator set conducted during an agency inspection, complaint investigation, or Method 9 evaluations indicate two (2) consecutive Method 9 readings greater than or equal to fifteen percent (15%) opacity, YRCAA may require the Permittee to conduct additional Method 9 evaluations or source testing, as necessary, to determine compliance with the opacity limits in this Order.

8. SOURCE TESTING REQUIREMENTS

8.1 Following startup

8.1.1 Within ninety (90) days of achieving normal operation following facility startup, the Permittee shall conduct a source test using 40 CFR Part 60, Appendix A, Method 15 or an equivalent method approved by YRCAA.

8.1.2 This source test shall be conducted at the following locations to demonstrate compliance with the applicable H_2S emission limits:

Source	Emission limit
GAC bed exhaust stack	9 ppmv
Each enclose flare exhaust	1.61E-1 lb/hr

8.2 Boilers

8.2.1 Within ninety (90) days of issuance of this Order or start of operation, whichever occurs later, and at least once every five (5) calendar years thereafter, the Permittee shall conduct a source test at each boiler stack during representative normal operating conditions to demonstrate compliance with the emission limits in this Order.

8.2.2 The source test shall measure the following pollutants using the specified methods in 40 CFR Part 60, Appendix A, or equivalent YRCAA-approved methods:

Pollutant	Method
Nitrogen oxides (NOX)	Method 7E
Carbon monoxide (CO)	Method 10
Oxygen (O2)	Method 3 or 3A
Fine particulate matter (PM2.5)	Method 5 with method 202 or 201A (front and back half).

8.2.3 If any boiler source test indicates emissions in excess of the limits established in this Order, the Permittee shall implement corrective actions in accordance with the O&M plan as soon as practical but not later than seven (7) calendar days after the exceedance is identified. A follow-up source test shall be conducted within thirty (30) days after completion of corrective actions to verify compliance.

8.3 Cellulose grinder

8.3.1 Within ninety (90) days of issuance of this Order or start of operation, whichever occurs later, and at least once every five (5) calendar years thereafter, a source test for PM2.5 shall be conducted at the baghouse stack during representative normal operations. The

source test shall be performed using 40 CFR Part 60, Appendix A, Method 5 with Method 202 or 201A including the front and back half to demonstrate compliance with the BACT efficiency requirement for the filters. The source test protocol shall be submitted to YRCAA for approval at least 30 days prior to the source test date. Results of the source test must be submitted to the YRCAA within 45 days after the source test date.

8.3.2 If any baghouse source test indicates that air emissions fail to demonstrate compliance with the required PM2.5 control efficiency, corrective actions shall be taken in accordance with the O&M plan as soon as practical but not later than seven (7) calendar days after the exceedance is identified. A follow-up source test shall be conducted within thirty (30) days after completing corrective actions to confirm compliance with the emission limits.

8.4 Emergency generator set

8.4.1 Within ninety (90) days of issuance of this Order or start of operation, whichever occurs later, and at least once every five (5) calendar years thereafter, a source test for PM2.5 shall be conducted at the emergency generator stack during representative normal operations. The source test shall be performed using 40 CFR Part 60, Appendix A, Method 5 with Method 202 or 201A (front and back half). The source test protocol shall be submitted to YRCAA for approval at least 30 days prior to the source test date. Results of the source test must be submitted to the YRCAA within 45 days after the source test date.

8.4.2 If any emergency generator set source test indicates emissions in excess of the limits established in this Order, corrective actions shall be taken in accordance with the O&M plan as soon as practical but not later than seven (7) calendar days after the exceedance is identified. A follow-up source test shall be conducted within thirty (30) days after completing corrective actions to confirm compliance with the emission limits.

9. RECORDKEEPING AND REPORTING REQUIREMENTS

9.1 The Permittee shall maintain copies of the following documents on site at all times: this Order of Approval, the most current O&M plan, and the manufacturer's operation and maintenance manuals for all permitted emission units and associated air pollution control device(s). These documents shall be readily available, organized and accessible for review by YRCAA authorized staff during inspections or upon request, pursuant to RCW 70A.15.2500 and YRCAA Regulation 1.

9.2 The Permittee shall make this Order accessible to all employees conducting work that is, or may be, subject to the requirements of this Order.

9.3 The Permittee shall maintain all records required by this Order for a minimum of five (5) years from the date of generation. Records shall be properly stored to prevent loss, damage, or destruction, and readily available, organized, and accessible for review by YRCAA authorized staff during inspections or upon request.

9.4 Recordkeeping forms shall be designed by the Permittee and include, at a minimum, the date, time, and full printed name of the person performing the activity or observation. Forms shall capture all applicable information required by this Order and may be maintained in electronic

or hard copy format. If data are logged by an automated or computerized data acquisition system, the printed name may be omitted.

9.5 Unless otherwise specified, records required by this Order shall be maintained on site. At a minimum, the Permittee shall maintain the following records:

9.5.1 Enclosed flares
- a. Hours of operation, totalized per event, per month, and per rolling year, including the reason for flaring.
- b. Biogas flow flared, totalized per month and per rolling year.
- c. H_2S concentration.
- d. Combustion temperature.
- e. Alarm activation events, including date, time, duration (from activation to corrective action taken), cause, and operator response.

9.5.2 Biogas upgrading system
- a. Biogas flow processed.
- b. H_2S concentration.
- c. GAC bed media replacement, including media type and removal efficiency.

9.5.3 Boilers
- a. Natural gas flow combusted, totalized per month and per rolling year.

9.5.4 Cellulose grinder
- a. Material processed, totalized per day.
- b. Pressure drop readings for the enclosed building and baghouse.
- c. Baghouse filter replacements, including make, model, and efficiency specifications.

9.5.5 Emergency generator set
- a. Hours of operation, totalized per event and per rolling year, including event type (maintenance/testing or emergency operation).
- b. Diesel consumption, totalized per month and per rolling year.

9.5.6 Processed digestate storage
- a. Visual inspections of digestate storage piles, including pile condition, observed weather or operational conditions that could affect emissions, and any corrective actions taken to minimize fugitive emissions or odors.

9.5.7 Roadways
- a. Visual inspections of paved and unpaved roads, documenting road location and condition, observed dust emissions, if any, and corrective actions taken.

9.5.8 O&M activities performed, including inspections, maintenance, repairs, replacements, corrective actions in response to exceedances or deviations, and implementation of any plan or program required.

9.5.9 Downtime hours of the biogas upgrading system and the pipeline injection system.

9.5.10 Emergency venting events, including date, time, duration and cause.

9.5.11 Calibration, QA/QC, and gas check records for all H_2S analyzers and instruments.

9.5.12 Operator training and certification records.

9.5.13 Copies of all notifications and reports submitted to YRCAA pursuant to this Order, including Method 9 evaluations, source tests, excess emissions, malfunctions, or deviations.

9.5.14 Copies of written approvals or correspondence from YRCAA related to this Order.

9.6 The Permittee shall comply with all applicable notification and reporting requirements of 40 CFR 60.48c(a) and 40 CFR 60.7, including notification of:

9.6.1 Date of construction and heat input capacity of affected units;

9.6.2 Actual date of initial startup, and

9.6.3 Any physical or operational changes which may increase emissions, unless exempted by 40 CFR 60 Subpart Dc or 40 CFR 60.14(e)

9.7 The Permittee shall submit the source test protocols for any source test required by this Order to YRCAA for approval at least thirty (30) days prior to testing. Source test results shall be submitted to YRCAA within forty-five (45) days after completion of testing.

9.8 The Permittee shall submit H_2S monitoring results from the enclosed flare inlets and GAC bed outlet to YRCAA on a monthly basis for the first six (6) months following facility startup. Submittals shall be done no later than thirty (30) days after the end of each calendar month. After the six-month period, submittal frequency may be reduced to annual, concurrent with the annual emissions inventory (registration).

9.9 For any emission unit or associated air pollution control device(s) specified in this Order with "unknown" serial number, the Permittee shall provide the manufacturer's serial number to YRCAA within thirty (30) days of issuance of this Order or start of the operation, whichever is later. If unavailable, a company-assigned unique identifier shall be permanently affixed to the unit and reported to YRCAA within thirty (30) days. A copy of this correspondence shall be retained on site with this Order.

9.10 The Facility shall submit its annual registration report to YRCAA on or before the date specified in the sent-out annual registration forms. This report shall include operational data for the previous calendar year, including estimated air emissions, total hours of operation, total material processed, total biogas combusted in the enclosed flares, total diesel and natural gas usage, and any other data requested in the forms. All required annual registration fees must be submitted with the report.

9.11 Tables 4 through 13 in Appendix A shall be used to estimate annual actual air emissions from the Facility using parameters monitored during normal operation, including but not limited to, flow rates, operating hours, fuel usage, and pollutant concentrations, as applicable.

