TECHNICAL SUPPORT DOCUMENT

Air Discharge Permit ADP 17-3223
ADP Application CL-2084

NuStar Terminals Service, Inc.
and
NuStar Terminals Operations Partnership L.P.

SWCAA ID – 460 / 270

Final Issued: July 12, 2017

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Southwest Clean Air Agency

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Abbreviations

acfm	Actual cubic feet per minute
ADP	Air Discharge Permit
AP-42	Compilation of Emission Factors, AP-42, Fifth Edition, Volume 1, Stationary Point and Area Sources – published by the US Environmental Protection Agency
BACT	Best available control technology
BART	Best Available Retrofit Technology
Btu	British thermal unit
Btu/gal	Heat content expressed in British thermal units per gallon
CAS #	Chemical Abstracts Service registry number
cfm	Cubic feet per minute
CPM	Condensable particulate matter
CFR	Code of Federal Regulations
CO	Carbon monoxide
dscfm	Dry standard cubic feet per minute
EPA	U.S. Environmental Protection Agency
gr/dscf	Grains per dry standard cubic foot (68 °F, 1 atmosphere)
HAP	Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act
lb/1000 gal	Pounds per thousand gallons
lb/10^6 scf	Pounds per million standard cubic feet
lb/dy/unit	Pounds per day per unit
lb/hr	Pounds per hour
lb/MMBtu	Pounds per million British thermal units
lb/yr	Pounds per year
MMBtu/hr	Millions of British thermal units per hour
MSDS	Material Safety Data Sheet
NO_x	Nitrogen oxides
NOV	Notice of Violation
PM	Total particulate matter (includes both filterable and condensable particulate matter as measured by EPA Methods 5 and 202)
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (includes both filterable and condensable particulate matter as measured by EPA Methods 5 and 202)
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (includes both filterable and condensable particulate matter as measured by EPA Methods 5 and 202)
ppm	Parts per million
ppmv	Parts per million by volume
ppmvd	Parts per million by volume, dry
PSD	Prevention of Significant Deterioration
psig	Pounds per square inch, gauge
RCW	Revised Code of Washington
SQER	Small Quantity Emission Rate listed in WAC 173-460
SO_2	Sulfur dioxide
SWCAA	Southwest Clean Air Agency
TAP	Toxic air pollutant pursuant to Chapter 173-460 WAC
T-BACT	Best Available Control Technology for toxic air pollutants
tpy	Tons per year
TWA	Time weighted average
VOC	Volatile organic compound
WAC	Washington Administrative Code

1. FACILITY IDENTIFICATION

Applicant Name:	NuStar Energy LP
Applicant Address:	2368 Maritime Drive, Suite 275, Elk Grove, CA 95758
Primary Facility Name:	NuStar Terminals Service Inc. (Main Terminal)
Facility Address:	2565 NW Harborside Drive, Vancouver, WA 98660
Secondary Facility Name:	NuStar Terminals Operations Partnership L.P. (Annex Terminal)
Facility Address:	5420 Fruit Valley Road, Vancouver, WA 98660
SWCAA ID:	460 / 270
Contact Person:	Aaron Flett, Terminal Manager Chris Chan, Senior HSE Manager
Primary Process:	Special Warehousing and Storage / Industrial Chemicals Merchant Wholesalers
SIC/NAICS Code:	4226 / 424690
Facility Classification:	Title V Synthetic Minor (Opt-Out)

2. FACILITY DESCRIPTION

NuStar Energy LP (NuStar) owns and operates two bulk tank terminals in Vancouver, Washington under the business names of NuStar Terminals Service Inc. and NuStar Terminals Operations Partnership L.P. NuStar Terminals Service, Inc. operates the "Main Terminal" located on the Columbia River at 2565 NW Harborside Drive, Vancouver. NuStar Terminals Operations Partnership LP operates the "Annex Terminal" located approximately 1.8 miles to the north at 5420 Fruit Valley Road, Vancouver. The two terminals are connected by an underground pipeline, which allows for the transfer of bulk liquid product between the two locations.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit application number CL-2084 (ADP Application CL-2084) dated June 29, 2016. NuStar submitted ADP Application CL-2084 requesting approval to convert existing bulk liquid storage and transfer equipment at the Main and Annex Terminals to ethanol service. Proposed maximum throughput for this project is 408,000,000 gal/yr of ethanol. NuStar also requested that existing approval to store and handle crude oil be rescinded.

The proposed conversion affects tank Main 12001, tank Annex 12002, the railcar receiving areas, the truck loading area at the Annex Terminal, and the marine loading rack at the Main Terminal. The current permitting action provides approval for bulk ethanol storage and transfer operations as proposed in ADP Application CL-2084 and rescinds approval to store and handle crude oil. Previous approvals for the affected equipment to handle jet fuel and/or methanol will remain in place.

ADP 07-2710R3 will be superseded in its entirety by this permitting action.

4. PROCESS DESCRIPTION

4.a Main Terminal (*modified*). Bulk liquid products are received from various offsite sources and stored onsite prior to reshipment to other locations. The terminal is capable of both receiving and shipping products via ship, railcar, truck, and pipeline. Historically the terminal has handled antifreeze (ethylene glycol), methanol, caustic (50% sodium hydroxide), bio-diesel, calcium chloride, sodium chlorate solution, CCA (Copper/Chromium/Arsenate), carboquat 250 T (Active N-N-Dialkyn-N, N-Dimethylammonium Bicarbonate/Carbonate), ACQ 2102 (Wood Preservative), ACQ-C (Copper Ammonium Carbonate Solution) and ACQ-C2 (Aqueous Copper Solution). In

general practice, caustic is received via ship/barge, and shipped via railcar or truck. Methanol has received via ship/barge, and shipped via railcar. Other products are received via railcar and shipped via truck or ship/barge. Headspace vapors displaced from railcar loading of selected products are controlled using a thermal oxidizer (Main Vapor Combustion Unit).

Some products at the Main Terminal require elevated temperatures for proper storage and transfer. Storage tanks and piping for these products are heated indirectly with steam generated by a single natural gas fired Johnston model PFTX400-4G150S boiler rated at 16.8 MMBtu/hr.

A complete listing of all the storage tanks located at the Main Terminal is provided below in Table 5-1.

ADP Application CL-2084. NuStar proposes to repurpose tank Main 12001 to store/handle ethanol instead of crude oil or methanol. Approval to store/handle crude oil will be rescinded. Ethanol will be received via railcar, and shipped via marine tank vessel (ship/barge) using the existing marine loading rack. A new vapor combustion unit and vapor collection system will be installed for control of headspace vapors displaced during marine tank vessel loading operations. All other equipment/operations will remain unchanged.

4.b Annex Terminal (*modified*). Bulk liquid products are received from various offsite sources and stored onsite prior to reshipment to other locations. The terminal is capable of receiving products via ship, railcar, truck, and pipeline. Products are shipped primarily via truck. Historically the terminal has handled methanol, jet fuel, glycol ether, and various jet fuel additives (FSII, ASA). Headspace vapors displaced from truck loading of selected products are controlled using a thermal oxidizer (Annex Vapor Combustion Unit).

A complete listing of all the storage tanks located at the Annex Terminal is provided below in Table 5-1.

ADP Application CL-2084. NuStar proposes to repurpose tank Annex 12002 to store/handle ethanol instead of crude oil or methanol. Approval to store/handle crude oil will be rescinded. Ethanol will be received via railcar, and shipped via truck using storage and transfer equipment previously used to store and handle methanol (truck loading rack, VCU). All other equipment/operations will remain unchanged.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

Main Terminal.

5.a Main Methanol Railcar Loading Rack / Vapor Combustion Unit (*existing*). One railcar loading rack dedicated to loading methanol into railcars at a rate of up to 1,200 gallons per minute. Emissions from loading operations are controlled using vapor balance and a John Zink vapor combustion unit.

Main Vapor Combustion Unit. John Zink model ZCS-1-4-20-X-1/6 vapor combustion unit with a heat rating of 4 MMBtu per hour. The unit is 20 feet high and 4 feet in diameter. The vendor guarantees a 98% hydrocarbon destruction efficiency. The unit is capable of controlling 160 cfm of displace vapors from the railcar loading rack.

ADP Application CL-2084. No changes are proposed.

5.b Main Marine Loading Rack / Vapor Combustion Unit (*modified*). One marine loading rack used to load marine tank vessels (ships/barges) with jet fuel and ethanol. The loading rack utilizes a submerged fill configuration. Displaced headspace vapors from ethanol loading operations will be vented to a dedicated vapor combustion unit.

Marine Vapor Combustion Unit (Crude Oil). GEM Mobile Treatment Services model 42 MVC vapor combustion unit with a maximum heat rating of 42 MMBtu per hour. The unit's burn chamber provides a residence time of 0.5 seconds at a flow of 32,500 scfm (1,750°F). Unit exhaust is discharged vertically at a height of 18' above ground level. Source test information from similar applications demonstrates a hydrocarbon destruction efficiency of >99%.

ADP Application CL-2084. Approval to handle crude oil will be rescinded as part of this permitting action. The vapor combustion unit proposed for use while loading crude oil will be removed from the facility's permit.

Marine Vapor Combustion Unit (Ethanol). John Zink model ZCM-8-35-X-3/8-3/8-X vapor combustion unit with a maximum heat rating of 35 MMBtu per hour. The unit's burn chamber has a design residence time of 0.89 seconds. Unit exhaust is discharged vertically at a height of 35' above ground level. The manufacturer guarantees a hydrocarbon destruction efficiency of >98%.

