Technical Support Document

Draft Minor New Source Review Permit for Bluewater Texas Terminal, LLC (BWTX) Deepwater Port (DWP)

Permit Number: R6NSR-DWP-GA8

June 25, 2025

This document serves as the technical support document (TSD or fact sheet) for the above-referenced Clean Air Act (CAA) draft Minor New Source Review (NSR) permit, as required by 40 C.F.R. § 124.8. This document sets forth the legal and factual basis for the proposed permit conditions and provides references to the statutory or regulatory provisions, including provisions under Deepwater Port Act (DPA), the CAA and the Texas Clean Air Act (Texas Health and Safety Code Chapter 382), that would apply if the permit is finalized.

I. Executive Summary

On December 29, 2022, Bluewater Texas Terminals LLC (BWTX) submitted to the United States Environmental Protection Agency (EPA) Region 6 an NSR permit application for the Bluewater Texas Terminal (BWTX) Deepwater Port (DWP). The application was for the construction and operation of a crude oil deepwater port (DWP) to be located in federal waters approximately 17.26 miles (15 nautical miles) off the coast of Aransas County, Texas. BWTX proposes to own and operate a new DWP to export crude oil by fully loading Very Large Crude Carriers (VLCC) and similar vessels at a maximum throughput of 80,000 barrels/hour (bbls/hr) and 384,000,000 bbls/year.

After reviewing the application and supplemental information, EPA Region 6 has prepared this TSD and the draft minor[1] NSR air permit to approve the construction of the BWTX DWP located in the Gulf of America. This TSD documents the information and analysis EPA used to draft the decisions EPA made in the development of the air permit. It includes a description of the proposed facility, the applicable air permit requirements, and an analysis showing how the applicant will comply with the applicable regulatory requirements.

EPA Region 6 concluded that the application provides the necessary information to demonstrate that the proposed project meets the applicable NSR air permit regulations. EPA's conclusions rely upon information provided in the permit application, supplemental information that EPA requested from BWTX, the corresponding DWP License Application submitted to the Maritime Administration (MARAD), and EPA's own technical expertise. EPA is making all of this information available as part of the public record for this permit action.

[1] Minor sources are sometimes further delineated as being either "true" minor sources or "synthetic" minor sources. This delineation reflects whether the source's potential to emit (PTE) is based on its true, unrestricted ability to emit regulated NSR pollutants, or if its PTE is based on enforceable restrictions that "synthetically" reduce or limit the source's PTE. The BWTX NSR permit may properly be called a synthetic minor NSR permit.

Acronyms and Abbreviations

ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Methods
AVO	Audio, Visual and Olfactory
BACT	Best Available Control Technology
bbls	Barrels
BS/EN	British Standards/European Norm
Btu	British Thermal Unit
BWTX	Bluewater Texas Terminal
CAA	Clean Air Act
CEMS	Continuous Emissions Monitoring System
C.F.R.	Code of Federal Regulations
CH_4	Methane
CMS	Continuous Monitoring System
CPMS	Continuous Parametric Monitoring System
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DRE	Destruction and Removal Efficiency
DWP	Deepwater Port as defined in 33 C.F.R. § 148.7
EPA	U.S. Environmental Protection Agency
EPN	Emission Point Number
FCAA	Federal Clean Air Act 42 USC §7401 et seq
FR	Federal Register
GHG	Greenhouse Gas
gr	Grains
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant defined in 42 USC §7412 et seq
HHV	High Heating Value
hp	Horsepower
hr	Hour
ISO	International Organization for Standardization
kW	kilo watt
LDAR	Leak Detection and Repair
Lb	Pound
MMBtu	Million British Thermal Units
MMSCFD	Million Standard Cubic Feet per Day
MSS	Maintenance, Start-up and Shutdown
MLVCS	Marine Loading Vapor Control System
N_2O	Nitrous Oxides
NAAQS	National Ambient Air Quality Standards
NIST	National Institute of Standards and Technology
NO_x	Nitrogen Oxide
NSPS	New Source Performance Standards
NSR	New Source Review
OCIMF	Oil Companies International Marine Forum
OSV	Offshore Service Vessel
PM	Total Particulate Matter, suspended in the atmosphere, including PM10 and PM2.5, as represented
$PM_{2.5}$	Particulate Matter equal to or less than 2.5 microns in diameter
PM_{10}	Particulate Matter equal to or less than 10 microns in diameter, including PM2.5 as represented
ppm_v	Parts per Million by volume
ppm_w	Parts Per Million by weight
PSD	Prevention of Significant Deterioration
Psia	Pounds Per Square Inch Absolute
QA/QC	Quality Assurance and/or Quality Control
RATA	Relative Accuracy Test Audit
RICE	Reciprocal Internal Combustion Engine
Scfh	Standard Cubic Feet per Hour
SCR	Selective Catalytic Reductio
SMOG	Single Point Mooring Maintenance and Operations Guide
SO_2	Sulfur Dioxide
SPM	Single Point Mooring
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
VPM	Vapor Processing Module
tpy	tons per year
TVP	True Vapor Pressure
ULCC	Ultra Large Crude Carrier
USC	United States Code
VCS	Vapor Control System (VOC Plant)
VLCC	Very Large Crude Carrier
VOC	Volatile Organic Compounds volatile organic compounds as defined in 40 C.F.R. § 52.21(b)(50)
yr	Year

II. Applicant

Owner Name:	Bluewater Texas Terminal, LLC (BWTX) 2331 City West Blvd. Houston, TX 77042
Responsible Official:	Mr. B.R. Sutaria, Vice President, Bluewater Texas Terminal LLC 2331 City West Blvd. Houston, TX 77042 Phone: (832) 765-1764 Email: br.sutaria@p66.com

III. Permitting Authority

Permitting Authority:	U.S. Environmental Protection Agency Region 6, Air Permitting Section (ARPE) 1201 Elm Street, Suite 500 Dallas, TX 75270 (214) 665-7596
Permit Writer:	Aimee Wilson

IV. Facility Location

The BWTX DWP is proposed to be located in federal waters, approximately 17.26 miles (15 nautical miles) off the coast of Aransas County, Texas in water depths of approximately 89 feet. The project is generally positioned at: Latitude N27° 53' 21.70" and Longitude W96° 39' 4.16". The BWTX DWP consists of two Single Point Mooring (SPM) buoys, to which tanker ships will be moored while being loaded at the port. This configuration allows tanker ships to 'weathervane' around the mooring buoy while using flexible, floating cargo transfer hoses to connect to the crude oil supply manifold on the ship being loaded.

The nearest Class I areas are the U.S. Fish & Wildlife Service Breton National Wildlife Refuge that is located in Southeast Louisiana and the Big Bend National Park that is located in Southwest Texas. Both Class I areas are well over 300 miles from the proposed DWP marine terminal location. The offshore area where BWTX is planning to locate the DWP is in federal waters beyond the seaboard boundary of the coastal states in the Gulf. EPA has not designated the offshore areas beyond the applicable seaward boundary as "nonattainment," "attainment," or "unclassifiable" in accordance with 40 CFR Part 81. EPA has applied state law from the nearest adjacent coastal state, Texas, to the proposed project, as discussed in section VI of this document. In the Appendix to this document, Figure 1 illustrates the general proposed location of the BWTX DWP. EPA is treating the federal waters area where the source is located as being in attainment/unclassifiable.

V. Project Description

BWTX is proposing to construct, own, and operate the BWTX DWP in the federal waters of the Gulf of America to export domestically produced crude oil. The BWTX DWP consists of two SPM buoy systems that are remotely controlled from the Harbor Island control center and designed to moor VLCCs. Figure 2 illustrates the proposed schematic diagram for the BWTX SPM buoy system operations. The overall project consists of three distinct, but interrelated components: the "inshore" and "onshore" components, and the "offshore" component.

The project's "inshore" component consists of an inshore control center located on Harbor Island in Nueces County, Texas. The "onshore" components include the construction and operation of the Midway Terminal, a pipeline breakout station and petroleum storage terminal in San Patricio County, Texas. The Midway Terminal serves as the primary collection and storage terminal of crude oil to be directly pumped through the proposed pipeline infrastructure to the offshore SPM buoy system. The Texas Commission on Environmental Quality (TCEQ) is the permitting authority for the air emissions from the "inshore" and "onshore" project components (see TCEQ Registration Number 158065 for the Midway Terminal).

The affected source for this permit action is the "offshore" component, that includes the SPM buoy systems to be located approximately 15 nautical miles off the coast of San Jose Island (Aransas County, Texas). The BWTX DWP consists of approximately 27 miles of two new parallel 30-inch diameter crude oil pipelines, which terminate at two offshore SPM buoy systems. Each SPM buoy system is to be positioned in water depths of approximately 89 feet and will consist of a Pipeline End Manifold (PLEM), Catenary Anchor Leg Mooring system (CALM), and other associated equipment.

The primary source of emissions from the operation of the offshore portion of the DWP project originate from crude oil loading into tanker ships. These loading emissions are captured (a minimum 99% vapor capture efficiency) by means of a closed vent cargo vapor space system at the tanker ship being loaded and are routed via flexible vapor hose to a vapor control system (VCS) located on an adjacent offshore service vessel (OSV). The vapor control system (VCS) consists of a refrigerated condenser in tandem with two marine gas turbines, refrigerant compressors, pumps, and other machinery. The OSV mounted VCS is an integral part of the fundamental design of this DWP, and without it the volatile organic compound (VOC) emissions from the loading operation would be uncontrolled resulting in over 12,000 tons per year (tpy) VOC emissions. By controlling loading emissions to the extent represented in the permit application and in accordance with federally enforceable limitations provided as part of this permit action for the DWP, the PTE for this stationary source is at a level below the major stationary source threshold for the NSR preconstruction program, enabling the source to qualify as a synthetic minor source of emissions. For example, under the design and operation of the proposed DWP, only one tanker ship, the tanker ship for which the OSV based equipment is processing emissions, will be loaded at the port at any given time.

This permit action, which consists of a synthetic minor NSR[2] permit, addresses the stationary source requirements of the offshore DWP. Components that comprise this stationary source[3] include all emission point sources resulting from tanker vessel loading operations at the port, including: the emissions from the single point mooring systems[4], the dockside vessel[5] emissions that result when a tanker is moored and engaging in crude oil transfer activities[6], the vapor emissions transfer hose between the tanker and the OSV, and the VCS equipment and emissions, including the associated storage units for condensed vapors, the refrigerated condenser components, and the stationary emissions from gas turbines and ancillary equipment.

The stationary source components that comprise the SPM buoy oil transfer systems include piping and appurtenances to connect the crude oil submerged pipeline end manifold to the buoy and thru the buoy hardware, to connected floating, flexible supply hoses that extend to the crude oil headers on the tanker ship being loaded.

The stationary source emissions from the tanker ship being loaded include all emissions that are the result of functions performed by the DWP, and may arise from tanker crude oil storage holds, transfer piping, and connected vapor space piping system components that may emit volatile organic compounds as fugitive or non-fugitive emissions. All such emissions occur while the ship is moored and engaged in crude oil transfer operations at the port.

Stationary source components on the OSV include all components and systems mounted on the OSV designed to route, process, condense, store, reduce, analyze, and monitor or control volatile organic carbon air contaminant emissions originating from crude oil loading operations at the port. Such systems and components include but are not limited to the vapor routing hoses and pipes, initial moisture knockout equipment, the VCS and its contained vapor processing systems, the condensed and recovered liquid VOC (L-VOC) pressure storage tank and associated piping and components, two gas turbines that are used to destroy the non-condensable portion (S-VOC) and supplemental condensed portion (L-VOC's) of the processed emissions as fuel. As discussed further below, emissions from certain OSV-based equipment are considered stationary source emissions during the vapor-controlled loading period - that period of time beginning when the vapor outlet header on the tanker ship is connected via vapor transfer hose to the vapor inlet header of the VCS on the OSV and crude oil vapor may flow between the two vessels, including vapor transfer hose purging. The diesel electric propulsion or diesel auxiliary marine engines located on any vessel at the DWP (OSV and crude tankers) are not subject to stationary source emission control requirements as they are marine or nonroad engines subject to either 40 C.F.R. Part 1042 Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels or 40 C.F.R. Part 1043, Control of NO_x, SO_x, and PM

[2] The DWP is a new source as defined in 33 U.S.C 1502(9)(D) and meets the definition of a new source in 30 TAC § 116.10(11).
[3] As defined in 30 TAC §116.10.
[4] The single point mooring oil transfer system means the part of the oil transfer system that extends from the pipeline end manifold to the end of the hose string that connects to the tanker's manifold, as defined in 33 C.F.R. §148.7.
[5] As defined in 30 TAC §116.10(2).
[6] As defined in 30 TAC §116.10(3).

Emissions from Marine Engines and Vessels Subject to the International Convention for the Prevention of Pollution from Ships (MARPOL) Protocol.

The role of the OSV is integral to and unique with respect to emissions control activities during tanker loading operations that occur at the port. During loading operations, the OSV is dynamically positioned, ensuring that the VCS keeps station alongside the tanker being loaded so that the VCS may perform its emissions control function. The diesel engines onboard the OSV supply electricity to the OSV's electrical grid for maintaining the dynamic positioning system while the VCS performs its function during tanker loading operations.

The two gas turbines onboard the OSV are fueled at all times with S-VOC and L-VOC derived from the VCS processing of loading related emissions during tanker ship loading conducted at the port. When not processing loading emissions through the VCS, the turbines are fired using L-VOCs drawn from pressure vessel stored L-VOCs. During VCS activities the energy generated from the use of such processed VOC emissions supply power to the OSV's electrical grid to primarily power the operations of the VCS, with any surplus electricity generated used to offset the balance of the electrical demands of the vessel. Emissions from the gas turbines are considered stationary source emissions given that their primary function is thermal destruction of crude oil loading emissions. When those same sources are engaged primarily in transit operations within and to and from the DWP, they are subject to 40 C.F.R. 1042 as previously described.

The OSV mounted VCS produces three output streams from the processed loading emissions routed through it, including: reject water; a condensed and dehydrated L-VOC liquids stream; and a dehydrated S-VOC gas stream. The module also houses analyzers and monitoring systems for the OSV VCS.