9.12 The Permittee shall notify YRCAA of any excess emissions, including but not limited to opacity exceedances or activation of the flare alarm system, in accordance with WAC 173-400-108 or WAC 173-400-109, as applicable.

9.13 The Permittee shall report any deviation from the conditions of this Order to YRCAA as soon as possible, but no later than thirty (30) days after discovery.

9.14 All air quality-related complaints received by the Permittee shall be reported to YRCAA within three (3) calendar days of receipt. Complaint records shall include, at minimum, the date and time received, a brief description of the complaint, complainant's name and contact information (if available), corrective action taken, and the date and time the corrective action was taken.

9.15 Results of any Method 9 opacity evaluation required by this Order, or deemed necessary by YRCAA, shall be submitted to YRCAA as a written report no later than thirty (30) days after completion of the evaluation.

9.16 Any application form, report, or compliance certification submitted to YRCAA pursuant to this Order must be signed by a responsible official.

10. **GENERAL CONDITIONS**

10.1 The construction of this Project shall be conducted consistent with the Notice of Construction application, and all plans, data, specifications, and other information provided in reference thereto as submitted to the Agency except as otherwise specified herein.

10.2 The construction and operation of this Project shall comply with all applicable federal, state, and local laws and regulations including, but not limited to, the Federal Clean Air Act (42 USC Chapter 85), Washington Clean Air Act (Chapter 70A.15 RCW), General Regulations for Air Pollution Sources (Chapter 173 400 WAC), Controls for New Sources of Toxic Air Pollutants (Chapter 173-460 WAC), and Yakima Regional Clean Air Agency Regulation 1, all as may be amended.

10.3 This Order does not grant permission to operate the Facility in the absence of any other permit required by law.

10.4 All emission units and associated air pollution control device(s) required, authorized, or described herein this Order shall be installed, operated and maintained in accordance with manufacturer specifications, the O&M plan, conditions of this Order, and industry standards. The Permittee shall operate the equipment in a manner that minimizes the release of air contaminants from the Project to the greatest extent reasonable possible.

10.5 All emission-generating activities required, authorized, or described herein this Order shall be performed in accordance with the O&M plan, conditions of this Order, and industry standards in a manner that minimizes the release of air contaminants from the Project to the greatest extent reasonable possible.

10.6 In addition to the periodic source testing required under this Order, if any, YRCAA may require additional source test for any emission unit or air pollution control device(s) listed in Table 2, pursuant to WAC 173-400-105(4), to demonstrate compliance with applicable limits. YRCAA will notify the Permittee of the requirement and applicable test method in writing.

10.7 All plans, specifications, and other information submitted to, and any further authorizations, approvals, or denials issued by, the Agency in relation to this Project shall be incorporated herein by reference and made a part hereof as if fully set forth in this Order.

10.8 Prior to any new or additional construction, modification, alteration, expansion, equipment installation, operating revision, or change in the limits set forth in this Order affecting the air emissions of the Facility, except as may be included in the Notice of Construction and covered by this Order, the Permittee shall submit a NoC application wherein all BACT and t-BACT

requirements are satisfied pursuant to RCW 70A.15.2210, WAC 173-400-110 and WAC 173-460-040

10.9 The O&M plan shall be reviewed by the Facility at least annually and updated as needed to reflect any modification to the operating procedures, equipment or monitoring methods. These subsequent revisions must be submitted to YRCAA within thirty (30) days of completion.

10.10 All air emissions from this Facility shall be in compliance with air emission standards at all times. It is the responsibility of the owner to make sure that air emissions are within all known rules and regulations.

10.11 The Permittee shall prevent Air Contaminants and other fugitive emissions from migrating outside the Exterior Property Boundary of the Facility in sufficient quantity and/or duration as to be detrimental to the health, safety, or welfare of any person, cause injury to property, animals, or plants, or unreasonably interfere with the use and enjoyment of the property so affected

10.12 The Permittee shall comply with all other standards for maximum air emissions including, but not limited to, those specified in WAC 173-400-040 and 173-400-075.

10.13 The Permittee shall allow Agency staff to enter the Facility, at reasonable times, without notice, for the purpose of investigating conditions specific to the control, recovery, or release of air contaminants into the atmosphere and shall not obstruct, hamper, or interfere with any such inspection in accordance with RCW 70A.15.2500 and YRCAA Regulation 1 Section 2.01.

10.14 Nothing in this Order shall prevent or relieve compliance with the requirements of any applicable law or regulation including those set forth in the FCAA and WCAA.

10.15 Any violation(s) of the requirements in this Order are subject to enforcement and penalty action in accordance with RCW 70A.15.3150 and 3160, WAC 173-400-230 and YRCAA Regulation 1, Article 5.

10.16 This Order may be modified, suspended, or revoked in whole, or in part, for cause including, but not limited to, the following:

10.16.1 Violating any of the conditions or requirements of this Order;

10.16.2 Providing any data, log, result, or other information, or making any statement, certification, or other representation, to the Agency pertaining to the project or Facility that is materially false; or

10.16.3 Altering any monitoring method, tampering with any monitoring equipment or sample, or interfering with any person responsible for monitoring, collecting, or analyzing emissions from the Facility so as to render the results of such monitoring, collection, or analysis inaccurate, incomplete, or unusable.

10.17 The provisions of this authorization are severable and, if any provision or application of any provision of this authorization to any circumstance is held invalid, the application of such provision to their circumstances, and the remainder of this authorization, shall not be affected thereby.

10.18 Deviations from these conditions are violations subject to penalties pursuant to RCW 70A.15.3150 and 3160, WAC 173-400-230 and YRCAA Regulation 1, Article 5.

10.19 The requirements of this Order apply to the Facility owner and/or operator(s) and any contractor or subcontractor performing any activity authorized under this Order. Any person(s), including contractor(s) and/or subcontractor(s), not in compliance with the applicable requirements in this Order are in violation of state and local laws and subject to appropriate civil and criminal penalties. The Facility owner and/or operator, and all contractor(s) or subcontractor(s) are liable for the actions and violations of their employee(s). Any violation committed by a contractor or subcontractor shall be considered a violation by the Facility owner and/or operator, and is also a violation by the contractor and/or any subcontractor(s).

10.20 It is the Permittee's responsibility to stay current, and comply, with all applicable laws, rules and regulations governing their business.

10.21 This Order and the requirements contained therein shall remain in effect in the event of any change in the control or ownership of the Facility. The Permittee shall provide a full and complete copy of this Order to any succeeding owner or controlling party of the Facility and submit a "Change of Ownership" (or subsequently adopted) form obtained from the Agency to the same within thirty (30) calendar days of any such change.

10.22 This Order is invalid without paying the complete appropriate and required fees to YRCAA, pursuant to RCW 70A.15.2210.

11. APPEALS

Any person with standing may appeal this Order to the PCHB. The appeal process and applicable requirements are governed by Chapter 43.21B RCW {app.leg.wa.gov/rcw/default.aspx?cite=43.21B} and Chapter 371-08 WAC {app.leg.wa.gov/wac/default.aspx?cite=371-08}.

11.1 Requirements

Any person appealing this Order must file a notice of appeal with the PCHB and serve the Agency with a paper copy of the appeal via delivery in person, postal mail, or common carrier within thirty (30) days of the date of receipt as set forth in RCW 43.21B.001(2) {app.leg.wa.gov/rcw/default.aspx?cite=43.21B.001}.

11.2 Instructions

Instructions regarding filing an appeal are available on the PCHB web site at eluho.wa.gov/boards/pollution-control-hearings-board/file-appeal (URL); by mail at PO Box 40903; Olympia, WA 98504-0903; or by calling 360-664-9160 (relay service for the hearing impaired is available by calling 711).

11.3 Additional Information

Additional information is available at the following URLs:

a. PCHB: eluho.wa.gov/boards/pollution-control-hearings-board.
b. PCHB Resources and Glossary: eluho.wa.gov/boards/pollution-control-hearings-board/resources-and-glossary.

Yakima Regional Clean Air Agency

c. Administrative Procedures Act (Chapter 34.05 RCW): app.leg.wa.gov/rcw/default.aspx?cite=34.05.

DATED this __ day of _____, 2026.

PREPARED BY:

_____
Elizel Reynoso
Permitting and Planning Division Supervisor
Yakima Regional Clean Air Agency

APPROVED BY:

_____
Marc Thornsbury
Air Pollution Control Officer
Yakima Regional Clean Air Agency

REVIEWED BY:

_____
P.E.

DRAFT

Summary of Project Emissions

Table 1. Summary of project emissions.