ADP Application CL-2084. NuStar proposes to modify the existing marine loading rack to transfer ethanol from onsite storage (Main 12001, Annex 12002) to ships and/or barges. Maximum transfer rate is specified as 10,000 barrels per hour. Emissions from ethanol loading operations will be controlled using vapor balance and a vapor combustion unit. Specifications for the proposed vapor combustion unit are provided above.

5.c Main Truck/Railcar Loading Racks (*existing*). NuStar operates 5 truck/railcar loading racks at the Main Terminal for the general transfer of bulk liquid products. The loading racks are described as follows:

Loading Rack A	Side rack used to load CCA, calcium chloride, sodium chlorate, caustic, antifreeze, biodiesel and water to trucks.
Loading Rack B	River rack used to load caustic, calcium chloride and water to trucks.
Loading Rack C	Univar rack used to load caustic to trucks and railcars.
Loading Rack E	"Northstar" rack used to load caustic to trucks and railcars.
Loading Rack F	"World" rack used to load caustic, ACQ, ACQ-2, ACQ-2102, and Q50C to trucks.

ADP Application CL-2084. No changes are proposed.

5.d Main Process Boiler (*existing*). Johnston model PFTX400-4G150S serial number 10177-01 natural gas fired boiler with a rated heat input of 16.8 MMBtu/hr. The boiler is equipped with a ST Johnson Co. model FD98G400M-SP low emission burner and internal flue gas recirculation. The boiler has a four pass configuration. Exhaust gases are discharged vertically through a 22.25" diameter stack 12 feet above ground level.

ADP Application CL-2084. No changes are proposed.

5.e Main 12001 Storage Tank (*modified*). Internal floating roof tank (mechanical shoe) installed in 2007 with a maximum safe fill capacity of 4,216,000 gallons. This tank is currently approved to store crude oil or methanol. See Table 5-1 for tank parameters.

ADP Application CL-2084. As proposed in ADP Application CL-2084, Main 12001 will be repurposed to store ethanol. Approval to store/handle crude oil will be rescinded. No physical modification of the tank is necessary to handle ethanol. Permit conditions will allow either ethanol or methanol to be stored in Main 12001, but practically only one product can be physically handled at a time.

5.f Main 301 Storage Tank (*existing*). Cone fixed roof storage tank installed in 1970 with a maximum safe fill capacity of 12,232 gallons. This tank currently is used to store Safe-T-Therm (propylene glycol) but is permitted for the storage of perchloroethylene. See Table 5-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.g Main 403 Storage Tank (*removed*). Cone fixed roof storage tank installed in 2000 with a maximum safe fill capacity of 39,152 gallons. This tank was used to store 1,1,1-trichloroethane. This tank was decommissioned and removed from the facility in 2016.

ADP Application CL-2084. Main 403 was removed from the facility in 2016. The tank will be removed from the list of registered emission units.

5.h Main 1190 Storage Tank (*existing*). Cone fixed roof storage tank installed in 1982 with a maximum safe fill capacity of 54,000 gallons. This tank is normally empty and serves as an emergency spill tank for methanol. See Table 5-1 for tank parameters.

ADP Application CL-2084. The function of this tank will remain unchanged. Ethanol will be added to the list of allowed materials.

5.i Main Terminal Miscellaneous Storage Tanks (*existing*). The tanks listed below are used for the storage of low vapor pressure components. Emissions from operation of the tanks are small based on calculations from EPA TANKS 4.0 and an assumed 40 tank turnovers per year. Therefore the tanks are registered as a single emission unit. If the emissions from a tank increase significantly or if a new toxic or hazardous air pollutant is stored in a tank, the affected tank may be registered as a separate emission unit subsequent to the change.

Tanks:			
	Main 101	Main 244	Main 507
	Main 102	Main 351	Main 508
	Main 131	Main 352	Main 509
	Main 132	Main 401	Main 510
	Main 133	*Main 402 (removed 2016)*	Main 511
	Main 134	Main 404	Main 512
	Main 135	Main 405	Main 1001
	Main 136	Main 406	Main 1002
	Main 137	Main 407	Main 1003
	Main 138	Main 408	Main 1004
	Main 139	Main 501	Main 1005
	Main 141	Main 502	Main 1501
	Main 142	Main 503	Main 1502
	Main 241	Main 504	Main 5401
	Main 242	Main 505	Main 5402
	Main 243	Main 506	

ADP Application CL-2084. Main 402 was removed from the facility in 2016. The tank will be removed from the list of registered emission units. No other changes are proposed.

Annex Terminal:

5.j Annex Truck Loading Rack / Vapor Combustion Unit (*modified*). The loading rack consists of two truck bays with four arms dedicated to each truck bay for a total of eight arms with a throughput of 500 gpm each. Only one arm at each bay may be used at one time. One arm at each bay was dedicated to methanol loading. Displaced vapors from methanol loading operations were vented to a dedicated vapor combustion unit. There are no active methanol loading operations at this time.

Annex Vapor Combustion Unit. John Zink Vapor Combustion Unit model ZCS-1-4-20-X-1/6 enclosed vapor combustor. The unit is 20 feet high and 4 feet in diameter with a heat rating of 4 MMBtu per hour. The vendor guarantees a 98% hydrocarbon destruction efficiency. This unit controls 160 cubic feet per minute of methanol vapors from the truck loading of methanol.

ADP Application CL-2084. NuStar proposes to transfer ethanol from onsite storage (Main 12001, Annex 12002) to trucks using existing equipment that was previously used to transfer methanol. Emissions from ethanol loading operations will be controlled using vapor balance and the existing vapor combustion unit. No physical modification of the loading rack will be necessary.

5.k Annex 12002 Storage Tank (*modified*). Internal floating roof tank (mechanical shoe) installed in 2007 with a maximum safe fill capacity of 4,216,600 gallons. This tank is currently approved to store crude oil or methanol. See Table 4-1 for tank parameters.

ADP Application CL-2084. As proposed in ADP Application CL-2084, Annex 12002 will be repurposed to store ethanol. Approval to store/handle crude oil will be rescinded. No physical modification of the tank is necessary to handle ethanol. Permit conditions will allow either ethanol or methanol to be stored in Annex 12002, but practically only one product can be physically handled at a time.

5.l Annex 5501 Storage Tank (*existing*). Cone roof storage tank installed in 1958 with a maximum safe fill capacity of 2,190,594 gallons. This tank is currently used for the storage of jet fuel. See Table 4-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.m Annex 5502 Storage Tank (*existing*). Cone roof storage tank installed in 1958 with a maximum safe fill capacity of 2,190,342 gallons. This tank is currently used for the storage of jet fuel. See Table 4-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.n Annex 5503 Storage Tank (*existing*). External floating roof storage tank installed in 1958 with a maximum safe fill capacity of 2,079,378 gallons. The floating roof is a pontoon design with a mechanical shoe primary seal and a rim-mounted secondary seal. This tank is currently used for the storage of jet fuel. See Table 4-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.o Annex 5504 Storage Tank (*existing*). External floating roof storage tank installed in 1958 with a maximum safe fill capacity of 2,078,580 gallons. The floating roof is a pontoon design with a mechanical shoe primary seal and a rim-mounted secondary seal. This tank is currently used for the storage of jet fuel. See Table 4-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.p Annex 5505 Storage Tank (*existing*). External floating roof storage tank installed in 1958 with a maximum safe fill capacity of 2,073,372 gallons. The floating roof is a pontoon design with a mechanical shoe primary seal and a rim-mounted secondary seal. This tank is currently used for the storage of jet fuel. See Table 4-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.q Annex 4001 Storage Tank (*existing*). External floating roof storage tank installed in 1958 with a maximum safe fill capacity of 1,558,788 gallons. The floating roof is a pontoon design with a mechanical shoe primary seal and a rim-mounted secondary seal. This tank is currently used for the storage of jet fuel. See Table 4-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.r Annex 101 Storage Tank (*existing*). Internal floating roof storage tank (mechanical shoe) installed in 1958 with a maximum safe fill capacity of 38,111 gallons. This tank was converted from a fixed roof configuration to a floating roof configuration in 2014. This tank is currently approved to store methanol, tank slops, and transmix. See Table 4-1 for tank parameters.

ADP Application CL-2084. The function of this tank will remain unchanged. Ethanol will be added to the list of allowed materials.

5.s Annex 6 Storage Tank (*existing*). Cone roof storage tank installed in 1991 with a maximum safe fill capacity of 28,770 gallons. This tank is currently approved to store methanol. See Table 4-1 for tank parameters.

ADP Application CL-2084. No changes are proposed.

5.t Annex Terminal Miscellaneous Storage Tanks (*existing*). The tanks listed below are used for the storage of low vapor pressure components. Emissions from operation of the tanks are small based on calculations from EPA TANKS 4.0 and an assumed 40 tank turnovers per year. Therefore the tanks are registered as a single emission unit. If the emissions from a tank increase significantly or if a new toxic or hazardous air pollutant is stored in a tank, the affected tank may be registered as a separate emission unit subsequent to the change.

Tanks:	Annex 1	Annex 3	Annex 24
	Annex 2	Annex 8	Annex 191

ADP Application CL-2084. No changes are proposed.

5.u Equipment/Activity Summary.