The OSV mounted Liquid storage system consists of two L-VOC pressurized storage tanks and associated piping and routing system components.

The OSV mounted gas turbines include two gas turbines that exclusively use processed loading emissions, both L-VOC and S-VOC streams, as fuel to drive electric generators for powering the VCS and other on board OSV systems.

By employing the OSV vapor capture and control systems, VOC emissions generated from tanker ship loading at the offshore DWP will be reduced by over 99% versus uncontrolled.

BWTX states that the project's purpose is to provide crude oil export services to fully and directly load up to 384,000,000 barrels (bbls) on a 12-month rolling basis to VLCC sized carriers. Based on BWTX's proposed project design, the DWP would allow for a single VLCC or other crude oil carrier to moor at each of the two SPM buoys at the same time. Therefore, BWTX's marine loading operations are limited to a maximum of 384,000,000 barrels per year (bbls/yr), based upon a 12-month rolling total basis and the maximum loading rate for vessels being loaded at any time is limited to 80,000 (bbls/hr). The marine loading operations are limited to crude oil, and the product shall not exceed a True Vapor Pressure (TVP) of 11 psia at 100^{o} F.

BWTX shall maintain records of the total number of vessels loaded on a 12-month rolling total basis and the maximum amount of product loaded on a 12-month rolling total basis in bbls/yr. For each vessel loaded, the type of vessel and the product loading rate in bbls/hr shall be monitored. The records shall delineate specific loading dates, loading times, and individual vessel loading rates at each SPM by vessel type and total loading duration to ensure that each marine loading activity is in compliance with the 80,000 bbls/hr product loading rate limitation for the two SPMs.

Stationary Source Equipment of the DWP

The following tables identify the equipment at the proposed DWP that are included within the stationary source subject to air permitting requirements.

Table 1. BWTX SPM Buoy System Emission Units

Facility Identification Number (FIN) / Emission Point Number (EPN)	Source Description
UNCAPLOAD	Uncaptured Loading Emissions
SPMFUG	Fugitive Emissions from the SPM Buoy (both SPMs)
OSVTURB1/OSVTURB2	Marine Gas Turbines Emissions
REFCOND	VOC Plant Refrigerated Condenser

Emissions from the units listed in Table 1 are summarized in Table 2. Table 2 is provided for convenience and does not establish emissions limits for the source. See the Table Facility Maximum Allowable Emission Rate Table (MAERT) on page 44 for enforceable emissions limits applied to the DWP and its stationary sources.

Table 1. Bluewater Texas Terminal DWP Sitewide Emissions

Air Contaminant	Emissions (tpy)
NO_x	41.91
CO	116.49
VOC	150.40
PM 2.5/10	0.93
Any Single HAP	4.93
All HAPs Combined	6.08

VI. Applicable Federal and State Air Quality Requirements

The Deepwater Port Act (33 U.S.C. § 1501, *et seq*.) defines a DWP as a structure or combination of structures "located beyond State seaward boundaries and that are used or intended for use as a port or terminal for the transportation, storage, or further handling of oil or natural gas…." (33 U.S.C. § 1502(9)(A)). Since a DWP is, by definition, located beyond state boundaries, an important part of the DPA is the section that identifies the law that applies to such a structure outside of state jurisdiction:

> The Constitution, laws, and treaties of the United States shall apply to a deepwater port licensed under this chapter and to activities connected, associated, or potentially interfering with the use or operation of any such port, in the same manner as if such port were an area of exclusive Federal jurisdiction located within a State.

(33 U.S.C. § 1518(a)(1)).

More expressly, the DPA requires that a person wishing to construct, own, or operate a DWP must obtain a license from the Secretary of Transportation before construction of the facility may commence. In advance of such a license being issued, there are a number of pre-conditions required by the statute, including, among others, that the proposed DWP will conform with all applicable provisions of the Clean Air Act, Federal Water Pollution Control Act, and the Marine Protection, Research and Sanctuaries Act. (33 U.S.C. § 1503(c)).

33 U.S.C. § 1518(b) "federalizes" consistent laws of the adjacent coastal state and directs that they be applied by federal officials to the extent that they are applicable and not inconsistent with federal law.

A. United States Coast Guard and International Standards

The International Maritime Organization (IMO)[7] is a specialized agency of the United Nations with the responsibility to develop and maintain a comprehensive regulatory framework for worldwide shipping. The result is a comprehensive body of international conventions, supported by hundreds of recommendations governing every facet of shipping including safety, environmental concerns, legal matters, technical co-operation, maritime security and the efficiency of shipping.

Key treaties of the IMO include the International Convention for the Safety of Life at Sea (SOLAS), the International Convention for the Prevention of Pollution from Ships (MARPOL), and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

The U.S. Coast Guard (USCG) has been a key participant at the IMO for all policy development since the IMO Convention entered into force over 50 years ago. Numerous USCG headquarters personnel take the lead in addressing international maritime issues and are assisted by various government and industry advisors. These advisors include members from the Department of State, Department of Homeland Security, Department of Defense, Department of Justice, Environmental Protection Agency,

[7] https://www.dco.uscg.mil/IMO/

National Oceanic and Atmospheric Administration, National Transportation Safety Board, and a variety of industry experts - all providing the technical support and guidance necessary to advocate U.S. positions on the important maritime issues.

The Director of Commercial Regulations and Standards Directorate (CG-5PS)[8] is responsible for developing and enforcing regulations that implement maritime requirements, including IMO based agreements. For example, the Vapor Control System (VCS) Section[9] of CG-5PS is responsible for ensuring that systems installed to control volatile or hazardous cargo vapor emissions meet minimum safety standards for design and operation. To this end, the Coast Guard has developed a program, which incorporates regulatory requirements, policy guidelines, and third-party system certification. Many of the requirements for such systems are found in 33 C.F.R. Part 154 - Facilities Transferring Oil or Hazardous Material in Bulk. With respect to international standards, the Coast Guard Office of Commercial Vessel Compliance (CG-CVC) is responsible for implementing international standards into federal law, such as VOC control requirements found in MARPOL 73/78 Annex VI, Regulation 15 Volatile Organic Compounds which addresses VOC emissions from ships via the development and adoption of VOC management plans for tanker ships and vapor emissions control systems.[10]

B. Clean Air Act

The DPA, 33 U.S. Code (U.S.C.) § 1501, *et seq*., is the source of EPA's authority to apply the CAA to activities associated with DWPs. In relevant part, 33 U.S.C. § 1518(a)(1) extends the Constitution and laws of the United States "to deepwater ports…and to activities connected, associated, or potentially interfering with the use or operation of any such port, in the same manner as if such port were an area of exclusive Federal jurisdiction located within a State."

Based on the foregoing and the statement in 33 U.S.C. § 1518(a)(1) that, "[n]othing in this chapter shall be construed to relieve, exempt, or immunize any person from any other requirement imposed by Federal law, regulation, or treaty," the CAA is one of the "laws of the United States" that is applicable to DWPs. As such, EPA is a designated "cooperating agency" under the DPA licensing program regulations. (33 C.F.R. § 148.3(d)). These regulations require that an applicant prepare and submit applications to the EPA for all permits required under the CAA. (33 C.F.R. § 148.700).

C. Texas NSR Permit Program and Title V Federal Operating Permit Program

The proposed project, considering controls, is to be located in federal waters more than 17 miles from shore. The DPA at 33 U.S.C. § 1518(b) "federalizes" laws of the adjacent state and directs that they be applied by federal officials to the extent the state laws are applicable and not inconsistent with federal law. The Supreme Court has addressed language nearly identical to the DPA savings clause at 33 U.S.C.

[8] https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Commercial-Regulations-Standards-CG-5PS/

[9] https://www.dco.uscg.mil/CG-ENG-5/VCS/

[10] https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Commercial-Vessel-Compliance/Domestic-Compliance-Division/MARPOL/

§ 1518(b)(1) and found that, "to the extent Federal law applies to a particular issue, state law is inapplicable." *Parker Drilling v. Newton*, 139 S.Ct. 1881, 1889 (2019). For this DWP permitting action, the nearest adjacent state is Texas. Thus, the laws of Texas will apply to the proposed port, to the extent they are "applicable" and not inconsistent with federal law. EPA does not consider all provisions of the Texas State Implementation Plan (SIP) to be applicable to permitting the Bluewater DWP. For instance, we are not applying the procedural state administrative provisions, but we do consider other Texas SIP provisions—for example, those related to controls, monitoring, and inspections—to be appropriate means of implementing the CAA and EPA therefore "applicable" state law that is "not inconsistent" with the CAA for DWPA purposes.

The applicable air quality state laws include Chapter 382 of the Texas Health and Safety Code (the Texas Clean Air Act), the federally approved State Implementation Plan (40 C.F.R. § 52, Subpart SS, Texas), including but not limited to the approved provisions found in 30 TAC Chapter 116, Control of Air Pollution by Permits for New Construction or Modification, and 30 TAC Chapter 122, Federal Operating Permits Program. The source is also subject to permitting under the Federal Operating Permit Programs, 40 C.F.R. Part 71. The source is required to apply for a title V permit within 12 months after the source becomes subject to the permit program (40 C.F.R. § 71.5(a)(1)(i)).

It should be noted that under 30 TAC § 116.111 an applicant must provide, in an application, information concerning the sources of emissions at the facility and provide demonstrations that the operation of the facility, as proposed, will be protective of public health and welfare and demonstrate compliance with several requirements. Specifically, the provision of emissions measurement, the application of the state's Best Available Control Technology (BACT) when establishing emission limits, compliance with applicable state and federal air quality requirements, including applicable requirements governing hazardous air pollutants, and the evaluation of impacts of air contaminants are required in the permit application.

The source, as represented in the permit application will include controls for emissions and is not a major source under the NSR Prevention of Significant Deterioration (PSD) permitting program in Title I of the Federal Clean Air Act (FCAA) for either criteria pollutants or greenhouse gases (GHG) pollutants.[11] See Bluewater Texas Terminals Sitewide Emissions, Table 2 above. A source becomes subject to the PSD program if it has actual emissions, or if it has the potential to emit when considering controls, above either 250 tpy of any criteria pollutant, or at or above 100 tpy for 28 specific source categories.[12] Since the proposed source is not in one of these 28 categories, the applicable PSD major source thresholds is 250 tpy.

As a minor source, the source is subject to the preconstruction NSR and operating permits programs under the Texas Clean Air Act (TCAA) (Texas Health and Safety Code, Chapter 382 Subchapter C Permits) and the NSR implementing regulations under Title 30 of the Texas Administrative Code (TAC)

[11] As defined in 40 C.F.R. § 52.21.
[12] As defined in 40 C.F.R. §52.21(b)(1)(i)(A), definition of major stationary source.

Chapter 116 Control of Air Pollution by Permits for New Construction or Modification). The source is also subject to 30 TAC Chapter 122, Federal Operating Permits program because the source, while not major under NSR regulations is, as proposed, a major source under 30 TAC § 122.120(a)(1). The source is also subject to the federal operating permit program under 40 C.F.R. Part 71, implemented by the EPA.

After determining that PSD review is not required, EPA evaluated the source's applicability under the state's minor NSR permitting program in accordance with the provisions of 30 TAC Chapter 116, Control of Air Pollution by Permits for New Construction or Modification. The proposed BWTX DWP facility has a potential to emit (PTE) of 150.4 tons per year (tpy) of Volatile Organic Compounds (VOC). Based on its PTE, the proposed facility is a minor NSR source. The project has regulated NSR pollutants that are non-GHG pollutants which have been modeled to ensure that the proposed project will not cause or contribute to air pollution in violation of a NAAQS. The analysis also evaluated the ambient impact of emissions of the chemical species subject to the TCEQ Modeling and Effects Review Applicability (MERA) process and the emissions of Sulfur Dioxide (SO_2) and Hydrogen Sulfide (H_2S) subject to review under the TCEQ's State Property Line Standards.[13]

Regarding the title V operating permits program, BWTX is subject to the 40 C.F.R. Part 71 Federal Operating Permits requirements. BTWX has a PTE of 6.08 tpy of total Hazardous Air Pollutants (HAPs) and based on this PTE, it is an area source of HAP. The proposed facility is also a title V major source[14], because it has the potential to emit more than 100 tpy of a pollutant subject to regulation under NSR. Under 40 C.F.R. § 71.3, the proposed project is considered a title V major source[15] because it is considered an area source for hazardous air pollutants (HAPs) and is subject to a standard or other requirement under section 111 of the CAA.

The project has regulated NSR pollutants that are non-GHG pollutants which have been modeled to ensure that the proposed project will not cause or contribute to air pollution in violation of a National Ambient Air Quality Standard (NAAQS). The analysis also evaluated the ambient impact of emissions of the chemical species subject to the TCEQ Modeling and Effects Review Applicability (MERA) process and the emissions of Sulfur Dioxide (SO_2) and Hydrogen Sulfide (H_2S) subject to review under the TCEQ's State Property Line Standards.[16]

D. Applicability of Stationary Source requirements for the OSV-mounted VCS

The DPA defines a "deepwater port" as "any fixed or floating manmade structure other than a vessel, or any group of such structures . . . that are used or intended for use as a port or terminal for the transportation, storage, or further handling of oil or natural gas for transportation to any State." 33

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[13] TCEQ APDG 5874, Air Permit Reviewers Reference Guide, Modeling and Effects Review Applicability (MERA) (March 2018).
[14] 40 C.F.R. § 71.2, Definition of Major Source
[15] As defined in 40 C.F.R. § 71.2, Definition of Major Source
[16] TCEQ APDG 5874, Air Permit Reviewers Reference Guide, Modeling and Effects Review Applicability (MERA) (March 2018).

U.S.C. § 1502(9)(A). The DPA also defines a "vessel" to include "every description of watercraft or other artificial contrivance used as a means of transportation on or through the water." 33 U.S.C. § 1502(9)(A). Further, as defined in the DPA, the DWP "includes all components and equipment, including pipelines, pumping stations, buoys, mooring lines, and similar facilities to the extent they are located seaward of the high-water mark." 33 U.S.C. § 1502(9)(B). EPA classifies the OSV as a "vessel" under these provisions, but the components located on the OSV that function to control air pollutant emissions from loading operations (and generate electrical power for this pollution control equipment) are part of the deepwater port.

