Statement of Basis

Permit to Construct No. P-2009.0124
Project ID 62542

Alto Magic Valley, LLC
Burley, Idaho

Facility ID 031-00032

Final

April 8, 2021
Zach Pierce
Permit Writer

ZP

The purpose of this Statement of Basis is to satisfy the requirements of

IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
Btu	British thermal units
CAA	Clean Air Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
m	meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
U.S.C.	United States Code
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Alto Magic Valley is a fuel-grade ethanol facility with a maximum permitted capacity of 73.57MMGal/yr of denatured ethanol, and 70 million gallons of undenatured ethanol. The facility is located near Burley. The facility processes approximately 23.6 million bushels of corn per year. The facility has the ability for an additional 315,000 T/yr corn to be received and shipped. Corn load-out with a capacity of 20,000 bushels/hr is also part of the operations at the facility. The facility consists of the following operations:

- Fermentation and Distillation Operations
- Storage Tanks
- Ethanol Load-Out Operations
- Boilers

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

May 14, 2007	P-060450 issued for the initial construction of the ethanol production plant. (S)
March 28, 2008	P-2008.0025 install a RCO instead of a RTO. (S)
August 4, 2009	P-2009.0060 add ability to receive and ship whole and ground corn from the facility. (S)
November 10, 2009	P-2009.0124, add provisions of Consent Order No. E-2008.0020, including changing the catalytic oxidizer (RCO) to a regenerative thermal oxidizer (RTO). (S)
March 21, 2012	P-2009.0124, project 60885, to allow an increase in production of undenatured ethanol and add a flare. (S)
September 25, 2014	P-2009.0124, project 61373 to increase the annual undenatured ethanol production from 63 million gallons to 70 million gallons per year. (S)
November 29, 2018	P-2009.0124, project 62108 to allow the use of cooling tower blowdown water in the scrubbers and include combustion temperature to the requirements on the RTO. (A but will become S upon issuance)

Application Scope

This PTC is a revision of an existing PTC.

The applicant has proposed to:

- Split off the grain milling operation to Liberty Basin, LLC. The grain handling, hammermills, wet cake barn and rail loop have been transferred to the new owner under a separate permit application. The facility also proposed a facility name change from Pacific Ethanol Magic Valley, LLC to Alto Magic Valley, LLC.

Application Chronology

November 30, 2020	DEQ received an application and an application fee.
December 17, 2020	DEQ determined that the application was complete.
December 21, 2020	DEQ made available the draft permit and statement of basis for peer and regional office review.
December 24, 2020	DEQ made available the draft permit and statement of basis for applicant review.
February 1, 2021	DEQ received the permit processing fee.
April 8, 2021	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Emission Unit	Size or Capacity	Control Equipment
4- Fermenters	705,576 Gallons each	Fermentation Scrubber & RTO
Beerwell	910,944 Gallons	
Liquefaction Tank	165,438 Gallons	Vent Gas Scrubber & RTO
Slurry Tank	17,004 Gallons	
Beer Stripper	26,738 Gallons	
Side Stripper	6,500 Gallons	
Regen Receiver Tank	11,000 Gallons	
Reflux Vent Condenser	1,100 Gallons/hr (approximate)	
Whole Stillage Tank	178,459 Gallons	
Process Condensate Tank	178,459 Gallons	
Evaporator Vacuum Receiver Tank	2,500 Gallons	
5-Centrifuges	13,200 Gallons/hr each	
Syrup Tank	122,251 Gallons	
Thin Stillage Tank	115,007 Gallons	
Yeast Propagation Tank	26,738 Gallons	
Ethanol Truck Load-out	38,000 Gallons/hr	Flare or RTO
Ethanol Rail Load-out	60,000 Gallons/hr	
Rectifier Column	26,173 Gallons	RTO
Stripper Column	6,500 Gallons	
3-Boilers	75.6 MMBtu/hr, Natural Gas	None
Denaturant Tank	63,452 Gallons	Internal Floating Roof
3- Anhydrous Ethanol Tanks	185,068 Gallons each	
2- Denatured Ethanol Tanks	619,573 Gallons each	
Cooling Towers		None
Ammonia Tank	33,886 Gallons	None
Sulfuric Acid Tank	10,557 Gallons	None
Fire Pump Engine	Diesel Fuel 288BHP	None

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the three natural gas-fired boilers, fermentation and distillation, flare, loadout, and fire pump engine operations at the facility (see **Error! Reference source not found.**) associated with this proposed project. Emissions estimates of criteria pollutant, HAP PTE were based on emission factors from AP-42, manufacturer factors, operation of 8,760 hours per year, and process information specific to the facility for this proposed project.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria pollutants from all emissions units at the facility. See **Error! Reference source not found.** for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]
Corn Receiving Baghouse	3.75				
Corn Handling Baghouse	1.88				
Hammermilling Baghouse	1.69				
Boiler #1	2.47	0.19	16.56	10.91	1.78
Boiler #2	2.47	0.19	16.56	10.91	1.78
Boiler #3	2.47	0.19	16.56	10.91	1.78
RTO[(b)]	0.20	0.02	1.31	2.25	26.00
Truck Loadout Flare/Ethanol Loadout	0.003	0.00	1.95	10.41	6.22
Fire Water Pump	0.03	0.03	0.13	0.10	0.040
Pre-Project Totals	**14.96**	**0.62**	**53.07**	**45.49**	**37.60**

a) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
b) RTO controls emissions from fermentation (including scrubber) and distillation.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See **Error! Reference source not found.** for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]
Boiler #1	2.47	0.19	16.56	10.91	1.78
Boiler #2	2.47	0.19	16.56	10.91	1.78
Boiler #3	2.47	0.19	16.56	10.91	1.78
RTO[(b)]	0.20	0.02	1.31	2.25	26.00
Truck Loadout Flare/Ethanol Loadout	0.00	0.00	1.95	10.41	6.22
Fire Water Pump	0.03	0.03	0.13	0.10	0.040
Post-Project Totals	**7.64**	**0.62**	**53.07**	**45.49**	**37.60**

a) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
b) RTO controls emissions from fermentation (including scrubber) and distillation.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr
Pre-Project Potential to Emit	14.96	0.62	53.07	45.49	37.60
Post Project Potential to Emit	7.64	0.62	53.07	45.49	37.60
Changes in Potential to Emit	**-7.32**	**0.00**	**0.00**	**0.00**	**0.00**

Carcinogenic and Non-Carcinogenic TAP Emissions

No TAP Emission analysis was required for this permitting action. The emission sources removed as part of this project did not emit TAP emissions; therefore, the facility TAP emissions were unaffected by this permitting action.

Ambient Air Quality Impact Analyses

No air modeling was required for this permitting action because this permitting action did not trigger any emission increases requiring modeling.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Cassia County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.

SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.

SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.

UNK = Class is unknown.

For All Other Pollutants:

A = Use when permitted emissions of a pollutant are > 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.

UNK = Class is unknown.

Table 5 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	> 100	7.64	**100**	SM
PM_{10}	Unknown	7.64	**100**	UNK
$PM_{2.5}$	Unknown	7.64	**100**	UNK
SO_2	0.62	0.62	**100**	B
NO_X	53.07	53.07	**100**	B
CO	45.49	45.49	**100**	B
VOC	1,522	37.6	**100**	SM
HAP (single)	Unknown	8.8	**10**	UNK
Total HAPs	Unknown	15.85	**25**	UNK

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201..... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the revised emissions sources. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401..... Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301..... Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM_{10}, SO_2, NO_X, CO, VOC, and HAP or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 ..... Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

This permitting action does not alter the applicability status of existing affected sources at the facility.