Pollutant	Units	Boilers	Upgrader & Thiopaq Scrubber	Emergency Generator	Flares	Grinder Baghouse	Roadway Fugitives	Digestate	Totals
NO_x	lb/hr	0.51	--	21.9	16.1	--	--	--	38.45
	tpy	2.2	--	1.7	3.52	--	--	--	7.49
CO	lb/hr	1.81	--	5.0	73	--	--	--	80.09
	tpy	7.9	--	0.40	16.1	--	--	--	24.4
PM_{10}	lb/hr	0.36	--	0.70	1.76	0.10	0.51	--	3.43
	tpy	1.6	--	0.056	0.386	0.44	1.77	--	4.24
$PM_{2.5}$	lb/hr	0.36	--	0.70	1.76	0.10	0.09	--	3.02
	tpy	1.6	--	0.056	0.386	0.44	0.32	--	2.78
SO_2	lb/hr	0.028	--	0.018	60	--	--	--	60.46
	tpy	0.125	--	0.0014	13.2	--	--	--	13.36
VOC	lb/hr	0.17	--	0.38	0.28	--	--	--	0.84
	tpy	0.76	--	0.031	0.062	--	--	--	0.85
CO_2e	tpy	24,748	81,780	136	9,236	--	--	--	115,900
HAPs	tpy	0.02	--	0.02	4.16E-03	--	--	--	0.04

Table 2. Toxic air pollutant emissions summary.

Pollutant	CAS	Averaging Period	Emissions (lb/ave. period)						De Minimis	< De Minimis	SQER	> SQER
			Boilers	Upgrader & Thiopaq Scrubber	Emergency Generator	Flares	Digestate	Total	lb/period		lb/period	
Nitrogen Dioxide	10102-44-0	1-hr	0.51	--	21.87	16.08	--	38	0.46	No	0.87	Yes
Carbon Monoxide	630-08-0	1-hr	1.81	--	4.99	73.29	--	80	1.1	No	43	Yes
Sulfur Dioxide	7446-09-05	1-hr	0.03	--	0.02	60.41	--	60	0.46	No	1.2	Yes
Diesel Particulate Matter	DPM	year	--	--	50.94	--	--	51	0.027	No	0.54	Yes
1,1,2,2-Tetrachloroethane	79-34-5	year	--	--	--	--	--	--	0.14	Yes	2.8	No
1,1,2-Trichloroethane	79-00-5	year	--	--	--	--	--	--	0.51	Yes	10	No
1,1-Dichloroethane	75-34-3	year	--	--	--	--	--	--	5.1	Yes	100	No
1,2-Dichloroethane	107-06-2	year	--	--	--	--	--	--	0.31	Yes	6.2	No
1,2-Dichloropropane	78-87-5	year	--	--	--	--	--	--	0.81	Yes	16	No
1,3-Butadiene	106-99-0	year	--	--	2.59	--	--	2.6	0.27	No	5.4	No
1,3-Dichloropropene	542-75-6	year	--	--	--	--	--	--	2	Yes	41	No
Acetaldehyde	75-07-0	year	1.28	--	9.34	0.31	--	11	3	No	60	No
Acrolein	107-02-8	24-hr	3.07E-03	--	2.53E-03	0.02	--	0.02	0.0013	No	0.026	No
Ammonia	7664-41-7	24-hr	--	--	--	--	33.54	33.5	1.9	No	37	No
Arsenic	7440-38-2	year	--	--	0.02	--	--	0.019	0.0025	No	0.049	No
Benzene	71-43-2	year	2.40	--	2.22	0.59	--	5	1	No	21	No
Benzo(b)flouranthene	205-99-2	year	--	--	--	--	--	--	0.045	Yes	0.89	No
Cadmium	7440-43-9	year	--	--	0.02	--	--	0.018	0.0019	No	0.039	No
Carbon Tetrachloride	56-23-5	year	--	--	--	--	--	--	1.4	Yes	27	No
Chlorobenzene	108-90-7	24-hr	--	--	1.49E-05	--	--	1.5E-05	3.7	Yes	74	No
Chloroethane	75-00-3	24-hr	--	--	--	--	--	--	110	Yes	2200	No
Chloroform	67-66-3	year	--	--	--	--	--	--	0.35	Yes	7.1	No
Chromium VI	18540-29-9	year	--	--	1.19E-03	--	--	1.2E-03	0.000033	No	0.00065	Yes
Chrysene	218-01-9	year	--	--	--	--	--	--	0.45	Yes	8.9	No
Copper	7440-50-8	1-hr	--	--	3.05E-04	--	--	3.1E-04	0.0093	Yes	0.19	No
Ethylbenzene	100-41-4	year	2.86	--	0.13	0.70	--	3.7	3.2	No	65	No
Ethylene Dibromide	106-93-4	year	--	--	--	--	--	--	0.014	Yes	0.27	No
Formaldehyde	50-00-0	year	5.10	--	20.58	1.25	--	27	1.4	No	27	No
Hexane	110-54-3	24-hr	0.01	--	2.00E-03	0.03	--	0.03	2.6	Yes	52	No
Hydrogen Chloride	7647-01-0	24-hr	--	--	0.01	--	--	0.014	0.033	Yes	0.67	No
Hydrogen Sulfide	7783-06-4	24-hr	--	3.10	--	15.42	--	18.52	0.0074	No	0.15	Yes
Lead	7439-92-1	year	--	--	0.10	--	--	0.10	10	Yes	14	No
Manganese	7439-96-5	24-hr	--	--	2.31E-04	--	--	2.3E-04	0.0011	Yes	0.022	No
Mercury	7439-97-6	24-hr	--	--	1.49E-04	--	--	1.5E-04	0.00011	No	0.0022	No
Methanol	67-56-1	24-hr	--	--	--	--	--	--	74	Yes	1500	No
Methylene Chloride	75-09-2	year	--	--	--	--	--	--	490	Yes	9800	No
Naphthalene	91-20-3	year	0.12	--	0.23	0.03	--	0.4	0.24	No	4.8	No
Nickel	7440-02-0	year	--	--	0.05	--	--	0.046	0.031	No	0.62	No
Phenol	108-95-2	24-hr	--	--	--	--	--	--	0.74	Yes	15	No
Propylene	115-07-1	24-hr	0.60	--	0.03	2.95	--	3.6	11	Yes	220	No
Selenium	7782-49-2	24-hr	--	--	1.64E-04	--	--	1.6E-04	0.074	Yes	1.5	No
Styrene	100-42-5	24-hr	--	--	--	--	--	--	3.2	Yes	65	No
Toluene	108-88-3	24-hr	0.03	--	0.01	0.15	--	0.19	19	Yes	370	No
Vinyl Chloride	75-01-4	year	--	--	--	--	--	--	0.92	Yes	18	No
Xylene	1330-20-7	24-hr	0.02	--	3.16E-03	0.11	--	0.135	0.82	Yes	16	No

Table 3. Hazardous air pollutant emissions summary.

Pollutant	CAS	Emissions (tpy)					
		Boilers	Upgrader & Thiopaq Scrubber	Emergency Generator	Flares	Digestate	Total
1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	--	--	--
1,1,2-Trichloroethane	79-00-5	--	--	--	--	--	--
1,1-Dichloroethane	75-34-3	--	--	--	--	--	--
1,2-Dichloroethane	107-06-2	--	--	--	--	--	--
1,2-Dichloropropane	78-87-5	--	--	--	--	--	--
1,3-Butadiene	106-99-0	--	--	1.30E-03	--	--	1.30E-03
1,3-Dichloropropene	542-75-6	--	--	--	--	--	--
Acetaldehyde	75-07-0	6.42E-04	--	4.67E-03	1.57E-04	--	0.01
Acrolein	107-02-8	5.59E-04	--	2.02E-04	1.37E-04	--	8.99E-04
Arsenic	7440-38-2	--	--	9.54E-06	--	--	9.54E-06
Benz(a)anthracene	56-55-3	--	--	--	--	--	--
Benzene	71-43-2	1.20E-03	--	1.11E-03	2.94E-04	--	2.61E-03
Benzo(a)pyrene	50-32-8	--	--	--	--	--	--
Benzo(b)flouranthene	205-99-2	--	--	--	--	--	--
Benzo(k)fluoranthene	207-08-9	--	--	--	--	--	--
Cadmium	7440-43-9	--	--	8.94E-06	--	--	8.94E-06
Carbon Tetrachloride	56-23-5	--	--	--	--	--	--
Chlorobenzene	108-90-7	--	--	1.19E-06	--	--	1.19E-06
Chloroethane	75-00-3	--	--	--	--	--	--
Chloroform	67-66-3	--	--	--	--	--	--
Chromium VI	18540-29-9	--	--	5.96E-07	--	--	5.96E-07
Dibenz(a,h)anthracene	53-70-3	--	--	--	--	--	--
Ethylbenzene	100-41-4	1.43E-03	--	6.50E-05	3.50E-04	--	1.84E-03
Ethylene Dibromide	106-93-4	--	--	--	--	--	--
Formaldehyde	50-00-0	2.55E-03	--	0.01	6.24E-04	--	0.01
Hexane	110-54-3	9.53E-04	--	1.60E-04	2.34E-04	--	1.35E-03
Hydrogen Chloride	7647-01-0	--	--	1.11E-03	--	--	1.11E-03
Indeno(1,2,3-c,d)pyrene	193-39-5	--	--	--	--	--	--
Lead	7439-92-1	--	--	4.95E-05	--	--	4.95E-05
Manganese	7439-96-5	--	--	1.85E-05	--	--	1.85E-05
Mercury	7439-97-6	--	--	1.19E-05	--	--	1.19E-05
Methanol	67-56-1	--	--	--	--	--	--
Methylene Chloride	75-09-2	--	--	--	--	--	--
Naphthalene	91-20-3	6.22E-05	--	1.17E-04	1.52E-05	--	1.95E-04
Nickel	7440-02-0	--	--	2.32E-05	--	--	2.32E-05
Phenol	108-95-2	--	--	--	--	--	--
Selenium	7782-49-2	--	--	1.31E-05	--	--	1.31E-05
Styrene	100-42-5	--	--	--	--	--	--
Toluene	108-88-3	0.01	--	6.28E-04	1.35E-03	--	0.01
Vinyl Chloride	75-01-4	--	--	--	--	--	--
Xylene	1330-20-7	4.08E-03	--	2.53E-04	1.00E-03	--	0.01
	Total	0.02	--	0.02	4.16E-03	--	0.04