ID No.	Generating Equipment/Activity	# of Units	Control Measure/Equipment	# of Units
1	Main Methanol Railcar Loading Rack	1	Submerged Fill, Vapor Capture and Combustion Main Vapor Combustion Unit (John Zink / ZCS-1-4-20-X-1/6)	1
2	Main Marine Loading Rack	1	Submerged Fill, Vapor Capture and Combustion, Marine Vapor Combustion Unit (John Zink / ZCM-8-35-X-3/8-3/8-X)	1
3	Main Truck/Railcar Loading Racks	5	Submerged Fill	N/A

ID No.	Generating Equipment/Activity	# of Units	Control Measure/Equipment	# of Units
4	Main Boiler (Johnston, 16.8 MMBtu/hr)	1	Low Emission Burner / FGR	N/A
5	Main 12001 Storage Tank	1	Internal Floating Roof (Mechanical Shoe)	N/A
6	Main 301 Storage Tank	1	None	N/A
7	Main Miscellaneous Storage Tanks	48	None	N/A
8	Annex Truck Loading Rack	1	Submerged Fill, Vapor Capture and Combustion Annex Vapor Combustion Unit (John Zink / ZCS-1-4-20-X-1/6)	1
9	Annex 12002 Storage Tank	1	Internal Floating Roof (Mechanical Shoe)	N/A
10	Annex 5501 Storage Tank	1	None	N/A
11	Annex 5502 Storage Tank	1	None	N/A
12	Annex 5503 Storage Tank	1	External Floating Roof (Mechanical Shoe / Rim Seal)	1
13	Annex 5504 Storage Tank	1	External Floating Roof (Mechanical Shoe / Rim Seal)	1
14	Annex 5505 Storage Tank	1	External Floating Roof (Mechanical Shoe / Rim Seal)	1
15	Annex 4001 Storage Tank	1	External Floating Roof (Mechanical Shoe / Rim Seal)	1
16	Annex 101 Storage Tank	1	Internal Floating Roof (Mechanical Shoe)	N/A
17	Annex 6 Storage Tank	1	None	N/A
18	Annex Miscellaneous Storage Tanks	6	None	N/A

5.v Storage Tank Summary. Table 5-1 identifies all of the individual storage tanks located at both NuStar terminals. For each tank, the table lists year of installation, height and diameter, storage capacity, roof type, current tank contents, and potential future tank contents used in the potential emissions calculations. Tank contents have changed in the past due to market conditions and new contracts obtained.

Table 5-1 - Tank Identification Table

Tank	Roof Type	Current Contents	Potential Contents	Design Capacity[1] (gallons)	Safe Fill Capacity[2] (gallons)	Diameter	Height	Install Date
Annex-5501	Cone Fixed Roof	Jet Fuel	Jet Fuel	2,284,266	2,189,102	90'	48'	1958
Annex-5502	Cone Fixed Roof	Jet Fuel	Jet Fuel	2,284,266	2,189,102	90'	48'	1958
Annex-5503	External Floating Roof	Jet Fuel	Jet Fuel	2,284,266	2,079,378	90'	48'	1958
Annex-5504	External Floating Roof	Jet Fuel	Jet Fuel	2,284,266	2,078,580	90'	48'	1958
Annex-5505	External Floating Roof	Jet Fuel	Jet Fuel	2,284,266	2,073,372	90'	48'	1958
Annex-4001	External Floating Roof	Jet Fuel	Jet Fuel	1,715,738	1,558,788	78'	48'	1958
Annex-101	*Internal Floating Roof*	*Tank Slops*	*Ethanol, Methanol, Slops, Transmix*	*42,445*	*38,111*	*21' 3"*	*16'*	*2014[3]*
Annex-12002	*Internal Floating Roof*	*Jet Fuel*	*Ethanol, Methanol*	*5,092,369*	*4,216,600*	*133'*	*49'*	*2007*
Annex-1	Cone Fixed Roof	Empty	Empty	19,943	19,824	10' 8"	29' 10"	1978
Annex-2	Cone Fixed Roof	Empty	Empty	10,575	9,492	10'	18'	1977
Annex-3	Cone Fixed Roof	Empty	Empty	19,905	19,488	11'	28'	1990
Annex-6	Cone Fixed Roof	Water	Methanol	32,122	28,803	13' 6"	30'	1991
Annex-8	Cone Fixed Roof	Empty	Empty	14,218	13,860	11'	20'	1993
Annex-24	Horizontal	ASA	ASA	1,000	1,000	5.33'	6.3'	2014
Annex-191	Horizontal	FSII	FSII	8,500	8,500	8'	22.33'	2014
Main-12001	*Internal Floating Roof*	*Empty*	*Ethanol, Methanol*	*5,092,369*	*4,216,600*	*133'*	*49'*	*2007*
Main-1001	Cone Fixed Roof	Caustic	Antifreeze	420,000	416,405	45'	36'	1960
Main-1002	Cone Fixed Roof	Caustic	Antifreeze	420,000	416,405	45'	36'	1960
Main-1003	Cone Fixed Roof	Caustic	Antifreeze	420,000	416,405	45'	36'	1960
Main-1004	Cone Fixed Roof	Caustic	Caustic	420,000	391,408	45'	36'	1966
Main-1005	Cone Fixed Roof	Caustic	Caustic	420,000	415,117	45'	36'	1966
Main-1501	Cone Fixed Roof	Caustic	Caustic	630,000	619,262	58'	32'	1969
Main-1502	Internal Floating Roof	Caustic	Antifreeze/Caustic	586,910	416,405	52'	40'	1971
Main-101	Cone Fixed Roof	Empty	Empty	4,888	4,524	8'	13'	1968
Main-102	Cone Fixed Roof	Empty	Empty	5000	5,000	9'	10'	1986
Main-131	Cone Fixed Roof	Empty	Empty	44,000	39,550	14'	38' 5"	1994
Main-132	Cone Fixed Roof	CCA	CCA	54,000	51,170	16'	36'	1979
Main-133	Cone Fixed Roof	Chlorate	Chlorate	44,000	39,550	14'	38' 5"	1994
Main-134	Cone Fixed Roof	Chlorate	Chlorate	44,000	39,550	14'	38' 5"	1994

Table 5-1 - Tank Identification Table

Tank	Roof Type	Current Contents	Potential Contents	Design Capacity[1] (gallons)	Safe Fill Capacity[2] (gallons)	Diameter	Height	Install Date
Main-135	Cone Fixed Roof	ACQ-2102	ACQ-2102	54,000	51,674	16'	36'	1979
Main-136	Cone Fixed Roof	ACQ-2102	ACQ-2102	54,000	51,674	16'	36'	1979
Main-137	Cone Fixed Roof	ACQ-C	ACQ-C	56,000	53,249	20'	24'	1979
Main-138	Cone Fixed Roof	ACQ-C2	ACQ-C2	66,000	63,791	18'	35'	1984
Main-139	Cone Fixed Roof	Carboquat Q50C	Carboquat Q50C	66,000	63,791	18'	35'	1984
Main-141	Cone Fixed Roof	Caustic	Caustic	60,900	57,153	18'	32'	1984
Main-142	Cone Fixed Roof	Caustic	Caustic	60,900	57,153	18'	32'	1985
Main-241	Cone Fixed Roof	Caustic	Caustic	102,000	98,081	22'	36'	1984
Main-242	Cone Fixed Roof	Calcium Chloride	Calcium Chloride	102,000	79,686	22'	36'	1979
Main-243	Cone Fixed Roof	Caustic	Caustic	102,000	97,0965	22'	36'	1979
Main-244	Cone Fixed Roof	Caustic	Caustic	102,000	98,037	22'	36'	1979
Main-301	Cone Fixed Roof	Propylene Glycol	Perchloroethylene	12,500	12,232	10' 4"	20'	1970
Main-351	Cone Fixed Roof	Empty	Antifreeze	15,000	14,898	10'6"	24'	1968
Main-352	Cone Fixed Roof	Empty	Antifreeze	15,000	14,898	10'6"	24'	1968
Main-401	Cone Fixed Roof	Empty	Antifreeze	39,000	39,152	14'	35'	1979
Main-402	*Cone Fixed Roof*	*Removed*		*41,500*	*40,980*	*15'*	*31' 8"*	*1986*
Main-403	*Cone Fixed Roof*	*Removed*		*39,000*	*39,152*	*14'*	*35'*	*2000*
Main-404	Cone Fixed Roof	Calcium Chloride	Antifreeze	39,500	38,001	14'	34' 4"	1980
Main-405	Cone Fixed Roof	Calcium Chloride	Antifreeze	39,500	38,001	14'	34' 4"	1980
Main-406	Cone Fixed Roof	Biodiesel	Antifreeze	39,500	38,001	14'	34' 4"	1980
Main-407	Cone Fixed Roof	Biodiesel	Antifreeze	39,500	38,001	14'	34' 4"	1980
Main-408	Internal Floating Roof	Biodiesel	Antifreeze	39,500	38,001	14'	34' 4"	1980
Main-501	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-502	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-503	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-504	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-505	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-506	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-507	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-508	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-509	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960

Table 5-1 - Tank Identification Table

Tank	Roof Type	Current Contents	Potential Contents	Design Capacity[1] (gallons)	Safe Fill Capacity[2] (gallons)	Diameter	Height	Install Date
Main-510	Cone Fixed Roof	Calcium Chloride	Antifreeze	20,000	19,072	10' 7"	30'	1960
Main-511	Cone Fixed Roof	Antifreeze	Antifreeze	20,000	19,072	10' 7"	30'	1963
Main-512	Cone Fixed Roof	Empty	Antifreeze	20,000	19,690	10' 9"	30'	1967
Main-1190	*Cone Fixed Roof*	*Empty*	*Ethanol, Methanol*	*57,000*	*54,000*	*16'*	*38'*	*1982*
Main-5401	Cone Fixed Roof	Caustic	Caustic	2,268,000	2,203,594	110'	32'	2000
Main-5402	Cone Fixed Roof	Caustic	Caustic	2,268,000	2,237,600	110'	32'	2003

[1] Design capacity based on the internal cross-sectional area multiplied by the internal height of the tank as specified by an EPA letter (12/29/97)

[2] The safe fill capacity has been re-calculated by the facility based on seal interference and past history of the tank

[3] Date of conversion from fixed roof to internal floating roof configuration.