The facility is subject to the requirements of 40 CFR 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels), 40 CFR 60 Subpart Vv - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, and 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

40 CFR 60, Subpart Dc ..... Standards of Performance for Small Industrial–Commercial–Institutional Steam Generating Units

All three boilers at this facility only combust natural gas as fuel as required by Permit Condition 3.3. Therefore, the only Sections of this subpart that are applicable to the three boilers at this facility are the Applicability and Delegation of Authority specified in § CFR 60.40c(a), the Recordkeeping requirements of § CFR 60.48c(g) and (i), and the Reporting requirements of § CFR 60.48c(a), (a)(1), and (a)(3).

§ 60.40c ..... Applicability and Delegation of Authority

Section (a) specifies that except as provided in paragraph (d) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr).

(b) In delegating implementation and enforcement authority to a State under section 111(c) of the Clean Air Act, §60.48c(a)(4) shall be retained by the Administrator and not transferred to a State.

(c) Steam generating units that meet the applicability requirements in paragraph (a) of this section are not subject to the sulfur dioxide (SO_2) or particulate matter (PM) emission limits, performance testing requirements, or monitoring requirements under this subpart (§§60.42c, 60.43c, 60.44c, 60.45c, 60.46c, or 60.47c) during periods of combustion research, as defined in §60.41c.

The three natural gas-fired boilers are rated at 75.6 MMBtu/hr and were constructed after June 9, 1989. Therefore, these three natural gas fired boilers are subject to some of the requirements of this subpart. These requirements are included in Section 3 of the permit.

40 CFR 60, Subpart Vv..... Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry

The provisions of this Subpart apply to this facility since it will be constructed after the January 5, 1981 applicability date and will produce more than 1,102 tons of ethanol. This Subpart regulates leaks from equipment (pumps, valves, seals, etc.) used in the production of ethanol. These requirements are summarized in Section 7 of the permit.

40 CFR 60, Subpart Kb..... Standards of Performance for Volatile Organic Liquid Storage Vessels

The provisions of this Subpart apply to this facility since it will be constructed after July 23, 1984 and because it will have storage vessels over 75 cubic meters used to store volatile organic liquids. These requirements are included in Section 4 of the permit.

40 CFR 60 Subpart IIII Stationary Compression Ignition Internal Combustion Engines

§ 60.4200 Am I subject to this subpart?

The fire pump engine is an affected emissions unit in accordance with §60.4200(a)(2)(ii). The engine was constructed after July 11, 2005 and was manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006

§ 60.4201, § 60.4202 & § 60.4203 Are all Standards for Manufacturers and do not apply to Alto Magic Valley LLC.

§ 60.4204 What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

The fire pump engine is an emergency engine as defined by § 60.4219 because it is "used to pump water in the case of fire", therefore the provisions of this section do not apply.

§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with § 60.4205(c), "Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants." The applicable standards of table 4 are summarized in the following table.

Maximum engine power	Model year	NMHC + NO_x (g/HPhr)	CO (g/HPhr)	PM (g/HPhr)
75<HP<300	2008 and earlier	7.8	2.6	0.40

§ 60.4206 *How long must I meet the emission standards if I am an owner or operator* ?

The fire pump shall comply with § 60.4205 over the entire life of the engine.

§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

This provision is superseded by the following provision that became applicable October 1, 2010.

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

40 CFR 80.510(b):

"diesel fuel is subject to the following per-gallon standards":

(1) Sulfur content 15 ppm maximum.

(2) Cetane index or aromatic content, as follows:

(i) A minimum cetane index of 40; or
(ii) A maximum aromatic content of 35 volume percent.

(c) [Reserved]

(d) Beginning June 1, 2012owners and operators of stationary CI ICE subject to this subpart with a displacement of greater than or equal to 30 liters per cylinder are no longer subject to the requirements of paragraph (a) of this section, and must use fuel that meets a maximum per-gallon sulfur content of 1,000 parts per million (ppm). The fire pump engine has a displacement of less than 30 liters.

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section. Pacific Ethanol has not pursued this exemption.

§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in previous model years?

Alto Magic Valley LLC has not proposed to import or install an engine after any of the dates specified in this section.

§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine.

Alto Magic Valley LLC has specified in the application that they are applicable to this monitoring provision.

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

Alto Magic Valley LLC's engine is not equipped with a particulate filter.

§ 60.4210 What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

Alto Magic Valley LLC is not a manufacturer and this provision does not apply.

§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

If you are an owner or operator and must comply with the emission standards specified in this *subpart, you must do all of the following, except as permitted under paragraph (g) of this section:*

(1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;
(2) Change only those emission-related settings that are permitted by the manufacturer; and
(3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

The fire pump engine is applicable to emissions standards of this subpart and must comply with all of the above.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in 60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in § 60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

Alto Magic Valley LLC's fire water pump was manufactured prior to the dates specified in table 3 and has chosen to comply using (1) as listed below.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in 60.4204(b) or 60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.

Alto Magic Valley LLC's fire pump engine is a 2007 model year but does not have to comply with standards specified in 60.4204(b) or 60.4205(b), nor was the pump engine manufactured during or after the model year that applies as listed in table 3. Therefore, this section does not apply to the engine.

(d) If you are an owner or operator and must comply with the emission standards specified in §60.4204(c) or §60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section.

Alto Magic Valley LLC's pump engine does not need to comply with emission standards specified in §60.4204(c) or §60.4205(d), therefore this section does not apply.

(e) If you are an owner or operator of a modified or reconstructed stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(e) or §60.4205(f), you must demonstrate compliance according to one of the methods specified in paragraphs (e)(1) or (2) of this section.

Alto Magic Valley LLC is not proposing to modify or reconstruct an engine. Therefore, this section does not apply.

(f) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited.

This provision applies to Alto Magic Valley LLC and is included in the permit.

(g) If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows:

Alto Magic Valley LLC has indicated that they plan install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions. This section would only apply if they did not follow the written instructions.

§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

Alto Magic Valley LLC is going to comply with the emissions standards of § 60.4205(c) by purchasing an engine certified to the standards and installing and configuring according to the manufacturer's specifications. Therefore testing is not required.

§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.

The fire pump engine does not meet any of these criteria; therefore this section does not apply.

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to nonemergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the nonresettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

The fire pump engine is an emergency engine; Alto Magic Valley LLC is not required to submit an initial notification. The pump engine is not of a model year listed in table 5 and records are not required to be kept on the operation of the engine.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT/GACT Applicability (40 CFR 63)

This permitting action does not alter the applicability status of existing affected sources at the facility.

The facility has operates as a minor source of hazardous air pollutant (HAP) emissions, and is subject to the requirements of 40 CFR 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines. The fire pump engine is applicable to this subpart because it is internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile - 40 CFR 63.6585(a). However, in accordance with 40 CFR 63.6590(c) an affected source meets the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII; no further requirements apply for such engines under this part.