DRAFT

Enclosed Flares

Table A. Enclosed flares information.

Flare Information		
Number of Flares	4	flares
Annual Operating Hours (upgrader downtime) [1]	438	hrs/yr
Flare Destruction Efficiency	98%	
Exhaust Flow (per Flare) [2]	97,145	Nm³/hr
	57,177.27	scfm
Biogas Information		
Raw Biogas Heat Content	655	btu/scf
Raw Biogas H_2S Content	1,381	mg/m³
	991	ppmv
Raw Biogas Carbon Content	34.60	vol% CO_2
	65.00	vol% CH_4
Hourly Peak Biogas Generation (Total)	10,225	Nm³/hr
	6,015	scfm
Hourly Peak Biogas Generation (per Flare)	2,556	Nm³/hr
	1,504	scfm
Hourly Heat Input (Total)	236.4	MMBtu/hr
Hourly Heat Input (per Flare)	59.1	MMBtu/hr/flare

[1] Upgrder downtime assumed to be 5% of the year.

[2] Calculated based on the following equations:

Exhaust Flow (per Flare) = $V \times (T + 273°K) \div 273°K$

where:

Exhaust Temperature (T) = 1000 °C

Total Gas Volume per Flare (V) = [Peak Biogas Generation per Flare] + [11 m³ of Combustion Air per m³ of CH_4]

(V) = 20,833 Nm³/hr

Table B. Raw biogas higher heat value (HHV) calculation.

Compound	Biogas Comp. [1] (mol %)	MW (lb/lb-mol)	Heat of Combustion [2] (kJ/kg)	Higher Heat Value [3] (Btu/scf)	Composite HHV (Btu/scf)
CH4	65	16	55530	1007.86	655.11
N2	0.2	28	0	0	0
O2	0.1	32	0	0	0
H2S	0.0991	34	0	0	0
CO2	34.6009	28	0	0	0
				Total:	**655**

[1] Biogas composition from Manufacturer declaration TA-Luft NT Rev1.pdf

[2] Higher Heat Values at 25 °C from Thermodynamics an Engineering Approach (4th edition) by Y.A. Cengel and M.A. Boles, McGraw-Hill, New York, 2002, Table A-27.

[3] Heat Input calculated by converting Heat of Combustion (KJ/Kg) to (Btu/lb), then converting to (Btu/lb-mol) using compound-specific MW, then converting to (Btu/scf) using ideal gas law and standard conditions (379 ft^3/lb-mol).

Ideal Gas Law = 379 scf/lb-mol @ STP

Table 4. Criteria air pollutants and greenhouse gases emissions from flares.

Criteria Air Pollutant	Emission Factor [3]	Emissions per Flare		Total Emissions	
		Hourly Emissions [5]	Annual Emissions [5]	Hourly Emissions [5]	Annual Emissions [5]
	(lb/MMBtu)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NO_X [1]	0.0680	4.0	0.88	16.1	3.5
CO [1]	0.3100	18.3	4.0	73.3	16.1
SO_2 [2]	--	15.1	3.31	60.4	13.2
PM	0.0075	0.4	0.10	1.8	0.4
PM_{10}	0.0075	0.4	0.10	1.8	0.4
$PM_{2.5}$	0.0075	0.4	0.10	1.8	0.4
VOC [1]	0.0012	0.1	0.02	0.3	0.1
CO_2e [4]	117	10,544	2,309	42,174	9,236

[1] NOx, CO, and VOC emissions from AP-42 Section 13.5. VOC based on THC for enclosed ground flare (normal load).

[2] Biogas combustion SO_2 emissions based on sulfur content and 100% conversion to SO_2.

[3] Biogas combustion criteria pollutants based on natrual gas combustion from AP-42 Section 1.4, converted to lb/mmbtu using 1020 btu/scf.

[4] GHG Emission factors from 40 CFR Part 98, Tables C-1 and C-2. CO_2e is calculated using the methodology in 40 CFR 98.2(b)(4) and Table A-1: CO_2e = S(GHG x GWP), where GHG is the mass emissions of each greenhouse gas and GWP is the global warming potential. Also includes process CO2 passing through control system.

[5] Hourly Emissions calculated using emission factors (lb/MMBtu), 236.4 MMBtu/hr per flaring event; and annual emissions based on 438 hours of flaring per year.

DRAFT

Table 5. Toxic air pollutants from flares.

Toxic Air Pollutant	CAS	Emission Factor [1] (lb/MMBtu)	Emission Factor [1] (lb/MMscf)	Emissions per Flare			Total Emissions		
				Hourly Emissions [4] (lb/hr)	Daily Emissions [5] (lb/day)	Annual Emissions [6] (lb/yr)	Hourly Emissions [4] (lb/hr)	Daily Emissions [5] (lb/day)	Annual Emissions [6] (lb/yr)
NO_2 [2]	10102-44-0	0.068	--	4.02E+00	9.65E+01	1.76E+03	1.61E+01	3.86E+02	7.04E+03
SO_2 [2]	7446-09-05	--	--	1.51E+01	3.62E+02	6.61E+03	6.04E+01	1.45E+03	2.65E+04
CO [2]	630-08-0	0.310	--	1.83E+01	4.40E+02	8.03E+03	7.33E+01	1.76E+03	3.21E+04
Hydrogen Sulfide [3]	7783-06-4	--	--	1.61E-01	3.86E+00	7.04E+01	6.43E-01	1.54E+01	2.82E+02
Benzene	71-43-2	5.7E-06	5.80E-03	3.36E-04	8.07E-03	1.47E-01	1.34E-03	3.23E-02	5.89E-01
Formaldehyde	50-00-0	1.2E-05	1.23E-02	7.13E-04	1.71E-02	3.12E-01	2.85E-03	6.84E-02	1.25E+00
Naphthalene	91-20-3	2.9E-07	3.00E-04	1.74E-05	4.17E-04	7.61E-03	6.95E-05	1.67E-03	3.05E-02
Acetaldehyde	75-07-0	3.0E-06	3.10E-03	1.80E-04	4.31E-03	7.87E-02	7.19E-04	1.72E-02	3.15E-01
Acrolein	107-02-8	2.6E-06	2.70E-03	1.56E-04	3.76E-03	6.85E-02	6.26E-04	1.50E-02	2.74E-01
Propylene	115-07-1	5.2E-04	5.30E-01	3.07E-02	7.37E-01	1.35E+01	1.23E-01	2.95E+00	5.38E+01
Toluene	108-88-3	2.6E-05	2.65E-02	1.54E-03	3.69E-02	6.73E-01	6.14E-03	1.47E-01	2.69E+00
Xylenes	1330-20-7	1.9E-05	1.97E-02	1.14E-03	2.74E-02	5.00E-01	4.57E-03	1.10E-01	2.00E+00
Ethylbenzene	100-41-4	6.8E-06	6.90E-03	4.00E-04	9.60E-03	1.75E-01	1.60E-03	3.84E-02	7.01E-01
Hexane	110-54-3	4.5E-06	4.60E-03	2.67E-04	6.40E-03	1.17E-01	1.07E-03	2.56E-02	4.67E-01

[1] Emission factors for toxic air pollutants from AB2588 Combustion Emission Factors for external natural gas combustion, 10-100 MMBtu/hr (converted to lb/mmbtu using 1020 btu/scf) obtained from Ventura County Air Pollution Control District. Petroleum refinery flare VOC/HAP emission factors are not representative of combustion biogas.

[2] NOx, SO2, and CO emission factors from criteria pollutant calculations.