As proposed, the primary purpose of BWTX's OSV is to hold a stationary position relative to the tanker ship being loaded to enable use of the OSV-based VCS to serve the DWP by routing, processing, and controlling vapors captured from the tanker ship during the loading operations. The condensable and non-condensable processed vapors are directly destroyed when the OSV uses them as fuel to fire two gas turbine generators that provide electrical power to operate the onboard VCS during loading operations and to dynamically maintain the OSV's position alongside the tanker ship being loaded. The portion of vapors routed from the tanker ship being loaded are processed through the VCS and stored in pressure vessels onboard the OSV. A portion of those stored liquids are continuously routed as fuel to the same gas turbine generators while the balance is eventually transported onboard the OSV to a nearby mainland port and sold as liquid VOCs. As such, EPA reads the DPA to include the VCS and its various systems, including the pressure storage and gas turbine generators aboard the OSV as included in the DWP's "components and equipment" when being used to process and control vapors during loading operations.

Under the Clean Air Act, § 302(z) defines "stationary source" as "generally any source of an air pollutant except those emissions resulting directly from an internal combustion engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in section 7550 of this title [CAA s. 216]." 42 U.S.C. § 7602(z). Further, under section 111(a)(3) of the CAA, "[t]he term 'stationary source' means any building, structure, facility, or installation which emits or may emit any air pollutant. Nothing in subchapter II of this chapter relating to nonroad engines shall be construed to apply to stationary internal combustion engines." 42 U.S.C. § 7411(a)(3). CAA § 216(10) defines "nonroad engine" as "an internal combustion engine (including the fuel system) that is not used in a motor vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under section 7411 of this title or section 7521 [CAA § 202 – emission standards for new motor vehicles or new motor vehicle engines] of this title." 42 U.S.C. § 7550(10).

The language in 302(z) suggests that emissions from mobile source engines are excluded from the definition of stationary sources, *i.e.*, mobile source engines are categorically not stationary sources. Further, the second sentence in CAA § 111(a)(3) "stationary source" definition makes it clear that Congress understood there were both stationary internal combustion engines and nonroad engines. The plain language of the definitions of "stationary source" and "nonroad engine" define the two terms in opposition to one and other. That is, a stationary source does not include "emissions resulting directly from . . . a nonroad engine," 42 U.S.C. § 7602(z), and a nonroad engine is an internal combustion engine "that is not subject to standards promulgated under [CAA section 111]." 42 U.S.C. § 7550(10).

These definitions from the CAA identify the following three categories of internal combustion engines that are regulated in different ways under the CAA: stationary internal combustion engines, engines used in highway motor vehicles, and nonroad engines. The EPA has recognized previously that "the boundaries between these three categories of engines is not well delineated in the Act," 68 Fed. Reg. 17741, 17742 (April 11, 2003).

EPA has sought to clarify these boundaries by defining nonroad engine through regulation in 40 C.F.R. Part 1068. Section 1068.30 defines nonroad engine, in part, as an internal combustion engine that "is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers)." However, the same definition excludes an engine from the nonroad engine definition if "[t]he engine is regulated under 40 C.F.R. part 60, (or otherwise regulated by a federal New Source Performance Standard promulgated under section 111 of the Clean Air Act (42 U.S.C. 7411))." 40 C.F.R. § 1068.30 (paragraph (2)(ii) of "nonroad engine" definition).

Delineating the boundary between nonroad and stationary engines for new installations is challenging and applying that decision-making to temporary installations increases the complexity. EPA attempted to address those complexities when the Agency adopted 40 C.F.R. 1068.31, which describes how regulations for nonroad and stationary engines apply as those engines transition between nonroad and stationary over the course of the engine's operating life. The provisions of 40 C.F.R. 1068.31 are mostly geared toward issues related to residence time for portable and transportable engines, but 40 C.F.R. 1068.31(e)(2) says that those provisions apply more generally for any case in which an engine is or becomes subject to regulation under New Source Performance Standards (NSPS) requirements in 40 C.F.R. part 60. We note too that the provisions of 40 C.F.R. 1068.31 say that stationary engines, when they are no longer subject to regulation under 40 C.F.R. part 60, are again considered nonroad engines subject to all relevant regulatory provisions for nonroad engines if they meet the criteria specified in the definition of "nonroad engine" in 40 C.F.R. 1068.30. Of note, BWTX has indicated that the marine turbines will be certified as Tier 4 and the diesel engines will be Tier 3 and have a certificate of conformity.

a. Marine Gas Turbines

The NSPS for stationary combustion turbines states: "Stationary means that the combustion turbine is not self-propelled or intended to be propelled while performing its function. *It may, however, be mounted on a vehicle for portability.*" 40 C.F.R. § 60.4420 (emphasis added). BWTX's permit application acknowledges that the marine gas turbines provide power to the OSV's electrical grid, which in part powers the OSV's propulsion system along with multiple marine diesel engines; but the primary function of the marine gas turbines is to provide power for the VCS functions onboard the OSV. The turbines are therefore functioning as stationary turbines that are mounted on a vehicle for portability consistent with subpart KKKK definitions.[17] Under the stationary combustion turbine definition, the function of the turbines—powering the VCS functionality mounted on the OSV—is unrelated to the

[17] Stationary combustion turbine defined in 40 C.F.R. § 60.4420.

propulsion of the vessel, and as discussed above, the dynamic positioning of the OSV does not exclude it from performing a stationary function.

Additionally, under the nonroad engine definition,[18] while the turbines are performing a dual purpose as described in BWTX's permit application—powering the OSV's VCS systems and dynamically positioning propulsion systems—this dual purpose differs from the examples of dual purposes listed in the nonroad engine definition, i.e., garden tractors, off-highway mobile cranes, and bulldozers. The examples of dual-purpose engines listed in the Part 1068 definition are of engines whose dual purposes are directly related to mobility, e.g., a crane or bulldozer that is driven onto and around a site to lift or move materials, or a garden tractor that can propel itself and mow grass or perform similar functions. Here the turbines are primarily used to power the VCS, performing a stationary function that is not directly related to the OSV's propulsion. Rather, the turbines' power is primarily going to operate a stationary operation that is mounted on a vehicle for portability. On this basis, EPA considers the turbines to be part of the stationary source for purposes of applying CAA requirements in this permit.

The EPA differentiated between stationary and nonroad engines on the basis of the CAA section 302(z) definition of "stationary source" in the April 11, 2013, Excelerate Letter.[19] The CAA section 302(z) definition of "stationary source" excludes "emissions resulting directly from an internal combustion engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in [CAA section 261]." In the Excelerate Letter, the EPA determined "[a]ll reciprocating internal combustion engines on [the vessel at issue] will not be considered stationary sources . . . since these engines will be used on a piece of equipment that is self-propelled[.]" As an initial matter, the EPA's 2013 determination was specific to the applicability of NSPS/NESHAP requirements to the Excelerate project discussed therein. See Excelerate Letter at 2 ("Specific questions on the requirements and applicability of a particular NSPS/NESHAP can be discussed separately on a case-by-case basis as the need arises."). Further, and as discussed above, the EPA has sought to clarify the boundaries between stationary and mobile engines delineated in the CAA through regulation, and internal combustion turbines that are mounted on a piece of equipment for portability can qualify as stationary turbines under the 40 C.F.R. § 60.4420 definition. The EPA's conclusion in the specific instance at issue in the Excelerate letter is not controlling here.

b. Marine Diesel Generators

There are a total of four marine diesel generator engines that are certified under 40 C.F.R. Part 1042 onboard the OSV: two 1,995 kW Caterpillar 3516C generators and two 1,700 kW Caterpillar 3512C generators; of these 4 diesel generators, only two will operate at any given time while at the DWP. The diesel engines, in contrast to the gas turbine generator engines are engines that primarily provide propulsion power and also provide ancillary electrical capacity to the OSV's electrical grid. 40 C.F.R. part 60 Subparts IIII and JJJJ define "stationary internal combustion engine" as an:

[18] Non-road engine defined in 40 C.F.R. § 1068.30(1) and marine engine as defined in 40 C.F.R. § 1042.901

[19] *See* Letter from Steven C. Riva, Section Manager of Air Permitting, EPA, to Mike Trammel, Director of Environmental Affairs, Excelerate Energy, L.P. (April 11, 2013), available at https://www.epa.gov/sites/default/files/2015-08/documents/epa-r2-engine-applicability-determination-20130411.pdf.

> internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 C.F.R. 1068.30 *(excluding paragraph (2)(ii) of that definition)*, and is not used to propel a motor vehicle, aircraft, or a vehicle used solely for competition. Stationary ICE include reciprocating ICE, rotary ICE, and other ICE, except combustion turbines. (40 C.F.R. §§ 60.4219, 60.4248 (emphasis added)).

In contrast to the NSPS KKKK stationary source definition discussed previously, NSPS subparts IIII and JJJJ define stationary internal combustion engines as engines that are not nonroad engines. In addition, these definitions refer to the definition of nonroad engine in EPA regulations at 40 C.F.R. § 1068.30.

What is notable in these definitions is the language in parentheses, which excludes the applicability of paragraph (2)(ii) of the nonroad engine definition. As noted above, paragraph (2)(ii) of the nonroad engine definition states, “an internal combustion engine is not a nonroad engine” if “[t]he engine is regulated under 40 C.F.R. part 60,” unless the engine meets the affirmative criteria of the nonroad engine definition, and is voluntarily certified under 40 C.F.R. Part 60. The exclusion of paragraph (2)(ii) of the nonroad engine definition from the subparts IIII and JJJJ definitions of “stationary internal combustion engine” definitions avoid the potential circularity of an NSPS rule defining what it covers by referring to the definition of nonroad engine that does not apply to engines subject to an NSPS. This suggests *engines* can either be stationary or nonroad, but not both. That is, an engine meeting the affirmative criteria in paragraph (1) of the nonroad engine definition in 1068.30, which could potentially also meet the stationary internal combustion definition under subparts IIII and JJJJ, cannot be excluded from the nonroad engine definition under paragraph (2)(ii). Since they qualify as nonroad engines under the definition in 1068.30 (and cannot be excluded under paragraph (2)(ii)), these diesel engines are not included within the permitted stationary source under section 302(z) of the Clean Air Act, and thus emissions from these engines are not regulated or limited under stationary source permitting requirements. However, the emissions from these four diesel engines are regulated under 40 C.F.R. Part 1042 at all times.

Although the diesel electric generators onboard the OSV have no applicable emissions control requirements under the NSR and Title V source permits, when these generators are operated during loading operations to generate power for pollution control equipment and dynamic positioning thrusters on the OSV, EPA considers the emissions from these generators to be attributable to marine loading operations at the deepwater port stationary source. See, *Natural Resources Defense Council, Inc. v. EPA*, 725 F.2d 761, 765–66 (D.C. Cir. 1984) (directing in the context of marine loading that EPA examine “the nature of specific interactions between a mobile source and an attendant stationary source to determine which categories of emissions can (as a matter of statutory authority) and should (as a matter of policy) be attributed to the stationary source.”). When used to support loading operations, these engines are integral to the design of the stationary source and are fundamental to the ability to operate the DWP’s vapor control system. Thus, when the diesel engines on the OSV are used to generate electrical power to support marine loading operations, these engines function as part of the physical or operational design of the deepwater port stationary source. 40 C.F.R. § 52.21(b)(4) (defining PTE as “the maximum capacity of a stationary source a to emit a pollutant under its physical and operational design.” Therefore, during these periods of operation, the emission from the diesel engines on the OSV can (as a matter of law) and should (as a matter of policy) be included in the potential to emit of the stationary source subject to permitting. Consequently, the emission from these engines are included in the Maximum Allowable Emissions Rate Table in the permit and included in the Potential to Emit of the source but there are no direct stationary source limitations on the emissions under NSPS, NESHAPS, NSR regulations, or this permit.

Applicable Stationary Source Requirements at the DWP

As previously stated in Section A of this document, under the DPA, the laws of Texas apply to the proposed port, to the extent they are "applicable" and not inconsistent with federal law. Specifically, the applicable requirements include the federally approved portions of 30 TAC Chapter 101, 111, 113, 115, and 116, and 30 TAC Chapter 122 (with EPA serving as the permitting authority). See Table 2. General Association of Emissions Units to Applicable Requirements below for the requirements applicable to the sources at the BWTX DWP.

Table 2. General Association of Emissions Units to Applicable Requirements

FIN / EPN	Applicable Regulations
Facility-wide	• Title I, Part C of the Clean Air Act (CAA), New Source Review (NSR) • TCEQ SIP rules, 30 Texas Administrative Code, approved under 40 C.F.R. Part 51 • Title V of the CAA and the implementation regulations under 40 C.F.R. Part 71 • Texas Health & Safety Code § 382.051 • Texas Health & Safety Code § 382.0518 • Texas Health & Safety Code § 382.012 • 30 TAC 101, General Air Quality Rules • 30 TAC 111, Control of Air Pollution from Visible Emissions and Particulate Matter • 30 TAC 112, Control of Air Pollution from Sulfur Dioxide • 30 TAC 113, Standards of Performance for Hazardous Air Pollutants and for Designated Facilities and Pollutants • 30 TAC 115, Control of Air Pollution from Volatile Organic Compounds (VOC) • 30 TAC 116, Control of Air Pollution by Permits for New Construction or Modification • 30 TAC 117, Control of Air Pollution from Nitrogen Compounds • 30 TAC 122, Federal Operating Permits Program
OSVTURB1 OSVTURB2	• 40 C.F.R. Part 60, Subpart A • 40 C.F.R. Part 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines
REFCOND	• 30 TAC 116, Control of Air Pollution by Permits for New Construction or Modification
DEG1 DEG2 DEG3	• 40 C.F.R. Part 60, Subpart A as required in 40 C.F.R. § 60.4218 • 40 C.F.R. Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

DEG4	• 40 C.F.R. Part 63, Subpart A as required in 40 C.F.R. § 63.6590(b)(i) • 40 C.F.R. Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines as required in 40 C.F.R. § 63.6590(b)(i)
UNCAPLOAD	• 30 TAC 116, Control of Air Pollution by Permits for New Construction or Modification
SPMFUG	• 30 TAC 116, Control of Air Pollution by Permits for New Construction or Modification

Applicability of the New Source Performance Standards

Under Section 111 of the CAA, EPA has developed technology-based standards that apply to specific categories of stationary sources. These standards, referred to as New Source Performance Standards (NSPS) found in 40 C.F.R. Part 60, implement Section 111(b) of the CAA and are issued for categories of sources that cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare.