Permit Conditions Review

This section describes only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Revised Permit Condition 1.1 and Table 1.1

This permit condition has been revised to reflect the new permit scope and the new list of regulated sources at the facility after transferring the grain handling, hammermills, wet cake barn and rail loop to a new owner.

Revised Permit Condition 2.7

This permit condition has been revised due to a minor error from the previous permit issuance. The new permit condition includes both denatured and undenatured ethanol in the load-out requirements.

Revised Permit Condition 4.1

This permit condition has been revised at the request of the facility for an updated process description. The reference to a 190 proof storage tank in the previous permit is for an ICM design ethanol plant where there is a storage tank included in the distillation area as a feed tank for the molecular sieves. Alto Magic Valley is a Delta-T design ethanol plant where no such tank in distillation exists; the molecular sieves are fed directly from the rectifier column. However, the 190 tank identified on the permit does exist, only it's located inside the tank farm and is actually the same service tank as the two 200 proof tanks. So the process description has been updated to reflect the Delta-T process. Instead of identifying the proof of the storage tanks, we removed that designation and just call them anhydrous ethanol tanks.

PUBLIC REVIEW

Public Comment Opportunity

Because this permitting action does not authorize an increase in emissions, an opportunity for public comment period was not required or provided in accordance with IDAPA 58.01.01.209.04.

APPENDIX A – EMISSIONS INVENTORY

The following emission inventory was taken from the most recently issued permit with an emission analysis (P-2009.0124 PROJ 61373, issued September 25, 2014). For this project, the emission analysis simply removed the appropriate emission sources from the permit and technical analysis.

Form EI – Emissions Inventory

Table 1 PRE-PROJECT POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS[a]

Emissions Unit	PM T/yr	PM10 T/yr	PM2.5 T/yr	SO2 T/yr	NOX T/yr	VOC T/yr	CO T/yr	CO2e T/yr
Point Sources								
Corn Receiving Baghouse	3.75	3.75	3.75	-	-	-	-	-
Corn Handling Baghouse	1.88	1.88	1.88	-	-	-	-	-
Hammermill Baghouse	1.69	1.69	1.69	-	-	-	-	-
Boiler #1	2.47	2.47	2.47	0.19	16.56	1.78	10.91	99,454 (combined)
Boiler #2	2.47	2.47	2.47	0.19	16.56	1.78	10.91	
Boiler #3	2.47	2.47	2.47	0.19	16.56	1.78	10.91	
RTO	0.20	0.20	0.20	-	1.31	26.00	2.25	
Truck Loadout Flare	0	0	0	0	2.49	4.31	4.16	
Fire Pump	0.00	0.00	0.00	0.03	0.13	0.04	0.10	6.0
Fugitive Sources								
Storage Tanks (TK01-TK06)	-	-	-	-	-	1.79	-	-
Paved Roads	15.39	3.0	0.45	-	-	-	-	-
Grain Receiving Fugitives	6.44	1.43	1.43	-	-	-	-	-
Wetcake Storage/Loadout	-	-	-	-	-	0.02	-	-
Equipment Leaks	-	-	-	-	-	3.92	-	-
Cooling Towers	3.28	3.28	3.28	-	-	-	-	-
Grain Loadout	1.15	0.26	0.26	-	-	-	-	-
Totals	**41.19**	**22.90**	**20.35**	**0.60**	**53.61**	**41.42**	**39.24**	**99,500**

Table 2 POST PROJECT POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS[a]

Emissions Unit	PM	PM10	PM2.5	SO2	NOX	VOC	CO	CO2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Point Sources								
Corn Receiving Baghouse	3.75	3.75	3.75	-	-	-	-	-
Corn Handling Baghouse	1.88	1.88	1.88	-	-	-	-	-
Hammermill Baghouse	1.69	1.69	1.69	-	-	-	-	-
Boiler #1	2.47	2.47	2.47	0.19	16.56	1.78	10.91	99,454 (combined)
Boiler #2	2.47	2.47	2.47	0.19	16.56	1.78	10.91	
Boiler #3	2.47	2.47	2.47	0.19	16.56	1.78	10.91	
RTO	0.20	0.20	0.20	0.02	1.31	26.00	2.25	
Truck Loadout Flare/Ethanol Loadout	0.003	0.003	0.003	0.000	1.950	6.22	10.41	
Fire Pump	0.03	0.03	0.03	0.03	0.13	0.04	0.10	6.0
Fugitive Sources								
Storage Tanks (TK01-TK06)	-	-	-	-	-	2.63	-	-
Paved Roads	10.67	2.13	0.52	-	-	-	-	-
Grain Receiving Fugitives	6.44	1.43	1.43	-	-	-	-	-
Wetcake Storage/Loadout	0.02	0.00	0.00	-	-	3.08	-	-
Equipment Leaks	-	-	-	-	-	3.93	-	-
Cooling Towers	3.28	3.28	3.28	-	-	-	-	-
Grain Loadout	1.15	0.26	0.26	-	-	-	-	-
Corn Oil Extraction System	-	-	-	-	-	0.54	0.10	-
Totals	**36.52**	**22.07**	**20.46**	**0.63**	**53.06**	**47.80**	**45.49**	**99,500**

Table 3 CHANGES IN POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS

Emissions Unit	PM	PM10	PM2.5	SO2	NOX	VOC	CO	CO2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Point Sources								
Corn Receiving Baghouse	0.00	0.00	0.00	-	-	-	-	-
Corn Handling Baghouse	0.00	0.00	0.00	-	-	-	-	-
Hammermill Baghouse	0.00	0.00	0.00	-	-	-	-	-
Boiler #1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99,454 (combined)
Boiler #2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Boiler #3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
RTO	0.00	0.00	0.00	0.02	0.00	0.00	0.00	
Truck Loadout Flare/Ethanol Loadout	0.00	0.00	0.00	0.00	-0.54	1.91	6.25	
Fire Pump	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0
Fugitive Sources								
Storage Tanks (TK01-TK06)	-	-	-	-	-	0.84	-	-
Paved Roads	-4.72	-0.87	0.07	-	-	-	-	-
Grain Receiving Fugitives	0.00	0.00	0.00	-	-	-	-	-
Wetcake Storage/Loadout	-	-	-	-	-	3.06	-	-
Equipment Leaks	-	-	-	-	-	0.01	-	-
Cooling Towers	0.00	0.00	0.00	-	-	-	-	-
Grain Loadout	0.00	0.00	0.00	-	-	-	-	-
Corn Oil Extraction System	-	-	-	-	-	0.54	0.10	-
Totals	**-4.67**	**-0.84**	**0.10**	**0.03**	**-0.55**	**6.38**	**6.25**	**0**

"Potential to Emit" Emission Calculations Summary:

Pacific Ethanol Magic Valley, Idaho

70MM gallons/ year Ethanol	660,674	tons/yr grain
73.57MM gallons/year Denatured Ethanol	0	tons/yr DDGS
	741,969	tons/yr WDGS