[3] H_2S emissions based on 98% destruction of H2S in biogas.

[4] Hourly Emissions calculated using emission factors (lb/MMBtu) and 236.4 MMBtu/hr.

[5] Daily Emissions calculated using hourly emissions and 24 hours of operation per day.

[6] Annual Emissions calculated using hourly emissions and 438 hours of flaring per year.

Biogas Upgrader and THIOPAQ Bioscrubber

Table C. Biogas upgrader and THIOPAQ bioscrubber specifications.

Process Flow	2662	scfm
Incoming Tail Gas	99.6	vol% CO2
Incoming Tail Gas	0.1	vol%CH4
Inlet Tail Gas H_2S [1]	1381	mg/m³
Venting of H_2S	100	mg/m³
H_2S Emissions from GAC Bed	9.0	ppm
Annual Operating Hours	8,760	hrs/yr

[1] Equal to 991parts per million by volume.

Table 6. Toxic air pollutants from biogas upgrader system.

Toxic Air Pollutant	CAS	Hourly Emissions [1] (lb/hr)	Daily Emissions [2] (lb/day)	Annual Emissions [2] (lb/yr)	Annual Emissions [2] (Tons/yr)
Hydrogen Sulfide	7783-06-4	0.1291	3.10	1131.34	0.566

[1] Hourly emissions calculated from maximum estimated concentration of vented H_2S.

[2] Daily Emissions calculated using hourly emissions and 24 hours of operation per day; annual Emissions calculated using hourly emissions and 8,760 hours of operation per day.

Table 7. Greenhouse gases emissions from biogas upgrader system.

Criteria Air Pollutant	Hourly Emissions [1] (lb/hr)	Annual Emissions [1] (tpy)
CO_2e	18,671	81,780

[1] GHG Emission factors from 40 CFR Part 98, Tables C-1 and C-2. CO_2e is calculated using the methodology in 40 CFR 98.2(b)(4) and Table A-1: CO_2e = S(GHG x GWP), where GHG is the mass emissions of each greenhouse gas and GWP is the global warming potential. Also includes process CO2 passing through control system.

DRAFT

Boiler Emission Calculations

Table D. Boiler specifications.

Number of Boilers	2	boiler
Rated Boiler Size	600	hp
NG Heat Input per Boiler	24.13	MMBtu/hr
Annual Operating Hours	8,760	hrs/yr

Table 8. Criteria air pollutants and greenhouse gases emissions from boilers.

Criteria Air Pollutant	Emission Factor [2] (lb/MMBtu)	Emissions per Boiler		Total Emissions	
		Total Hourly Emissions (lb/hr)	Total Annual Emissions (tpy)	Total Hourly Emissions (lb/hr)	Total Annual Emissions (tpy)
NOx [1]	0.011	0.25	1.1	0.51	2.2
CO [1]	0.038	0.90	4.0	1.81	7.9
SO2	0.0006	0.01	0.062	0.03	0.1
PM	0.0075	0.18	0.8	0.36	1.6
PM10	0.0075	0.18	0.8	0.36	1.6
PM2.5	0.0075	0.18	0.8	0.36	1.6
VOC	0.0036	0.09	0.4	0.17	0.8
CO2e [c]	117	2,825	12,374	5,650	24,748

Notes:

[1] NOx and CO emissions from natural gas burners based on 9 ppmv and 50 ppmv, respectively.

[2] Emission factors provided by Cleaver-Brooks.

[3] GHG Emission factors from 40 CFR Part 98, Tables C-1 and C-2. CO_2e is calculated using the methodology in 40 CFR 98.2(b)(4) and Table A-1: CO_2e = S(GHG x GWP), where GHG is the mass emissions of each greenhouse gas and GWP is the global warming potential.

Table 9. Toxic air pollutants from boilers.

Toxic Air Pollutant	CAS	Emission Factor [1] (lb/MMBtu)	Emission Factor [1] (lb/MMscf)	Emissions per Boiler			Total Emissions		
				Hourly Emissions [3] (lb/hr)	Daily Emissions [4] (lb/day)	Annual Emissions [5] (lb/yr)	Hourly Emissions [3] (lb/hr)	Daily Emissions [4] (lb/day)	Annual Emissions [5] (lb/yr)
NO2 [2]	10102-44-0	0.011	--	2.53E-01	6.08E+00	2.22E+03	5.07E-01	1.22E+01	4.44E+03
SO_2 [2]	7446-09-05	5.9E-04	0.6	1.42E-02	3.41E-01	1.24E+02	2.84E-02	6.81E-01	2.49E+02
CO [2]	630-08-0	0.038	--	9.05E-01	2.17E+01	7.93E+03	1.81E+00	4.34E+01	1.59E+04
Benzene	71-43-2	5.7E-06	0.0058	1.37E-04	3.29E-03	1.20E+00	2.74E-04	6.58E-03	2.40E+00
Formaldehyde	50-00-0	1.2E-05	0.0123	2.91E-04	6.98E-03	2.55E+00	5.82E-04	1.40E-02	5.10E+00
Naphthalene	91-20-3	2.9E-07	0.0003	7.10E-06	1.70E-04	6.22E-02	1.42E-05	3.41E-04	1.24E-01
Acetaldehyde	75-07-0	3.0E-06	0.0031	7.33E-05	1.76E-03	6.42E-01	1.47E-04	3.52E-03	1.28E+00
Acrolein	107-02-8	2.6E-06	0.0027	6.39E-05	1.53E-03	5.59E-01	1.28E-04	3.07E-03	1.12E+00
Propylene	115-07-1	5.2E-04	0.5300	1.25E-02	3.01E-01	1.10E+02	2.51E-02	6.02E-01	2.20E+02
Toluene	108-88-3	2.6E-05	0.0265	6.27E-04	1.50E-02	5.49E+00	1.25E-03	3.01E-02	1.10E+01
Xylenes	1330-20-7	1.9E-05	0.0197	4.66E-04	1.12E-02	4.08E+00	9.32E-04	2.24E-02	8.16E+00
Ethylbenzene	100-41-4	6.8E-06	0.0069	1.63E-04	3.92E-03	1.43E+00	3.26E-04	7.83E-03	2.86E+00
Hexane	110-54-3	4.5E-06	0.0046	1.09E-04	2.61E-03	9.53E-01	2.18E-04	5.22E-03	1.91E+00

Notes:

[1] Emission factors for toxic air pollutants from AB2588 Combustion Emission Factors, 10-100 MMBtu/hr (converted to lb/mmbtu using 1020 btu/scf) obtained from Ventura County Air Pollution Control District.

[2] NOx, SO2, and CO emission factors from criteria pollutant calculations.

[3] Hourly Emissions calculated using emission factors (lb/MMBtu) and heat input for the boiler.

[4] Daily Emissions calculated using hourly emissions and 24 hours of operation per day.

[5] Annual Emissions calculated using hourly emissions and 8,760 hours of operation per day.

DRAFT

Enclosed Cellulosic Grinder with Process Cyclone and Dust Collector

Table E. Enclosed cellulosic grinder operating parameters.

Straw Processing	200	tons/day
Annual Operating Hours	365	days/yr

Table 10. Criteria air pollutants from cellulose grinder.

Criteria Air Pollutant	Emission Factor [1] (lb/ton)	Daily Average Hourly Emissions [2] (lb/hr)	Annual Emissions [2] (tpy)
PM	0.012	0.10	0.44
PM_{10}	0.012	0.10	0.44
$PM_{2.5}$	0.012	0.10	0.44

Notes:

[1] Emission factors for shredding operation (controlled by baghouse) based on AP-42 Chapter 9.9.1 (Hammermill operations.) PM_{10} and $PM_{2.5}$ conservatively set equal to PM emissions.

[2] Hourly Emissions calculated using emission factors, hourly shredding throughput 200 tons/day; and annual emissions based on 365 days of operation per year.

DRAFT

Emergency generator set

Table F. Emergency generator specifications.

Make	Kohler
Model	KD2000
Emissions	Tier 2
Fuel	ULSD

Table G. Engine operational parameters.

Testing Time	30 minutes/test
Total Operating Hours	80 hour/year
Diesel Fuel Heat Content	139 MMBtu/Mgal

Table H. Engine specifications. [1]

Gen. Set Output Rating	2,923 hp
Exhaust Gas Volume Flow	17,586 cfm
Maximum Fuel Use Rate	149.0 gal/hr
Exhaust Exit Diameter	21 inches
Exhaust Temperature	932 F
Power Rating	2,180 ekW

[1] Obtained from Kohler KD2000.pdf

Table 11. Total emissions from emergency generator set.