NSPS Subpart A, General Provisions

The provisions of Subpart A apply to any source subject to a standard in 40 C.F.R. Part 60, as referenced in the applicable subpart. For BWTX's proposed project, applicable Subpart A requirements are found at 40 C.F.R. § 60.4218 Table 8 for NSPS Subpart IIII and at 40 C.F.R. §60.4248 Table 1 for Subpart JJJJ.

NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Based on EPA's review of BWTX's permit application the diesel-powered generators will meet the applicability requirements of the NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. NSPS Subpart IIII establishes limits on emissions of PM, NOx, CO and NMHC. The proposed emission limits for the emission units are based on the equipment specifications represented in the permit applications and are dependent on BWTX's final engine selection to determine the appropriate, applicable standard.

Note that the marine diesel engines and their vessel integrated systems located on the OSV are not subject to stationary source requirements but are rather subject to 40 C.F.R. Part 1042 Control Of Emissions From New And In-Use Marine Compression-Ignition Engines And Vessels and MARPOL Annex VI requirements to control NO_x , SO_2, and PM emissions in the Emission Control Areas in accordance with 40 C.F.R. Part 1043, Control of NO_X, SO_X, and PM Emissions from Marine Engines and Vessels Subject to the MARPOL Protocol. In addition, BWTX has indicated that these engines would be certified under Tier 3. As discussed above, since these diesel engines are not part of the stationary source, their emissions are not regulated under the preconstruction or operating permits, although their emissions contribute to the overall stationary source emissions from the DWP while the OSV is effectively functioning as the pollution control device during the loading operations.

NSPS Subpart KKKK, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The OSV based gas turbines are the only sources at the DWP that are subject to NSPS Subpart KKKK, Standards of Performance for Stationary Combustion Turbines. Based on EPA's review of BWTX's permit application, the gas fired turbines located on the OSV will meet the applicability requirements of the NSPS Subpart KKKK. NSPS Subpart KKKK establishes limits on emissions of nitrogen oxides (NO_x) and sulfur dioxide (SO_2) for stationary combustion turbines.

Applicability of the National Emission Standards for Hazardous Air Pollutants (NESHAP) and NESHAP for Source Categories

The BWTX DWP does not contain affected facilities subject to 40 C.F.R. Part 61, NESHAP. Further, the BWTX DWP does not meet the definition of a major source under NESHAP for Source Categories at 40 C.F.R. § 63.2 defined as any source that emits 10 tpy or more of any single HAP or 25 tpy or more of any combination of HAPs. The BWTX DWP, as represented in the permit applications, is an area source for HAPs, and as such emissions units at the source are not generally subject to such standards.

NESHAP Subpart A, General Provisions

The provisions of Subpart A apply to any source subject to a standard in 40 C.F.R. Part 63, as referenced in the applicable subpart. For BWTX's proposed project, applicable Subpart A requirements are found at 40 C.F.R. § 63.6590(c).

NESHAP Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The emission and operating requirements for HAPs emitting from stationary reciprocating internal combustion engines located at major and areas sources of HAP emissions are included in the Maximum Achievable Control Technology (MACT) Subpart ZZZZ. Since the BWTX DWP will be a minor source of HAP emissions, the stationary diesel engines at the site will be subject to 40 C.F.R. § 63.6590(c). As such, compliance of those engines with the requirements of 40 C.F.R. 60 Subpart IIII or JJJJ constitutes compliance with MACT ZZZZ.

Texas Air Regulations

As previously stated, the laws of Texas apply to the proposed port, to the extent they are "applicable" and not inconsistent with federal law. Specifically, the applicable requirements include the federally approved portions of 30 TAC Chapter 101, General Air Quality Rules, through Chapter 113, Standards of Performance for Hazardous Air Pollutants for Designated Facilities and Pollutants, and 30 TAC Chapter 122, Federal Operating Permits Program consistent with the requirement of 40 C.F.R. Part 71.

The source is required to apply for a title V permit within 12 months after the source becomes subject to the permit program (40 C.F.R. 71.5(a)(1)(i)).

VII. BACT Analysis

The BWTX DWP, considering air pollution controls, is a minor source not subject to review under the PSD program found in 40 C.F.R. §52.21. In order to issue a NSR permit for this new stationary source, EPA applies the relevant requirements found in 30 TAC Chapter 116, including permit application requirements found in 30 TAC §116.111, which among other requirements, conditions the issuance of a permit on the application of the Best Available Control Technology (BACT) to emissions sources of criteria and other regulated pollutants. Because EPA is applying Texas NSR program regulations here, the BACT limits in this permit are based on the requirements of those state regulations (not the BACT requirement under EPA regulations for the PSD program and sections 165 and 169 of the CAA). Texas state regulation (30 TAC §116.10(1)) defines BACT as:

> *"Best available control technology (BACT)--An air pollution control method for a new or modified facility that through experience and research, has proven to be operational, obtainable, and capable of reducing or eliminating emissions from the facility, and is considered technically practical and economically reasonable for the facility. The emissions reduction can be achieved through technology such as the use of add-on control equipment or by enforceable changes in production processes, systems, methods, or work practice."*

With respect to BACT, 30 TAC §116.111 (a)(2)(C)[20] requires the following as part of a permit application:

> Best available control technology (BACT) must be evaluated for and applied to all facilities subject to the TCAA. Prior to evaluation of BACT under the TCAA, all facilities with pollutants subject to regulation under the Federal Clean Air Act (FCAA), Title I, Part C shall evaluate and apply BACT as defined in §116.160(c)(1)(A) of this title (relating to Prevention of Significant Deterioration Requirements).

With respect to BACT as applied to sources subject to review under the PSD program, the TCEQ has incorporated by reference (30 TAC §116.160(c)(1) the federal definition of BACT as found in 40 C.F.R. §52.21(b)(12):

> *Best available control technology means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is*

[20] Adopted 35 Tex Reg 8962 October 1, 2010, and approved into the Texas SIP by EPA at 79 FR 66626 on November 10, 2014.

> *achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 C.F.R. part 60, 61, or 63. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.*

The BACT definition found in 30 TAC 116.10.(1) and applied to NSR permitting actions was adopted by the State in 2010 to make clear the distinction in the Texas SIP between BACT as applied to minor source NSR review and BACT applied to PSD and other Federal NSR permitting programs. This distinction was incorporated into the rule as described in the proposed rulemaking published in the Texas Register on April 16, 2010 (35 Tex Reg 2978 in the Section by Section Discussion at 2981):

> In its proposed disapproval of the qualified facility program, the EPA states the commission must revise its definition of best available control technology in §116.10(3) to clearly apply only for minor sources and minor modifications (74 Federal Register 48450). The commission proposes to address this issue by separating the content of the definition in renumbered §116.10(1), and its application in §116.111(a)(2)(C), General Application. The commission proposes to amend the definition of BACT to define the term in a more descriptive manner using language to indicate the features of the term without using the term in the definition. The proposed new definition will maintain its broad application to all NSR permitting actions and thus maintain the stringency of permit review currently approved in the SIP. In the commission permitting process, the first determination is whether federal requirements are triggered. If so, then the BACT requirements of 40 C.F.R. §52.21(b)(12) are applied. The commission's BACT process will then be applied for any other air contaminants and any other facilities not subject to federal permitting requirements.

The revised rules were adopted and made effective on October 7, 2010[21] *and adopted into the SIP on September 9, 2016.*[22]

EPA reviewed the BACT analysis provided by BWTX and conducted a BACT analysis for the BWTX DWP sources, which follows the TCEQ three-tier BACT approach as described below.

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[21] *See 35 TexReg 8962,*

[22] *See 1 9/9/2016*

TCEQ's three-tier review process, considers five BACT performance elements at each tier of the analysis: capture efficiency, emissions reduction or performance level, reliability, on-stream time, and enforceability with enforceability assured through monitoring, testing, recordkeeping, and reporting.[23]

Tier I. In the first tier, an applicant's BACT proposal is compared to the emission reduction performance levels accepted as BACT in recent NSR permit reviews for the same process and/or industry, which can be identified by the principal company product or business, Standard Industrial Classification (SIC) Code and the North American Industry Classification System (NAICS) system code.

A Tier I BACT evaluation can be relatively straightforward in that the technical practicability and economic reasonableness of a particular emission reduction option may have already been demonstrated in prior reviews for the same process and/or industry. However, the BACT evaluation should also take into consideration any new technical developments, which may indicate that additional emission reductions are economically or technically reasonable. The TCEQ has established Tier I BACT requirements for a number of industry types. This information can be accessed at the TCEQ website[24]. However, these BACT requirements are subject to change through TCEQ case-by-case evaluation procedures. Consequently, the TCEQ published tables are a good starting point for BACT evaluations.

Tier II. If BACT requirements have not already been established for a particular process/industry or if there are compelling technical differences between the applicant facility's process and others in the same industry, the evaluation of the BACT proposal will proceed into the second tier. A Tier II BACT evaluation involves a comparison of the applicant's BACT proposal to the emission reduction performance levels that have been accepted as BACT in recent permit reviews for similar air emission streams in a different process or industry type. This tier of BACT evaluation therefore involves the consideration of an emission reduction option(s) already in use in another industry type. As with Tier I evaluations, the economic reasonableness of a particular emission reduction option should already be established by prior permit reviews. However, in-depth technical analysis, such as emission stream comparisons, may be required to determine the technical practicability of an emission reduction option that is normally used in a different process or industry type.

Tier III. A BACT evaluation should proceed to the third tier only if the first two tiers of evaluation have failed to identify an emission reduction option(s) that is technically practicable and economically reasonable. A Tier III BACT evaluation involves a detailed technical and quantitative economic analysis of all emission reduction options available for the process/industry under review. While technical practicability is established through the demonstrated success of an emission reduction option based on previous use and/or an engineering evaluation of a new technology, economic reasonableness is determined by the cost-effectiveness of controlling emissions (expressed as dollars per ton of pollutant reduced) and does not consider the effect of emission reduction costs on corporate economics.

[23] *See* APGD-6110, pp 11-18.
[24] Best Available Control Technology BACT and Air Permitting, TCEQ webpage, accessed at https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/bact/bact-chemical.xlsx

A Tier III evaluation is rarely necessary because technical practicability and economic reasonableness have usually been firmly established by industry practice as identified in the first two tiers. Due to its highly-complex and time-intensive nature, it is usually in the best interest of both the applicant and the TCEQ to avoid the third tier of BACT evaluation. Furthermore, the completion of such an evaluation is not likely to result in substantially different emission reduction options than what would otherwise be indicated by the first two tiers.

EPA has reviewed BWTX's BACT analysis which has been incorporated into this technical support document, and also provides its own analysis based on information from the RACT/BACT/LAER Clearinghouse (RBLC), minor NSR permits issued by the TCEQ, and relevant technical literature in setting forth BACT for the proposed permit. EPA's BACT analysis for the BWTX DWP is provided below and follows the TCEQ tiered BACT approach.

Offshore Marine Loading Operations

Marine loading operations produce the largest quantity of emissions of volatile organic compounds, sulfur compounds, and hazardous air contaminant emissions at the BWTX DWP. The nature of the material to be loaded at the DWP consists of crude oil with varying characteristics, as described in their NSR application. The characteristics of the material being loaded, defined by BWTX as a key element of their source design, plays a large role in estimating the potential magnitude of emissions generated from the loading operations. BWTX estimated their PTE based on a worst-case molecular weight of 59.37 lb/lbmol and worst-case VOC mass fraction of 100% hydrocarbon vapors.

Crude oil loading related emissions are affected by several factors, as described in the application, including but not limited to: the characteristics of the material remaining in the cargo hold upon arrival of the tanker ship at the DWP for loading, the effect of vapor space inerting, the rate of cargo transfer onto the ship, ship design standards that reduce vapor growth during loading and transit, and the marine safety based requirements to maintain the vapor space within specific pressure and vacuum limits at all times. Most of these parameters are limited by ship design in compliance with USCG regulations and by international standards requirements and are in place to assure safe transport of such materials, including equipment and operating requirements designed to minimize emissions to the environment, damage to equipment, and protection of workers.

The USCG and international standards require crude carriers to develop and operate in accordance with each ship's specific USCG approved VOC management plan. Such a plan requires, among other things, that crude oil be submerged fill loaded (as opposed to splash loading, to reduce vapor growth) into the cargo holds, to maintain the ship cargo vapor space as an inert environment (to control potential for fire or explosion), to maintain the cargo vapor space within pressure and vacuum limits at all times (to maintain integrity of the ship's cargo holds), and for the crude oil loading rate to be loaded to aid in minimizing venting of emissions from the ship's cargo hold vapor space. All of these factors are described by BWTX in their NSR permit application.

Marine Loading Emissions: Captured and Fugitive

The air contaminant emissions generated onboard the tanker ship originate from material contained in the cargo holds, cargo hold crude oil washing (activity conducted prior to arriving at the DWP), cargo hold working and breathing losses, mandatory cargo hold vapor space inerting methods, and cargo hold connected vapor space pressure and vacuum controls effected by various vapor space vent control devices onboard the ship. Such emissions are captured by the tanker ship's vapor capture system.

When not at port, cargo hold vapor space air contaminant emissions are typically vented without emissions reductions mechanisms safely to atmosphere through a variety of liquid and vapor pressure/vacuum valves at mast risers located on the deck of the tanker ship. The configuration allows for safe management of cargo hold vapor growth due to cargo movement and cargo breathing losses while maintaining ship specific pressure vacuum limits, thus minimizing emissions to the atmosphere.