Stack ID	Emission Source(s)	PM (tpy)	PM10 (tpy)	PM2.5 (tpy)	SO2 (tpy)	NOx (tpy)	CO (tpy)	VOC (tpy)	HAP (tpy)	CO_2e (tpy)
SV01	Corn Receiving Baghouse	3.75	3.75	3.75	--	--	--	--	--	--
SV02	Corn Handling Baghouse	1.88	1.88	1.88	--	--	--	--	--	--
SV06	Hammermilling Baghouse	1.69	1.69	1.69	--	--	--	--	--	--
SV09	Boiler #1	2.47	2.47	2.47	0.19	16.56	10.91	1.78	0.61	
SV10	Boiler #2	2.47	2.47	2.47	0.19	16.56	10.91	1.78	0.61	
SV11	Boiler #3	2.47	2.47	2.47	0.19	16.56	10.91	1.78	0.61	99,454.00
SV12	RTO[1]	0.20	0.20	0.20	0.02	1.31	2.25	26.00	12.49	
SV13	Truck Loadout Flare	0.00	0.00	0.00	0.00	1.95	10.41	1.46	--	
	Product Loadout[2]	--	--	--	--	--	--	4.76	1.52	--
TK01-06	Storage Tanks	--	--	--	--	--	--	2.63	0.27	--
FS01	Paved Roads	10.67	2.13	0.52	--	--	--	--	--	--
FS02	Grain Receiving Fugitives	6.44	1.43	1.43	--	--	--	--	--	--
FS03	Wetcake Storage/Loadout	--	--	--	--	--	--	3.22	0.14	--
FS04	Equipment Leaks	--	--	--	--	--	--	3.93	1.92	--
FS05	Cooling Tower	3.28	3.28	3.28	--	--	--	--	--	--
FS06	Grain Loadout	1.15	0.26	0.26	--	--	--	--	--	--
FWP	Fire Water Pump	0.03	0.03	0.03	0.03	0.13	0.10	0.040	--	6.00
COES	Corn Oil Extraction System	--	--	--	--	--	--	0.54	--	--
Totals, Plantwide		**36.50**	**22.07**	**20.46**	**0.63**	**53.06**	**45.49**	**47.94**	**18.17**	**99,500.00**

NOTES:

[1]RTO controls emissions from fermentation (including scrubber) and distillation.

[2]Facility ships denatured ethanol by both truck and rail; however, assumed all loaded out by truck to demonstrate worst-case emissions.

The facility has the ability to supplement corn with sugar as a feedstock to the fermentation process. Supplementing can occur at appoximately 600,000 lbs of sugar per day. No change in emissions result from this process.

The facility is installing Selective Milling Technology™ (SMT™) which does not result in any emission increase and is considered exempt from obtaining a construction permit.

Hazardous Air Pollutant Emissions Summary

See Workbook for details of emission calculations

Compound	Boilers	RTO	Product Loadout	Fugitive Comps.	Storage Tanks	Wetcake Storage/ Loadout	TOTAL
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	**(tpy)**
Acrolein	--	0.13	0.0005	0.2756	0.0002	0.0051	**0.41**
Formaldehyde	0.07	3.33	0.0005	0.2672	0.0002	0.0618	**3.73**
Acetaldehyde	--	8.80	0.0010	0.57	0.0003	0.0309	**9.41**
Methanol	--	0.18	0.0010	0.30	0.0003	0.0386	**0.51**
Hexane	1.75	0.05	1.0085	0.3423	0.18	--	**3.33**
Toluene	3.31E-03	8.76E-05	--	--	--	--	**0.00**
Benzene	2.05E-03	5.41E-05	0.5043	0.1712	0.09	--	**0.77**
Nickel	2.05E-03	5.41E-05	--	--	--	--	**2.10E-03**
Chromium	1.36E-03	3.61E-05	--	--	--	--	**1.40E-03**
Dichlorobenzene	1.17E-03	3.09E-05	--	--	--	--	**1.20E-03**
Cadmium	1.07E-03	2.83E-05	--	--	--	--	**1.10E-03**
Naphthalene	5.94E-04	1.57E-05	--	--	--	--	**6.10E-04**
Manganese	3.70E-04	9.79E-06	--	--	--	--	**3.80E-04**
Mercury	2.53E-04	6.70E-06	--	--	--	--	**2.60E-04**
Arsenic	1.95E-04	5.15E-06	--	--	--	--	**2.00E-04**
Cobalt	8.18E-05	2.16E-06	--	--	--	--	**8.40E-05**
2-Methylnaphthalene	2.34E-05	6.18E-07	--	--	--	--	**2.40E-05**
Phenanthrene	1.66E-05	4.38E-07	--	--	--	--	**1.70E-05**
Pyrene	4.87E-06	1.29E-07	--	--	--	--	**5.00E-06**
Fluoranthene	2.92E-06	7.73E-08	--	--	--	--	**3.00E-06**
Fluorene	2.73E-06	7.21E-08	--	--	--	--	**2.80E-06**
Totals	*1.84*	*12.49*	*1.52*	*1.92*	*0.27*	0.136	
							18.17

Wetcake Storage Emissions

Basis: Emission factors based on November 2, 2004 test data from a wetcake storage building at DENCO, LLC in Morris, MN.

Wetcake Production: 84.7 ton/hr
Total Wetcake: 741,969 tons/year

Pollutant	DENCO results[1] (lb/hr)	Emission Factor (lb/ton wetcake)	Scaled Emission Factor[2] (lb/ton wetcake)	Potential Emissions (lb/hr)	Potential Emission (tpy)
HAPs					
Acetaldehyde	0.001	5.56E-05	8.34E-05	7.06E-03	0.03
Acrolein	0.00017	9.17E-06	1.38E-05	1.17E-03	0.01
Formaldehyde	0.002	1.11E-04	1.67E-04	1.41E-02	0.06
Methanol	0.00125	6.94E-05	1.04E-04	8.82E-03	0.04
Non-HAPs					
Acetic Acid	0.08	4.44E-03	6.66E-03	5.64E-01	2.47
Ethanol	0.02	1.11E-03	1.67E-03	1.41E-01	0.62
VOC Total	0.10442	5.80E-03	8.69E-03	7.36E-01	**3.22**
HAPs of Interest Total					**0.14**

NOTES:

[1] For HAP results, used 1/2 the detection limit as results were non-detect.

[2] Factor is scaled based on tested facility production rate compared to facility production rate for conservatism.

Grain Handling Emissions:

Basis: Grain Handling/Storage is closed system

Emissions based on AP-42 Particulate Emission Factors for Grain Elevators

PM/PM10/PM2.5 Emissions:

ID	Emission Source	Baghouse Aiflow (acfm)	Emission Factor (gr/scf)	Hours of Operation (hrs/yr)	Controlled PM Emissions (lbs/hr)	Controlled PM/ PM10/ PM2.5 Emissions (tons/yr)
SV01	Corn Receiving Baghouse	20,000	0.005	8,760	0.86	3.75
SV02	Corn Handling Baghouse	10,000	0.005	8,760	0.43	1.88
SV06	Hammermilling Baghouse	9,000	0.005	8,760	0.39	1.69
					Total:	7.32

Grain Handling Fugitive Emissions:

PM Emissions:

ID	Emission Source	Throughput (tons/hour)	Emission Factor (lb/ton)	Potential to Emit (lb/hr)	Potential PM Emissions (tons/yr)
FS02	Grain Receiving Fugitives	42	0.035	1.47	6.44
FS06	Grain Loadout	8	0.035	0.26	1.15
				Total:	7.59

PM10 Emissions:

ID	Emission Source	Throughput (tons/hour)	Emission Factor (lb/ton)	Potential to Emit (lb/hr)	Potential PM10 Emissions (tons/yr)
FS02	Fugitives Receiving	42	0.0078	0.33	1.43
FS06	Grain Loadout	8	0.0078	0.06	0.26
				Total:	1.69

PM-2.5 Emissions:

ID	Emission Source	Throughput (tons/hour)	Emission Factor (lb/ton)	Potential to Emit (lb/hr)	Potential PM-2.5 Emissions (tons/yr)
FS02	Fugitives Receiving	42	0.0078	0.33	1.43
FS06	Grain Loadout	8	0.0078	0.06	0.26
				Total:	1.69

Notes:

1. Fugitives are a result of uncaptured PM/PM10
2. Assumes ethanol plant will receive and store grain in their grain storage silos
3. Assumes storage bin vents are not included with the headhouse/internal handling emissions
4. Assumes addition control of fugitives by choked flow system (~95%)

Emissions from Boiler

Criteria emissions from combustion of natural gas at Boiler							
Basis:	SO2, VOC, PM, PM10, PM2.5 & HAP emission factors based on AP-42, Section 1.4.						
	NOx and CO emission factors based on manufacturer factors.						
	Unit assumed to operate maximum fuel input capacity						
	Assumed operation time: 8,760 hours/year						
	PTE based on 100% Natural Gas						
	BTU content of natural gas: 1020 Btu/scf						
Unit	**Fuel**	**Total MMBtu/hr**	**Pollutant**	**E Factors lb/MMBtu**	**E Factors Source**	**PTE lb/hr**	**PTE tpy**
3 - 75.6 MMBtu/hr Boilers (SV09,SV10,SV11)	N Gas	226.8	NOx	0.05	manufacturer	11.34	**49.67**
			SO2	0.0006	AP-42	0.13	**0.58**
			CO	0.0329	manufacturer	7.47	**32.73**
			VOC	0.00539	AP-42	1.22	**5.35**
			PM/PM10/PM2.5	0.00745	AP-42	1.69	**7.40**
			Hexane	1.76E-03	AP-42	4.00E-01	**1.75E+00**
			Formaldehyde	7.35E-05	AP-42	1.67E-02	**7.30E-02**
			Toluene	3.33E-06	AP-42	7.56E-04	**3.31E-03**
			Benzene	2.06E-06	AP-42	4.67E-04	**2.05E-03**
			Nickel	2.06E-06	AP-42	4.67E-04	**2.05E-03**
			Chromium	1.37E-06	AP-42	3.11E-04	**1.36E-03**
			Dichlorobenzene	1.18E-06	AP-42	2.67E-04	**1.17E-03**
			Cadmium	1.08E-06	AP-42	2.45E-04	**1.07E-03**
			Naphthalene	5.98E-07	AP-42	1.36E-04	**5.94E-04**
			Manganese	3.73E-07	AP-42	8.45E-05	**3.70E-04**
			Mercury	2.55E-07	AP-42	5.78E-05	**2.53E-04**
			Arsenic	1.96E-07	AP-42	4.45E-05	**1.95E-04**
			Cobalt	8.24E-08	AP-42	1.87E-05	**8.18E-05**
			2-Methylnaphthalene	2.35E-08	AP-42	5.34E-06	**2.34E-05**
			Phenanthrene	1.67E-08	AP-42	3.78E-06	**1.66E-05**
			Pyrene	4.90E-09	AP-42	1.11E-06	**4.87E-06**
			Fluoranthene	2.94E-09	AP-42	6.67E-07	**2.92E-06**
			Fluorene	2.75E-09	AP-42	6.23E-07	**2.73E-06**
			Total HAPs:				**1.84E+00**

GHG Emissions from Boiler

Total rate of boilers: 226.8 MMBtu/hr (Natural Gas Combustion)
Operating hours: 8,760 hrs/yr
Conversion Factor: 2.20462 lbs/kg

Boilers NG Combustion Emissions				
Pollutant	**Emission Factor (kg/MMBtu)[1]**	**Emission Factor (lbs/ MMBtu)[2]**	**Potential Hourly Emissions (lbs/hr)**	**Potential Annual Emissions (tons/yr)**
GHGs				
CO_2	53.020	116.89	26,510.41	**116,116**
CH_4	0.0010	0.0022	0.500	**2.19**
N_2O	0.00010	0.00022	0.050	**0.22**
GHGs (mass basis)	53.021	116.891	26,510.964	**116,118**
CO_2e				**116,236**

NOTES:

[1]GHG Emissions are based on 40 CFR 98, Tables A-1, C-1 and C-2

[2]Conversions from Table A-2 to Subpart A of Part 98 - Units of Measure Conversion

Emissions from RTO

Criteria emissions from combustion of natural gas at RTO							
Basis:	SO2, PM, PM10, PM2.5 & most HAP emission factors based on AP-42, Section 1.4.						
	NOx and CO emission factors based on manufacturer factors.						
	VOC, acetaldehyde, acrolein, methanol & formaldehyde emission factors based on test data.						
	Unit assumed to operate maximum fuel input capacity						
	Assumed operation time:		8,760 hours/year				
	PTE based on 100% Natural Gas						
	BTU content of natural gas:		1020 Btu/scf				
Unit	**Fuel**	**Total MMBtu/hr**	**Pollutant**	**E Factors lb/MMBtu**	**E Factors Source**	**PTE lb/hr**	**PTE tpy**
1 - 6.0 MMBtu/hr RTO (SV12)	N Gas	6	NOx	0.05	manufacturer	0.30	**1.31**
			SO2	0.0006	AP-42	0.00	**0.02**
			CO	0.08568	AP-42	0.51	**2.25**
			VOC		Test Data	5.94	**26.00**
			PM/PM10/PM2.5	0.00775	AP-42	0.05	**0.20**
			Acetaldehyde		Test Data	2.01	**8.80**
			Acrolein		Test Data	0.03	**0.13**
			Methanol		Test Data	0.04	**0.18**
			Hexane	1.76E-03	AP-42	1.06E-02	**4.64E-02**
			Formaldehyde		Test Data	7.60E-01	**3.33**
			Toluene	3.33E-06	AP-42	2.00E-05	**8.76E-05**
			Benzene	2.06E-06	AP-42	1.24E-05	**5.41E-05**
			Nickel	2.06E-06	AP-42	1.24E-05	**5.41E-05**
			Chromium	1.37E-06	AP-42	8.24E-06	**3.61E-05**
			Dichlorobenzene	1.18E-06	AP-42	7.06E-06	**3.09E-05**
			Cadmium	1.08E-06	AP-42	6.47E-06	**2.83E-05**
			Naphthalene	5.98E-07	AP-42	3.59E-06	**1.57E-05**
			Manganese	3.73E-07	AP-42	2.24E-06	**9.79E-06**
			Mercury	2.55E-07	AP-42	1.53E-06	**6.70E-06**
			Arsenic	1.96E-07	AP-42	1.18E-06	**5.15E-06**
			Cobalt	8.24E-08	AP-42	4.94E-07	**2.16E-06**
			2-Methylnaphthalene	2.35E-08	AP-42	1.41E-07	**6.18E-07**
			Phenanthrene	1.67E-08	AP-42	1.00E-07	**4.38E-07**
			Pyrene	4.90E-09	AP-42	2.94E-08	**1.29E-07**
			Fluoranthene	2.94E-09	AP-42	1.76E-08	**7.73E-08**
			Fluorene	2.75E-09	AP-42	1.65E-08	**7.21E-08**
			Total HAPs:				**12.49**