6. EMISSIONS DETERMINATION

Emissions to the ambient atmosphere from terminal operations, as proposed in ADP Application CL-2084, consist of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM) sulfur dioxide (SO_2), toxic air pollutants (TAPs), and hazardous air pollutants (HAPs).

6.a Storage Tanks *(modified)*. VOC emissions from the storage tanks are calculated using the EPA TANKS 4.0 emissions model, actual tank configuration, and the maximum estimated throughput of the most volatile component stored in each tank. For most tanks, VOC emissions are estimated assuming each tank has a maximum of 40 turnovers per year. Emissions from Annex 101 are estimated based on the product throughput and characteristics proposed in ADP Application CL-2013. Emissions from Annex 12002 and Main 12001 are estimated based on the product throughput and characteristics proposed in ADP Applications CL-1998 and CL-2084. Caustic, calcium chloride, chlorate and CCA do not contain any VOC components and are not volatile products so any tank primarily engaged in the storage and transfer of those products is assumed to have negligible VOC emissions.

Table 6-1 VOC Emissions from Storage Tanks

Tank ID	Contents	Emissions (lb/yr)
Annex-5501	JP-8	2,169.4
Annex-5502	JP-8	2,169.4
Annex-5503	JP-8	252.5
Annex-5504	JP-8	252.5
Annex-5505	JP-8	251.9
Annex-4401	JP-8	222.3
Annex-101	Transmix	726.0
*Annex-12002**	*Ethanol*	*696.0*
Annex-Tank 6	Methanol	1,179.5
*Main-12001**	*Ethanol*	*696.0*
Main-1001	Antifreeze	14.1
Main-1002	Antifreeze	14.1
Main-1003	Antifreeze	14.1
Main-1502	Antifreeze	152.5
Main-139	Carboquat Q50C	122.0
Main-301	Perchloroethylene	364.0
Main-351	Antifreeze	0.5
Main-352	Antifreeze	0.5
Main-401	Antifreeze	1.4
Main-404	Antifreeze	1.3
Main-405	Antifreeze	1.3
Main-406	Antifreeze	1.3
Main-407	Antifreeze	1.3
Main-408	Antifreeze	34.1
Main-501	Antifreeze	0.7
Main-502	Antifreeze	0.7
Main-503	Antifreeze	0.7
Main-504	Antifreeze	0.7
Main-505	Antifreeze	0.7
Main-506	Antifreeze	0.7
Main-507	Antifreeze	0.7
Main-508	Antifreeze	0.7
Main-509	Antifreeze	0.7
Main-510	Antifreeze	0.7
Main-511	Antifreeze	0.7
Main-512	Antifreeze	0.7
Total		9,346.4

Table 6-2 contains the TAP and HAP vapor fraction used to calculate emissions at the facility. The TAP and HAP vapor fraction of jet fuel emission is estimated using EPA SPECIATE 3.2 profile number 0100 "fixed Roof Tank – Commercial JP-8 (Jet A)."

Table 6-2
HAP and TAP Vapor Fraction

HAP*/TAP	Perchloro-ethylene Vapor (%)	Jet Fuel Vapor (%)	Methanol Vapor (%)	*Ethanol Vapor (%)*	Antifreeze Vapor (%)	Transmix Vapor (%)
Benzene*						0.65
Cyclohexane						0.34
Ethanol				*100*		
Ethylbenzene*						0.15
Ethylene Glycol*					100	
Hexane*						0.53
Hydrogen sulfide						
Isopropylbenzeme*						0.05
Methanol*			100			
Naphthalene*						0.02
N-heptane		0.1				
N-nonane		4.7				0.05
N-octane		0.5				
Perchloroethylene*	100					
124-Trimethylbenzene						0.02
Toluene*						0.39
Xylene*						0.07

TAP and HAP emissions from storage tank operation were calculated by multiplying the vapor fraction shown above in Table 6-2 by the estimated potential VOC emissions from the affect storage tank (see Table 6-1).

Table 6-3
HAP and TAP Emissions from Storage Tanks

HAP*/TAP	Perchloro-ethylene (lb/yr)	Jet Fuel (lb/yr)	Methanol (lb/yr)	*Ethanol (lb/yr)*	Antifreeze (lb/yr)	Transmix* (lb/yr)
Benzene*						4.7
Cyclohexane						2.5
Ethanol				*1,392.0*		
Ethylbenzene*						1.1
Ethylene Glycol*					244.9	
Hexane*						3.8
Isopropylbenzene*						0.4
Methanol*			1,179.5			
Naphthalene*						0.1
N-heptane		5.3				
N-nonane		249.9				0.4
N-octane		26.6				
Perchloroethylene*	364.0					
124-Trimethylbenzene						0.1
Toluene*						2.8
*Xylene**						0.5

* NuStar is currently approved to store methanol and slops in Annex 101. The above calculations assume the storage of transmix in Annex 101, as proposed in ADP Application CL-2013.

Actual annual VOC emissions from the storage tanks shall be calculated based on actual tank configuration, actual tank contents and actual product throughput using either the most recent version of EPA TANKS or the emissions calculation program developed by International Environmental Associated, Inc. (IEA). . Actual annual HAP and TAP emissions will be calculated using the annual VOC emissions and the vapor percentages shown in Table 6-2.

6.b Truck/Railcar Loading – Fugitive Emissions and VCU Pass Through (*modified*). NuStar loads trucks and railcars using multiple loading racks. Methanol and jet fuel are approved for loading into tanker trucks at the Annex Terminal and methanol, perchlorethylene, and antifreeze are approved for loading into trucks and railcars at the Main Terminal.

ADP Application CL-2084. NuStar proposes to add ethanol as an approved product for loading into tanker trucks at the Annex Terminal. Emissions will be controlled using the equipment previously used for methanol. The throughput/emission values for ethanol and methanol represent maximum potential values while handling a single product. The facility can not physically handle both products simultaneously at those levels.

VOC emissions from loading rack operation are calculated using the loading loss equation from EPA AP-42 Section 5.2 "Transportation and Marketing of Petroleum Liquids".

$$L = 12.46\left(\frac{SMP}{T}\right)$$ (Uncontrolled loading losses)

Where:

L =	VOC loading losses (lb/1000 gallons)
S =	Saturation factor
P =	True vapor pressure (psia)
M =	Molecular weight
T =	Temperature of bulk liquid, °R
Cap Eff =	Efficiency of vapor capture system
Cont Eff =	Efficiency of vapor combustion unit

Table 6-4 shows input variables and resulting emission factors for loading rack operations. Two factors are given. The first factor represents fugitive emissions that are not captured by the control system (1.3% of uncontrolled emissions). The second factor represents emissions that pass through the vapor combustion units untreated (2% of captured emissions). Emissions from methanol, transmix, and ethanol loading are controlled using vapor balance and vapor combustion units. All other products are loaded without add-on controls.

Table 6-4
Truck/Railcar Loading – VOC Emission Factors

Product	S	P (psia)	M	T (°R)	Capture Eff (%)	Uncaptured E.F. (lb/1000 gal)	Control Eff (%)	Uncombusted E.F. (lb/1000 gal)
Methanol	0.6	1.2322	32.04	513.57	98.7[1]	0.00747	98	0.0113
Ethanol	0.6	0.5542	46.07	513.57	98.7[1]	0.00483	98	0.00734
Transmix	1	2.0512	62.5	513.57	99.9	0.0031	98	0.062
Jet Fuel	0.6	0.0073	130	513.57	N/A[2]	0.0138	N/A[2]	--
Perchloroethylene	0.6	0.1759	165.83	513.57	N/A[2]	0.425	N/A[2]	--
Ethylene Glycol	0.6	0.0005	62.07	513.57	N/A[2]	0.0005	N/A[2]	--

[1] Notice of Proposed Change to AP-42 Section 5.2, 12/15/95 for trucks passing annual test.
[2] Loading uncontrolled.

Table 6-5 shows estimated emissions from loading rack operation based on maximum throughput and the emission factors shown in Table 6-4 above.

Table 6-5
Truck/Railcar Loading – VOC Emissions

Product	Throughput (gal/yr)	Uncaptured E.F. (lb/1000 gal)	Uncaptured Emissions (lb/yr)	Uncombusted E.F. (lb/1000 gal)	Uncombusted Emissions (lb/yr)
Annex - Transmix	2,016,000	0.0031	6	0.062	125
Annex - Methanol	171,340,560	0.00747	1,280	0.0113	1,936
Annex - Ethanol	408,000,000	0.00483	1,971	0.00734	2,995
Annex - Jet Fuel	487,932,880	0.0138	6,733	--	--
Main - Methanol	198,664,000	0.00747	1,260	0.0113	1,906
Main - Perchlorethylene	489,280	0.425	208	--	--
Main - Ethylene Glycol	75,853,800	0.0005	38	--	--

Table 6-6 shows TAP and HAP emissions from truck/railcar loading rack operation. Emissions are calculated by multiplying the VOC emissions in Table 6-5 by the vapor fractions shown in Table 6-2.