While being loaded or unloaded at a port the capture system is configured as a closed vent system with emissions directed not to atmosphere but rather to vapor control system located at the port. The interface from tanker interconnected vapor space to port control is the tanker ship vapor header manifold. A hose typically connects at the tanker ship vapor header manifold and routes the emissions to the port's loading emissions vapor control system. Such systems, designed and operated in accordance with international and USCG requirements allow emissions mitigation and safe management of air contaminant emissions with respect to crew and equipment. During loading operations, the tanker ship vapor collection system connected to the port's vapor control system forms a closed vent system that collects, routes, and assures the proper control of emissions generated emissions. The pumps that move the crude oil into the tanker ship's holds are located on shore. The motive force for routing the vapors from the cargo holds through the closed vent system to the port-based vapor control system is supplied by the onshore electrical driven pumps that move the crude oil to the DWP's PLEM and routed via submerged pipeline to a single point mooring buoy and from there via floating transfer hoses to the product header manifold on the tanker ship. Note that because Coast Guard regulations require the inerting of tanker ship cargo hold connected vapor space, control collection of loading emissions using vacuum control is not possible.

To assure that the tanker ship's vapor capture system is capable of working correctly, the ship's approved VOC management plan mandates that an annual ship's cargo hold vapor space leak tightness test be performed. The successful completion of the test results in the issuance of a certificate of leak tightness to the ship's owner. Possession and provision of such a certificate to the DWP is a mandatory prerequisite for cargo transfer.

To assure that the vapor capture system is properly operating during loading operations, the VOC management plan requires confirmation of correct valve settings to assure that the captured vapors are routed safely not to atmosphere but to the vapor header for connection to the port's vapor control system. The VOC management plan also requires monitoring of the cargo loading rate and that the cargo hold vapor space approved pressure/vacuum operating envelope is maintained for the duration of the loading operation. In addition, the VOC management plans also require the physical periodic observation of potential fugitive emissions sources on the tanker ship being loaded during the loading operation such as pressure/relief valves or cargo hold overfill relief valves.

BWTX's permit application included a demonstration that BACT will be used at the proposed site following applicable guidance. The use of appropriate control measures will decrease the amount of air contaminants emitted to the atmosphere by this DWP. The primary control measures proposed for the DWP are summarized below:

Table 3. Best Available Control Technology Summary

Source Name	Best Available Control Technology Description
Fugitives (SPMFUG and OSVFUG)	Uncontrolled sitewide fugitive piping and equipment leaks for sources with emissions below 10 tpy requires no control.
Marine Loading (UNCAPLOAD)	Loading emissions are collected to meet a minimum 99% capture efficiency and routed via the closed vent system on the Offshore Support Vessel (OSV) to a vapor control system. Vessel leak testing: EPA Method 21 During loading of inerted marine vessels, BWTX shall conduct AVO checks for leaks once every 8 hours onboard the OSV. The pressure at the vapor collection connection and the loading rate must be monitored and recorded. VOC >= 0.5 psia
Vapor Control System (VCS – REFCOND, OSVTURB1, and OSVTURB2)	Collected emissions from marine vessels will be routed to the VCS, with a VOC destruction efficiency of 99%. The temperature will be monitored, and an initial stack test will be required. Turbines will meet 40 C.F.R. 60, Subpart KKKK requirements, and will be certified to meet the following emission limits (expressed in equivalent units). VOC – 10.1 ppmvd at 15% O_2 achieved through good combustion practices. NOx – 78.8 ppmvd at 15% O_2, achieved through good combustion practices.

	CO - 229 ppmvd at 15% O_2, achieved through good combustion practices.

BACT Analysis for Marine Loading

In this permit, the Offshore Support Vessel (OSV) provides both the capture and the control of VOCs from loading operations at the DWP. The loading emissions capture system assures that volatile organic compound (VOC) emissions from the loading operations aboard the tanker ship being loaded are effectively captured and routed via a closed vent system to the OSV-VCS and not to the atmosphere during crude oil transfer operations.

Traditionally, TCEQ has specified a collection efficiency of 95% for marine loading. TCEQ has adopted guidance that allows the use of a 99.9% collection efficiency provided the applicant agrees to follow additional monitoring, inspection, and recordkeeping requirements. BWTX has proposed to utilize a conservative 99% collection efficiency.

BACT Analysis for the Vapor Control System

In this permit the OSV-VCS consists of the VOC Plant (refrigerator condenser (OSV-REFCOND)) and the marine gas turbines (OSV-TURB1 and OSV-TURB2). These units serve as a control device for captured emissions during marine loading and operate in tandem to achieve a 99.9% destruction and removal efficiency for VOCs. The VCS is a closed vent system that includes but is not limited to the flexible emissions transfer hose, reel, and associated connectors used to route vapors from the tanker ship being loaded cargo vapor system header manifold to the vapor processing header manifold of the OSV, the vapor knock out drum and associated slop tank and piping, the Vapor Control System (VCS) and its appurtenances, fixtures, and monitoring systems, the liquid VOC pressure storage vessels and associated piping, the liquid VOC vaporization skid and associated piping, and the gas turbines, their skids and associated piping and vent stacks. Also included are all connectors, piping, valves (including safety relief or bypass valves) and sampling manifolds that route either loading emissions or processed loading emissions on the OSV. The VOC Plant utilizes a refrigerated condenser to reduce the temperature of the gaseous emissions stream captured below its dew point. This converts some or all of the VOC vapors into their liquid state to enable recovery and reduce emissions. Uncondensed vapors exiting the refrigerated condenser contain hydrocarbons that can be converted to energy when combusted in a gas turbine.

The VOC Plant includes the collection of equipment located on the OSV downstream of the knockout pot used to process marine tanker ship loading related emissions into three streams: volatile organic compounds (including methane) separated into a condensed liquid volatile organic compound stream (termed herein the L-VOC stream), a non-condensable (or surplus) volatile organic compound stream (termed herein S-VOC stream), and reject water. The enclosed and ventilated VCS located on the deck of the OSV contains the equipment and equipment skids necessary to compress, condense, separate, and dry the vent stream directed to it. All L-VOCs produced in the VOC Plant are routed to pressure storage tank onboard the OSV which are external to the VOC Plant process area or to the gas turbines for destruction as fuel. All S-VOCs produced in the VOC Plant are routed for destruction as fuel to the gas turbines which are also external to the VPM process area. Also included as part of the VOC Plant are all process associated piping, valves, including pressure relief and bypass valves, and instruments necessary to sample and analyze the vent stream routed through the VPM process area, the control air system, electrical cabinets, CO_2 system, slop tanks, and a control station.

The disposition of the three vent streams from the VOC Plant are reject water, the S-VOC stream, and the L-VOC stream as follows:

The reject water stream is routed to slop tanks onboard the ship and disposed of at a land-based port. The S-VOC stream exists only when the tanker ship is being loaded. The S-VOC stream is routed to the gas turbines where it is destroyed in the gas turbines as a portion of the fuel needed to generate electricity used to service the processes of the VCS.

The L-VOC stream is routed from the VCS via hard piping to pressure vessels for pressurized storage on board. A portion of the L-VOCs collected are continuously sent via hard piping to a fuel header where it is combined with the S-VOC stream using a system of real time analyzers, monitors, and controllers to create the fuel mixture that powers the gas turbines over their range of operations to produce electricity. The extensive fuel gas monitoring and control systems are necessary as the british thermal unit (btu) content of the tanker ship loading vent stream varies widely over the course of the loading operations; therefore, such monitoring assures that the vent stream sent for destruction in the gas turbines allows proper operation continuously over the entire operating range.

Thus, 100% of the S-VOCs processed through the VCS and a portion of the L-VOCs that are initially stored from the processing of the emissions vents stream routed from the tanker ship being loaded are ultimately destroyed as fuel in the gas turbines. The gas turbines generate the electricity needed for loading emissions processing and for operation of the OSV. A second portion of the stored L-VOCs is used as the sole fuel for the gas turbine generators at all times other than during tanker ship loading operations, and remains reserved in the pressure vessels until needed to generate electricity for use by the OSV to supply electricity for trips to and from the DWP. The portion of L-VOCs not reserved for use as fuel in the gas turbine generators is transported in the pressure vessels aboard the OSV to an onshore terminal, where it is sold. Therefore, emissions are not generated from the L-VOCs being stored in pressurized storage vessels while the OSV is operating at the DWP itself.

Thus, the ultimate control of the emissions generated as the result of tanker ship crude oil loading operations is two pronged: 1) by vapor recovery and storage in pressure vessels on board for later sale at an onshore port and 2) as fuel for the gas turbine electrical generators that, while at the DWP, provide power output to operate the VCS functions of the OSV. Note that the gas turbines are fueled at all times by processed loading emissions. Thus, the VOC emissions resultant from the combustion of the fuel in the gas turbine generators while at the DWP are the final controlled stationary source emissions generated from the loading operations at the DWP.

The various means to recover VOCs generated as the result of tanker ship loading of crude oil are several. In general, if a control option has been demonstrated in practice on a range of exhaust gases with similar physical and chemical characteristics and does not have a significant negative impact on process operations, product quality, or the control of other emissions; it may be considered as potentially feasible for application to another process.[25] In this project, the company has proposed to recover and pressure vessel store condensable (liquid) VOC content of the tanker ship loading related emissions and to destroy all gasified (vapor) VOC content by utilization as fuel in the gas turbine generator combustion devices.

For comparison, other similar emission units with a VOC BACT limit are summarized in the table below.

Table 4. Similar VOC BACT Limitations for Captured Marine Loading Operations

Company / Location[1]	Process Description	BACT Emission Limit / Requirements	Year Issued	Reference
Beaumont Terminal Jefferson County, TX	Marine Loading, 42.010	24.5 tpy with 99.8% capture efficiency	6/8/16	RBLC ID: TX-0799
Ingleside Terminal-Oxy Oil San Patricio County TX	Marine Loading, 42.010	126.1 tpy with 99% collection efficiency for ships and 99% DRE	6/22/15	RBLC ID: TX-0752
Corpus Christi Oil Terminal Nueces County TX	Marine Loading, 42.004 – 20,000,000 bbls/yr	351 tpy with 95% capture efficiency	6/22/16	RBLC ID: TX-0800
Port of Beaumont Petroleum Transload Terminal (PBPTT) Orange County TX	Petroleum Liquid Marketing, 42.004 – 45,000 bbsl/yr	660.32 tpy with 99% DRE for inerted vessels	11/6/15	RBLC ID: TX-0772
Energy Transfer Nederland Terminal Marine Vessel Loading Operations Jefferson County TX	Petroleum Liquid Marketing, 42.004 – 100 MMbbls/yr loading crude oil, etc.	97.36 tpy with 99% DRE for inerted vessels	09/18/15	RBLC ID: TX- 0765
Texas Dock and Rail Nueces County TX	Petroleum Liquid Marketing, 42.004 – 157 MMbbls/yr loading crude oil, etc.	74.35 tpy with 95% capture	6/3/15	RBLC ID: TX-0745
Corpus Christi Terminal Condensate Splitter Nueces County TX	Petroleum Liquid Marketing, 42.004 – 20,000 bbls/hr per vessel into ships and barges	Submerged fill and vapor combustor with 99.5% DRE	4/10/15	RBLC ID: TX-0731

[25] U.S. EPA, OAQPS, supra note 6 at 24.

Company / Location[1]	Process Description	BACT Emission Limit / Requirements	Year Issued	Reference
Max Midstream Texas Calhoun, TX	Bulk Storage Terminal	Vapor tight vessels, route all loading vapors to a vapor combustor having a VOC destruction efficiency of 99.9%	04/08/22	Permit 162941 Project 320923
Vopack Terminal Deer Park Inc. Vopak Terminal Deer Park	Bulk Storage Terminal	Vapor tight vessels, route all loading vapors to a vapor combustor having a VOC destruction efficiency of 99.5%.	09/14/22	Permit 466A Project 338636
HFOTCO LLC Houston Fuel Oil Terminal	Bulk Storage Terminal	Vapor tight vessels, collection efficiency 99.9%, route all loading vapors to a vapor combustor having a VOC destruction efficiency of 99.9%	01/24/22	Permit 5783 Project 323019

[1] - Note that none of the facilities in the table below are located offshore.

The surveyed permit BACT determinations are consistent with the TCEQ general BACT guidance and the 2021 Marine Loading Operations Standard Permit. The BWTX control proposal satisfies TCEQ Tier I BACT requirements based on the information surveyed above. BWTX will use a system of add-on control devices that exceeds the performance specifications of the recent TCEQ determinations.

Fugitive Emissions BACT

VOC fugitive emissions come from three categories of sources: equipment leak fugitives from the SPM buoys, equipment leak fugitives from the OSV-VCS, and equipment leak fugitives from piping components onboard the VLCC. Tanker ship design assures that crude oil cargo loading emission generation is minimized by requiring submerged loading of cargo holds and the ship specific VOC management plan mandating that the cargo hold vapor space be maintained in an inert environment and the pressures be maintained within a working pressure/vacuum envelope.

TCEQ Tier I BACT for fugitive emissions is no control for sources with sitewide fugitive emissions of <10 tpy VOC. The sitewide fugitive emissions for the BWTX DWP are 9.66 tpy VOC. However, BWTX proposes an equipment design and work practice standard as follows: leakless design to the extent dictated by good engineering design, AVO inspections for leaking components onboard the OSV prior to the start of each loading operation, and inventorying floating oil transfer hoses with seawater when not in service. No supplemental Method 21- or OGI-based leak detection and repair (LDAR) program is proposed, other than LDAR monitoring in connection with the verification of capture system integrity. The proposed DWP is currently designed to employ high quality components which are substantially leakless and will also employ remote sensing technologies to detect the presence of significant leaks. The proposed pipeline infrastructure will be designed to close shut-off valves and shutdown pumps within 30 seconds of detection of pipeline pressure drops. Through the use of remote sensing technologies, data will be available via telemetering equipment to the tanker and to the shore personnel. This data will consist of multiple pressure readings and flow rates along the pipeline. Unusual movements in pressure will automatically shut down the onshore pumps.

VIII. Summary of Applicable Air Quality Impact Analyses

The BWTX DWP federally enforceable controls limit the potential emissions to below PSD permitting thresholds and as such is not subject to federal NSR permitting requirements, including air quality analysis requirements. Although the DWP facility does not trigger PSD, permitting requirements of the nearest adjacent state (Texas) must still be followed in accordance with the DPA. Because PSD does not apply, an additional impacts analysis per §52.21(o) and a federal Class I area impacts analysis per §52.21(p) are not required. The air quality analysis requirements specifically required by Texas are described below.