CAS	Compound	Emission Factor			Emissions [7]		
		lb/hp-hr	lb/mgal [3]	lb/mmBtu	lb/hr	lb/day	lb/yr
10102-44-0	NOx [1]	--	--	--	2.19E+01	2.19E+01	3.50E+03
630-08-0	CO [1]	--	--	--	4.99E+00	4.99E+00	7.98E+02
PM	PM [1]	--	--	--	7.03E-01	7.03E-01	1.12E+02
PM10	PM10 [1]	--	--	--	7.03E-01	7.03E-01	1.12E+02
PM2.5	PM2.5 [1]	--	--	--	7.03E-01	7.03E-01	1.12E+02
7446-09-05	SO2 [2]	1.2E-05	--	--	1.77E-02	1.77E-02	2.84E+00
VOC	VOC [1]	--	--	--	3.84E-01	3.84E-01	6.15E+01
CO2	CO2 [5]	--	--	1.6E+02	1.69E+03	1.69E+03	2.70E+05
CH4	CH4 [5]	--	--	6.6E-03	6.85E-02	6.85E-02	1.10E+01
N2O	N2O [5]	--	--	1.3E-03	1.37E-02	1.37E-02	2.19E+00
CO2e	CO2e [6]	--	--	--	1.69E+03	1.69E+03	2.71E+05
106-99-0	1,3 Butadiene	--	0.2174	--	1.62E-02	1.62E-02	2.59E+00
75-07-0	Acetaldehyde	--	0.7833	--	5.84E-02	5.84E-02	9.34E+00
107-02-8	Acrolein	--	0.0339	--	2.53E-03	2.53E-03	4.04E-01
71-43-2	Benzene	--	0.1863	--	1.39E-02	1.39E-02	2.22E+00
108-90-7	Chlorobenzene	--	0.0002	--	1.49E-05	1.49E-05	2.38E-03
DPM	Diesel Engine Particulate [4]	--	--	--	3.18E-01	7.03E-01	5.09E+01
50-00-0	Formaldehyde	--	1.7261	--	1.29E-01	1.29E-01	2.06E+01
91-20-3	Naphthalene	--	0.0197	--	1.47E-03	1.47E-03	2.35E-01
115-07-1	Propylene	--	0.4670	--	3.48E-02	3.48E-02	5.57E+00
110-54-3	Hexane	--	0.0269	--	2.00E-03	2.00E-03	3.21E-01
108-88-3	Toluene	--	0.1054	--	7.85E-03	7.85E-03	1.26E+00
1330-20-7	Xylenes	--	0.0424	--	3.16E-03	3.16E-03	5.05E-01
100-41-4	Ethyl Benzene	--	0.0109	--	8.12E-04	8.12E-04	1.30E-01
7647-01-0	Hydrogen Chloride	--	0.1863	--	1.39E-02	1.39E-02	2.22E+00
7440-38-2	Arsenic	--	0.0016	--	1.19E-04	1.19E-04	1.91E-02
7440-43-9	Cadmium	--	0.0015	--	1.12E-04	1.12E-04	1.79E-02
18540-29-9	Chromium VI	--	0.0001	--	7.45E-06	7.45E-06	1.19E-03
7440-50-8	Copper	--	0.0041	--	3.05E-04	3.05E-04	4.89E-02
7439-92-1	Lead	--	0.0083	--	6.18E-04	6.18E-04	9.89E-02
7439-96-5	Manganese	--	0.0031	--	2.31E-04	2.31E-04	3.70E-02
7439-97-6	Mercury	--	0.0020	--	1.49E-04	1.49E-04	2.38E-02
7440-02-0	Nickel	--	0.0039	--	2.91E-04	2.91E-04	4.65E-02
7782-49-2	Selenium	--	0.0022	--	1.64E-04	1.64E-04	2.62E-02

[1] NOx, CO, PM, and Hydrocarbon emission factors based on Tier 2 Not to Exceed Emission data from Kohler (maximum emissions across all load test conditions)

[2] Emission factors from AP-42 Section 3.4, Large Stationary Diesel and Duel-Fuel Engines (October 1996). Fuel sulfur content of ULSD is 0.0015%.

[3] Emission factors for toxic air pollutants from AB2588 Combustion Emission Factors for diesel internal combustion obtained from Ventura County Air Pollution Control District.

[4] Diesel Engine Particulate emissions based on filterable PM only.

[5] Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

[6] CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 25; and N2O = 298 (40 CFR Part 98, Subpart A).

[7] Hourly emissions based on 2923 hp-hr/hr, fuel cosumption rate of 149.0 gal/hr, testing emission rate based on 30 minutes/test, one test per day, and annual emissions based on 80 hrs/yr.

DRAFT

Ammonia emissions from Solid Digestate storage

Table I. Ammonia emissions derivation parameters. [1]

Substrate Temperature (TS) [2]	33.60	C
Air Exchange Rate (LD)	2	
NH4-N Content (TAN) [3]	3.9	g/kg
Surface Area [4]	1,100.0	m2

[1] Parameters used in equation "E=17.254* 1.060^TS*LD^0.274*TAN" to estimate total ammonia emissions in mg NH3/m2*h, obtained from Bell, M.W., etal. Ammonia emissions from an anaerobic digestion plant estimated using atmospheric measurements and dispersion modelling. Waste Management (2016), http://dx.doi.org/10.1016/j.wasman.2016.06.002

[2] Assumed to be equal to the high average temperature in the hottest month (July) in the area; data obtained from Yakima Air Terminal McAllister Field Station (KYKM).

[3] Obtained from test value in "Do we have a Nitrogen / Ammonia Problem in the AD Process" document for Sunnyside RNG 222-024. Equal to total nitrogen content minus NH3 content.

[4] Per notice of construction application.

Table 12. Total ammonia emissions from solid digestate storage.

Toxic Air Pollutant	CAS	Hourly Emissions (g/hr)	Hourly Emissions (lb/hr)	Daily Emissions [1] (lb/day)	Annual Emissions [2] (lb/yr)	Annual Emissions (tons/year)
Ammonia	7664-41-7	633.9	1.4E+00	3.4E+01	1.2E+04	6.1E+00

[1] Daily Emissions calculated using hourly emissions and 24 hours of operation per day.

[2] Annual Emissions calculated using hourly emissions and 8,760 hours of operation per day.

Fugitive dust from paved and unpaved roads.

Table J. Paved roads emission factors (E) derivation parameters. [1]

Parameter	PM	PM10	PM2.5
Base emission factor (lb/VMT) [k]	0.011	0.0022	0.00054
Road surface silt content (g/m2) [sL] [2]	2.9	2.9	2.9
Average vehicle weight (tons) [W]	---see values in Table 13---		
Number of days with at least 0.01 inches of precipitation [P] [3]	57		

[1] To be used with equation 2 "E=k*(sL)^0.91*(W)^1.02*⌈1-P/(4*365)⌉", obtained from from AP-42, "Paved Roads", Section 13.2.1, January 2011.
[2] Upper range of corn mills, <500 ADT default at 0.6 g/m^2.
[3] Obtained from https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa8207 for Sunnyside, WA.

Table K. Unpaved roads emission factors (E) derivation parameters. [1]

Parameter	PM	PM10	PM2.5
Base emission factor (lb/VMT) [k]	4.9	1.5	0.15
Surface material silt content (%) [s] [2]	48	48	48
Average vehicle weight (tons) [W]	---see values in Table 13---		
Empirical constant [a]	0.7	0.9	0.9
Empirical constant [b]	0.45	0.45	0.45
Number of days with at least 0.01 inches of precipitation [P] [3]	57		

[1] To be used with equation 1a "E=k*(s/12)^a*(W/3)^b*⌈(365-P)/365⌉", obtained from from AP-42, "Unpaved Roads", Section 13.2.2, November 2006.
[2] Obtained from https://www.tandfonline.com/doi/full/10.1080/02786820903516844.
[3] Obtained from https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa8207 for Sunnyside, WA.

Table 13. Criteria air pollutants from paved and unpaved roads.