Table 6-6
Truck/Railcar Loading – HAP and TAP Emissions

HAP*/TAP	Perchloro-ethylene (lb/yr)	Jet Fuel (lb/yr)	Methanol (lb/yr)	*Ethanol (lb/yr)*	Antifreeze (lb/yr)	Transmix (lb/yr)
Benzene*						0.9
Cyclohexane						0.4
Ethanol				*4,965.4*		
Ethylbenzene*						0.2
Ethylene Glycol*					37.9	
Hexane*						0.7
Isopropylbenzene*						0.1
Methanol*			6,381.9			
Naphthalene*						0.03
N-heptane		6.7				
N-nonane		316.5				0.07
N-octane		33.7				
Perchloroethylene*	207.9					
124-Trimethylbenzene						0.03
Toluene*						0.5
Xylene*						0.1

Actual annual VOC emissions from the vapor combustion system will be calculated based on the actual product loaded and the emission factors from source test data. For uncontrolled and uncaptured loading, the emission factors shown in Table 6-5 may be used. Actual annual HAP and TAP emissions will be calculated based on the vapor fraction shown in Table 6-2 multiplied by the VOC emissions.

6.c Truck/Railcar Loading – Vapor Combustion Units (*modified*). Emissions values presented in Table 6-7 are based on product type, proposed/approved product throughput, and applicable emission factors. Emission factors for transmix loading are taken from an email from the manufacturer (*John Zink - 2/6/14*). The NO_X emission factor for all other products is taken from manufacturer's data. The CO emission factor for other products is taken from source test data with an added margin of safety. Emissions of other pollutants are considered insignificant. Estimated emissions are as follows:

Table 6-7
Truck / Railcar Loading VCU Emissions

Product	Throughput (gal)	Emission Factor (lb/1000 gal) CO	Emission Factor (lb/1000 gal) NO_x	Emissions (lb/yr) CO	Emissions (lb/yr) NO_x
Annex - Methanol	171,340,560	0.030	0.033	5,140	5,654
Annex - Ethanol	408,000,000	0.030	0.033	12,240	13,464
Annex - Transmix	2,016,000	0.0835	0.334	168	67
Main - Methanol	168,664,000	0.030	0.033	5,060	5,566

Actual emissions of combustion products will be calculated based on the most recent source test for each vapor combustion unit and actual product throughput.

6.d Marine Loading Fugitive Emissions – Jet Fuel (*existing*). NuStar loads jet fuel to marine tank vessels (ships/barges) at the existing marine dock. Loading operations use only submerged fill. Associated fugitive VOC emissions are calculated using Equation 1 from EPA AP-42 Section 5.2 "Transportation and Marketing of Petroleum Liquids".

L = 12.46 [SPM/T] (TOC - uncontrolled loading)

Where:

S =	Saturation factor (Table 5.2-1)	=	0.5 (barge) 0.2 (ship)
P =	True vapor pressure of jet fuel, psia	=	0.0075
M =	Molecular weight of vapors, lb/lbmole	=	130
T =	Temperature of vapors, °R (°F + 460)	=	528

Table 6-8 estimates VOC emissions from loading jet fuel to marine tank vessels. Potential emissions have been calculated assuming 100% of the vessels loaded are barges (worst case).

Table 6-8
Jet Fuel Marine Vessel Loading – VOC Emission Factors

Product	Throughput (gal/yr)	Uncontrolled E.F. (lb/1000 gal)	Emissions (lb/yr)
Jet Fuel (Barge)	113,000,000	0.01150	1,300
Jet Fuel (Ship)	--	0.00460	--

Table 6-9 shows potential TAP and HAP emissions from loading rack operation. Emissions are calculated by multiplying the VOC emissions in Table 6-8 by the vapor fractions shown in Table 6-2.

Table 6-9
Jet Fuel Marine Vessel Loading
HAP/TAP Emissions

HAP*/TAP	Emissions (lb/yr)
N-heptane	1.3
N-nonane	61.1
N-octane	6.5

Actual annual VOC emissions from marine loading of jet fuel shall be calculated based on actual product throughput and emission factors from Table 6-8. Actual annual HAP and TAP emissions will be calculated by multiplying estimated VOC emissions by the vapor fraction shown in Table 6-2.

6.e Marine Loading Fugitive Emissions and VCU Pass Through - Ethanol (*new*). Emissions from loading ethanol into marine vessels are calculated using the loading loss equation from EPA AP-42 Section 5.2 "Transportation and Marketing of Petroleum Liquids". Emissions are controlled using vapor balance systems and a vapor combustion unit.

EF = (L + V) lb/1000 gal	(Total uncontrolled loading losses)
L = 12.46 [SMP/T] = 0.3013 lb/1000gal	(TOC - uncontrolled loading)
V = L = 0.3013 lb/1000 gal	(uncleaned vessel headspace - assumed equal to loading factor)
EF = 0.6025 lb/1000 gal	(Total uncontrolled loading losses)

Table 6-14 shows input variables and resulting emission factors for loading rack operations. Two factors are given. The first factor represents fugitive emissions that are not captured by the control system (0.1% of uncontrolled emissions). The second factor represents emissions that pass through the vapor combustion units untreated (2% of captured emissions).

Table 6-10
Ethanol Marine Vessel Loading– VOC Emission Factors

Product	S	P (psia)	M	T (°R)	Capture Eff (%)	Uncaptured E.F. (lb/1000 gal)	Control Eff (%)	Uncombusted E.F. (lb/1000 gal)
Ethanol	0.5	0.5542	46.07	528	99.9	0.000603	98	0.01204

Table 6-15 shows estimated emissions from loading rack operation based on maximum throughput and the emission factors shown in Table 6-14 above.

Table 6-11
Ethanol Marine Vessel Loading - VOC Emissions

Product	Throughput (gal/yr)	Uncaptured E.F. (lb/1000 gal)	Uncaptured Emissions (lb/yr)	Uncombusted E.F. (lb/1000 gal)	Uncombusted Emissions (lb/yr)
Main - Ethanol	408,000,000	0.000603	246	0.01204	4,912

ADP Application CL-2084. NuStar proposes to add ethanol as an approved product for loading into marine vessels at the Main Terminal. Ethanol may be loaded to trucks and railcars as well as marine vessels. The throughput/emission values cited above for ethanol represent maximum potential values.

6.f Marine Vessel Loading Vapor Combustion Unit - Ethanol (*new*). This marine loading VCU is only assumed to operate during ethanol loading operations. Emissions values presented in Table 6-16 are based on proposed/approved product throughput and applicable emission factors. The NO_X emission factor is taken from manufacturer's data. The CO emission factor is taken from source test data with an added margin of safety. Emissions of other pollutants are considered insignificant. Estimated emissions are as follows:

Table 6-12
Marine Vessel Loading / Ethanol - VCU Emissions

		Emission Factor (lb/1000 gal)		Emissions (lb/yr)	
Product	Throughput (gal)	CO	NO_x	CO	NO_x
Main - Ethanol	408,000,000	0.030	0.033	12,240	13,464

Actual emissions of combustion products will be calculated based on the most recent source test for each vapor combustion unit and actual product throughput.

6.g Fugitive Emissions from Equipment Components (*modified*). Fugitive emissions from product handling and storage are estimated from the number of components in service at the facility, a maximum of 365 days of operation, and applicable emission factors. Emission factors for all products are taken from the Texas Natural Resources Conservation Commission publication titled "Technical Guidance Package for: Bulk Gasoline Terminals".

Table 6-13
Fugitive VOC Emissions – Jet Fuel Handling and Storage

Component	No. Units	Factor (lb/hr/unit)	Emissions (lbs/yr)
Pumps	10	1.19E-03	104
Valves	182	9.48E-05	151
Pressure Relief Devices	19	2.87E-04	48
Flanges/Connectors	294	1.76E-05	45
Total			348

Table 6-14
Fugitive VOC Emissions – Methanol Handling and Storage

Component	No. Units	Factor (lb/hr/unit)	Emissions (lbs/yr)
Pumps	2	1.19E-03	21
Valves	40	9.48E-05	33
Pressure Relief Devices	4	2.87E-04	10
Flanges/Connectors	20	1.76E-05	3
Total			67

Table 6-15
Fugitive VOC Emissions – Antifreeze Handling and Storage

Component	No. Units	Factor (lb/hr/unit)	Emissions (lbs/yr)
Pumps	17	1.19E-03	177
Valves	303	9.48E-05	252
Pressure Relief Devices	32	2.87E-04	80
Flanges/Connectors	490	1.76E-05	76
Total			585

Table 6-16
Fugitive VOC Emissions – Perchloroethylene Handling and Storage

Component	No. Units	Factor (lb/hr/unit)	Emissions (lbs/yr)
Pumps	1	1.19E-03	10
Valves	12	9.48E-05	10
Pressure Relief Devices	1	2.87E-04	3
Flanges/Connectors	20	1.76E-05	3
Total			26

Table 6-17
Fugitive VOC Emissions – Transmix Handling and Storage

Component	No. Units	Factor (lb/dy/unit)	Emissions (lbs/yr)
Pumps	1	2.27E-3	1
Valves	4	2.85E-2	42
Pressure Relief Devices	2	2.87E-4	0.2
Flanges/Connectors	15	4.23E-4	2
Total			45

Table 6-18
Fugitive VOC Emissions – Ethanol Handling and Storage

Component	No. Units	Factor (lb/dy/unit)	Emissions (lbs/yr)
Pumps	4	2.85E-2	42
Valves	46	2.28E-3	38
Pressure Relief Devices	4	6.89E-3	10
Flanges/Connectors	34	4.22E-4	5
Total			95

TAP and HAP emissions from fugitive leaks are calculated by multiplying estimated VOC emissions by the vapor fractions shown in Table 6-2.