GHG Emissions from RTO

Total rate of boilers: 6 MMBtu/hr (Natural Gas Combustion)
Operating hours: 8,760 hrs/yr
Conversion Factor: 2.20462 lbs/kg

Boilers NG Combustion Emissions				
Pollutant	**Emission Factor (kg/MMBtu)[1]**	**Emission Factor (lbs/MMBtu)[2]**	**Potential Hourly Emissions (lbs/hr)**	**Potential Annual Emissions (tons/yr)**
GHGs				
CO_2	53.020	116.89	701.33	**3,072**
CH_4	0.0010	0.0022	0.013	**0.06**
N_2O	0.00010	0.00022	0.001	**0.01**
GHGs (mass basis)	53.021	116.891	701.348	**3,072**
CO_2e				**3,075**

NOTES:

[1]GHG Emissions are based on 40 CFR 98, Tables A-1, C-1 and **C-2**

[2]Conversions from Table A-2 to Subpart A of Part 98 - Units of Measure Conversion

Emissions from Cooling Tower:

Basis: Mass balance based on circulation rates, TDS, Drift Loss
Water density 8.34 lb/gal
Based on manufacturer's guarantee of 0.005% drift loss
All PM is assumed to be PM10, therefore PM = PM10
Non VOC biocide proposed, therefore no VOCs calculated

ID	Emission Source	Circulation rate (gal/hr)	TDS content (avg ppm)	Drift Loss (percent)	Operating hours (hrs/yr)	PM10/ PM2.5 PTE (tons/yr)	PM PTE (tons/yr)	VOC PTE (tons/yr)
FS05	Cooling Tower	900,000	2,000	0.005	8760	**3.28**	**3.28**	0.00

Note: any increase in average TDS beyond 2000 ppm will result in increased PM/PM10 emissions.

Paved Roads (FS01):

Basis: 100% of grain, DDGS, ethanol, denaturant goes in/out by truck
Grain density = 56 lb/bushel
The below is considered a worst case emission estimate assuming no rail service
Equation based on AP-42 Section 13.2.1 Paved Roads

lbs/VMT Equation: $E=k\,(sL)^{0.91}\,(W)^{1.02}$

particle size multiplier	k_{PM}	0.011	dimensionless
	k_{PM-10}	0.0022	dimensionless
	$k_{PM-2.5}$	0.00054	dimensionless
road surface silt loading	sL	0.6	g/m2

Emission Unit	Truck Full (tons)	Truck Empty (tons)	Average Truck (tons)	PM Emission Factor (lb/VMT)	PM 10 Emission Factor (lb/VMT)	PM2.5 Emission Factor (lb/VMT)	Total VMT	PM Emissions (tons/yr)	PM10 Emissions (tons/yr)	PM2.5 Emissions (tons/yr)
In plant paved roads	40.00	15.00	29.00	0.21	0.04	0.01	99,511	**10.67**	**2.13**	**0.52**

VMT Calculations	Load Size	Amount/yr	% by truck	# of Trips	VMT (miles)	Full	Empty
Denaturant	7500 gal	3,571,429 gal	100%	476	714	357	357
Denatured Ethanol	7500 gal	71,428,571 gal	100%	9,524	14,286	7,143	7,143
Grain	25 tons	660,674 tons	100%	26,427	39,640	19,820	19,820
Wet DGS	25 tons	741,969 tons	100%	29,679	44,518	22,259	22,259
Corn Oil	7500 gal	1,760,000 gal	100%	235	352	176	176
					99,511	49,755	49,755
						50.0%	50.0%

Weighted Vehicle Average	((Empty %)*(15)) + ((Full %)*(40))
Empty Vehicle	15 Tons
Full Vehicle	40 tons
	29 tons

Fugitive Emissions from Equipment Leaks (FS04)

Component breakdown for applicability purposes only as includes components in <10% VOC service.

Fermentation

Equipment	#	Leak Rate (kg/hr/source)	Uncontrolled VOC lb/hr	LDAR Control percent	Controlled VOC lb/hr	Max % Alcohol in stream	Controlled VOC lb/hr	Controlled VOC tpy
Light Liquid Valves	90	0.00403	0.799	84%	0.128	13%	0.017	0.07
Light Liquid Pumps	6	0.0199	0.263	69%	0.082	13%	0.011	0.05
Gas Valves	0	0.00597	0.000	87%	0.000	13%	0.000	0.00
Compressor Seals	0	0.228	0.000	75%	0.000	13%	0.000	0.00
Pressure Relief Valves (gas)	5	0.104	1.145	87%	0.149	13%	0.019	0.08
Sampling Connections	0	0.015	0.000	87%	0.000	13%	0.000	0.00
Open-ended lines	5	0.0017	0.019	84%	0.003	13%	0.000	0.00
Flanges (connectors)	166	0.00183	0.669	84%	0.107	13%	0.014	0.06
Total Fugitive Components	272						*Controlled*	**0.27**

Distillation

Equipment	#	Leak Rate (kg/hr/source)	Uncontrolled VOC lb/hr	LDAR Control percent	Controlled VOC lb/hr	Max % Alcohol in stream	Controlled VOC lb/hr	Controlled VOC tpy
Light Liquid Valves	22	0.00403	0.195	84%	0.031	82%	0.026	0.11
Light Liquid Pumps	7	0.0199	0.307	69%	0.095	82%	0.078	0.34
Gas Valves	45	0.00597	0.592	87%	0.077	82%	0.063	0.28
Compressor Seals	0	0.228	0.000	75%	0.000	82%	0.000	0.00
Pressure Relief Valves (gas)	7	0.104	1.604	87%	0.208	82%	0.171	0.75
Sampling Connections	0	0.015	0.000	87%	0.000	82%	0.000	0.00
Open-ended lines	15	0.0017	0.056	84%	0.009	82%	0.007	0.03
Flanges (connectors)	190	0.00183	0.766	84%	0.123	82%	0.100	0.44
Total Fugitive Components	286						*Controlled*	**1.95**

Tank Farm

Equipment	#	Leak Rate (kg/hr/source)	Uncontrolled VOC lb/hr	LDAR Control percent	Controlled VOC lb/hr	Max % Alcohol in stream	Controlled VOC lb/hr	Controlled VOC tpy
Light Liquid Valves	70	0.00403	0.621	84%	0.099	100%	0.099	0.44
Light Liquid Pumps	5	0.0199	0.219	69%	0.068	100%	0.068	0.30
Gas Valves	0	0.00597	0.000	87%	0.000	100%	0.000	0.00
Compressor Seals	0	0.228	0.000	75%	0.000	100%	0.000	0.00
Pressure Relief Valves (gas)	5	0.104	1.145	87%	0.149	100%	0.149	0.65
Sampling Connections	0	0.015	0.000	87%	0.000	100%	0.000	0.00
Open-ended lines	6	0.0017	0.022	84%	0.004	100%	0.004	0.02
Flanges (connectors)	110	0.00183	0.443	84%	0.071	100%	0.071	0.31
Total Fugitive Components	196						*Controlled*	**1.71**