Overview of Air Impacts Analysis Required by the Nearest Adjacent Coastal State

Consistent with the DPA permitting requirements, BWTX is required to complete the air impacts analyses that are required by the nearest adjacent coastal State. In this case, the nearest adjacent coastal state is Texas, which requires the following air impacts analyses: (1) State Minor NAAQS analysis; (2) State Property Line Standard analysis; and (3) State Health Effects analysis (also referred to as effects screening level (ESL) analysis).

According to TCEQ's modeling guidelines, the purpose of the Minor NAAQS analysis is to demonstrate that proposed emissions of criteria pollutants from a new facility or from a modification of an existing facility that does not trigger PSD review will not cause or contribute to an exceedance of the NAAQS. The demonstration may consist of both air dispersion modeling predictions and ambient air monitoring data. BWTX conducted the Minor NAAQS analysis via dispersion modeling.

According to TCEQ's modeling guidelines, the purpose of the State Property Line Standard analysis is to demonstrate compliance with state standards for net ground-level concentrations. This analysis must demonstrate that resulting air concentrations from all on-property facilities and sources that emit the regulated pollutant will not exceed the applicable standard. For the State Property Line Standard analysis, BWTX used dispersion modeling with the same model set up that was used in the Minor NAAQS analyses. (Model set-up refers to the modeling system and modes used, the meteorological data, receptor data, and source data inputs.)

Finally, according to TCEQ's modeling guidelines, the purpose of the State Health Effects analysis is to demonstrate that emissions of non-criteria pollutants from a new facility or from a modification of an existing facility will be protective of the public's health and welfare. The results from the State Health

Effects analysis are used to evaluate the effects of facility emissions and their potential to cause adverse effects on a contaminant-by-contaminant basis. For the State Health Effects analysis, BWTX also used dispersion modeling with the same model set up that was used in the Minor NAAQS analyses.

The applicant's Air Quality Analysis report dated May 2023 submitted in support of the minor NSR permit application presents a report describing the off-property impacts analyses performed for the proposed BWTX DWP Facility (i.e., a minor new source) following TCEQ's requirements. These analyses include dispersion modeling using the AERCOARE/AERMOD model, which is an alternative model. (See the "Model Selection" section of this document for more details regarding BWTX's alternative model request and approval.)

Minor NAAQS Analysis Modeling Methodology

Model Selection

BWTX conducted dispersion modeling using AERMOD (version 22112) to conduct dispersion modeling as part of the NAAQS modeling analyses. Since all modeled sources and receptors are located overwater, AERMAP was not run as part of the modeling analysis. In addition, the BWTX used AERCOARE (version D13108) as the meteorological data preprocessor instead of AERMET to prepare meteorological input data for AERMOD.

For overwater modeling, AERCOARE/AERMOD is an alternative model requiring review and approval by the EPA Regional Office. As part of this permitting action, EPA Region 6 is approving BWTX's use of AERCOARE/AERMOD as an alternative model. The Alternative Model Technical Support Document outlining EPA's review and intended approval of BWTX's alternative model request is available as part of the permit record.[26]

Meteorological Data

BWTX obtained overwater meteorological data from the National Oceanic and Atmospheric (NOAA) National Data Buoy Center for 2015-2019. Based on proximity to the proposed DWP and data availability and completeness, BWTX obtained meteorological data from Buoys 42019 and PTAT2. Two buoys were used to construct a more complete dataset because of data gaps that existed for the individual buoys. Buoy 42019 is located approximately 128 km east of the proposed BWTX DWP, and Buoy PTAT2 is located approximately 39 km west southwest of the proposed facility. AERMOD meteorological input files were generated by BWTX from the observed buoy data using the AERCOARE meteorological data preprocessor using MIXOPT1 to calculate mixing heights.

[26] *Technical Review of Bluewater Texas Terminal LLC (BWTX) request to use the AERCOARE meteorological data preprocessor program in conjunction with AERMOD in support of their New Source Review (NSR) Construction Permit Application*, May 2025.

In addition to reviewing the permit applicant's merged buoy meteorological input data, EPA developed alternative meteorological input files using prognostic meteorological outputs. This alternative meteorological input dataset was used in a supplemental air dispersion modeling analysis. More details regarding the generation of the prognostic based meteorological data input files and the results of EPA's supplemental modeling analysis can be found in the permit record.[27,28] EPA chose to utilize prognostic data to assist in addressing data completeness and representativeness of the available buoy data and data inconsistencies between multiple buoys. Additionally, the prognostic meteorology approach allowed for the generation of a complete meteorology dataset for the specific location of the proposed BWTX DWP.

Receptor Data

For the dispersion modeling analysis, BWTX placed receptors on overwater areas determined to be ambient air. The ambient air boundary was defined based on the Coast Guard safety zone surrounding the proposed DWP. BWTX's receptor grid began at the "property line" and consisted of 3 cartesian grids extended from the ambient air boundary out to 20 km with variable grid spacing, increasing with increased distance from the proposed facility.

On-site Source Data

BWTX's project-related modeled emission sources included marine diesel engines, gas turbines, refrigerated condensers, equipment leak fugitives and marine loading. Emissions from all sources except the equipment leaks and marine loading were modeled as point sources. The remaining sources were modeled as volume sources. Modeled release height for the equipment leak fugitive emissions was representative of the average equipment height of the emissions. The loading emissions modeled release height was based on the average height of the loading operations.

Within the modeling, loading operations were represented to occur only at one SPM location concurrently. Source groups were used to ensure that the worst-case impacts from the SPMs were captured in the modeling results. In addition, on a short-term basis, only two marine diesel engines will operate simultaneously so the marine diesel engines with the highest impacts were included in the modeled sources groups to capture maximum impacts.

Off-site Inventory Sources

BWTX reviewed the Bureau of Ocean Energy Management (BOEM) 2021 Platform Emissions Inventory database to determine what off-site sources may need to be included in a refined modeling analysis based on their proximity to the proposed DWP location. Based the modeled impacts from the significance analysis and the locations of off-site source, BWTX determined that no additional off-site emission sources from the 2021 Emissions Inventory should be modeled in the refined NAAQS analysis. BWTX extended their review of off-site inventory sources 20 km from the proposed DWP location. The

[27] *Prognostic Meteorological Modeling Evaluation – Bluewater Texas Terminal, LLC*, May 2025.
[28] *Supplemental Air Quality Analysis Summary for Bluewater Texas Terminal LLC (BWTX)*, May 2025.

refined modeling analysis for the BWTX facility analysis included all on-site emission sources, as well as an ambient monitoring concentration to account for background. The monitors chosen to represent background are discussed below.

Background Ambient Air Quality

BWTX used existing air monitoring data to determine representative background concentrations that were used in the refined NAAQS analysis. The background concentrations plus the model predicted concentrations were compared with the appropriate NAAQS for each criteria pollutant and averaging time requiring a refined analysis. Based on the significance modeling results, 1-hr NO_2, annual NO_2, 1-hr SO_2, and 24-hr $PM_{2.5}$ required refined modeling to demonstrate compliance with the state NAAQS.

BWTX identified the Galveston 99th Street monitoring site (AQS# 48-167-1034) as a conservatively representative background monitor for NO_2 and $PM_{2.5}$ based on its proximity to the proposed facility and not being significantly impacted by localized source impacts. For SO_2, BWTX identified the Texas City monitoring site (AQS# 48-167-0005) for background data, again based on the proximity to the proposed facility and not being significantly impacted by localized source impacts. While the identified monitors were not located in the immediate offshore area where the facility is to be located, the monitoring data identified by BWTX is expected to be representative, or in most cases conservative, based on their on-shore locations in less isolated areas than the proposed DWP location. The table below provides a summary of the background monitoring data provided by the applicant.

Table 5. Background Ambient Concentrations (2020-2022)

Pollutant	Monitor Site (AQS #)	Value Rank	Year	% Valid Data	Conc. (ppb)	Conc. (μg/m³)	3-Year Avg Conc. (μg/m³)	Max Conc. (μg/m³)
NO_2	Galveston 99th Street (48-039-1016)	98% Max Daily 1-hr	2020	95%	22.1	41.5	48.1	
			2021	92%	24.6	46.2		
			2022	84%	30.1	56.6		
		Ann. Avg	2022	84%	2.3	4.4		4.4
$PM_{2.5}$	Galveston 99th Street (48-039-1016)	98% 24-hr	2020	88%		28.4	22.9	
			2021	95%		16.4		
			2022	95%		24.0		
SO_2	Texas City (48-167-0005)	99% Max Daily 1-hr	2020	80%	11.0	28.8	22.6	
			2021	99%	6.7	17.6		
			2022	90%	8.2	21.5		

NO_2 Analysis

BWTX used EPA's Tier 2 Ambient Ratio Method 2 (ARM2) to estimate the fraction of NO_X that converts to NO_2 in the atmosphere when conducting dispersion modeling for NO_2. They used the default minimum and maximum ratios of 0.5 and 0.9, respectively, in the NO_2 analysis.

Secondary $PM_{2.5}$ Analysis

In addition to their primary $PM_{2.5}$ impacts analysis conducted via dispersion modeling, BWTX also conducted an additional analysis to determine the secondary $PM_{2.5}$ impacts resulting from the facility's $PM_{2.5}$ precursor emissions. The potential precursor emissions impacts on secondary formation were determined using a Tier 1 demonstration tool and relying on existing technical and appropriate relationships between emissions and impacts developed from previous modeling analyses. Specifically, BWTX conducted a Tier 1 demonstration consistent with the approach outlined in EPA's draft Modeled Emission Rates for Precursors (MERPs) Guidance dated April 30, 2019.[29] MERPs were used to estimate the secondary $PM_{2.5}$ contributions from both NO_x and SO_2 emissions. The secondary impacts were combined with the modeled direct $PM_{2.5}$ impacts and a representative $PM_{2.5}$ background concentration, as applicable, and compared with the applicable $PM_{2.5}$ standards.

In assessing the secondary $PM_{2.5}$ impacts, BWTX conservatively used the following MERPs values, which are the worst-case MERPs for the Texas hypothetical sources listed in TCEQ's MERPs Guidance.[30]

Table 6. MERPs Values Used by BWTX in Secondary $PM_{2.5}$ Analysis

Precursor	24-Hr $PM_{2.5}$	Annual $PM_{2.5}$
NO_X	2,649	10,397
SO_2	359	1,820

The annual $PM_{2.5}$ NAAQS was revised after BWTX's initial modeling submittal. This NAAQS revisions resulted in updates to the worst-case MERPs listed in TCEQ's MERPs Guidance. The updated annual $PM_{2.5}$ MERPs in TCEQ's guidance for NO_2 and SO_2 are 6,759 and 1,183, respectively. EPA evaluated the impacts of the updated MERPs on the estimated secondary $PM_{2.5}$ impacts, and the annual $PM_{2.5}$ modeling results presented later in this document reflect the updated MERPs.

Significance Analysis Approach

The initial air dispersion modeling analysis conducted by BWTX was the significance analysis, in which modeled predicted concentrations were compared with the corresponding EPA recommended significant impacts levels (SILs). Maximum modeled impacts were determined for each pollutant and corresponding short-term and long-term averaging periods. For those pollutants and averaging periods with modeled impacts less than the SILs, the NAAQS demonstration was complete based on a finding of insignificance consistent with EPA's technical analysis and documentation establishing the recommended SILs, along with the existing ambient air quality in the proposed project area. For those

[29] *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program*, April 2019, EPA-454/R-19-003.
[30] *Appendix R – Secondary Formation of Particulate Matter ($PM_{2.5}$)* to TCEQ's *Air Quality Modeling Guidelines*, June 2024, APDG 6232.

pollutants and averaging periods with modeled impacts exceeding significance levels, a refined modeling analysis was conducted to demonstrate compliance with the NAAQS.

Refined NAAQS Analysis Approach

BWTX conducted refined air dispersion modeling to demonstrate compliance with the NAAQS for each pollutant and averaging period that exceeded the corresponding significance level. The refined analysis results included modeled impacts from the proposed facility emissions combined with a representative background concentration, which were compared with the corresponding NAAQS to determine compliance.

State Property Line Standard Analysis Modeling Analysis Methodology

Consistent with TCEQ requirements and guidance, BWTX also conducted a State Property Line Standard analysis to demonstrate compliance with the state standards for net ground-level concentrations for SO_2 and H_2S. BWTX modeled site-wide emissions from the proposed facility in the state property line analysis. BWTX compared the maximum impacts for each pollutant in the State Property Line Standard analysis modeling with the corresponding standard.

State Health Effects Analysis Modeling Methodology

Consistent with TCEQ requirements and guidance, BWTX completed the State Health Effects analysis to determine the potential impacts from the emissions of non-criteria pollutants from the proposed facility for comparison with the corresponding Effects Screening Levels (ESLs). This analysis was completed to demonstrate that the non-criteria pollutant emission levels will be protective of the public's health and welfare.

Based on the proposed facility's emissions, BWTX included the following eleven pollutants in the State Health Effects analysis: n-hexane, benzene, toluene, m-xylene, p-xylene, o-xylene, ethylbenzene, styrene, xylene (all isomers), propylene, and crude oil. Propylene is specified as a simple asphyxiant and is exempt from further MERA review. Following TCEQ's MERA guidance, BWTX completed Step 2 of the MERA analysis to screen out any pollutants that were determined to be de minimis. For the remaining pollutants, BWTX proceeded to Step 3 in the MERA analysis and used generic modeling and a unit emission rate to determine if the estimated maximum ground level concentrations for each pollutant were less than 10% of the corresponding ESL. For pollutants with estimated impacts greater than 10% of the ESL in Step 3, BWTX proceeded to Step 7 of the MERA analysis to demonstrate acceptable impacts as compared to the corresponding ESLs for the remaining pollutants.

Modeling Results

The following sections summarize the results of the air quality impacts analyses completed by BWTX in support of their construction permit application for the proposed DWP. In addition to EPA's review of the applicant's air quality analysis, EPA conducted a supplemental modeling analysis to further evaluate whether the proposed BWTX DWP would comply with all applicable air quality standards.[31]

Significance Analysis Results

EPA recommended SILs were used to determine if the impacts from the BWTX DWP would result in insignificant impacts. BWTX's significance modeling analysis results for CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are presented in the table below.