Table 6-19
Fugitive HAP/TAP Emissions from Equipment Components

HAP*/TAP	Perchloro-ethylene (lb/yr)	Jet Fuel (lb/yr)	Antifreeze (lb/yr)	Methanol (lb/yr)	*Ethanol (lb/yr)*	Transmix (lb/yr)
Benzene*						0.3
Cyclohexane						0.2
Ethanol					*95.2*	
Ethylbenzene*						0.1
Ethylene Glycol*			584.8			
Hexane*						0.2
Isopropylbenzene*						0.02
Methanol*				67.2		
Naphthalene*						0.01
N-heptane		0.3				
N-nonane		16.4				0.02
N-octane		1.7				
Perchloroethylene*	26.0					
124-Trimethylbenzene						0.01
Toluene*						0.2
Xylene*						0.03

Actual emissions will be calculated using the above emissions which assume that product is stored in the lines 8,760 hours per year. If the facility is not in operation and the lines are emptied of product for a significant portion of the year, a reduced emission estimate may be used based on the reduction in hours.

6.h Johnston Boiler (*existing*). Information in the Technical Support Document associated with ADP 03-2464 indicates that the Johnston boiler will maintain NO_x and CO emissions at, or below, 30 ppmv and 40 ppmv, respectively (corrected to 3% O_2). Source test and monitoring results have demonstrated compliance with these concentrations. Emission factors for NO_x, CO, VOC, PM, and SO_2 have been taken from manufacturer's data. Emission factors for TAPs and HAPs are taken from EPA AP-42, Section 1.4 "Natural Gas Combustion" (7/98). Based on a maximum rated heat input of 16.8 MMBtu/hr and 8,760 hrs/yr of operation, emissions are as follows:

Pollutant	Emission Factor	Emission Factor Source	Potential Emissions
NO_x	0.0370 lb/MMBtu	Mfg	2.72 tpy
CO	0.0275 lb/MMBtu	Mfg	2.02 tpy
VOC	0.0040 lb/MMBtu	Mfg	0.29 tpy
SO_2	0.0010 lb/MMBtu	Mfg	0.07 tpy
PM/PM_{10} (total)	0.0100 lb/MMBtu	Mfg	0.74 tpy
Benzene	2.1E-6 lb/MMBtu	AP-42, Section 1.4	0.3 lbs/yr
Formaldehyde	7.4E-5 lb/MMBtu	AP-42, Section 1.4	10.9 lbs/yr

Actual emissions from the boiler shall be calculated based on actual fuel consumption and the most recent source test or emission monitoring result for NO_x and CO or the emission factors listed above for all other pollutants.

6.i Emissions Summary/Facilitywide Potential to Emit. Potential emission values presented below assume worst case operating conditions for tanks Main 12001 and Annex 12002, and the marine loading rack.

Pollutant	Potential Emissions	Project Change
NO_X	15.10 tpy	0.72 tpy
CO	13.33 tpy	2.13 tpy
VOC	15.53 tpy	- 0.50 tpy
SO_2	0.07 tpy	- 0.17 tpy
Lead	-- tpy	-- tpy
PM	0.74 tpy	- 0.32 tpy
PM_{10}	0.74 tpy	- 0.32 tpy
$PM_{2.5}$	0.74 tpy	- 0.32 tpy
HAP	4.56 tpy	- 0.37 tpy
TAP	8.25 tpy	2.95 tpy

HAP/TAP	CAS No.	Category	Potential Emissions (lb/yr)	Project Increase (lb/yr)	SQER (lb/yr)
Benzene	71-43-2	HAP/TAP A	6.2	- 76.4	20
Cyclohexane	110-82-7	TAP B	3.1	0.0	43,748
Ethanol	64-17-5	TAP B	6,645	6,645	43,748
Ethyl Benzene	100-41-4	HAP/TAP B	1.4	- 11.4	43,748
Ethylene Glycol	107-21-1	HAP/TAP B	868	0.0	43,748
Formaldehyde	50-00-0	HAP/TAP A	10.9	0.0	20
Hexane	110-54-3	HAP/TAP B	4.8	- 569.1	22,750
Isopropylbenzene	98-82-8	HAP/TAP B	0.5	0.0	43,748
Methanol	67-56-1	HAP/TAP B	7,629	0.0	43,748
Naphthalene	91-20-3	HAP/TAP B	0.2	0.0	22,750
N-heptane	142-82-5	TAP B	13.7	0.0	43,748
N-nonane	111-84-2	TAP B	644	0.0	43,748

HAP/TAP	CAS No.	Category	Potential Emissions (lb/yr)	Project Increase (lb/yr)	SQER (lb/yr)
N-octane	111-65-9	TAP B	68.5	0.0	43,748
Perchloroethylene	127-18-4	HAP/TAP A	598	0.0	500
124-Trimethylbenzene	95-63-6	TAP B	0.2	0.0	43,748
Toluene	108-88-3	HAP/TAP B	3.5	- 38.4	43,748
Xylene	1330-20-7	HAP/TAP B	0.6	- 46	43,748

7. REGULATIONS AND EMISSION STANDARDS

Regulations that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the regulations, codes, or requirements listed below.

7.a 40 CFR 60 Subpart Dc "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units" applies to any steam generating unit with a heat input greater than or equal to 10 MMBtu/hr, but less than or equal to 100 MMBtu/hr constructed, modified, or reconstructed after June 9, 1989. The Johnston replacement boiler is subject to this regulation because it was manufactured after 1989 and has a rated heat input greater than 10.0 MMBtu/hr.

7.b 40 CFR 60 Subpart K "Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973 and Prior to May 19, 1978" applies to each storage vessel with a capacity greater than or equal to 151,412 liters (40,000 gallons) that is used to store petroleum liquids for which construction is commenced after June 11, 1973. There are no storage tanks at either facility which were constructed between June 11, 1973 and May 19, 1978 with a capacity greater than 40,000 gallons therefore this regulation does not apply to any tanks at either of the two terminals.

7.c 40 CFR 60 Subpart Ka "Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978 and Prior to July 23, 1984" applies to each storage vessel with a capacity greater than or equal to 151,416 liters (40,000 gallons) that is used to store petroleum liquids for which construction is commenced after May 18, 1978. There are no storage tanks at either facility which were constructed between May 18, 1978 and July 23, 1984 with a capacity greater than 40,000 gallons therefore this regulation does not apply to any tanks at either of the two terminals.

7.d 40 CFR 60 Subpart Kb "Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984" applies to each storage vessel with a capacity greater than or equal to 75 cubic meters (19,812 gallons) that is used to store volatile organic liquids. The subpart does not apply to storage vessels with a capacity between 75 cubic meters (19,812 gallons) and 151 cubic meters (39,889 gallons) with a maximum true vapor pressure of less than 15 kPa nor storage vessels with a capacity greater than 151 cubic meters (39,889 gallons) with a maximum true vapor pressure of less than 3.5 kPa. The following table lists the tanks which may be subject to this subpart based on tank capacity and date of installation:

Table 7-1
NSPS Subpart Kb Applicability

Tank	Design Capacity (gallons)	Installation Date	Potential Contents	Max Vap Pressure (kPa)	Notes
Annex 12002	*5,092,369*	*2007*	*Ethanol, Methanol*	*11*	*Subject to Kb*
Annex 3	19,905	1990	Denatured Ethanol	6	Not subject to Kb (size, vapor pressure)
Annex 6	32,122	1991	Methanol	11	Subject to Kb

Table 7-1
NSPS Subpart Kb Applicability

Tank	Design Capacity (gallons)	Installation Date	Potential Contents	Max Vap Pressure (kPa)	Notes
Annex 101	38,111	2014*	Transmix	14.1	(recordkeeping only) Not subject to Kb (size, vapor pressure)
Main 12001	*5,092,369*	*2007*	*Ethanol, Methanol*	*11*	*Subject to Kb*
Main 138	66,000	1984	ACQ-C2	0.05	Not subject to Kb (size, vapor pressure)
Main 139	66,000	1984	Carboquat Q50C	<1	Not subject to Kb (size, vapor pressure)
Main 141	60,900	1984	Caustic	NA	Not subject to Kb (non organic content)
Main 142	60,900	1985	Caustic	NA	Not subject to Kb (non organic content)
Main 241	102,000	1984	Caustic	NA	Not subject to Kb (non organic content)
Main 5401	2,268,000	2000	Caustic	NA	Not subject to Kb (non organic content)
Main 5402	2,268,000	2003	Caustic	NA	Not subject to Kb (non organic content)

7.e 40 CFR 60 Subpart XX "Standards of Performance for Bulk Gasoline Terminals" applies to loading racks at bulk gasoline terminals which deliver liquid product into gasoline tank trucks for which construction or modification commenced after December 17, 1980. This facility is not a bulk gasoline terminal so this regulation is not applicable.

7.f 40 CFR 63 Subpart R "National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)" establishes emission limits for bulk gasoline terminals. This Subpart applies to major HAP sources only. This facility is not a major source and does not store gasoline so this regulation is not applicable.

7.g 40 CFR 63 Subpart Y "National Emission Standards for Marine Tank Vessel Loading Operations" applies to marine tank vessel loading operations that are major sources of HAP emissions or sources with a throughput of greater than 1.6 billion liters (10 M barrels) of gasoline annually or 32 billion liters (200 M barrels) of crude oil annually. This facility is not a major source of HAP emissions so this regulation is not applicable.

7.h 40 CFR 68 "Chemical Accident Prevention Provisions" requires affected stationary sources to compile and submit a risk management plan, as provided in Sections 68.150 to 68.185. Applicability is determined by the type and quantity of material stored at the facility. Substances stored at the facility will not be stored in quantities greater than the threshold amounts.

7.i Revised Code of Washington (RCW) 70.94.141 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act [RCW 70.94] and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess.

7.j RCW 70.94.152 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an Air Discharge Permit for installation and establishment of an air contaminant source.

7.k Washington Administrative Code (WAC) 173-401 "Operating Permit Regulation" requires all major sources and other sources as defined in WAC 173-401-300 to obtain an operating permit. This facility has voluntarily requested throughput and emission limits consistent with SWCAA 400-091 to limit their emissions to less that Title V thresholds therefore this facility is considered a Title V synthetic minor or opt-out facility.

7.l Washington Administrative Code (WAC) 173-401-300(7) "Federally Enforceable Limits" provides that any source with the potential to emit exceeding the tonnage thresholds defined in WAC 173-401-200(18) can be exempted from the requirement to obtain an Operating Permit when federally enforceable conditions are established which limit that source's potential to emit to levels below the relevant tonnage thresholds.

7.m WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" requires Best Available Control Technology for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety. SWCAA implements WAC 173-460 as in effect on August 21, 1998.

7.n WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM_{10}, $PM_{2.5}$, lead, sulfur dioxide, nitrogen dioxide, ozone, and carbon monoxide in the ambient air, which shall not be exceeded.

7.o SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, sulfur dioxide, concealment and masking, and fugitive dust.

7.p SWCAA 400-040(1) "Visible Emissions" requires that no emission of an air contaminant from any emissions unit shall exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point.

7.q SWCAA 400-040(2) "Fallout" requires that no emission of particulate matter from any source shall be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.

7.r SWCAA 400-040(3) "Fugitive Emissions" requires that reasonable precautions be taken to prevent the fugitive release of air contaminants to the atmosphere.

7.s SWCAA 400-040(4) "Odors" requires that any person who shall cause or allow the generation of any odor from any source, which may unreasonably interfere with any other property owner's use and enjoyment of their property use recognized good practices and procedures to reduce these odors to a reasonable minimum.

7.t SWCAA 400-040(6) "Sulfur Dioxide" requires that no person shall emit a gas containing in excess of one thousand ppm of sulfur dioxide on a dry basis, corrected to 7% O_2 or 12% CO_2 as required by the applicable emission standard for combustion sources.

7.u SWCAA 400-040(8) "Fugitive Dust Sources" requires that reasonable precautions be taken to prevent fugitive dust from becoming airborne, and minimize emissions.

7.v SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met and that no person shall cause or permit the emission of particulate matter from any combustion or incineration unit in excess of 0.23 grams per dry cubic meter (0.1 grains per dry standard cubic foot) of exhaust gas at standard conditions.

7.w SWCAA 400-060 "Emission Standards for General Process Units" prohibits particulate matter emissions from all new and existing process units in excess of 0.1 grains per dry standard cubic foot of exhaust gas.

7.x SWCAA 400-091 "Voluntary Limits on Emissions" allows sources to request voluntary limits on emissions and potential to emit by submittal of an ADP application as provided in SWCAA 400-109. Upon completion of review of the application, SWCAA shall issue a Regulatory Order that reduces the source's potential to emit to an amount agreed upon between SWCAA and the permittee.

7.y SWCAA 400-110 "New Source Review" requires that an Air Discharge Permit Application be filed with SWCAA, and an Air Discharge Permit be issued by SWCAA, prior to establishment of the new source, emission unit, or modification.

7.z SWCAA 400-111 "Requirements for Sources in a Maintenance Plan Area" requires that no approval to construct or alter an air contaminant source shall be granted unless it is evidenced that:

(1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
(2) Emissions will be minimized to the extent that the new source will not exceed emission levels or other requirements provided in the maintenance plan;
(3) Best Available Control Technology will be employed for all air contaminants to be emitted by the proposed equipment;
(4) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
(5) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

7.aa SWCAA 491-040(2) "Gasoline Loading Terminals " requires gasoline loading terminals to be equipped with a vapor control device designed to not allow organic vapors emitted to the ambient air to exceed 35 mg/l (322 mg/gal) of gasoline loaded. This facility is not a gasoline loading terminal so this regulation is not applicable.

7.bb SWCAA 491 – "Emission Standards and Controls for Sources Emitting Gasoline Vapors" established minimum control requirements for gasoline marketing operations within SWCAA's jurisdiction. This regulation defines gasoline as "...a petroleum distillate that is a liquid at standard conditions and has a true vapor pressure greater than four pounds per square inch absolute (4.0 psia) at twenty degrees C (20 °C), and is used as a fuel for internal combustion engines. Also any liquid sold as a vehicle fuel with a true vapor pressure greater than four pounds per square inch absolute at twenty degrees C (20 °C) shall be considered "gasoline" for purpose of this regulation." This facility does not store or handle gasoline so this regulation is not applicable.

8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate Best Available Control Technology (BACT) for the types and amounts of air contaminants emitted by the processes as described below:

8.a BACT Determination – Ethanol Storage (Main 12001, Annex 12002). The proposed use of storage tanks equipped with mechanical shoe internal floating roofs has been determined to meet the requirements of BACT and T-BACT for the storage of ethanol at this facility.

8.b BACT Determination – Truck Loading - Ethanol (Annex Truck Loading Rack / VCU). The proposed use of vapor balancing and a thermal oxidizer with a demonstrated destruction efficiency of 98% has been determined to meet the requirements of BACT and T-BACT for the loading of ethanol into tanker trucks at this facility.

8.c BACT Determination – Marine Vessel Loading - Ethanol (Main Marine Loading Rack / VCU). The proposed use of vapor balancing and a thermal oxidizer with a demonstrated destruction efficiency of 98% has been determined to meet the requirements of BACT and T-BACT for the loading of ethanol into marine vessels at this facility.

Other Determinations

8.d Prevention of Significant Deterioration (PSD) Applicability Determination: The potential to emit of this facility is less than applicable PSD applicability thresholds. Likewise, this permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.

8.e Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because it is not a major source and is not required to obtain a Part 70 permit.

9. AMBIENT IMPACT ANALYSIS

9.a TAP Small Quantity Review. The incremental increases in TAP emissions associated with this permitting action are quantified in Section 6 of this Technical Support Document. All incremental increases in individual TAP emissions are less than the applicable small quantity emission rate (SQER) identified in WAC 173-460 (effective 8/21/98).

Conclusions

9.b Ethanol storage and handling operations, as proposed in ADP Application CL-2084, will not cause the ambient air quality requirements of Title 40 Code of Federal Regulations (CFR) Part 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.

9.c Ethanol storage and handling operations, as proposed in ADP Application CL-2084, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" (as in effect 8/21/98) or WAC 173-476 "Ambient Air Quality Standards" to be violated.

9.d Ethanol storage and handling operations, as proposed in ADP Application CL-2084, will not cause a violation of emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions," 400-050 "Emission Standards for Combustion and Incineration Units," and 400-060 "Emission Standards for General Process Units."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP 17-3223 in response to ADP Application CL-2084. ADP 17-3223 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a Supersession of Previous Permits. ADP 17-3223 supersedes ADP 07-2710R3 in its entirety.

10.b General Basis. Permit requirements for equipment affected by this permitting action incorporate the operating schemes proposed by the applicant in ADP Application CL-2084. Permit requirements established by this action are intended to implement BACT, minimize emissions, and assure compliance with applicable requirements on a continuous basis. Emission limits for approved equipment are based on the maximum potential emissions calculated in Section 6 of this Technical Support Document.

The equipment affected by this permitting action (Annex 12002, Main 12001, Annex truck loading rack, Main marine loading rack) is approved to store and handle multiple products (methanol, ethanol). As detailed in other sections of this document, product throughputs and calculated emissions are based on the maximum potential capacity of the facility while handling any single product. The facility can not physically handle all of the

products at these levels. Therefore, approval conditions are based on the worst case scenario for the most emissive product.

10.c Emission Limits. Consistent with ADP Application CL-2084, the scope of this permitting action is limited to the proposed ethanol storage and handling project. ADP 17-3223 carries forward the emission limits contained in ADP 07-2710R3 with the exception of those pertaining to Main 12001, Annex 12002, the truck loading rack at the Annex Terminal, and the marine loading rack at the Main Terminal. New permit requirements have been established for these units to reflect storage and handling of ethanol.

Emission limits contained in the Permit ensure proper operation of the facility and serve to limit hazardous air pollutant emissions below applicable Title V thresholds. The 20.00 tpy limit for facilitywide HAP emissions has been carried forward from ADP 07-2710R3.

10.d Operating Limits and Requirements: ADP 17-3223 carries forward existing operating limits for emission units that were not modified by this permitting action. Operating limits and requirements for Main 12001, Annex 12002, the truck loading rack at the Annex Terminal, and the marine loading rack at the Main Terminal have been updated to address storage and handling of ethanol.

10.e Monitoring and Recordkeeping Requirements. ADP 17-3223 establishes monitoring and recordkeeping requirements sufficient to document compliance with applicable emission limits, ensure proper operation of approved equipment and provide for compliance with generally applicable requirements.

10.f Reporting Requirements: ADP 17-3223 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. ADP 17-3223 carries forward the reporting requirements contained in ADP 07-2710R3, which includes semi-annual reporting since this is an opt-out facility.

SWCAA has maintained the requirement to submit a report to SWCAA at least 90 days prior to degassing of the Main-12001 and Annex-12002 tanks. Tank degassing emissions can be significant. The requirements of BACT/TBACT may therefore require the use of a control device to minimize emissions. At the time of degassing, NuStar is required to submit an emission estimate and control device specifications for review. SWCAA will then determine if New Source Review will be required.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

11.a Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology based emission standards and control technology determinations shall take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA shall include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

The floating roof tanks have legs that keep the roof approximately six feet off the bottom of the tank such that during product changes or completely emptying the tank for maintenance, the roof is not floating. The tanks will be filled or emptied as rapidly as possible to minimize emissions during these periods.

11.b Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the permit requirements.

11.c Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the permit requirements.

12. EMISSION MONITORING AND TESTING

12.a Emission Testing Requirements – Marine Vapor Combustion Unit (*modified*). Permit requirements for the Marine Vapor Combustion Unit require the permittee to conduct emission testing within 90 days of commencing operation and every five years thereafter, for the purposes of demonstrating compliance with applicable emission limits.

12.b Emission Testing Requirements – Main and Annex Vapor Combustion Units (*existing*). Initial testing of each vapor combustion system was performed in January 2008. Subsequent testing was performed on February 13th, 2009. The testing was performed under various combustion temperatures to determine ideal operating conditions for the units. Temperatures were not available for one of the runs, and other issues were associated with the testing. Therefore additional testing was performed in November 2008 to determine better emission factor. Higher CO was observed at the Annex VCU and this unit was tuned and re-tested on February 13, 2009.

The permittee is required to test by January 2013 and every five years thereafter to periodically demonstrate compliance. The standard testing protocol for the VCU's require three 1-hour test runs. Product volume when handling methanol is sufficient to allow testing, but transmix volume is too small to make testing practical (insufficient truck count, loading time, etc.). Therefore, testing is only required for methanol operations.

12.c Emission Testing Requirements – Johnston Boiler (*existing*). This boiler was originally approved in ADP 03-2464. This Permit required emission testing upon installation and every five years thereafter. The boiler was initially tested on January 15, 2004 and tested again on October 16, 2008. Therefore this Permit requires that the Johnston boiler be emission tested no later than January 2014 and every five years thereafter no later than the end of the month of January.

12.d Emission Monitoring Requirements– Johnston Boiler (*existing*). This boiler was originally approved in ADP 03-2464. This Permit required monitoring on a 12 month cycle, no later than the end of the month in which the initial tuning was conducted. Initial monitoring was performed June 6, 2005. Subsequent monitoring was performed on December 6, 2005 and again September 26, 2006 and most recently on October 2, 2007. Therefore this Permit requires that the Johnston boiler be emission monitored annually no later than the end of January 2009 and every year thereafter no later than the end of the month of January.

13. FACILITY HISTORY

13.a Facility History.

Main Terminal. This terminal was constructed in 1950 and began operation in 1960 as a bulk liquids storage terminal under the name of McGuire Terminals. The facility then became General American Transportation Corporation (GATX) in 1976. ST Services acquired the terminal in 1998. ST Services was purchased by Valero L.P. in 2005. Valero L.P. changed its name to NuStar Energy L.P. in 2007.

Annex Terminal. The terminal began operation in 1958 as a petroleum terminal under the name of Pacific Supply Coop. In 1978 the facility was purchased by CENEX. The facility continued to operate as a petroleum terminal until April 2001 when operations at the facility ceased. In December 2001, this facility was re-permitted as a bulk asphalt storage and transfer facility, however construction to modify the facility to handle asphalt did not commence.

This facility was purchased by ST Services in 2003 and subsequently re-designated as a petroleum storage facility. The facility was put into service for storage of jet fuel. ST Services was purchased by Valero L.P. in 2005. Valero L.P. changed its name to NuStar Energy L.P. in 2007.

13.b Previous Permitting Actions. SWCAA has previously issued the following permits for the NuStar facility in Vancouver:

Date	Application Number	Permit Number	Purpose
Combined Facility			
4/21/14	CL-1998	07-2710R3	Conversion of existing bulk liquid storage and transfer equipment at the Main and Annex Terminals to crude oil service. The proposed conversion affected tank Main 12001, tank Annex 12002, and the marine loading rack.
4/2/14	CL-2013	14-3086	Remove tanks Annex 4, Annex 5, Annex 7, and Annex 9 from service. Relocate Tank 191 and Tank 24 from associated Oregon facility to the Annex terminal. Convert tank Annex 101 from a fixed roof configuration to an internal floating roof configuration.
7/29/09	CL-1821	07-2710R2	Revision of temperature limits for thermal oxidizers and leak testing of rail cars for methanol loading.
1/3/08	CL-1811	07-2710R1	Installation of Main-601 (renamed Main 1190), a 54,000 gallon emergency spill tank to store spilled liquids containing methanol.
3/6/07	CL-1752	07-2710	Combination of Main Terminal and Annex Terminal into a single facility for purposes of permitting. Installation of methanol storage, handling and loading equipment at Main Terminal. Installation of methanol storage tank at Annex Terminal.
Main Terminal			
7/7/04	CL-1662	04-2575	Installation of a new asphalt transloading operation.
4/10/03	CL-1591	03-2464	Installation of a Johnston boiler to replace the existing Clayton boiler. Supersedes 94-1700.
8/10/99	CL-1431	99-2229	Increase of potassium hydroxide solution throughput. Supersedes 90-1262.
7/3/95	CL-1109	95-1773	Provided voluntarily limit of plant-wide potential emissions to ensure that federally enforceable plant site emission limits are less than the thresholds for the Title V Air Operating Permit Program.
12/30/94	CL-1096	94-1700	Installation of Clayton natural gas-fired boiler, replaced existing boiler. Superseded by 03-2464.
3/11/94	CL-1002	93-1517R	Storage of phenol, installation of phenol scrubber.
93-1517	CL-1002	93-1517	Storage of phenol, installation of phenol scrubber.
10/1/90	CL-743	90-1262	Storage of 45% potassium hydroxide solution
10/1/90	CL-722	90-1261	Storage of liquid urea ammonium nitrate fertilizer solution
9/24/79	CL-379	79-477	Storage of trichloroethylene, perchloroethylene, 1,1,1-trichloroethane & methylene chloride
1/27/78	CL-293R	78-314	Storage of trichloroethylene in tank fitted with internal floating roof

Date	Application Number	Permit Number	Purpose
9/8/77	CL-293	77-269	Storage of perchloroethylene & 1,1,1-trichloroethane in two new 37,000 gallon capacity tanks
9/1/77	CL-292	77-267	Storage of methanol, retrofit internal floating roofs on tanks 1001, 1002, 1004, 1502
1/15/76	CL-235	76-143	Storage of methyl chloroform & perchloroethylene
4/17/75	CL-212	75-84	Storage of benzene. Order rescinded May 12, 1975
Annex Terminal			
4/8/04	CL-1622	04-2520R1	Re-designates the facility as a petroleum storage facility.
2/10/04	CL-1636	04-2520	Allows for the temporary storage and transfer of alkylate, a gasoline additive. Superseded by 04-2520R1.
12/20/01	CL-1513	01-2394	Conversion of the existing petroleum products terminal to a bulk asphalt storage and transfer facility. Construction never commenced.
11/27/96	CL-1261	96-1949	Installation of a 10,000 gallon storage tank identified as # 5 used to store and transfer Lubrizol, a gasoline additive. Superseded by 95-1766R1.
11/27/96	CL-1262	95-1766R1	Revised facility wide emission limits to include a facility wide limit of 3 tpy HAPs. Superseded by 01-2394.
6/29/95	CL-1108	95-1766	Title V Opt-Out Permit. Limited facility wide VOC emissions to 50 tpy and loading rack VOC emissions to 30 mg/L of gasoline loaded. Superseded by 95-1766R1.
6/6/91	CL-832	91-1307	Installation of an air stripping system for waste water treatment facilities. This system was never installed and this permit expired December 6, 1992.
1/30/80	CL-407	80-505	Installation of a new truck loading rack and vapor recovery system. Superseded by 01-2394.

13.c Compliance Review. A search of source records on file at SWCAA did not identify any outstanding compliance issues.

14. PUBLIC INVOLMENT OPPORTUNITY

14.a Public Notice for ADP Application CL-2084. Public notice for ADP Application CL-2084 was published on the SWCAA internet website for a minimum of (15) days beginning on July 22, 2016.

14.b Public/Applicant Comment for ADP Application CL-2084. A public comment period was provided for this permitting action pursuant to SWCAA 400-171(3). The comment period began on May 4, 2017 and ended on June 9, 2017. Copies of all comments received during the comment period are on file at SWCAA's business office. SWCAA has responded to comments in the *Public Comment and Comment Response* document for ADP Application CL-2084.

14.c Public Hearing for ADP Application CL-2084. A public hearing was provided for this permitting action on June 6, 2017 at SWCAA's business office (11815 NE 99th Street, Suite 1294, Vancouver, Washington). A transcript of all oral testimony received at the hearing is on file at SWCAA's business office. SWCAA has responded to testimony in the *Public Comment and Comment Response* document for ADP Application CL-2084.

14.d State Environmental Policy Act. NuStar submitted a SEPA checklist for this project to the City of Vancouver (*dated May 31, 2016*). The City of Vancouver issued a Mitigated Determination of Non Significance (MDNS) on March 22, 2107 (*NuStar Biofuel Conversion Project, PRJ-150882/LUP-54033*).