Source type	Class		Trips/day	Trips/year	Miles/trip	Description	VMT/year	Veh. Wt.	Annual Emission Factors (E)			Daily Controlled Emissions			Annual Controlled Emissions		
								W	PM	PM10	PM2.5	PM	PM10	PM2.5	PM	PM10	PM2.5
								(tons)	lbs/VMT	lbs/VMT	lbs/VMT	lb/day	lb/day	lb/day	tpy	tpy	tpy
Feedstock Delivery Trucks	Paved	Loaded	125	35,750	0.40		14,452	52.75	1.59	0.32	0.08	24.11	4.82	1.18	3.45	0.69	0.17
	Paved	Empty	125	35,750	0.40		14,201	15	0.44	0.09	0.02	6.57	1.31	0.32	0.94	0.19	0.05
External Supplier Trucks	Paved	Loaded	2	520	0.16		85	40	1.20	0.24	0.06	0.12	0.02	0.01	0.02	0.00	0.00
	Paved	Empty	2	520	0.21		107	15	0.44	0.09	0.02	0.05	0.01	0.00	0.01	0.00	0.00
Fiber Export Truck	Paved	Loaded	19	4,940	0.21		1,015	52.75	1.59	0.32	0.08	1.86	0.37	0.09	0.24	0.05	0.01
	Paved	Empty	19	4,940	0.16		806	17.5	0.52	0.10	0.03	0.48	0.10	0.02	0.06	0.01	0.00
Straw Trucks	Paved	Loaded	11	2,860	0.16		467	52.75	1.59	0.32	0.08	0.86	0.17	0.04	0.11	0.02	0.01
	Paved	Empty	11	2,860	0.21		588	17.5	0.52	0.10	0.03	0.35	0.07	0.02	0.05	0.01	0.00
Sunnyside - Personal Vehicles	Paved	Loaded	17	5,356	0.02		119	2.5	0.07	0.014	0.003	0.01	0.00	0.00	0.00	0.00	0.00
	Paved	Empty	17	5,356	0.02		119	2.5	0.07	0.014	0.003	0.01	0.00	0.00	0.00	0.00	0.00
Truck Driver - Personal Vehicles	Unpaved	Loaded	17	5,148	0.13		655	2.5	10.05	4.06	0.41	6.52	2.63	0.26	0.99	0.40	0.04
	Unpaved	Empty	17	5,148	0.13		655	2.5	10.05	4.06	0.41	6.52	2.63	0.26	0.99	0.40	0.04
											Total Paved	**34.42**	**6.88**	**1.69**	**4.87**	**0.97**	**0.24**
											Total Unpaved	**13.04**	**5.27**	**0.53**	**1.97**	**0.80**	**0.08**
											Total	**47.46**	**12.15**	**2.22**	**6.85**	**1.77**	**0.32**

Yakima Regional Clean Air Agency

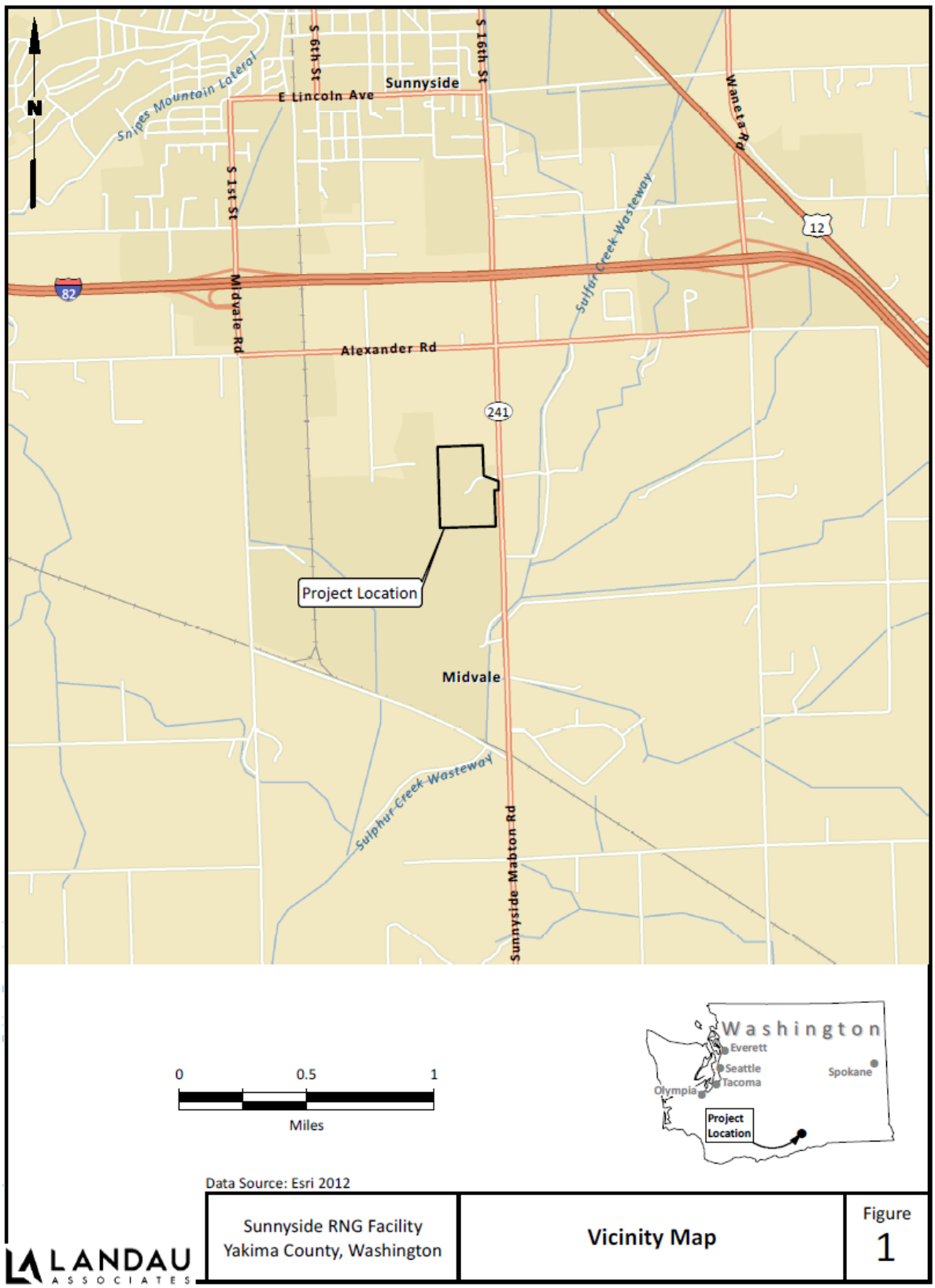
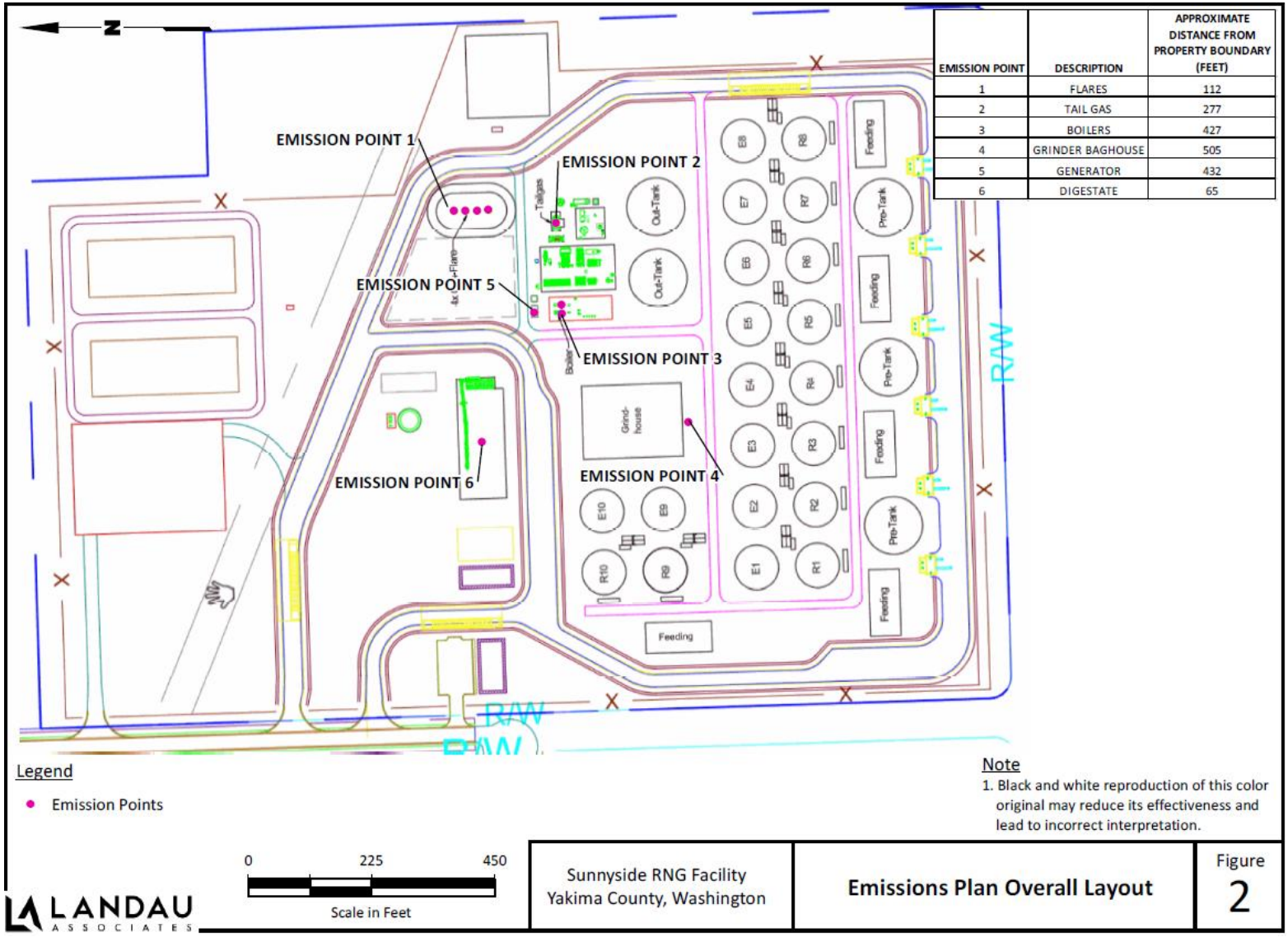


Figure 1: Vicinity map.