TOTAL COMPONENT COUNT

Equipment	#
Light Liquid Valves	182
Light Liquid Pumps	18
Gas Valves	45
Compressor Seals	0
Pressure Relief Valves (gas)	17
Sampling Connections	0
Open-ended lines	26
Flanges (connectors)	466
Total Fugitive Components	754

Pollutant	Mass Fraction of VOC - Ferm/Dist.	Mass Fraction of VOC - Tank Farm
Formaldehyde	0.000169	0.0001
Acetaldehyde	0.155	0.0002
Methanol	0.015	0.0002
Acrolein	0.0045	0.0001
Hexane	–	0.2
Benzene	–	0.1

TOTAL ESTIMATED EMISSIONS

VOC	**3.93**	tons/yr
Formaldehyde	0.267	tons/yr
Acetaldehyde	0.569	tons/yr
Methanol	0.296	tons/yr
Acroiein	0.276	tons/yr
Benzene	0.171	tons/yr
Hexane	0.342	tons/yr
Total HAPs:	**1.92**	tons/yr

VOC emissions from Product Loading (Truck/Rail)

Truck Loading Losses Truck -- Flared (controlled):

Loading Operations	Basis:	Calculated from AP-42, Section 5.2.2 - Loading Losses		
		Equation:	12.46*S*P*M/T	
		where: S	1	Saturation factor (submerged)
From Tanks 4.09		P	4.1037	Vapor pressure (psia)
		M	66	Molar Mass (lb/lb-mole)
From Tanks 4.09, average temp		T	506.04	Product Temp (deg R)
		AP-42 Factor:	6.67	lb/1000 gal

Losses calculated using this factor multiplied by loading rates:

Gasoline vapor emission rate (denatured ethanol loadout):	71,428,571	gal/yr
VOC Loading losses	476,348	lb/yr,uncontrolled
Controlled by flare	**4.76**	**tpy, @ 98% red.**

Rail Loading Losses (controlled):

Denatured Ethanol

Loading Operations	Basis:	Calculated from AP-42, Section 5.2.2 - Loading Losses		
		Equation:	12.46*S*P*M/T	
		where: S	0.6	Saturation factor
From Tanks 4.09		P	0.5284	Vapor pressure (psia)
		M	50.0449	Molar Mass (lb/lb-mole)
		T	506.04	Product Temp (deg R)
		AP-42 Factor:	0.39	lb/1000 gal

Losses calculated using this factor multiplied by loading rates:

Gasoline vapor emission rate (denatured ethanol loadout):	71,428,571	gal/yr
VOC Loading losses	27,905	lb/yr
Uncontrolled VOCs	13.95	tpy
Vapor recovery with flaring (98% destruction)	0.28	tpy

NOTE: Used emissions associated with truck loadout as it demonstrates worst-case emissions.

Product Loadout Flare Combustion Emissions

PM/PM-10 is negligible based on smokeless design
Pilot operated 8760 hrs/yr

Throughput:	6.4	MMBtu/hr	
Heating Value	850	Btu/scf	
Operating time	8760	hr/yr	
Pilot	0.1	MMBtu/hr	
Pilot Operating Time	8760	hr/yr	

Emission Factors (waste gas only)	NOx	0.068	lb/MMBtu	(AP-42, Table 13.5-1)
	CO	0.37	lb/MMBtu	(AP-42, Table 13.5-1)
	VOC	0.052	lb/MMBtu	(AP-42, Table 13.5-1&2, less methane and ethane)
	PM/PM10	negligible		smokeless design
	SO2	negligible		negligible sulfur presence
	HAP	negligible		due to negligible presence

Flaring Emissions (8760hr/yr) (truck and rail time)	NOx	3812	lb/yr	1.91	ton/yr
	CO	20744	lb/yr	10.37	ton/yr
	VOC	2915	lb/yr	1.46	ton/yr

Pilot Emissions (8760hr/yr)	NOx	0.1	lb/MMBtu	(AP-42, Table 1.4)	0.04	tpy
	CO	0.084	lb/MMBtu	(AP-42, Table 1.4)	0.04	tpy
	VOC	0.0055	lb/MMBtu	(AP-42, Table 1.4)	0.0024	tpy
	PM/PM10	0.0076	lb/MMBtu	(AP-42, Table 1.4)	0.0033	tpy
	SO2	0.0006	lb/MMBtu	(AP-42, Table 1.4)	0.0003	tpy
	HAP	negligible			negligible	

Totals see above	NOx	**1.95**
	CO	**10.41**
	VOC	**1.46**
	PM/PM10	**0.0033**
	SO2	**0.0003**
	HAP	**negligible**

GHG Emissions from Loadout Flare

Pilot Design Rate: 0.1 MMBtu/hr (NG Combustion)
Operating hours: 8,760 hrs/yr
Conversion Factor: 2.20462 lbs/kg

Loadout Flare Pilot - NG Emissions				
Pollutant	Emission Factor (kg/ MMBtu)[1]	Emission Factor (lbs/ MMBtu)[2]	Potential Hourly Emissions (lbs/hr)	Potential Annual Emissions (tons/yr)
GHGs				
CO_2	53.020	116.889	11.69	51.20
CH_4	0.0010	0.0022	0.00022	0.0010
N_2O	0.00010	0.00022	0.00002	0.0001
GHGs (mass basis)	53.021	116.891	11.689	51.198
CO_2e				**51.25**

Flare Design Rate: 6.4 MMBtu/hr (Methane/VOC Combustion)
Operating hours: 8,760 hrs/yr
Conversion Factor 2.20462 lbs/kg

Loadout Flare - Methane/VOC Emissions				
Pollutant	Emission Factor (kg/ MMBtu)[1]	Emission Factor (lbs/ MMBtu)[2]	Potential Hourly Emissions (lbs/hr)	Potential Annual Emissions (tons/yr)
GHGs				
CO_2	52.070	114.795	734.69	3,217.92
CH_4	0.0032	0.0071	0.04515	0.1978
N_2O	0.00063	0.00139	0.00889	0.0389
GHGs (mass basis)	52.074	114.803	734.739	3,218.158
CO_2e				**3,234.47**

Loadout Flare Totals	CO_2	3,269
	CH_4	0.20
	N_2O	0.04
	GHGs (MB)	3,269.36
	CO_2e	**3,285.72**

NOTES:
[1]GHG Emissions are based on 40 CFR 98, Tables A-1, C-1 and C-2
[2]Conversions from Table A-2 to Subpart A of Part 98 - Units of Measure Conversion

TRUCK and RAIL LOADING HAP LOSSES:

RAIL Loading HAPs:

Rail Loading: 0.28 tpy

Rail Denatured Ethanol HAPs	Fraction (%/100)	VOC (tpy)	HAP (tpy)
Benzene	0.1	0.28	0.02790
Hexane	0.2	0.28	0.05581
Acrolein	0.0001	0.28	0.00003
Formaldehyde	0.0001	0.28	0.00003
Acetaldehyde	0.0002	0.28	0.00006
Methanol	0.0002	0.28	0.00006
All other HAPS insignificant			
		Total HAPs	**0.084**

Truck Loading HAPS:

Composition based on typical MSDS for unleaded gasoline (mid points used)
Most gasoline is similar in composition
Only listed HAPs are given below
Calculations assume that trucks carrying ethanol were carrying gasoline and these vapors are vented to flare during loading

Total estimated VOC from product loading 4.76 tpy

Compound	Percent in Product	HAP Emissions (lb/yr)	HAP Emissions (tpy)
Benzene	10.00%	952.70	0.48
Hexane	20.00%	1905.39	0.95
Acrolein	0.01%	0.95	0.0005
Formaldehyde	0.01%	0.95	0.0005
Acetaldehyde	0.02%	1.91	0.001
Methanol	0.02%	1.91	0.001
Total HAPs		2863.81 lb/yr	
		1.43 ton/yr	

Rail and Truck HAP loss totals: 1.52 tpy

Storage Tank VOCs and HAPs:

Basis: Tanks 4.09 software (VOC), see attached tank calculations.