Table 7. Comparison of BWTX DWP Impacts Against SILs

Pollutant	Averaging Time	Class II SIL (µg/m³)	Modeled Impacts (µg/m³)	Exceeds SIL? (Y/N)
CO	1-hr	2,000	540.3	N
	8-hr	500	191.0	N
NO_2	1-hr	7.5	198.2	Y
	Annual	1	4.96	Y
SO_2	1-hr	7.8	13.0	Y
	3-hr	25	6.70	N
	24-hr	5	3.11	N
	Annual	1	0.23	N
PM_{10}	24-hr	5	2.16	N
$PM_{2.5}$	24-hr	1.2	2.28*	Y
	Annual	0.13	0.114*	N

**Includes both primary and secondary $PM_{2.5}$ impacts.*

These results indicate that the impacts for 1-hour and 8-hour CO; 3-hour, 24-hour and annual SO_2; 24-hour PM_{10}; and annual $PM_{2.5}$ were below the corresponding significance thresholds and determined to be insignificant. Further analysis, via a refined NAAQS modeling analysis was required for 1-hour and annual NO_2, 1-hour SO_2, and 24-hour $PM_{2.5}$, which had impacts greater than the corresponding SIL.

NAAQS Results

BWTX completed a refined NAAQS modeling analysis for 1-hour and annual NO_2, 1-hour SO_2, and 24-hour $PM_{2.5}$. The refined modeling analysis included modeled impacts from the BWTX DWP emission sources along with background concentrations taken from existing ambient air monitors, which were discussed previously in the Background Ambient Air Quality Section of this document. A summary of the refined modeling results, which demonstrates compliance with the NAAQS, is presented in the table below.

Table 8. Refined NAAQS Analysis Results

[31] *Supplemental Air Quality Analysis Summary for Bluewater Texas Terminal LLC (BWTX)*, May 2025.

Pollutant	Avg. Time	Modeled Impacts (µg/m³)	Background (µg/m³)	Total Conc. (µg/m³)	NAAQS (µg/m³)	Exceeds NAAQS? (Y/N)
NO_2	1-hr	120.8	48.1	168.9	188	N
	Annual	4.96	4.37	9.32	100	N
SO_2	1-hr	8.74	22.61	31.4	196	N
$PM_{2.5}$	24-hr	2.28*	22.93	25.1	35	N

**Includes both primary and secondary $PM_{2.5}$ impacts.*

EPA concludes that the NAAQS analysis provided by BWTX demonstrates that air quality impacts will not violate the NAAQS for any pollutant.

Secondary $PM_{2.5}$ Analysis Results

Using the emission rate and worst-case MERPs for the Texas hypothetical sources from TCEQ's modeling guidance, contribution to secondary $PM_{2.5}$ impacts from the proposed DWP's NO_x and SO_2 emissions were determined. The following table summarizes the calculated precursor emission contributions for both 24-hr and annual secondary $PM_{2.5}$. These impacts were calculated using the updated worst-case MERPs from the TCEQ guidance that incorporated the revised annual $PM_{2.5}$ NAAQS. The secondary formation impacts were combined with the primary $PM_{2.5}$ impacts for comparison with the applicable standards in the significance and cumulative modeling analyses.

Table 9. Secondary $PM_{2.5}$ Impacts

	Max. SO_2 Contribution (µg/m³)	Max NO_X Contribution (µg/m³)	Total Secondary $PM_{2.5}$ (µg/m³)
24-hr $PM_{2.5}$	0.11	0.02	0.13
Annual $PM_{2.5}$	0.004	0.001	0.004

State Property Line Results

BWTX completed a State Property Line Standard analysis to determine the impacts from the proposed facility's SO_2 and H_2S emissions. A summary of the modeling results, which demonstrates compliance with the standards is presented in the following table.

Table 10. State Property Line Standard Analysis Results

Pollutant	Avg. Time	Modeled Impacts (µg/m³)	Standard (µg/m³)	Exceeds Standard? (Y/N)
SO_2	30-min	13.0	1,021	N
H_2S	30-min (non-industrial)	56.51	108	N

	30-min (industrial)	56.51	162	N

EPA concludes that the State Property Line Standard analysis provided by BWTX demonstrates that air quality impacts from the proposed DWP will not exceed the state standards.

State Health Effects Results

BWTX completed a State Health Effects analysis to determine the impacts from the proposed facility's emissions of pollutants having an ESL. Consistent with the TCEQ's MERA guidance, via MERA Step 2, BWTX examined the project's emissions to determine if any of the pollutants were emitted at levels determined to be de minimis. The following table summarizes the results of the Step 2 evaluation.

Table 11. MERA Analysis Step 2 Results - State Health Effects Analysis

Pollutant	Emissions Increase (lb/hr)	ST ESL (µg/m³)	LT ESL (µg/m³)	LT ESL >/= 10% ST ESL? (Y/N)	De Minimis Value (lb/hr)	Emissions < De Minimis? (Y/N)	Step 2 Demo? (Y/N)
n-hexane	10.59	5,600	200	N	0.4	N	N
benzene	1.04	170	5	N	0.04	N	N
toluene	0.98	4,500	1,200	Y	0.4	N	N
m-xylene	0.29	2,200	180	N	0.1	N	N
p-xylene	0.17	2,200	180	N	0.1	N	N
o-xylene	0.07	2,200	180	N	0.1	Y	N
ethylbenzene	0.08	26,000	570	N	0.4	Y	N
styrene	0.003	110	140	Y	0.04	Y	Y
xylene (all isomers)	0.001	2,200	180	N	0.04	Y	N
crude oil	3.47	3,500	350	Y	0.4	N	N

For those pollutants with long-term ESLs that are greater than or equal to 10% of the short-term ESL and emission increases less than the de minimis levels, the MERA analysis was complete at Step 2 demonstrating that the proposed emission levels for these pollutants would be protective of the public's health and welfare. The only pollutant screened out in Step 2 was styrene.

For the remaining pollutants, BWTX moved to Step 3 of the MERA analysis and compared estimated maximum ground level concentrations with 10% of the corresponding ESLs. The following table summarizes the results of the Step 3 evaluation.

Table 12. MERA Analysis Step 3 Results - State Health Effects Analysis

Pollutant	ST GLCmax (µg/m³)	10% ST ESL (µg/m³)	ST </= 10% ST ESL? (Y/N)	LT GLCmax (µg/m³)	10% LT ESL (µg/m³)	LT </= 10% LT ESL? (Y/N)	Step 3 Demo? (Y/N)

n-hexane	171.15	560	Y	0.42	20	Y	Y
benzene	16.78	17	Y	0.04	0.5	Y	Y
toluene	15.82	450	Y	0.04	120	Y	Y
m-xylene	4.65	220	Y	0.01	18	Y	Y
p-xylene	2.68	220	Y	0.01	18	Y	Y
o-xylene	1.05	220	Y	0.003	18	Y	Y
ethylbenzene	1.29	2,600	Y	0.003	57	Y	Y
xylene (all isomers)	0.12	220	Y	0.0003	18	Y	Y
crude oil	4,820.28	350	N	14.54	35	Y	Y – LT; N - ST

For those pollutants with maximum ground level concentrations that are less or equal to equal to 10% of the ESL, the MERA analysis was complete at Step 3 demonstrating that the proposed emission levels for these pollutants would be protective of the public's health and welfare. This comparison was completed individually for the short-term and long-term ESL values. All remaining pollutants screened out in Step 3 of the MERA analysis except for crude oil for the short-term ESL.

Therefore, BWTX moved to Step 7 of the MERA analysis for the short-term crude oil ESL. In Step 7, BWTX compared the maximum ground level concentrations from the sitewide modeling with the corresponding short-term ESL. The following table shows that comparison.

Table 13. MERA Analysis Step 7 Results - State Health Effects Analysis

Pollutant	**ST GLCmax ($\mu g/m^3$)**	**ST ESL ($\mu g/m^3$)**	**ST GLCmax < ST ESL? (Y/N)**
crude oil	4,820.28	3,500	N

BWTX examined the modeled exceedances of the crude oil ESL and found that all occurred at industrial receptors over water. TCEQ's current guidelines specify that for modeled concentrations to be acceptable at industrial receptors the following conditions must be met:

- GLCmax ≤ 25x the corresponding ESL;
- # of exceedances of 10x ESL ≤ 24; and
- # of exceedances of 20x ESL ≤ 10.

As shown in the table above, the modeled impacts for crude oil from the BWTX DWP are within the listed TCEQ's guidelines regarding magnitude and frequency of exceedance. Therefore, EPA concludes that the State Health Effects analysis provided by BWTX demonstrates that air quality impacts from the proposed DWP will comply with the applicable ESLs.

4. Conclusion on Ambient Air Impacts

The EPA has reviewed the analyses submitted by BWTX related to the ambient air impacts. In addition, EPA conducted a supplemental air quality analysis for the proposed BWTX facility using adjusted model inputs based on our review of the applicant's analysis.[32] Based on EPA's review of the applicant's analysis, as described above, along with our supplemental air quality analysis, the EPA concludes that the emissions from the proposed BWTX DWP will not cause or contribute to violations of ambient air standards, including the NAAQS, State Property Line standards, or ESLs. Therefore, the ambient air impact requirements applicable to the proposed facility have been satisfied.

IX. Compliance with Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act, and National Historic Preservation Act

Before EPA may issue BWTX's permit, EPA must comply with section 7(a)(2) of the Endangered Species Act (ESA) (16 U.S.C. § 1536), the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and § 106 of the National Historic Preservation Act (NHPA). In accordance with 40 C.F.R. §§ 1051.5 and 1501.6 and the 2004 Memorandum of Understanding on Deepwater Port Licensing (DWP MOU), the U.S. Coast Guard and the Maritime Administration assumed the lead agency responsibilities for complying with National Environmental Policy Act (NEPA), which includes consulting with the other federal agencies under these laws. As a NEPA Cooperating Agency and Participating Agency under the DWP MOU, EPA's air permitting action will be included within the scope of the consultations and thus EPA intends to rely on them for compliance with these federal laws.[33]

EPA may not issue its permits until it receives confirmation from the U.S. Coast Guard and MARAD and/or these agencies that consultations under these laws are complete.

X. Conclusion and Proposed Actions

Based on the information provided by BWTX and EPA's independent evaluation of the information contained in our administrative record, it is EPA's determination that the proposed facility would employ BACT under the terms contained in the draft permit. Therefore, EPA is proposing to issue a minor NSR permit for BWTX's deepwater port, subject to the permit conditions specified therein. The minor NSR permit is subject to public review and comments. A final decision on the issuance of the permit will be made by EPA after considering significant comments received during the public comment period.

[32] *Supplemental Air Quality Analysis Summary for Bluewater Texas Terminal LLC (BWTX)*, May 16, 2025.
[33] *See* Docket MARAD-2019-0011 available online at www.regulations.gov.

Appendix

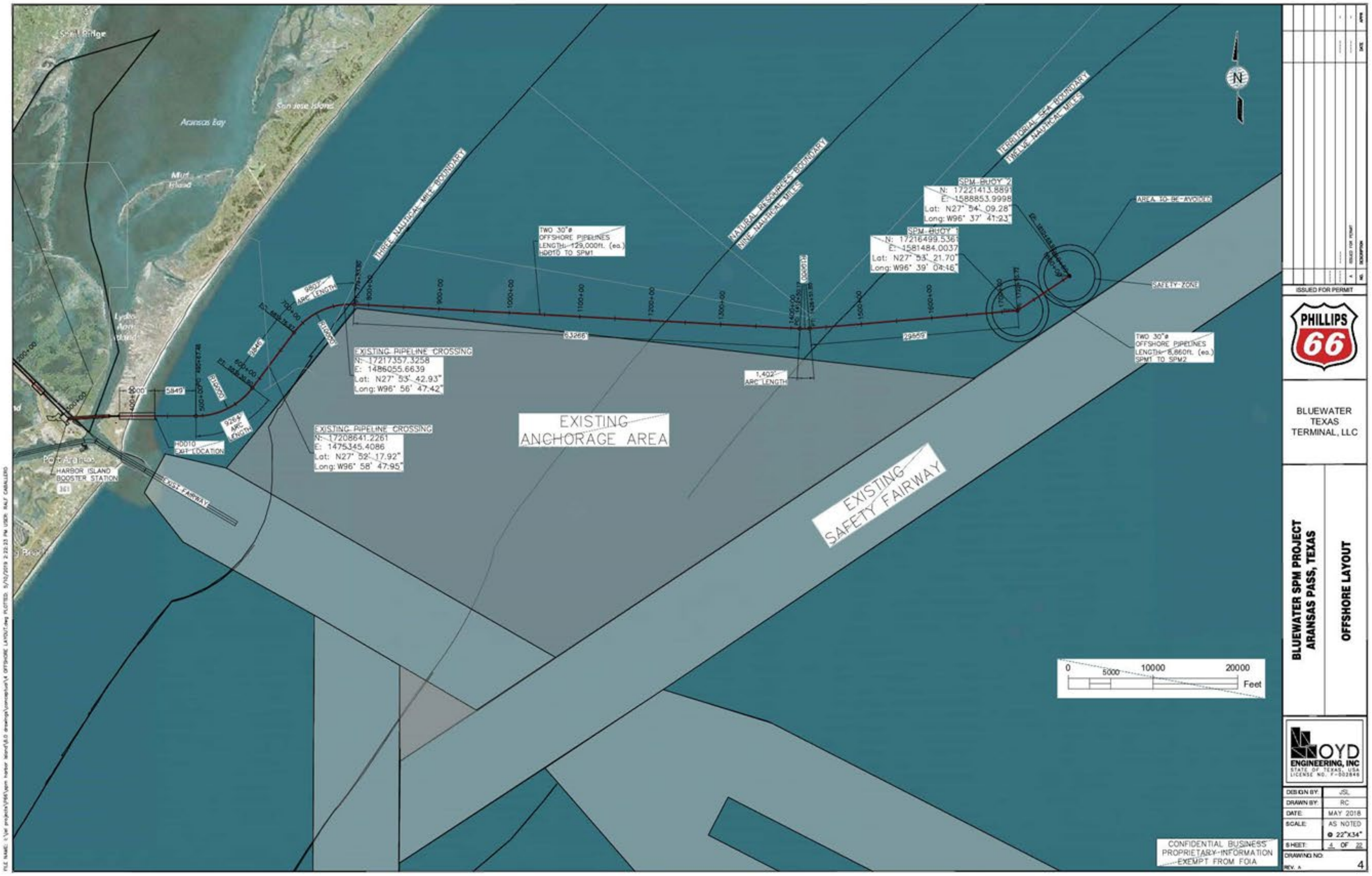

Figure 1. Location of BWTX's Proposed SPM Buoy System

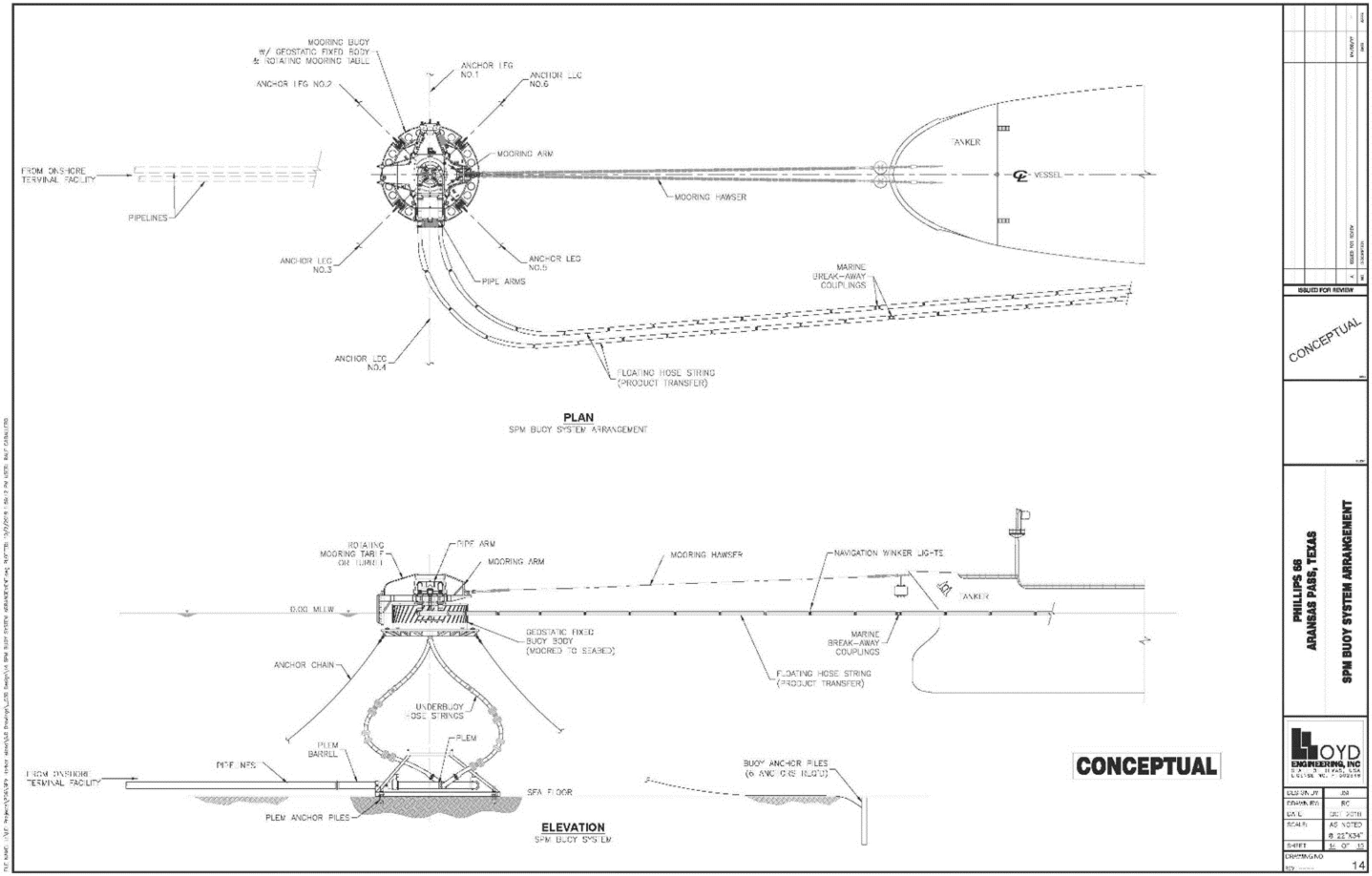

Figure 2. Engineering Drawing for BWTX's Proposed SPM Buoy System

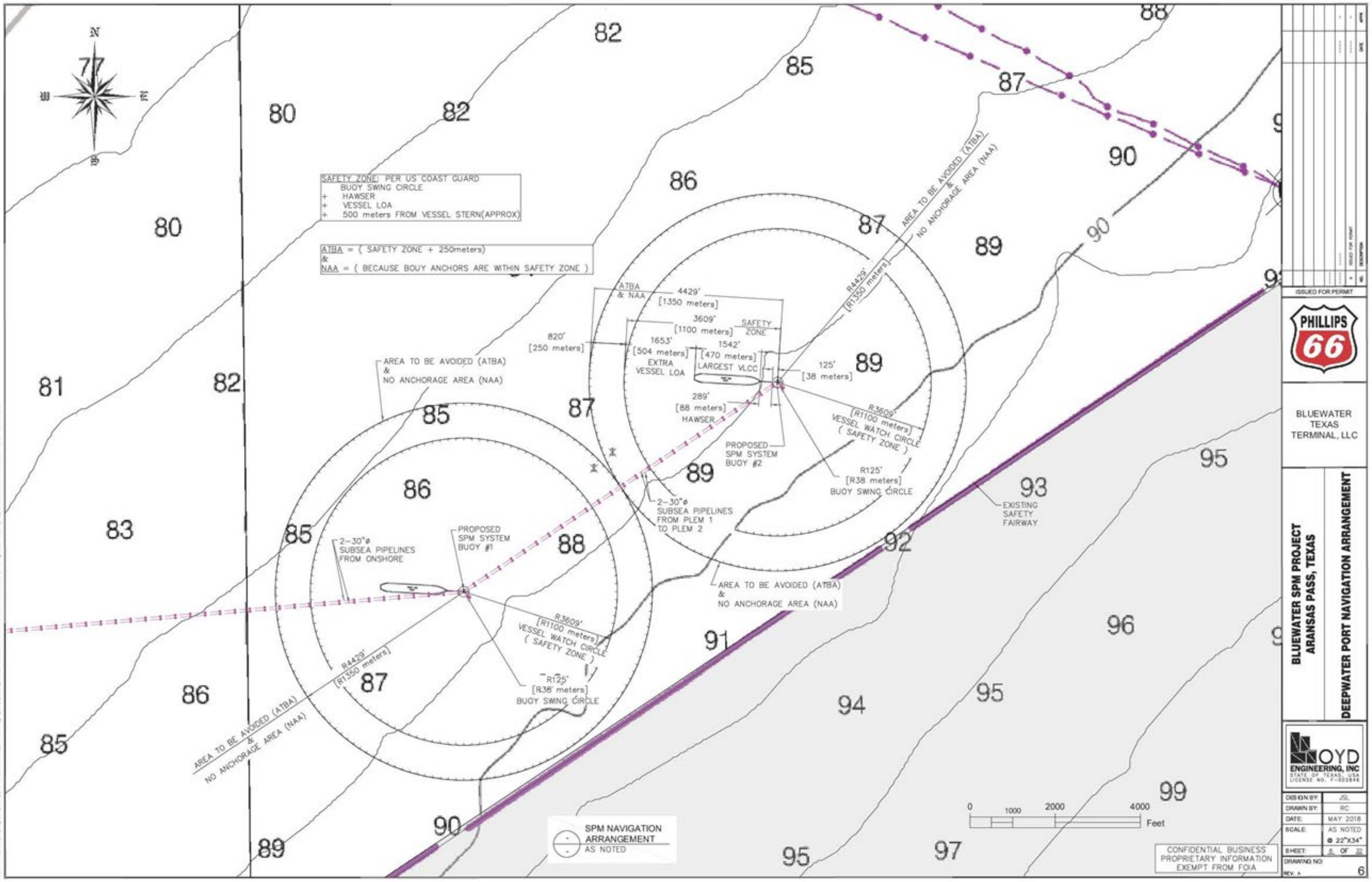

Figure 3. BWTX's SPM Navigation Arrangement

Table 14. Maximum Allowable Emission Rate Table (MAERT)[1]

EPN	Source Description	PM_{10}		$PM_{2.5}$		SO_2		NO_x[2]		CO		VOC		Total HAP
		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(tpy)
SPMFUG	Piping Fugitive Components											0.06	0.25	0.01
OSVFUG	Piping Fugitive Components											2.15	9.41	0.02
UNCAPLOAD	Uncaptured Loading Fugitives											59.19	124.97	5.5
VCS (OSVTURB1, OSVTURB2, and REFCOND)	OSV Emissions – Refrigerated Condenser in series with Marine Gas Turbine[3]	0.19	0.93	0.19	0.93	8.22	14.16	8.73	41.91	24.27	116.49	5.92	15.77	0.55
DENGCAP (DEG1, DEG2, DEG3, and DEG4)	Diesel ICE Emissions[4]	0.48	1.19	0.48	1.19	0.03	0.06	25.51	62.53	21.99	53.9	0.77	1.88	

[1] The tpy emission limits specified in this table are not to be exceed for this facility and include emissions from the facility during all operational scenarios. Compliance with tpy annual emission limits is based on a 12-month rolling total.

[2]
NOx = total oxides of nitrogen
CO = carbon monoxide
SO_2 = sulfur dioxide
PM = total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM_{10} = total particulate matter equal to or less than 2.5 microns in diameter, including $PM_{2.5}$, as represented
$PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter
VOC = volatile organic compounds as defined in 40 C.F.R. § 52.21(b)(50)
HAP = hazardous air pollutant as defined in § 112 of the CAA

[3] OSV emissions include all emissions resulting from the loading operations that enter the OSV and are emitted from the condenser stack or the gas turbine stacks.

[4] Emissions from the OSV's marine diesel engines are NOT regulated in this permit or under title V of the FCAA; however the emissions are included in the site potential to emit for determination of major source applicability.

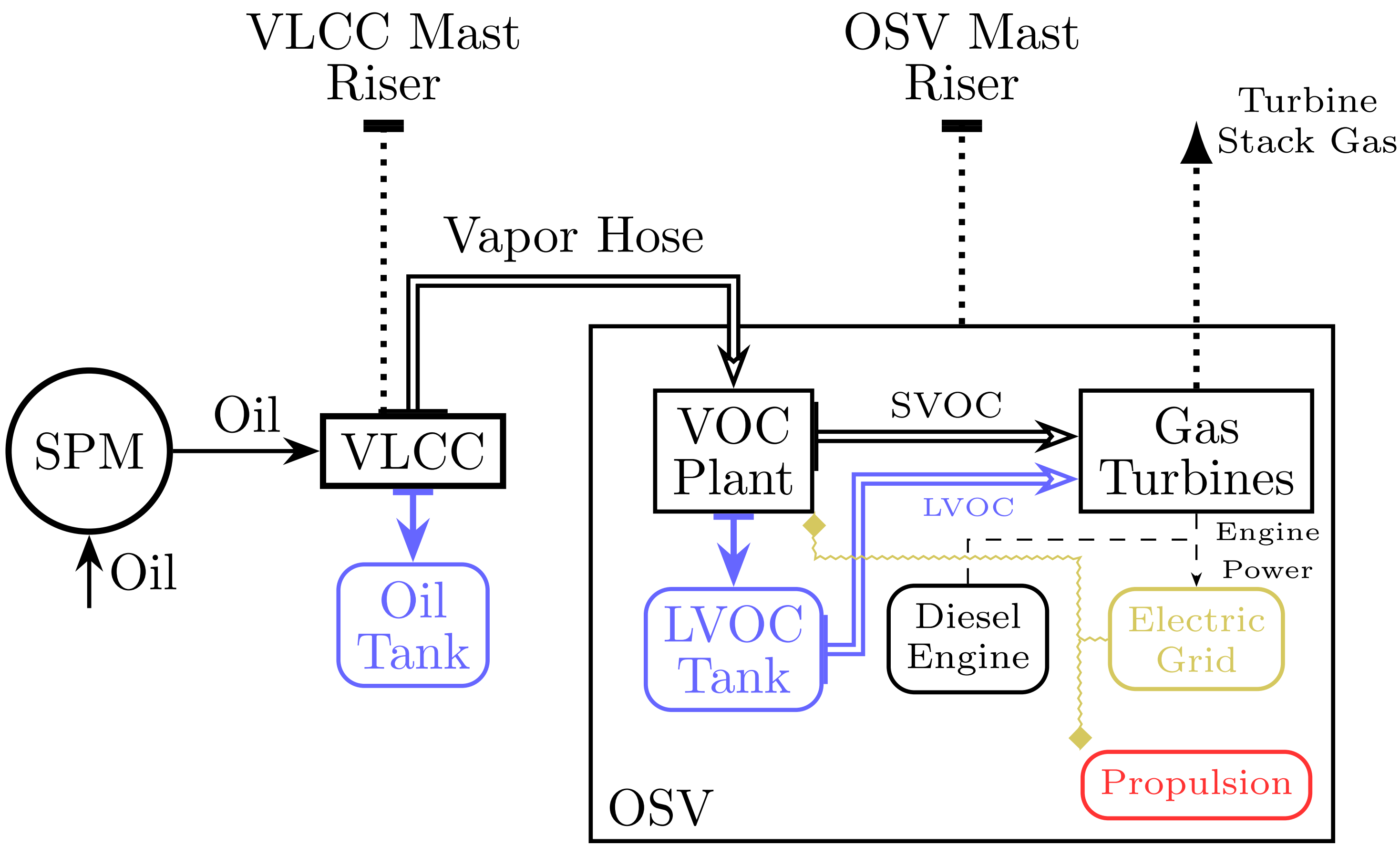

Figure 4. Schematic of OSV and Vapor Recovery System