EMISSION POINT	DESCRIPTION	APPROXIMATE DISTANCE FROM PROPERTY BOUNDARY (FEET)
1	FLARES	112
2	TAIL GAS	277
3	BOILERS	427
4	GRINDER BAGHOUSE	505
5	GENERATOR	432
6	DIGESTATE	65

Figure 2: Emissions plan overall layout.

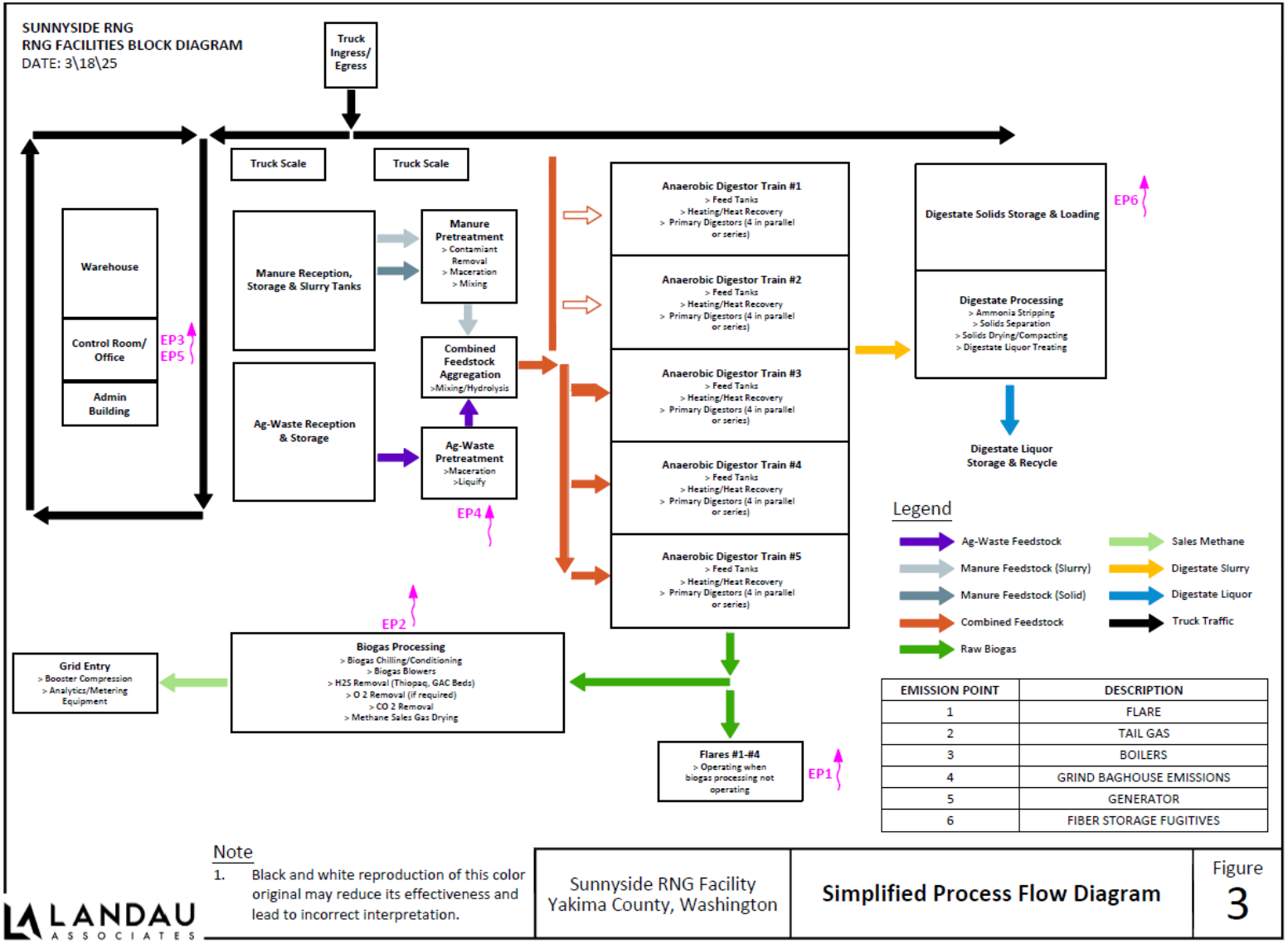


Figure 3: Simplified process flow diagram.

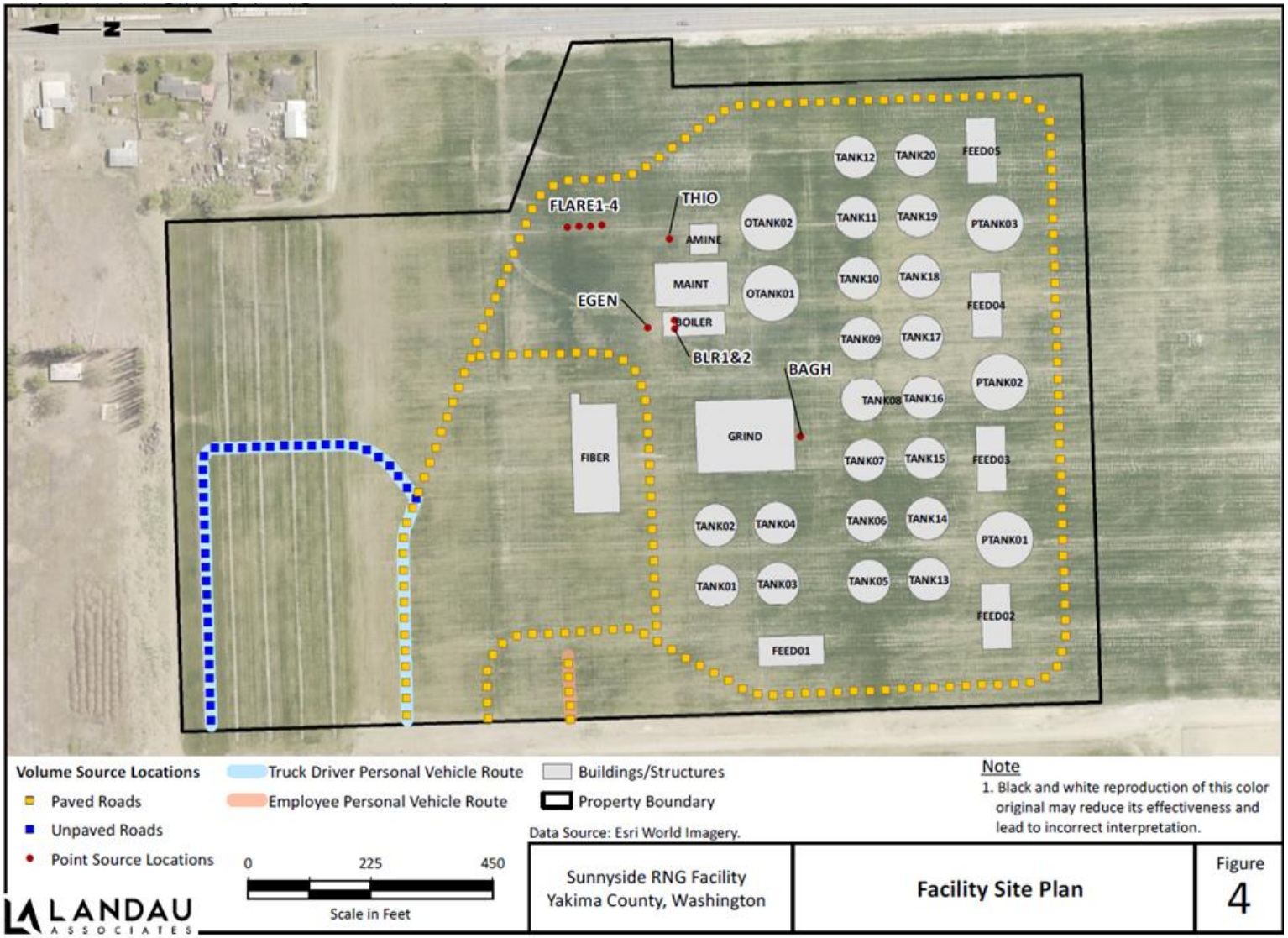


Figure 4: Facility site plan.