% Ethanol in Final Product: 98.00%
% Denaturant in Final Product: 5.00%

:al exceeds 100%, however, represents worst-case for each constitue

ID	Stored Liquid	Capacity (gal)	VOC lbs/yr	VOC (tpy)	Acetaldehyde (tpy)	Methanol (tpy)	Acrolein (tpy)	Form - aldehyde (tpy)	Benzene (tpy)	Hexane (tpy)
TK01	190 proof	174,500	790.74	0.395	7.91E-05	7.91E-05	3.95E-05	3.95E-05		
TK03	200 proof	174,500	757.68	0.379	7.58E-05	7.58E-05	3.79E-05	3.79E-05		
TK04	200 proof	174,500	757.68	0.379	7.58E-05	7.58E-05	3.79E-05	3.79E-05		
TK05	den. ethanol	587,000	608.18	0.304	5.96E-05	5.96E-05	2.98E-05	2.98E-05	1.52E-03	3.04E-03
TK06	den. ethanol	587,000	608.18	0.304	5.96E-05	5.96E-05	2.98E-05	2.98E-05	1.52E-03	3.04E-03
TK02	denaturant	58,750	1,745.03	0.873					8.73E-02	1.75E-01
	Total VOCs			**2.63**						
	Total HAPs			**0.27**	3.50E-04	3.50E-04	1.75E-04	1.75E-04	9.03E-02	1.81E-01

HAP:	Mass Fractions (VOL specific) (% / 100)
Acetaldehyde	0.0002 etoh (190/200/denatured ehoh)
Methanol	0.0002 etoh (190/200/denatured etoh)
Acrolein	0.0001 etoh (190/200/denatured etoh)
Formaldehyde	0.0001 etoh (190/200/denatured etoh)
Benzene	0.1 denaturant, natural gasoline
Hexane	0.2 denaturant, natural gasoline

HAP calculations (tpy) based on VOL (tpy) x HAP Mass Fraction

Corn Oil Extraction System

Storage VOCs and HAPs:
Basis: Tanks 4.09 software (VOC), see attached tank calculations.

Tank ID	Tank Description	Gallons	VOC	
			(lbs/yr)	(tpy)
TS-75701	Aqueous Soluble Phase Receiver Tank	263 gallons	77.07	0.039
TS-75801	Emulsion Concentrate Receiver Tank	382 gallons	77.63	0.039
TS-75501	Centrate Feed Tank	3,760 gallons	110.19	0.055
TS-77701	Bio Oil Storage Tank #1	9,000 gallons	152.22	0.076
TS-77702	Bio Oil Storage Tank #2	9,000 gallons	152.22	0.076
TP-6901	Emulsion Mix Flash Tank	1,000 gallons	90.54	0.045
TP-6930	Emulsion Settling Tank	450 gallons	85.8	0.043
TP-6931	Bio Oil Product Tank	400 gallons	79.56	0.040
Total VOCs			**825.23**	**0.413**

NOTES:
Due to actual tank/vessel size, some tank specs were modified in the TANKS program in order to calculate potential emissions.

VOC emissions from Product Loading (Truck/Rail)

Emissions are based on 100% of product shipped out by truck

Truck Loadout:

Loading Operations	Calculated from AP-42, Section 5.2.2 - Loading Losses			
	Equation:	12.46*S*P*M/T		
	where:	S	0.6	Saturation factor (submerged)
From Tanks 4.09		P	0.1112	Vapor pressure (psia)
		M	96.09	Molar Mass (lb/lb-mole)
From Tanks 4.09, average temp		T	569.67	Product Temp (deg R)
	AP-42 Factor:		0.14	lb/1000 gal
Losses calculated using this factor multiplied by loading rates:				
			1,760,000	gal/yr
			247	lb/yr,uncontrolled
			0.12	**tons/yr,uncontrolled**

Wetcake Store/Handling

Basis: PM/PM10 Emission Factor based on AP-42 Section 13.2.1 Paved Roads Equation
100% of Modified DGS is moved to hopper by front end loader
Front end loader average weight = 2 tons
1 Front end loader trip = 10 feet

Emission Unit	Front end loader (tons)	Front end loader empty (tons)	Average load (tons)	PM Emission Factor (lb/VMT)	PM10/ PM2.5 Emission Factor (lb/VMT)	Total VMT	PM Emissions (tons/yr)	PM10/PM2.5 Emissions (tons/yr)
pad and loading area fugitives	3.00	1.00	2.00	0.058	0.011	703	**0.020**	**0.004**

VMT Calculations	Load Size	Amount (tons) per year	# of Trips	VMT (miles)
Modified DGS	2	741,969	370,984	703

VOC Calcs	VOC/ton Mod. DGS	VOC emissions (tons/year)
	0.0083	**3.08**

Note: HAPs assumed insignificant.

HAP portion of VOCs:

	Mass Fraction	VOC (tpy)	HAP (tpy)
Formaldehyde	0.000169	3.08	0.000520
Acetaldehyde	0.155	3.08	0.47727
Methanol	0.015	3.08	0.04619
Acrolein	0.0045	3.08	0.01386
		Total:	**0.53784**

Firewater Pump - Emergency Equipment

Basis: Manufacturer's emission factors: 288 hp, diesel fired
Emission Factor for PM10 assumed to be all PM emissions

Unit Description	Unit Size (hp)	Operation hr/yr	Pollutant	E Factors lb/hp-hr	Emissions lb/yr	Emissions tpy
Fire Water Pump	288	100	NOx	0.0090	260.01	**0.130**
	288	100	SO2	0.0021	59.04	**0.030**
	288	100	CO	0.0067	192.38	**0.096**
	288	100	VOC*	0.003	80.01	**0.040**
	288	100	PM/PM10/PM2.5	0.0022	63.36	**0.032**
	288	100	CO2e	-	-	**6.0**

*Note: VOC factor considered conservative as it is for total organic carbon, which includes some non-VOC emissions (i.e.: Methane).
HAPs assumed to be negligible.

APPENDIX B – FACILITY DRAFT COMMENTS

The facility proposed a facility name change during the facility draft review. Therefore, the only comments received from the facility on January 21, 2021, were to change the facility name in the permit.

APPENDIX C – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company:	**Pacific Ethanol Magic Valley, LLC**
Address:	**2600 Washington Ave**
City:	**Burley**
State:	**ID**
Zip Code:	**83318**
Facility Contact:	**Zach Jensen**
Title:	**Plant Manager**
AIRS No.:	**031-00032**

N	Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
Y	Did this permit require engineering analysis? Y/N
N	Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	0	0.0
VOC	0.0	0	0.0
Total:	0.0	0	**0.0**
Fee Due	**$ 1,000.00**		

Comments: