August 21, 2017

Assistant Director for Permitting
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304

Re: West Virginia Oil Gathering, LLC
Brooksville Station
R13 Permit Application

To Whom It May Concern:

West Virginia Oil Gathering, LLC, (WVOG) a subsidiary of Enlink Midstream, LLC, currently operates the above-referenced facility. WVOG submitted a permit determination request for a similar facility and was advised by the West Virginia Department of Environmental Protection that a permit was required for operation of an emission source that is subject to NSPS Subpart Kb (Determination No. PD15-00017). The Brooksville Station also has a tank subject to NSPS Subpart Kb; therefore, a permit application is submitted to authorize its operation.

WVOG submitted a R13 application for this site on March 24, 2017 but it was returned by the WVDEP on March 28, 2017 with deficiencies noted. The attached application is a resubmission of the March application with the appropriate resposible official signature and emission unit data sheets. As noted below, the Affidavit of Publication from the legal ad will be submitted once received.

This package contains all the required application forms, supporting backup documentation and a check for $2,000, which includes $1,000 for the construction permit fee and $1,000 for the NSPS Requirements fee. The public notice has been submitted to the *Calhoun Chronicle* for publication and the Affidavit of Publication will be forwarded to your attention once it is received. If you have any questions or you need further information, please feel free to contact Hanh Duong at (214) 953-9529 or Hanh.Duong@enlink.com.

Sincerely,

Hanh Duong
Environmental Engineer

Enclosures (Original, Two Copies on CDs)

ecc: Robert Douglas, Enlink Midstream, LLC

1722 Routh Street, Suite 1300 > Dallas, Texas 75201
214.953.9500 office > 214.953.9501 fax

EnLink.com

CASH ONLY IF ALL *CheckLock™* SECURITY FEATURES LISTED ON BACK INDICATE NO TAMPERING OR COPYING

Flatrock Engineering and Environmental, LLC
Air Permit Account
18615 Tuscany Stone, Ste 200
San Antonio, TX 78258
210-568-1861

Frost Bank
30-9/1140

1209

08/25/2017

PAY TO THE ORDER OF WV Department of Environmental Protection

$ **2,000.00**

Two Thousand Dollars

DOLLARS

WV Department of Environmental Protection
601 57th Street SE
Charleston, WV 25304
United States

MEMO **ENL-Brooksville R13 After the Fact**

⑈001209⑈ ⑆114000093⑆ 010578657⑈

Flatrock Engineering and Environmental, Ltd.

1209

V000564--WV DEP
Print As: WV Department of Environmental Protection

601 57th Street SE
Charleston, WV 25304

Frost Bank
FEE Permit Account 8657
Date: 08/25/2017

Date / *Acct*	Bill # / *Memo*	Reference Number / *Department ID*	*Location*	*Amount Entered*	*Term Discount*	*Amount Paid*
08/25/2017	100005-Brooksville Station					
5110--Licenses and Fees	*R13 After the Fact*	*FEE_AIR*	*FEE*	*$2,000.00*	*$0.00*	*$2,000.00*
Net Amount:						$2,000.00

Page 1 of 1

Flatrock Engineering and Environmental, Ltd.

1209

V000564--WV DEP
Print As: WV Department of Environmental Protection

601 57th Street SE
Charleston, WV 25304

Frost Bank
FEE Permit Account 8657
Date: 08/25/2017

Date / *Acct*	Bill # / *Memo*	Reference Number / *Department ID*	*Location*	*Amount Entered*	*Term Discount*	*Amount Paid*
08/25/2017	100005-Brooksville Station					
5110--Licenses and Fees	*R13 After the Fact*	*FEE_AIR*	*FEE*	*$2,000.00*	*$0.00*	*$2,000.00*
Net Amount:						$2,000.00

Page 1 of 1

WEST VIRGINIA OIL GATHERING, LLC

BROOKSVILLE STATION

REGULATION 13 PERMIT APPLICATION

SUBMITTED TO WVDEP DIVISION OF AIR QUALITY
AUGUST 2017

TABLE OF CONTENTS

INTRODUCTION

West Virginia Oil Gathering, LLC (WVOG), a subsidiary of EnLink Midstream LLC, submits the enclosed application for an after-the-fact Regulation 13 permit. The facility's emission sources consist of a 15,000-bbl crude oil tank, loading operations and fugitives. WVOG submitted a permit determination request for a similar facility and were informed by the WVDEP that a permit would be necessary for the site because the 15,000-bbl crude tank is subject to NSPS Subpart Kb. The tank at Brooksville Station is also subject to NSPS Subpart Kb; therefore, this application is submitted to authorize the operation of the facility.

Proposed Emissions

Emissions calculations for the equipment affected by this project are presented in Attachment N.

Crude oil storage tank loss emissions were calculated by creating a profile in the EPA TANKS 4.0.9d model using oil with RVP 5. Throughput is not expected to exceed 5,475,000 barrels per year. The model includes the use of an internal floating roof (IFR) to reduce tank emissions.

Loading losses were calculated using AP-42 Section 5.2-4 Equation 1 and the characteristics of the liquid as modeled by TANKS 4.0.9d. No loading to trucks should occur under normal operations, but the emission calculations assumed 10% of the crude oil throughput was loaded out by truck as a conservative estimate of emissions.

The EPA TANKS 4.0.9d Emissions Report is included in Attachment N.

WVDEP APPLICATION FOR NSR PERMIT

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

APPLICATION FOR NSR PERMIT

AND

TITLE V PERMIT REVISION

(OPTIONAL)

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

☐ **CONSTRUCTION** ☐ **MODIFICATION** ☐ **RELOCATION**

☐ **CLASS I ADMINISTRATIVE UPDATE** ☐ **TEMPORARY**

☐ **CLASS II ADMINISTRATIVE UPDATE** ☒ **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

☐ **ADMINISTRATIVE AMENDMENT** ☐ **MINOR MODIFICATION**

☐ **SIGNIFICANT MODIFICATION**

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
West Virginia Oil Gathering, LLC

2. Federal Employer ID No. ***(FEIN):***
46-0971147

3. Name of facility *(if different from above):*
Brooksville Station

4. The applicant is the:
☐ **OWNER** ☐ **OPERATOR** ☒ **BOTH**

5A. Applicant's mailing address:
2017 SR 821, Building 21A
Marietta, OH 45750

5B. Facility's present physical address:
38.9598371°, 81.1735558°

6. **West Virginia Business Registration.** Is the applicant a resident of the State of West Virginia? ☒ **YES** ☐ **NO**

- If **YES,** provide a copy of the **Certificate of Incorporation/Organization/Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A.**
- If **NO,** provide a copy of the **Certificate of Authority/Authority of L.L.C./Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A.**

7. If applicant is a subsidiary corporation, please provide the name of parent corporation: Enlink Midstream, LLC

8. Does the applicant own, lease, have an option to buy or otherwise have control of the *proposed site?* ☒ **YES** ☐ **NO**

- If **YES,** please explain: West Virginia Oil Gathering, LLC owns the property at which the facility is located.
- If **NO,** you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be **constructed, modified, relocated, administratively updated** or **temporarily permitted** (e.g., coal preparation plant, primary crusher, etc.):
Crude oil storage tank

10. North American Industry Classification System **(NAICS)** code for the facility:
424710

11A. DAQ Plant ID No. (for existing facilities only):

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

12A.

– For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;

For **Construction** or **Relocation permits,** please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B**.

Facility is located approximately 1 mile west of Bigbend, WV on State Route 5.

12B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
See above	Bigbend	Calhoun
12.E. UTM Northing (KM): 4,312.334	12F. UTM Easting (KM): 484.963	12G. UTM Zone: 17S

13. Briefly describe the proposed change(s) at the facility:
N/A – no proposed changes from existing facility.

14A. Provide the date of anticipated installation or change: Immediately upon permit issuance – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: **2006**	14B. Date of anticipated Start-Up if a permit is granted: No new construction activity

14C. Provide a **Schedule** of the planned **Installation** of/**Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:
Hours Per Day 24 Days Per Week 7 Weeks Per Year 52

16. Is demolition or physical renovation at an existing facility involved? ☐ **YES** ☒ **NO**

17**. Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18**. Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process *(if known).* A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance *(if known).* Provide this information as **Attachment D.**

Section II. Additional attachments and supporting documents.

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan,** e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to ***Plot Plan Guidance***) **.**

– Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F.**

23. Provide a **Process Description** as **Attachment G.**

– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H.**

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I.**

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J.**

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K.**

28. Check all applicable **Emissions Unit Data Sheets** listed below:

☒ Bulk Liquid Transfer Operations	☒ Haul Road Emissions	☐ Quarry
☒ Chemical Processes	☐ Hot Mix Asphalt Plant	☐ Solid Materials Sizing, Handling and Storage Facilities
☐ Concrete Batch Plant	☐ Incinerator	☒ Storage Tanks
☐ Grey Iron and Steel Foundry	☐ Indirect Heat Exchanger	
☐ General Emission Unit, specify:		

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L.**

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

☐ Absorption Systems	☐ Baghouse	☐ Flare
☐ Adsorption Systems	☐ Condenser	☐ Mechanical Collector
☐ Afterburner	☐ Electrostatic Precipitator	☐ Wet Collecting System

☐ Other Collectors, specify

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M.**

30. Provide all **Supporting Emissions Calculations** as **Attachment N,** or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O.**

- Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and ***Example Legal Advertisement*** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33**. Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

☐ **YES** ☒ **NO**

- If **YES,** identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's ***"Precautionary Notice – Claims of Confidentiality"*** guidance found in the ***General Instructions*** as **Attachment Q.**

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

☐ Authority of Corporation or Other Business Entity	☐ Authority of Partnership
☐ Authority of Governmental Agency	☐ Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R.**

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned ☒ **Responsible Official** / ☐ **Authorized Representative,** hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE _____ DATE: 8-21-17

(Please use blue ink) *(Please use blue ink)*

35B. Printed name of signee: Steve Cornelison		35C. Title: Director, Fleet Operations
35D. E-mail: Steve.Cornelison@enlink.com	36E. Phone: (740) 371-5300	36F. FAX:
36A. Printed name of contact person (if different from above): Hanh Duong		36B. Title: Environmental Engineer
36C. E-mail: Hanh.Duong@enlink.com	36D. Phone: (214) 953-9529	36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- ☒ **Attachment A: Business Certificate**
- ☒ **Attachment B: Map(s)**
- ☒ **Attachment C: Installation and Start Up Schedule**
- ☒ **Attachment D: Regulatory Discussion**
- ☒ **Attachment E: Plot Plan**
- ☒ **Attachment F: Detailed Process Flow Diagram(s)**
- ☒ **Attachment G: Process Description**
- ☒ **Attachment H: Material Safety Data Sheets (MSDS)**
- ☒ **Attachment I: Emission Units Table**
- ☒ **Attachment J: Emission Points Data Summary Sheet**
- ☒ **Attachment K: Fugitive Emissions Data Summary Sheet**
- ☒ **Attachment L: Emissions Unit Data Sheet(s)**
- ☐ **Attachment M: Air Pollution Control Device Sheet(s)**
- ☒ **Attachment N: Supporting Emissions Calculations**
- ☐ **Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans**
- ☒ **Attachment P: Public Notice**
- ☐ **Attachment Q: Business Confidential Claims**
- ☐ **Attachment R: Authority Forms**
- ☐ **Attachment S: Title V Permit Revision Information**
- ☒ **Application Fee**

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- ☐ ***Forward 1 copy of the application to the Title V Permitting Group and:***
- ☐ ***For Title V Administrative Amendments:***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit,***
- ☐ ***For Title V Minor Modifications:***
  - ☐ ***Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit.***
- ☐ ***For Title V Significant Modifications processed in parallel with NSR Permit revision:***
  - ☐ ***NSR permit writer should notify a Title V permit writer of draft permit,***
  - ☐ ***Public notice should reference both 45CSR13 and Title V permits,***
  - ☐ ***EPA has 45 day review period of a draft permit.***

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

ATTACHMENT A: BUSINESS CERTIFICATE

State of West Virginia

Certificate

I, Natalie E. Tennant, Secretary of State of the State of West Virginia, hereby certify that

WEST VIRGINIA OIL GATHERING, LLC

was duly authorized under the laws of this state to transact business in West Virginia as a foreign limited liability company on August 29, 2012.

The company is filed as an at-will company, for an indefinite period.

I further certify that the LLC (PLLC) has not been revoked by the State of West Virginia nor has a Certificate of Cancellation been issued.

Therefore, I hereby issue this

CERTIFICATE OF AUTHORIZATION

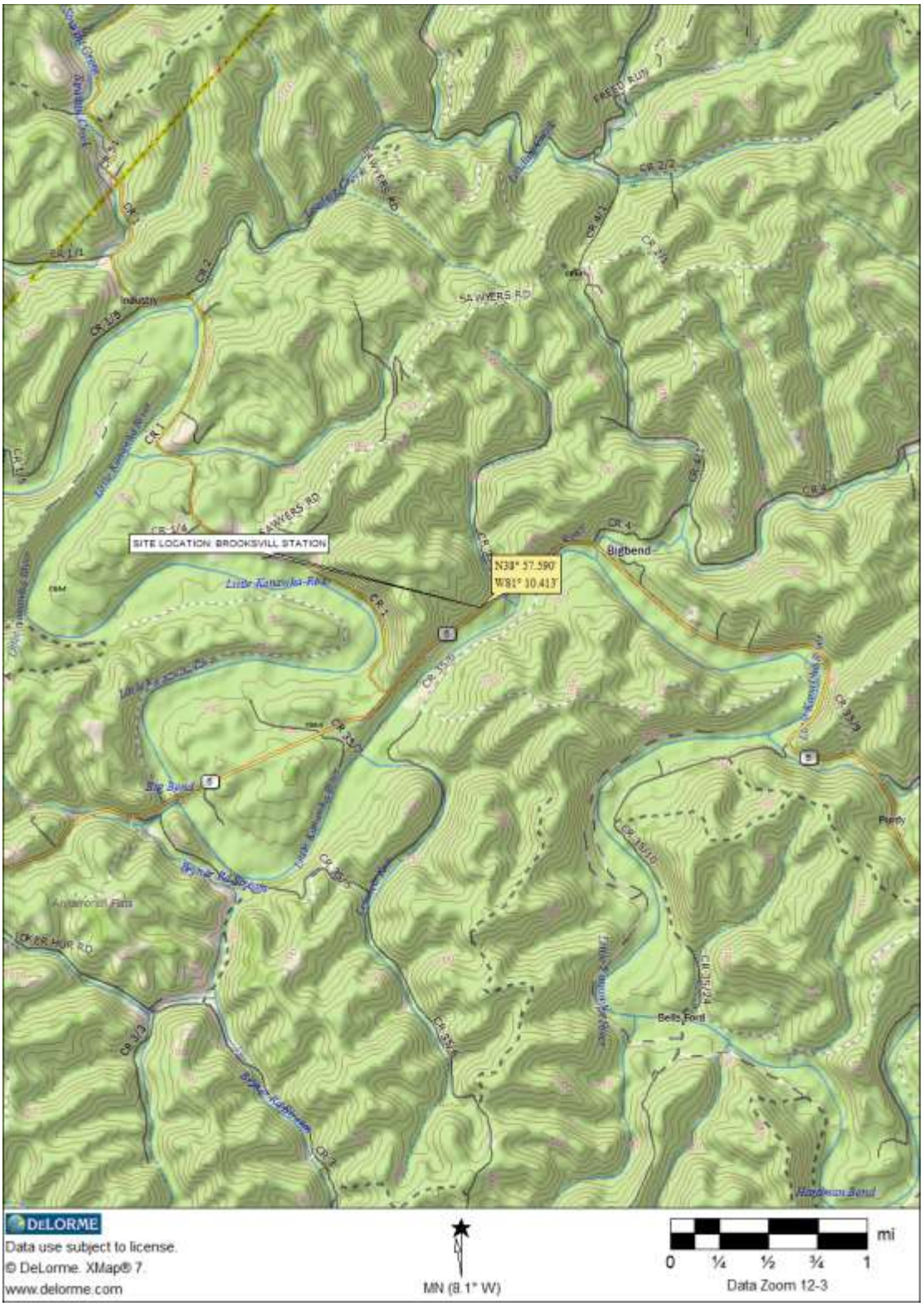
Validation ID:6WV3Q_8PMGP

Given under my hand and the Great Seal of the State of West Virginia on this day of April 22, 2016

Natalie E. Tennant

Secretary of State

ATTACHMENT B: MAP



Brooksville Station
Figure 1: Area Map
August 2017

ATTACHMENT C: INSTALLATION AND START-UP SCHEDULE

No new construction activities are planned.

ATTACHMENT D: REGULATORY DISCUSSION

STATE

45 CSR 13 - PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, AND PROCEDURES FOR EVALUATION:

VOC emissions associated with the facility are less than the minor source construction permit thresholds of 6 pounds per hour (pph) AND 10 tons per year (tpy) OR 144 pounds per day (ppd) of any regulated air pollutant OR 2 pph OR 5 tpy of aggregated hazardous air pollutants (HAP) OR 45 CSR 27 toxic air pollutant (TAP) (10% increase if above BAT triggers or increase to Best Available Technology (BAT) triggers) but is subject to an applicable Standard or Rule. Therefore, the facility is required to have a permit for the operation of the emission sources.

45 CSR 22 - AIR QUALITY MANAGEMENT FEE PROGRAM:

The facility will be required to maintain a valid Certificate to Operate on the premises.

45 CSR 30 - REQUIREMENTS FOR OPERATING PERMITS:

Emissions from the facility do not exceed major source thresholds; therefore, this rule does not apply.

FEDERAL

40 CFR PART 60 SUBPART KB—STANDARDS OF PERFORMANCE FOR VOLATILE ORGANIC LIQUID STORAGE VESSELS (INCLUDING PETROLEUM LIQUID STORAGE VESSELS) FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER JULY 23, 1984

The affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. The tank at this facility was constructed after the effective date of this subpart, has a capacity greater than 19,812 gallons and stores VOL after custody transfer. Therefore, it is subject to this subpart and complies with the control requirements through the use of an internal floating roof.

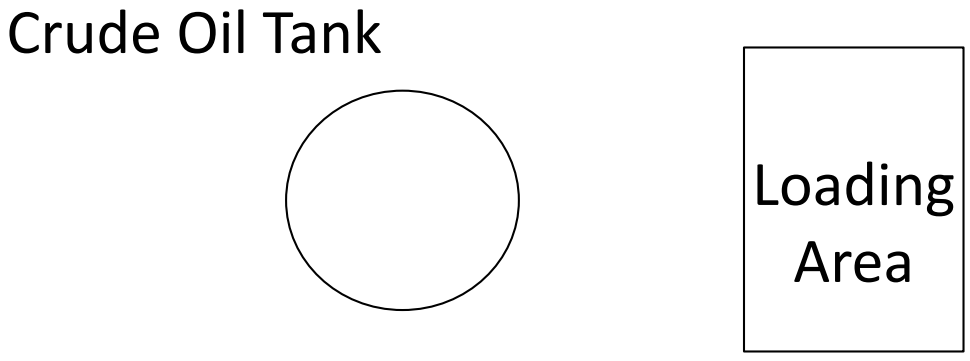
40 CFR PART 60 SUBPART OOOO - STANDARDS OF PERFORMANCE FOR CRUDE OIL AND NATURAL GAS PRODUCTION, TRANSMISSION AND DISTRIBUTION

The emission sources affected by this subpart include well completions, pneumatic controllers, equipment leaks from natural gas processing plants, sweetening units at natural gas processing plants, reciprocating compressors, centrifugal compressors and storage vessels which are constructed, modified or reconstructed after August 23, 2011 and before September 18, 2015. The storage tank was constructed before the effective date of this subpart and has VOC emissions less than 6.0 tpy. Therefore, it is not subject to this subpart.

40 CFR PART 60 SUBPART OOOOA - STANDARDS OF PERFORMANCE FOR CRUDE OIL AND NATURAL GAS FACILITIES FOR WHICH CONSTRUCTION, MODIFICATION, OR RECONSTRUCTION COMMENCED AFTER SEPTEMBER 18, 2015

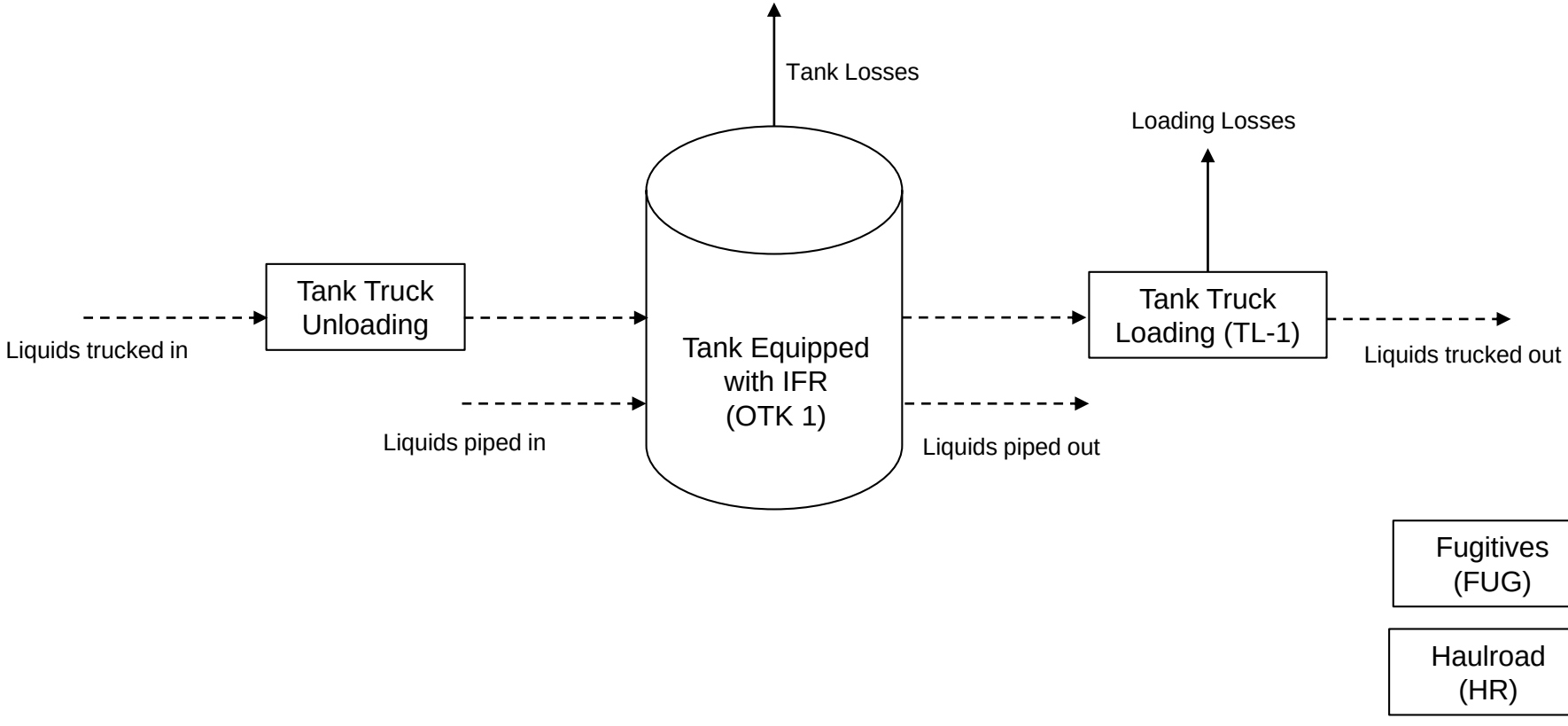
The emission sources affected by this subpart include well completions, centrifugal compressors, reciprocating compressors, pneumatic controllers, storage vessels, fugitive sources at well sites, fugitive sources at compressor stations, pneumatic pumps, equipment leaks from natural gas processing plants and sweetening units at natural gas processing plants which are constructed, modified or reconstructed after September 18, 2015. The storage tank was constructed before the effective date of this subpart and has VOC emissions less than 6.0 tpy. Therefore, it is not subject to this subpart.

ATTACHMENT E: PLOT PLAN



West Virginia Oil Gathering, LLC.
Brooksville Station
Attachment E: Plot Plan
August 2017

ATTACHMENT F: PROCESS FLOW DIAGRAM



Gas/Vapor

Liquids (Oil)

Note: The liquids are removed from the facility by pipeline under normal operations and truck loading is only shown as the worst-case scenario.

West Virginia Oil Gathering, LLC
Brooksville Station
Attachment F: Process Flow Diagram
August 2017

ATTACHMENT G: PROCESS DESCRIPTION

The Brooksville Station receives crude oil from surrounding gas and oil wells via tanker truck and pipeline. The fluids are stored in the 15,000-bbl crude oil storage tank (OTK 1) equipped with an internal floating roof. The 15,000-bbl crude tank, constructed in 2006, is subject to the compliance requirements of NSPS Subpart Kb. There is also one de minimis diesel fuel tank located at the site.

Oil is trucked or piped into the facility at a rate expected not to exceed 5,475,000 barrels per year. Typically, fluids are removed from the facility via pipeline. In the event there is an issue with the pipeline, fluids can be loaded back onto tanker trucks from the tanks (TL-1). Trucks leaving or entering the facility drive on a short haul road (HR).

A process flow diagram reflecting facility operations is shown in Attachment F.

ATTACHMENT H: MATERIAL SAFETY DATA SHEETS

Petroleum Crude Oil Solution

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: 07/14/2015

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Product name : Petroleum Crude Oil Solution

Other means of identification : Earth oil, petroleum oil, rock oil

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Fuel

1.3. Details of the supplier of the safety data sheet

Enlink Midstream
2501 Cedar Springs Road
Suite 100
Dallas, TX 75201
www.enlink.com

1.4. Emergency telephone number

Emergency number : 866-394-9839
CHEMTREC: 1-800-824-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Simple Asphy	H380
Flam. Liq. 2	H225
Skin Irrit. 2	H315
Muta. 1B	H340
Carc. 1A	H350
Repr. 2	H361
STOT SE 3	H336
STOT RE 1	H372
Asp. Tox. 1	H304
Aquatic Acute 2	H401
Aquatic Chronic 2	H411

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

GHS02 GHS07 GHS08 GHS09

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) :
H225 - Highly flammable liquid and vapor
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H336 - May cause drowsiness or dizziness
H340 - May cause genetic defects (Dermal, Inhalation, oral)
H350 - May cause cancer (Dermal, Inhalation, oral)
H361 - lung/respiratory system, Skin (Dermal, Inhalation)
H372 - Causes damage to organs (eye, lung/respiratory system, Skin) through prolonged or repeated exposure (Dermal, Inhalation, oral)
H380 - May displace oxygen and cause rapid suffocation
H401 - Toxic to aquatic life
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) :
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P233 - Keep container tightly closed

P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, ventilating equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P260 - Do not breathe vapor, mist, fume
P261 - Avoid breathing vapor, fume, mist
P264 - Wash hands, forearms and face, clothing thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P273 - Avoid release to the environment
P280 - Wear protective gloves, protective clothing, eye protection
P301 + P310 - If swallowed: Immediately call doctor, POISON CENTER
P302 + P352 - If on skin: Wash with plenty of water
P303 + P361 + P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P308 + P313 - If exposed or concerned: Get medical advice/attention
P312 - Call doctor, POISON CENTER if you feel unwell
P314 - Get medical advice/attention if you feel unwell
P321 - Specific treatment (See Section four (4) of this document on this label)
P331 - Do NOT induce vomiting
P332+P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P370+P378 - In case of fire: Use carbon dioxide (CO_2), dry extinguishing powder, foam to extinguish
P391 - Collect spillage
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P403+P235 - Store in a well-ventilated place. Keep cool
P405 - Store locked up
P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste

2.3. Other hazards

Other hazards not contributing to the classification : Product contains Dimethylpentanes mixture in a weight % ranging from 1-3%. This material can contain toxic levels of hydrogen sulfide vapor that accumulate in the vapor spaces of storage and transport compartments. Hydrogen sulfide vapor can cause eye, skin and respiratory tract irritation.

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Crude Oil	(CAS No) 8002-05-9	<= 100	Flam. Liq. 2, H225 Aquatic Acute 2, H401
n-decane	(CAS No) 872-05-9	4 - 10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Asp. Tox. 1, H304
n-Pentane	(CAS No) 109-66-0	2 - 7	Simple Asphy, H380 Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 STOT SE 3, H336 Aquatic Acute 2, H401 Aquatic Chronic 2, H411

Name	Product identifier	%	GHS-US classification
n-Hexane	(CAS No) 110-54-3	1 - 5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
n-Heptane	(CAS No) 142-82-5	2 - 5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Octane	(CAS No) 111-65-9	1 - 5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Nonane	(CAS No) 111-84-2	1 - 5	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation:gas), H332 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 4, H413
n-Butane	(CAS No) 106-97-8	1 - 5	Simple Asphy, H380 Flam. Gas 1, H220 Liquefied gas, H280
Methylcyclohexane	(CAS No) 108-87-2	1 - 4	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
Toluene	(CAS No) 108-88-3	<= 2	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304
1,2,4-trimethylbenzene	(CAS No) 95-63-6	<= 2	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 STOT SE 3, H335 Aquatic Chronic 2, H411
Benzene	(CAS No) 71-43-2	<= 1	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

First-aid measures after inhalation : If exposed: Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

First-aid measures after skin contact : Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. Wash with plenty of soap and water. In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.

First-aid measures after eye contact : Flush eyes with lukewarm water for 15 minutes opening and closing eyelids to ensure adequate rinsing. If redness, irritation, pain, or tearing occurs, seek medical attention. Remove contact lenses, if present and easy to do. Continue rinsing.

First-aid measures after ingestion : Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. Get Immediate Medical Attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : Volatile components of this product can cause respiratory and nasal irritation, headache, dizziness, drowsiness, nausea and loss of coordination. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and bulk transport compartments. With the loss of highly volatile components, weathered oil does not present an inhalation hazard.

Symptoms/injuries after skin contact : May cause moderate irritation. Prolonged or repeated exposure can cause dermatitis, folliculitis or oil acne.

Symptoms/injuries after eye contact : Causes eye irritation.

Symptoms/injuries after ingestion : Swallowing this material may be harmful. May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea. Aspiration into lungs may cause chemical pneumonia and lung damage.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : For small fires — Class B fire-extinguishing media such as CO_2, dry chemical, foam (AFFF/ATC) or water spray can be used. Larger fires -water spray, fog or foam (AFFF/ATC) can be used.

5.2. Special hazards arising from the substance or mixture

Fire hazard : HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may travel to source of ignition and flash back. Most vapor are heavier than air. They will spread along ground and collect in low or confined areas. Runover to sewer may create fire. Many liquids are lighter than water.

Explosion hazard : Will form explosive mixtures with air. Vapor explosion hazard indoors, outdoors or in sewers. Containers may explode when heated. Runoff to sewer may create fire or explosion hazard.

Reactivity : Highly flammable liquid and vapor.

5.3. Advice for firefighters

Firefighting instructions : Move containers from fire area if you can do it without risk. Gas fires should not be extinguished unless the gas flow can be stopped immediately. Shut off gas source and allow the fire to burn itself out.

Protection during firefighting : Wear positive pressure self-contained breathing apparatus (SCBA).Structural firefighters' protective clothing will only provide limited protection. Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

Other information : If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Eliminate every possible source of ignition.

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel. Large Spill: Consider initial downwind evacuation for at least 300 meters (1000 feet).

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

6.2. Environmental precautions

Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

6.3. Methods and material for containment and cleaning up

For containment : ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapor or divert vapor cloud drift. Avoid allowing water runoff to contact spilled.

Methods for cleaning up : Large Spill: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor; but may not prevent ignition in closed spaces. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : In use, may form flammable vapor-air mixture. Keep away from heats; sparks open flames, hot surfaces. - No smoking. Do not pressurize, cut, or weld containers. Handle empty containers with care because residual vapor are flammable.

Precautions for safe handling : Avoid contact with skin, eyes and clothing. Earth all parts which can be electrically charged. Prevent the build-up of electrostatic charge.

Hygiene measures : Practice good housekeeping. Wash thoroughly after handling. Change contaminated clothing. Do not reuse until laundered.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Ground/bond container and receiving equipment. Store in a segregated, approved and labelled area. Ensure effective ventilation. Vent waste air only via suitable separators or scrubbers. Take precautionary measures against electrostatic discharges.

Storage conditions : Keep away from heat, sparks and flame surfaces. Keep container tightly closed in a dry and well-ventilated place. Proper grounding procedures to avoid static electricity should be followed. OSHA requires cylinder storage be segregated from oxidizers and other combustible materials by a distance of at least 30 feet.

Incompatible products : Store away from strong oxidizing materials. Strong acids. Strong bases.

Incompatible materials : Sources of ignition. Heat sources.

7.3. Specific end use(s)

Use of the substance/mixture : Fuel

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

n-Hexane (110-54-3)		
ACGIH	ACGIH TWA (mg/m³)	176 mg/m³
ACGIH	ACGIH TWA (ppm)	50 ppm
ACGIH	Remark (ACGIH)	CNS impair; peripheral
OSHA	OSHA PEL (TWA) (mg/m³)	1800 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

n-Pentane (109-66-0)		
ACGIH	ACGIH TWA (ppm)	1000 ppm
OSHA	OSHA PEL (TWA) (mg/m³)	2950 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	1000 ppm

Toluene (108-88-3)		
ACGIH	ACGIH TWA (ppm)	20 ppm
ACGIH	Remark (ACGIH)	Visual impair; female repro;
OSHA	OSHA PEL (TWA) (ppm)	200 ppm
OSHA	OSHA PEL (Ceiling) (ppm)	300 ppm
OSHA	Remark (US OSHA)	(2) See Table Z-2.

n-Heptane (142-82-5)		
ACGIH	ACGIH TWA (ppm)	400 ppm

n-Heptane (142-82-5)		
OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

Octane (111-65-9)		
ACGIH	ACGIH TWA (ppm)	300 ppm
ACGIH	Remark (ACGIH)	URT irr
OSHA	OSHA PEL (TWA) (mg/m³)	2350 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

Nonane (111-84-2)		
ACGIH	ACGIH TWA (ppm)	200 ppm
ACGIH	Remark (ACGIH)	CNS impair
OSHA	Not applicable	

n-Butane (106-97-8)		
ACGIH	ACGIH STEL (ppm)	1000 ppm
OSHA	Not applicable	

Methylcyclohexane (108-87-2)		
ACGIH	ACGIH TWA (ppm)	400 ppm
ACGIH	Remark (ACGIH)	URT irr; CNS impair; liver & kidney
OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

1,2,4-trimethylbenzene (95-63-6)		
ACGIH	ACGIH TWA (mg/m³)	123 mg/m³
ACGIH	ACGIH TWA (ppm)	25 ppm
OSHA	Not applicable	

Benzene (71-43-2)		
ACGIH	ACGIH TWA (mg/m³)	1.6 mg/m³
ACGIH	ACGIH TWA (ppm)	0.50 ppm
ACGIH	ACGIH STEL (mg/m³)	8 mg/m³
ACGIH	ACGIH STEL (ppm)	2.5 ppm
ACGIH	Remark (ACGIH)	Leukemia
OSHA	OSHA PEL (TWA) (ppm)	1 ppm (See 29 CFR 1910.1028) OSHA AL 0.5 ppm TWA
OSHA	OSHA PEL (STEL) (ppm)	5 ppm
OSHA	Remark (US OSHA)	Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible.

n-Decane (872-05-9)	
ACGIH	Not applicable
OSHA	Not applicable

Crude Oil (8002-05-9)		
ACGIH	Not applicable	
OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

8.2. Exposure controls

Appropriate engineering controls	:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure good ventilation of the work station.
Materials for protective clothing	:	Nitrile. Butyl Rubber. Neoprene.
Hand protection	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical.
Eye protection	:	Use safety glasses and/or full face shield where splashing is possible. Maintain eye wash fountain in work area.
Skin and body protection	:	Nitrile rubber gloves.
Respiratory protection	:	If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Viscous liquid/semi-solid.
Color	:	Black;Yellow;Dark green
Odor	:	Hydrocarbon
Odor threshold	:	No data available
pH	:	No data available
Relative evaporation rate (butylacetate=1)	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	37.7 - 537.7 °C (100 to 1000°F)
Flash point	:	15.5 - 93.3 °C (60-200°F)
Auto-ignition temperature	:	>= 260 °C (500°F)
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapor pressure	:	<= 724 (0 - 0) mm Hg (at 100°F) (13.9 psi)
Relative vapor density at 20 °C	:	1.5 - 3 (AIR=1)
Relative density	:	0.7 - 1
Density	:	6.6 - 8.2 (Pounds/gallon)
Solubility	:	No data available
Log Pow	:	No data available
Log Kow	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Highly flammable liquid and vapor.

10.2. Chemical stability

Stable at normal temperatures and pressure.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Heat, sparks, open flame, and other ignition sources.

10.5. Incompatible materials

Strong Oxidizers, i.e. chlorates, bromates, peroxides, nitrates, halons.

10.6. Hazardous decomposition products

Combustion may produce carbon monoxide and other harmful substances.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

n-Hexane (110-54-3)	
LD50 oral rat	25 g/kg Industrial Health. Vol. 32, Pg. 145, 1994.
LC50 inhalation rat (ppm)	48000 ppm/4h

n-Pentane (109-66-0)	
LD50 oral rat	400 mg/kg National Technical Information Service. Vol. OTS0556690,

n-Heptane (142-82-5)	
LC50 inhalation rat (ppm)	25131 ppm/4h (103gm/m3/4H) Gigiena Truda i Professional'nye Zabolevaniya. Labor Hygiene and Occupational Diseases. Vol. 32(10), Pg. 23, 1988.

Octane (111-65-9)	
LC50 inhalation rat (ppm)	25257 ppm/4h (118 g/m³) Gigiena Truda i Professional'nye Zabolevaniya. Labor Hygiene and Occupational Diseases. Vol. 32(10), Pg. 23, 1988.

Nonane (111-84-2)	
LC50 inhalation rat (ppm)	3200 ppm/4h Toxicology and Applied Pharmacology. Vol. 44, Pg. 53, 1978.

n-Butane (106-97-8)	
LC50 inhalation rat (mg/l)	658 mg/l/4h Farmakologiya i Toksikologiya Vol. 30, Pg. 102, 1967.

Methylcyclohexane (108-87-2)	
LD50 oral rat	> 3200 mg/kg National Technical Information Service. Vol. OTS0556685
LC50 inhalation rat (ppm)	82 ppm/1h National Technical Information Service. Vol. OTS0556685

Benzene (71-43-2)	
LD50 oral rat	930 mg/kg
LD50 dermal rabbit	> 9400 µl/kg
LC50 inhalation rat (ppm)	5714 ppm/4h

n-Decane (872-05-9)	
LD50 oral rat	> 10000 mg/kg National Technical Information Service. Vol. OTS0535205,
LD50 dermal rabbit	> 10000 mg/kg National Technical Information Service. Vol. OTS0535205

Crude Oil (8002-05-9)	
LD50 oral rat	> 4300 mg/kg

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Not classified
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : May cause genetic defects (Dermal, Inhalation, oral).
Carcinogenicity : May cause cancer (Dermal, Inhalation, oral).

Toluene (108-88-3)	
IARC group	3 - Not classifiable

Benzene (71-43-2)	
IARC group	1 - Carcinogenic to humans
National Toxicology Program (NTP) Status	2 - Known Human Carcinogens

Crude Oil (8002-05-9)	
IARC group	3 - Not classifiable

Reproductive toxicity : lung/respiratory system, Skin (Dermal, Inhalation).

Specific target organ toxicity (single exposure)	:	May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	:	Causes damage to organs (eye, lung/respiratory system, Skin) through prolonged or repeated exposure (Dermal, Inhalation, oral).
Aspiration hazard	:	May be fatal if swallowed and enters airways.
Symptoms/injuries after inhalation	:	Volatile components of this product can cause respiratory and nasal irritation, headache, dizziness, drowsiness, nausea and loss of coordination. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and bulk transport compartments. With the loss of highly volatile components, weathered oil does not present an inhalation hazard.
Symptoms/injuries after skin contact	:	May cause moderate irritation. Prolonged or repeated exposure can cause dermatitis, folliculitis or oil acne.
Symptoms/injuries after eye contact	:	Causes eye irritation.
Symptoms/injuries after ingestion	:	Swallowing this material may be harmful. May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea. Aspiration into lungs may cause chemical pneumonia and lung damage.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product can cause fouling of shoreline and may be harmful to aquatic life in low concentrations.

n-Hexane (110-54-3)	
LC50 fishes	2500 (≤ 113) µg/l 96 hr Fathead minnow (pimephales promelas)

n-Pentane (109-66-0)	
LC50 fishes	9.87 mg/l mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia	9.74 mg/l mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish	11.59 mg/l mg/l (Exposure time: 96 h - Species: Pimephales promelas)

n-Heptane (142-82-5)	
LC50 fishes	375 mg/l Ghatak, D.B., M.M. Hossain, and S.K. Konar 1988. Acute Toxicity of n-Heptane and n-Hexane on Worm and Fish. Environ.Ecol. 6(4):943-947

Octane (111-65-9)	
EC50 other aquatic organisms	0.38 Species: water flea)

methylcyclohexane (108-87-2)	
LC50 fishes	5.8 (5.8 - 181000) mg/l

Crude Oil (8002-05-9)	
LC50 fishes	3 mg/l Mayer, F.L.Jr., and M.R. Ellersieck 1986. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Resour.Publ.No.160, U.S.Dep.Interior, Fish Wildl.Serv., Washington, DC :505 p. (USGS Data File); Moles, A., S.D. Rice, and S. Korn 1979. Sensitivity of Alaskan Freshwater and Anadromous Fishes to Prudhoe Bay Crude Oil and Benzene. Trans.Am.Fish.Soc. 108(4):408-414
EC50 Daphnia	5.3 ml/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.
EC50 Daphnia	1.65 mg/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.

12.2. Persistence and degradability

Petroleum Crude Oil Solution	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Petroleum Crude Oil Solution	
Bioaccumulative potential	This product is not expected to bioaccumulate.

n-Pentane (109-66-0)	
Log Pow	3.39

n-Butane (106-97-8)	
Log Pow	2.89

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of a“characteristic” hazardous waste. This product could also contain benzene at >0.5ppm and could exhibit the characteristics of “toxicity” (D018) as determined by the toxicity characteristic leaching procedure (TCLP). This material could become a hazardous waste if mixed or contaminated with hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1267 Petroleum crude oil, 3, III

UN-No.(DOT) : UN1267

Proper Shipping Name (DOT) : Petroleum crude oil

Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 3 - Flammable liquid

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102)	:	144 - If transported as a residue in an underground storage tank (UST), as defined in 40 CFR 280.12, that has been cleaned and purged or rendered inert according to the American Petroleum Institute (API) Standard 1604 (IBR, see 171.7 of this subchapter), then the tank and this material are not subject to any other requirements of this subchapter. However, sediments remaining in the tank that meet the definition for a hazardous material are subject to the applicable regulations of this subchapter. 357 - A bulk packaging that emits hydrogen sulfide in sufficient concentration that vapor evolved from the crude oil can present an inhalation hazard must be marked as specified in §172.327 of this part. IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / (1 + a (tr - tf)) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP8 - A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0 C (32 F).
DOT Packaging Exceptions (49 CFR 173.xxx)	:	150
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	202
DOT Packaging Bulk (49 CFR 173.xxx)	:	242
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	60 L
DOT Vessel Stowage Location	:	B - (i) The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) ‘‘On deck only’’ on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

Additional information

Other information : No supplementary information available.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	1267
Proper Shipping Name (IMDG)	:	PETROLEUM CRUDE OIL
Class (IMDG)	:	3 - Flammable liquids
Packing group (IMDG)	:	III - substances presenting low danger

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Petroleum Crude Oil Solution
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

n-Hexane (110-54-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	5000 lb

Pentane (as n-pentane) (109-66-0)
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not listed on the United States SARA Section 313

Toluene (108-88-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	1000 lb

n-Heptane (142-82-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Octane (111-65-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Nonane (111-84-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

n-Butane (106-97-8)
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not listed on the United States SARA Section 313

methylcyclohexane (108-87-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

1,2,4-trimethylbenzene (95-63-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313

Benzene (71-43-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313 Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	10 lb

n-decane (872-05-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Crude Oil (8002-05-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA
No additional information available

EU-Regulations
No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

15.2.2. National regulations

Benzene (71-43-2)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

Toluene (108-88-3)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	Yes	Yes	Yes	

Benzene (71-43-2)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	Yes	No	Yes	

n-Hexane (110-54-3)

U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - Maine - Air Pollutants - Hazardous Air Pollutants
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List

Pentane (as n-pentane) (109-66-0)

U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Toluene (108-88-3)

U.S. - Maine - Air Pollutants - Hazardous Air Pollutants
U.S. - Massachusetts - Right To Know List
U.S. - Michigan - Critical Materials List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List

n-Heptane (142-82-5)

U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Octane (111-65-9)

U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Nonane (111-84-2)

U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

n-Butane (106-97-8)

U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

methylcyclohexane (108-87-2)

U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

1,2,4-trimethylbenzene (95-63-6)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Crude Oil (8002-05-9)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

SECTION 16: Other information

Revision date : 07/14/2015

Full text of H-phrases::

Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Acute 2	Hazardous to the aquatic environment — Acute Hazard, Category 2
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Aquatic Chronic 4	Hazardous to the aquatic environment — Chronic Hazard, Category 4
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 1A	Carcinogenicity, Category 1A
Flam. Gas 1	Flammable gases, Category 1
Flam. Liq. 2	Flammable liquids, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
Liquefied gas	Gases under pressure : Liquefied gas
Muta. 1B	Germ cell mutagenicity, Category 1B
Repr. 2	Reproductive toxicity, Category 2
Simple Asphy	Simple Asphyxiant
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H220	Extremely flammable gas
H225	Highly flammable liquid and vapor
H226	Flammable liquid and vapor
H280	Contains gas under pressure; may explode if heated
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H332	Harmful if inhaled

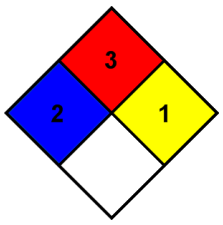
Full text of H-phrases::

H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H340	May cause genetic defects
H350	May cause cancer
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H380	May displace oxygen and cause rapid suffocation
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 3 - Liquids and solids that can be ignited under almost all ambient conditions.

NFPA reactivity : 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 3 Serious Hazard

Physical : 1 Slight Hazard

SDS US (GHS HazCom 2012)

ATTACHMENT I: EMISSION UNITS TABLE

Attachment I

Emission Units Table

(includes all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status)

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
OTK 1	OTK 1	Crude Oil Storage Tank	2006	15,000-bbl	N/A	Internal Floating Roof
TL-1	TH1	Crude Oil Truck Loading	N/A	22,995,000 gal/yr	N/A	N/A
FUG	FUG	Fugitive Emissions	N/A	N/A	N/A	N/A
HR	HR	Fugitive Haulroad Emissions	N/A	N/A	N/A	N/A

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] New, modification, removal
[4] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

ATTACHMENT J: EMISSION POINTS DATA SUMMARY SHEET

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions[4]		Maximum Potential Controlled Emissions[5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used[6]	Emission Concentration[7] (ppmv or mg/m^4)
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
OTK 1	Tank vent	OTK 1	Crude Oil Storage Tank	-	Internal Floating Roof	N/A	N/A	VOC n-Hexane Benzene Toluene Ethylbenzene Xylenes	1.08 0.02 0.01 0.01 <0.01 0.01	4.72 0.08 0.04 0.06 <0.01 0.02	N/A	N/A	Gas/Vapor	O (EPA TANKS 4.0.9d)	N/A
TL-1	Fugitive	TL-1	Crude Oil Truck Loading	-	None	N/A	N/A	VOC n-Hexane Benzene Toluene Ethylbenzene Xylenes Carbon Dioxide Methane	N/A	22.35 0.36 0.20 0.29 0.02 0.11 0.23 3.46	N/A	N/A	Gas/Vapor	O (AP-42)	N/A
FUG	Fugitive	FUG	Fugitive Components	-	None	N/A	N/A	VOC	N/A	0.59	N/A	N/A	Gas/Vapor	O (EPA-453/R-95-017)	N/A
HR	Fugitive	HR	Fugitive Haul Road Emissions	-	None	N/A	N/A	PM_{Total} PM_{10} $PM_{2.5}$	2.12 0.61 0.06	9.26 2.68 0.28	N/A	N/A	Gas/Vapor	O (AP-42)	N/A

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

[1] Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

[2] Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed

to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

[3] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. **DO NOT LIST** H_2, H_2O, N_2, O_2, and Noble Gases.

[4] Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[5] Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[6] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

[7] Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m^3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO_2, use units of ppmv (See 45CSR10).

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (^{o}F)	Volumetric Flow [1] (acfm) *at operating conditions*	Velocity (fps)	Ground Level *(Height above mean sea level)*	Stack Height [2] *(Release height of emissions above ground level)*	Northing	Easting
OTK 1	0.333	Ambient	N/A	N/A	1,060	30	4,312.334	484.963
TL-1	N/A	Ambient	N/A	N/A	1,060	N/A	4,312.334	484.963
FUG	N/A	Ambient	N/A	N/A	1,060	N/A	4,312.334	484.963
HR	N/A	Ambient	N/A	N/A	1,060	N/A	4,312.334	484.963
Note: In lieu of equipment UTM coordinates, site UTM coordinates provided.								

[1] Give at operating conditions. Include inerts.
[2] Release height of emissions above ground level.

ATTACHMENT K: FUGITIVE EMISSIONS DATA SUMMARY SHEET

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☒ Yes ☐ No ☐ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☐ Yes ☒ No ☐ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☒ Yes ☐ No ☒ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☒ Yes ☐ No ☒ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads						
Unpaved Haul Roads	PMTotal PM10 PM2.5	2.12 0.61 0.06	9.26 2.68 0.28	Does not apply	N/A	O – AP-42
Storage Pile Emissions						
Loading/Unloading Operations – Crude Oil	VOC n-Hexane Benzene Toluene Ethylbenzene Xylenes Carbon Dioxide Methane	Does not apply	22.35 0.36 0.20 0.29 0.02 0.11 0.23 3.46	Does not apply	N/A	O – AP-42 5.2-4 / API 5-12
Wastewater Treatment Evaporation & Operations						
Equipment Leaks	VOC	Does not apply	0.59	Does not apply	N/A	O – EPA-453/R-95-017
General Clean-up VOC Emissions						
Other						

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.

[2] Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[3] Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[4] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

ATTACHMENT L: EMISSION UNIT DATA SHEETS

EUDS - STORAGE TANK(S): OIL

EUDS - BULK LIQUID TRANSFER OPERATIONS: OIL

EUDS - CHEMICAL PROCESS (LEAK SOURCES)

EUDS – FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT **www.epa.gov/tnn/tanks.html**), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (**http://www.epa.gov/tnn/chief/**).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name Brooksville Station	2. Tank Name Crude Oil Storage Tank
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) OTK 1	4. Emission Point Identification No. (as assigned on *Equipment List Form*) OTK 1
5. Date of Commencement of Construction (for existing tanks) 2006	
6. Type of change ☐ New Construction ☐ New Stored Material ☐ Other Tank Modification	
7. Description of Tank Modification (if applicable) N/A	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode).	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): Not applicable	

II. TANK INFORMATION (required)

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height. 15,000 bbl	
9A. Tank Internal Diameter (ft) 53.25	9B. Tank Internal Height (or Length) (ft) 40
10A. Maximum Liquid Height (ft) 38 (estimated)	10B. Average Liquid Height (ft) 20
11A. Maximum Vapor Space Height (ft) Unknown	11B. Average Vapor Space Height (ft) Unknown
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights. 630,000 gallons	

13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
229,950,000	630,000 *Rolling daily throughput total not to exceed maximum annual throughput.

14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)
365

15. Maximum tank fill rate (gal/min) 600 (est.)

16. Tank fill method ☐ Submerged ☐ Splash ☒ Bottom Loading

17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☒ Does Not Apply

17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):
☒ Fixed Roof ☒ vertical ___ horizontal ___ flat roof ☒ cone roof ___ dome roof
___ other (describe)
☐ External Floating Roof ___ pontoon roof ___ double deck roof
☐ Domed External (or Covered) Floating Roof
☒ Internal Floating Roof X vertical column support ___self-supporting
☐ Variable Vapor Space ___ lifter roof ___ diaphragm
☐ Pressurized ___ spherical ___ cylindrical
☐ Underground
☐ Other (describe)

III. TANK CONSTRUCTION & OPERATION INFORMATION (optional if providing TANKS Summary Sheets)

19. Tank Shell Construction:
☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☒ Other (describe) Welded construction

20A. Shell Color White	20B. Roof Color White	20C. Year Last Painted 2016

21. Shell Condition (if metal and unlined):
☒ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ YES ☒ NO

22B. If YES, provide the operating temperature (°F)

22C. If YES, please describe how heat is provided to tank.

23. Operating Pressure Range (psig): Atmospheric

24. Complete the following section for **Vertical Fixed Roof Tanks** ☒ Does Not Apply

24A. For dome roof, provide roof radius (ft)

24B. For cone roof, provide slope (ft/ft)

25. Complete the following section for **Floating Roof Tanks** ☐ Does Not Apply

25A. Year Internal Floaters Installed:

25B. Primary Seal Type: (check one)
☐ Metallic (Mechanical) Shoe Seal ☐ Liquid Mounted Resilient Seal
☒ Vapor Mounted Resilient Seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a Secondary Seal? ☒ YES ☐ NO

25D. If YES, how is the secondary seal mounted? (check one) ☐ Shoe ☒ Rim ☐ Other (describe):		
25E. Is the Floating Roof equipped with a weather shield? ☐ YES ☒ NO		
25F. Describe deck fittings; indicate the number of each type of fitting:		
ACCESS HATCH		
BOLT COVER, GASKETED: 1	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
AUTOMATIC GAUGE FLOAT WELL		
BOLT COVER, GASKETED: 1	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
COLUMN WELL		
BUILT-UP COLUMN – SLIDING COVER, GASKETED: 1	BUILT-UP COLUMN – SLIDING COVER, UNGASKETED:	PIPE COLUMN – FLEXIBLE FABRIC SLEEVE SEAL:
LADDER WELL		
PIP COLUMN – SLIDING COVER, GASKETED: 1	PIPE COLUMN – SLIDING COVER, UNGASKETED:	
GAUGE-HATCH/SAMPLE PORT		
SLIDING COVER, GASKETED:	SLIDING COVER, UNGASKETED:	
ROOF LEG OR HANGER WELL		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	SAMPLE WELL-SLIT FABRIC SEAL (10% OPEN AREA)
VACUUM BREAKER		
WEIGHTED MECHANICAL ACTUATION, GASKETED: 1	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
RIM VENT		
WEIGHTED MECHANICAL ACTUATION GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
DECK DRAIN (3-INCH DIAMETER)		
OPEN:	90% CLOSED:	
STUB DRAIN		
1-INCH DIAMETER:12		
OTHER (DESCRIBE, ATTACH ADDITIONAL PAGES IF NECESSARY)		

26. Complete the following section for Internal Floating Roof Tanks ☐ Does Not Apply			
26A. Deck Type: ☒ Bolted ☐ Welded			
26B. For Bolted decks, provide deck construction: The deck is bolted to a metal frame. The metal frame sit on top of a series of pontoons the float on the surface of the crude.			
26C. Deck seam: ☒ Continuous sheet construction 5 feet wide ☐ Continuous sheet construction 6 feet wide ☐ Continuous sheet construction 7 feet wide ☐ Continuous sheet construction 5 × 7.5 feet wide ☐ Continuous sheet construction 5 × 12 feet wide ☐ Other (describe)			
26D. Deck seam length (ft) 446.75		26E. Area of deck (ft^2)	
For column supported tanks: 26F. Number of columns:		26G. Diameter of each column:	

IV. SITE INFORMANTION (optional if providing TANKS Summary Sheets)

27. Provide the city and state on which the data in this section are based. Charleston, WV
28. Daily Average Ambient Temperature (°F)
29. Annual Average Maximum Temperature (°F)
30. Annual Average Minimum Temperature (°F)
31. Average Wind Speed (miles/hr)
32. Annual Average Solar Insulation Factor (BTU/(ft^2·day))
33. Atmospheric Pressure (psia) 14.25

V. LIQUID INFORMATION (optional if providing TANKS Summary Sheets)

34. Average daily temperature range of bulk liquid:			
34A. Minimum (°F)		34B. Maximum (°F)	
35. Average operating pressure range of tank:			
35A. Minimum (psig)		35B. Maximum (psig)	
36A. Minimum Liquid Surface Temperature (°F) 51.31		36B. Corresponding Vapor Pressure (psia) NA	
37A. Average Liquid Surface Temperature (°F) 56.67		37B. Corresponding Vapor Pressure (psia) 2.6947	
38A. Maximum Liquid Surface Temperature (°F) 62.04		38B. Corresponding Vapor Pressure (psia) NA	
39. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.			
39A. Material Name or Composition			
39B. CAS Number			
39C. Liquid Density (lb/gal)			
39D. Liquid Molecular Weight (lb/lb-mole)			
39E. Vapor Molecular Weight (lb/lb-mole)			

Maximum Vapor Pressure 39F. True (psia) 39G. Reid (psia)	5		
Months Storage per Year 39H. From 39I. To			

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

40. Emission Control Devices (check as many as apply): ☐ Does Not Apply

- ☐ Carbon Adsorption[1]
- ☐ Condenser[1]
- ☐ Conservation Vent (psig)
  - Vacuum Setting Pressure Setting
- ☐ Emergency Relief Valve (psig)
- ☐ Inert Gas Blanket of
- ☐ Insulation of Tank with
- ☐ Liquid Absorption (scrubber)[1]
- ☐ Refrigeration of Tank
- ☐ Rupture Disc (psig)
- ☐ Vent to Incinerator[1]
- ☒ Other[1] (describe): Internal Floating Roof

[1] Complete appropriate Air Pollution Control Device Sheet.

41. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name & CAS No.	Breathing Loss (lb/hr)	Working Loss Amount	Working Loss Units	Annual Loss (lb/yr)	Estimation Method[1]
Refer to Attachment N Emissions Calculations and enclosed TANKS Summary Sheet.					
Crude oil (RVP 5)				4,723	Tanks 4.0.9d

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

☒ Remember to attach emissions calculations, including TANKS Summary Sheets if applicable.

Attachment L
EMISSIONS UNIT DATA SHEET
BULK LIQUID TRANSFER OPERATIONS

Furnish the following information for each new or modified bulk liquid transfer area or loading rack, as shown on the *Equipment List Form* and other parts of this application. This form is to be used for bulk liquid transfer operations such as to and from drums, marine vessels, rail tank cars, and tank trucks.

Identification Number (as assigned on *Equipment List Form*): TL-1

1. Loading Area Name: Crude Oil Truck Loading

2. Type of cargo vessels accommodated at this rack or transfer point (check as many as apply):
☐ Drums ☐ Marine Vessels ☐ Rail Tank Cars ☒ Tank Trucks

3. Loading Rack or Transfer Point Data:

Number of pumps	One (1)
Number of liquids loaded	One (1)
Maximum number of marine vessels, tank trucks, tank cars, and/or drums loading at one time	One (1)

4. Does ballasting of marine vessels occur at this loading area?
☐ Yes ☐ No ☒ Does not apply

5. Describe cleaning location, compounds and procedure for cargo vessels using this transfer point:

No cleaning. Tank trucks are in dedicated service.

6. Are cargo vessels pressure tested for leaks at this or any other location?
☒ Yes ☐ No
If YES, describe:

Vessel pressure tested in accordance with DOT requirements.

7. Projected Maximum Operating Schedule (for rack or transfer point as a whole):				
Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	24	24	24	24
days/week	5	5	5	5
weeks/quarter	13	13	13	13

8. Bulk Liquid Data *(add pages as necessary):*		
Pump ID No.		P01
Liquid Name		Crude Oil
Max. daily throughput (1000 gal/day)		~6.30
Max. annual throughput (1000 gal/yr)		22,995,000
Loading Method [1]		BF
Max. Fill Rate (gal/min)		280
Average Fill Time (min/loading)		~20
Max. Bulk Liquid Temperature (^{o}F)		50.00
True Vapor Pressure [2]		2.6947
Cargo Vessel Condition [3]		U
Control Equipment or Method [4]		None
Minimum control efficiency (%)		N/A
Maximum Emission Rate	Loading (lb/hr)	5.10
	Annual (lb/yr)	44,709.84 (based on 22.35 tons/year)
Estimation Method [5]		EPA

[1] BF = Bottom Fill SP = Splash Fill SUB = Submerged Fill
[2] At maximum bulk liquid temperature
[3] B = Ballasted Vessel, C = Cleaned, U = Uncleaned (dedicated service), O = other (describe)
[4] List as many as apply (complete and submit appropriate *Air Pollution Control Device Sheets*):CA = Carbon Adsorption LOA = Lean Oil AdsorptionCO = Condensation SC = Scrubber (Absorption)CRA = Compressor-Refrigeration-Absorption TO = Thermal Oxidation or Incineration CRC = Compression-Refrigeration-Condensation VB = Dedicated Vapor Balance (closed system) O = other (descibe)
[5] EPA = EPA Emission Factor as stated in AP-42 MB = Material Balance TM = Test Measurement based upon test data submittal O = other (describe)

9. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING None proposed.	RECORDKEEPING None proposed.
REPORTING None proposed.	TESTING None proposed.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.
RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.
REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.
TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
Not applicable

Attachment L
EMISSIONS UNIT DATA SHEET
CHEMICAL PROCESS

For chemical processes please fill out this sheet and all supplementary forms (see below) that apply. Please check all supplementary forms that have been completed.

☐ *Emergency Vent Summary Sheet*
☒ *Leak Sources Data Sheet*
☐ *Toxicology Data Sheet*
☐ *Reactor Data Sheet*
☐ *Distillation Column Data Sheet*

1. Chemical process area name and equipment ID number (as shown in *Equipment List Form*)
   Components in natural gas and light liquid service (EU-FUG)

2. Standard Industrial Classification Codes (SICs) for process(es)
   5171

3. List raw materials and ☒ attach MSDSs
   Crude oil

4. List Products and Maximum Production and ☐ attach MSDSs

Description and CAS Number	Maximum Hourly (lb/hr)	Maximum Annual (ton/year)
Not applicable		

5. Complete the *Emergency Vent Summary Sheet* for all emergency relief devices.

6. Complete the *Leak Source Data Sheet* and describe below or attach to application the leak detection or maintenance program to minimize fugitive emissions. Include detection instruments, calibration gases or methods, planned inspection frequency, and record-keeping, and similar pertinent information. If subject to a rule requirement (e.g. 40CFR60, Subpart VV), please list those here.

   The facility is not a natural gas processing plant (SIC 1321) and is therefore not subject to New Source Performance Standards (NSPS) Subpart KKK or NSPS Subpart OOOO/OOOOa requirements for a leak detection and repair (LDAR) monitoring program. It is also not a production site or compressor station and is not subject to the NSPS OOOOa LDAR monitoring program requirements.

7. Clearly describe below or attach to application Accident Procedures to be followed in the event of an accidental spill or release.

   In the event of an accidental spill or release, personnel will be protected, emergency response personnel will be notified and immediate steps to stop the spill or release will be implemented.

8A. Complete the *Toxicology Data Sheet* or attach to application a toxicology report (an up-to-date material safety data sheets (MSDS) may be used) outlining the currently known acute and chronic health effects of each compound or chemical entity emitted to the air. If these compounds have already been listed in Item 3, then a duplicate MSDS sheet is not required. Include data such as the OSHA time weighted average (TWA) or mutagenicity, teratogenicity, irritation, and other known or suspected effects should be addressed. Indicate where these are unknown, and provide references.

8B. Describe any health effects testing or epidemiological studies on these compounds that are being or may be conducted by the company or required under TSCA, RCRA or other federal regulations. Discuss the persistence in the environment of any emission (e.g. pesticides, etc.).

9. **Waste Products** - Waste products status: (If source is subject to RCRA or 45CSR25, please contact the Hazardous Waste Section of WVDEP, OAQ at (304) 926-3647.)

9A. Types and amounts of wastes to be disposed:

9B. Method of disposal and location of waste disposal facilities:

Carrier: Phone:

9C. Check here if approved USEPA/State Hazardous Waste Landfill will be used ☐

10. Maximum and Projected Typical Operating Schedule for process or project as a whole (circle appropriate units).

circle units:	(hrs/day) (hr/batch)	(days), (batches/day), (batches/week)	(days/yr), (weeks/year)
10A. Maximum			
10B. Typical			

11. Complete a *Reactor Data Sheet* for each reactor in this chemical process.

12. Complete a *Distillation Column Data Sheet* for each distillation column in this chemical process.

13. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
None proposed	None proposed
REPORTING	**TESTING**
None proposed	None proposed

MONITORING. Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation or air pollution control device.

RECORDKEEPING. Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING. Please describe the proposed frequency of reporting of the recordkeeping.

TESTING. Please describe any proposed emissions testing for this process equipment or air pollution control device.

14. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

Not applicable

LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components[1]	Number of Components Monitored by Frequency[2]	Average Time to Repair (days)[3]	Estimated Annual Emission Rate (lb/yr)[4]
Pumps[5]	light liquid VOC[6,7]				
	heavy liquid VOC[8]				
	Non-VOC[9]				
Valves[10]	Gas VOC				
	Light Liquid VOC	20	N/A	N/A	965.61
	Heavy Liquid VOC				
	Non-VOC				
Safety Relief Valves[11]	Gas VOC				
	Non VOC				
Open-ended Lines[12]	VOC	4	N/A	N/A	108.15
	Non-VOC				
Sampling Connections[13]	VOC				
	Non-VOC				
Compressors	VOC				
	Non-VOC				
Flanges	VOC	35	N/A	N/A	112.98
	Non-VOC				
Other	VOC				
	Non-VOC				

[1 - 13] See notes on the following page.

Note: Component counts taken by equipment type at representative facility.

Notes for Leak Source Data Sheet

1. For VOC sources include components on streams and equipment that contain greater than 10% w/w VOC, including feed streams, reaction/separation facilities, and product/by-product delivery lines. Do not include certain leakless equipment as defined below by category.

2. By monitoring frequency, give the number of sources routinely monitored for leaks, using a portable detection device that measures concentration in ppm. Do not include monitoring by visual or soap-bubble leak detection methods. "M/Q(M)/Q/SA/A/O" means the time period between inspections as follows:

   Monthly/Quarterly, with Monthly follow-up of repaired leakers/Quarterly/Semi-annual/Annually/Other (specify time period)

   If source category is not monitored, a single zero in the space will suffice. For example, if 50 gas-service valves are monitored quarterly, with monthly follow-up of those repaired, 75 are monitored semi-annually, and 50 are checked bimonthly (alternate months), with non checked at any other frequency, you would put in the category "valves, gas service:" 0/50/0/75/0/50 (bimonthly).

3. Give the average number of days, after a leak is discovered, that an attempt will be made to repair the leak.

4. Note the method used: MB - material balance; EE - engineering estimate; EPA - emission factors established by EPA (cite document used); O - other method, such as in-house emission factor (specify).

5. Do not include in the equipment count sealless pumps (canned motor or diaphragm) or those with enclosed venting to a control device. (Emissions from vented equipment should be included in the estimates given in the Emission Points Data Sheet.)

6. Volatile organic compounds (VOC) means the term as defined in 40 CFR □51.100 (s).

7. A light liquid is defined as a fluid with vapor pressure equal to or greater than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if 20% w/w or more of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a light liquid.

8. A heavy liquid is defined as a fluid with a vapor pressure less than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if less than 20% w/w of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a heavy liquid.

9. LIST CO, H_2S, mineral acids, NO, NO_2, SO_3, etc. DO NOT LIST CO_2, H_2, H_2O, N_2, O_2, and Noble Gases.

10. Include all process valves whether in-line or on an open-ended line such as sample, drain and purge valves. Do not include safety-relief valves, or leakless valves such as check, diaphragm, and bellows seal valves.

11. Do not include a safety-relief valve if there is a rupture disk in place upstream of the valve, or if the valve vents to a control device.

12 Open-ended lines include purge, drain and vent lines. Do not include sampling connections, or lines sealed by plugs, caps, blinds or second valves.

13. Do not include closed-purge sampling connections.

Attachment L
FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

UNPAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

k =	Particle size multiplier	4.90	1.50
s =	Silt content of road surface material (%)	3.9	3.9
p =	Number of days per year with precipitation >0.01 in.	150	150

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	Light Vehicles	4	3.5	10	0.16	2	1,917	N/A	N/A
2	Medium Trucks	10	16.2	10	0.16	1	767	N/A	N/A
3	Heavy Trucks	18	24.3	10	0.16	1	4,599	N/A	N/A
4									
5									
6									
7									
8									

Source: *AP-42 Fifth Edition – 13.2.2 Unpaved Roads*

$E = k \times 5.9 \times (s \div 12) \times (S \div 30) \times (W \div 3)^{0.7} \times (w \div 4)^{0.5} \times ((365 - p) \div 365) =$ lb/Vehicle Mile Traveled (VMT)

Where:

k =	Particle size multiplier	4.90	1.50
s =	Silt content of road surface material (%)	9	9
S =	Mean vehicle speed (mph)	10	10
W =	Mean vehicle weight (tons)	15	15
w =	Mean number of wheels per vehicle	9	9
p =	Number of days per year with precipitation >0.01 in.	150	150

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF UNPAVED HAULROAD EMISSIONS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	0.18	0.81	-	-	0.05	0.23	-	-
2	1.61	7.07	-	-	0.47	2.04	-	-
3	0.32	1.39	-	-	0.09	0.40	-	-
4								
5								
6								
7								
8								
TOTALS	**2.12**	**9.26**	-	-	**0.61**	**2.68**	-	-

Note: Minimum one-per-day average pick-up trucks and service trucks even if tanker truck not required every day. Per EPA BID calculations, all emissions based on average trips. Estimated maximum hourly, daily and yearly trips provided for information only.

Revision 03/2007

FUGITIVE EMISSIONS FROM PAVED HAULROADS – *Not Applicable*

INDUSTRIAL PAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1							
2							
3							
4							
5							
6							
7							
8							

Source: *AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads*

$E = 0.077 \times I \times (4 \div n) \times (s \div 10) \times (L \div 1000) \times (W \div 3)^{0.7}$ = lb/Vehicle Mile Traveled (VMT)

Where:

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface meterial silt content (%)	
L =	Surface dust loading (lb/mile)	
W =	Average vehicle weight (tons)	

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF PAVED HAULROAD EMISSIONS

Item No.	Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY
1				
2				
3				
4				
5				
6				
7				
8				
TOTALS				

ATTACHMENT N: SUPPORTING EMISSIONS CALCULATIONS

EXAMPLE CALCULATIONS

Fugitives:

TOC Emission Factor (lb/hr/source) * Number of Sources * VOC wt% = lb/hr VOC

Tons per Year (TPY) Conversion:

lb/hr * Hours/Year * 1 ton/2000 lb = TPY

Tonnes/Year * 1.10231131 = TPY

West Virginia Oil Gathering, LLC
Brooksville Station
Summary of Criteria Air Pollutant Emissions

Equipment	Unit ID	NOx		CO		VOC		SO_2		PM	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
15,000-bbl Crude Oil Tank	OTK 1	-	-	-	-	1.08	4.72	-	-	-	-
Crude Oil Truck Loading	TL-1	-	-	-	-	5.10	22.35	-	-	-	-
Fugitive Emissions	FUG	-	-	-	-	0.14	0.59	-	-	-	-
Fugitive Haul Road Emissions	HR	-	-	-	-	-	-	-	-	2.12	9.26
Total =		**-**	**-**	**-**	**-**	**6.32**	**27.67**	**-**	**-**	**2.12**	**9.26**

West Virginia Oil Gathering, LLC
Brooksville Station
Summary of Hazardous Air Pollutants

Equipment	Unit ID	Estimated Emissions (lb/hr)										
		Acetalde-hyde	Acrolein	Benzene	Ethyl-benzene	Formalde-hyde	Methanol	n-Hexane	Toluene	Xylenes	Other HAP	Total HAP
15,000-bbl Crude Oil Tank	OTK 1	-	-	0.01	<0.01	-	-	0.02	0.01	0.01	0.01	0.06
Crude Oil Truck Loading	TL-1	-	-	0.30	0.03	-	-	0.54	0.44	0.17	0.30	1.78
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-	-	-	-
	Total =	**-**	**-**	**0.31**	**0.03**	**-**	**-**	**0.56**	**0.45**	**0.17**	**0.31**	**1.84**

Equipment	Unit ID	Estimated Emissions (tons/yr)										
		Acetalde-hyde	Acrolein	Benzene	Ethyl-benzene	Formalde-hyde	Methanol	n-Hexane	Toluene	Xylenes	Other HAP	Total HAP
15,000-bbl Crude Oil Tank	OTK 1	-	-	0.04	<0.01	-	-	0.08	0.06	0.02	0.04	0.25
Crude Oil Truck Loading	TL-1	-	-	0.20	0.02	-	-	0.36	0.29	0.11	0.20	1.18
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-	-	-	-
	Total =	**-**	**-**	**0.24**	**0.03**	**-**	**-**	**0.43**	**0.35**	**0.14**	**0.24**	**1.44**

West Virginia Oil Gathering, LLC
Brooksville Station
Summary of Greenhouse Gas Emissions - Metric Tons (Tonnes)

Equipment	Unit ID	Carbon Dioxide (CO_2)		Methane (CH_4)		Methane (CH_4) as $CO_{2\ Eq.}$		Total CO_2 + $CO_{2\ Eq.}$	
		lb/hr	tonnes/yr	lb/hr	tonnes/yr	lb/hr	tonnes/yr	lb/hr	tonnes/yr
15,000-bbl Crude Oil Tank	OTK 1	-	-	-	-	-	-	-	-
Crude Oil Truck Loading	TL-1	0.05	0.21	0.79	3.14	19.75	78.47	19.80	78.68
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-
	Total =	**0.05**	**0.21**	**0.79**	**3.14**	**19.75**	**78.47**	**19.80**	**78.68**

Per API Compendium (2009) Chapter 5: Most of the CH_4 and CO_2 emissions from storage tanks occur as a result of flashing. No flashing emissions are expected from the storage tanks; therefore, no GHG emissions have been estimated.

West Virginia Oil Gathering, LLC
Brooksville Station
Summary of Greenhouse Gas Emissions - Short Tons (Tons)

Equipment	Unit ID	Carbon Dioxide (CO_2)		Methane (CH_4)		Methane (CH_4) as $CO_{2\ Eq.}$		Total CO_2 + $CO_{2\ Eq.}$	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
15,000-bbl Crude Oil Tank	OTK 1	-	-	-	-	-	-	-	-
Crude Oil Truck Loading	TL-1	0.05	0.23	0.79	3.46	19.75	86.50	19.80	86.73
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-
	Total =	**0.05**	**0.23**	**0.79**	**3.46**	**19.75**	**86.50**	**19.80**	**86.73**

Per API Compendium (2009) Chapter 5: Most of the CH_4 and CO_2 emissions from storage tanks occur as a result of flashing. No flashing emissions are expected from the storage tank; therefore, no GHG emissions have been estimated.

West Virginia Oil Gathering, LLC
Brooksville Station
Tank Emissions Calculations - Criteria Air Pollutants

Equipment Information

Unit ID:	**OTK 1**
Contents:	Crude Oil
Capacity (bbl):	15,000
Capacity (gal):	630,000
Throughput (bbl/yr):	5,475,000
Throughput (gal/yr):	229,950,000
Throughput (bbl/d):	15,000.00
TANKS 4.0.9d Losses (lb/yr):	4,723.00
Control Type:	IFR
Safety Factor:	100%

Proposed VOC Emissions[1]

Unit ID: **OTK 1**

Emissions	Avg. lb/hr[2]	tons/yr
Losses	1.08	4.72
Total =	**1.08**	**4.72**

Notes:
1) Losses calculated using EPA TANKS 4.0.9d. A 100% safety factor has been added as a conservative estimate of emissions.
2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.

West Virginia Oil Gathering, LLC
Brooksville Station
Tank Emissions Calculations - Hazardous Air Pollutants

Equipment Information

Unit ID:	**OTK 1**
Contents:	Crude Oil
Capacity (bbl):	15,000
Capacity (gal):	630,000
Throughput (bbl/yr):	5,475,000
Throughput (gal/yr):	229,950,000
Throughput (bbl/d):	15,000.00
Control Type:	IFR

Proposed Hazardous Air Pollutant Emissions[1]

Unit ID: **OTK 1**

Pollutant	Avg. lb/hr[2]	tons/yr
Total VOC =	**1.08**	**4.72**
n-Hexane	0.02	0.08
Benzene	0.01	0.04
Toluene	0.01	0.06
Ethylbenzene	<0.01	<0.01
Xylenes	0.01	0.02
Other HAP	0.01	0.04
Total HAP =	**0.06**	**0.25**

Estimated HAP Composition (% by Weight)[3]

Pollutant	Wt%
n-Hexane	1.6000%
Benzene	0.9000%
Toluene	1.3000%
Ethylbenzene	0.1000%
Xylenes	0.5000%
Other HAP	0.9000%
Total HAP =	**5.3000%**

Notes:
1) VOC emissions calculated in Criteria Air Pollutant calculations.
2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.
3) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

West Virginia Oil Gathering, LLC
Brooksville Station
Truck Loading Emissions Calculations - Criteria and Hazardous Air Pollutants

Equipment Information

Unit ID:	**TL-1**
Contents Loaded:	Crude Oil
Fill Method:	Submerged
Type of Service:	Dedicated
Mode of Operation:	Normal
Saturation Factor:	0.6
Annual Throughput (1000 gal)[1]:	22,995.000
Annual Emission Factor (lb/1000 gal)[2]:	1.94
Maximum Loading Rate (gal/hr):	16,800

Annual Loading Loss (lb/1000 gal) = 12.46 *S*P_{AVG}*M/T, where:

P = True vapor pressure of liquid loaded (avg. psia)	2.6947
M = Molecular weight of vapor (lb/lb-mol)	50
T = Temperature of bulk liquid loaded (average °F)	58.06
T = Temperature of bulk liquid loaded (°F + 460 = °R)	518.06

Uncontrolled VOC and HAP Emissions

Unit ID: **TL-1**

Pollutant	Avg. lb/hr	tons/yr
VOC =	**5.10**	**22.35**
n-Hexane	0.08	0.36
Benzene	0.05	0.20
Toluene	0.07	0.29
Ethylbenzene	0.01	0.02
Xylenes	0.03	0.11
Other HAP	0.05	0.20
Total HAP =	**0.27**	**1.18**

Estimated HAP Composition (% by Weight)[3]

Pollutant	Wt%
n-Hexane	1.6000%
Benzene	0.9000%
Toluene	1.3000%
Ethylbenzene	0.1000%
Xylenes	0.5000%
Other HAP	0.9000%
Total HAP =	**5.3000%**

Notes:
1) Crude oil truck loading should not occur during normal operations. Ten percent of total tank throughput is shown as a conservative estimate of emissions.
2) AP-42 5.2-4 Eq.1: Loading Loss (lb/1000 gal) = 12.46 *S*P*M/T. Properties based on EPA TANKS 4.0.9d.
3) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

West Virginia Oil Gathering, LLC
Brooksville Station
Truck Loading Emissions Calculations - Greenhouse Gases

Loading Information

Unit ID:	**TL-1**
Contents Loaded:	Crude Oil
Fill Method:	Submerged
Type of Service:	Dedicated
Mode of Operation:	Normal
Annual Throughput (10^6 gal):	22.995
TOC Em. Factor (tonne/10^6 gal): [1]	0.91
Maximum Loading Rate (gal/hr):	16,800

API Default =	15.000%
Default =	1.000%

Proposed Greenhouse Gas Emissions (tonnes) [2, 3]

Unit ID: **TL-1**

Pollutant	Avg. lb/hr	tonnes/yr
CH_4	0.79	3.14
CH_4 as CO_2e	19.75	78.47
CO_2	0.05	0.21
Total CO_2 + CO_2e =	**19.80**	**78.68**

Proposed Greenhouse Gas Emissions (tons) [2, 3]

Unit ID: **TL-1**

Pollutant	Avg. lb/hr	tons/yr
CH_4	0.79	3.46
CH_4 as CO_2e	19.75	86.50
CO_2	0.05	0.23
Total CO_2 + CO_2e =	**19.80**	**86.73**

Notes:
1) API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry, Table 5-12.
2) Due to variable short-term emission rates, maximum lb/hr rate shown for reference only.
3) CO_2e = CO_2 equivalent (Pollutant times GWP multiplier)

40 CFR 98 Table A-1, Global Warning Potential (GWP) Multiplier

Methane (CH_4)	25

West Virginia Oil Gathering, LLC
Brooksville Station
Fugitive Emissions Calculations

Equipment Information

Source Type/Service	Number of Sources[1]	Em. Factor (lb/hr/source)[2]	TOC lb/hr	TOC tons/yr	VOC Wt %[3]
Valves - Light Oil	20	5.51E-03	0.110	0.483	100.000%
Connectors - Light Oil	20	4.63E-04	0.009	0.041	100.000%
Flanges - Light Oil	15	2.43E-04	0.004	0.016	100.000%
Open-Ended Lines - Light Oil	4	3.09E-03	0.012	0.054	100.000%
Total TOC (Liquid Components) =			**0.135**	**0.593**	-

Proposed Emissions

Source Type/Service	VOC	
	lb/hr	tons/yr
Valves - Light Oil	0.11	0.48
Connectors - Light Oil	0.01	0.04
Flanges - Light Oil	<0.01	0.02
Open-Ended Lines - Light Oil	0.01	0.05
Total (Liquid Components) =	**0.14**	**0.59**

Notes:

1) Component count estimated based on similar site.

2) EPA-453/R-95-017 Emission Factors

3) Light Oil/Light Liquid composition conservatively assumed to be 100% VOC.

West Virginia Oil Gathering, LLC
Brooksville Station
Fugitive Haul Road Emissions Calculations

Equipment/Operations Information

Length Access Road (ft): 422
Total Round Trip Feet: 845

Facility Data[1]

Vehicle Type	Light Vehicles (Pick-ups and Cars)	Medium Trucks (Service Trucks)	Heavy Trucks (Tanker Trucks)[2]
Average vehicle weight ((empty + full)/2) (tons)	3.5	16.2	24.3
Number of wheels per vehicle type (w)	4	10	18
Average number of round trips/day/vehicle type	5	48	9
Distance per round trip (miles/trip)	0.16	0.16	0.16
Vehicle miles travelled (miles/day)	0.88	7.67	1.50
Number of days operational (days/yr)	365	365	365
Vehicle miles travelled VMT (miles/yr)	320.00	2,800.00	548.96
Average vehicle speed S (mph)	10	10	10
Average number of round trips/hour/vehicle type	0.23	2.00	0.39
Average number of round trips/year/vehicle type	2,000	17,500	3,431
Est. max. number of round trips/hour/vehicle type	2	1	1
Est. max. number of round trips/day/vehicle type	5	2	12
Est. max. number of round trips/year/vehicle type	1,917	767	4,599

Ratio of Maximum Trips per Day vs. Average Trips per Day[3]:

	Light	Medium	Heavy	Total
Weighted Trips (Maximum Per Vehicle Type/Maximum Total) =	0.26	0.11	0.63	**Weighted**
Adjustment Ratio (Maximum Trips/Average Trips) =	0.91	0.04	1.28	**Fraction:**
Weighted Fraction (Weighted Trips * Adjustment Ratio) =	0.24	0.00	0.81	**1.05**

West Virginia Oil Gathering, LLC
Brooksville Station
Fugitive Haul Road Emissions Calculations

Formula and Calculation Inputs

$E=k(s/12)^a * (W/3)^b * ((365-P) / 365)$ *Reference: AP-42 Section 13.2.2 (11/06), Equation 1a and 2*

where:	Rate	Units	Comment
Days per year	365		
Annual average hours per day of road operations	24		
k = PM Particle Size Multiplier	4.90	lb/VMT	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM)
k = PM_{10} Particle Size Multiplier	1.50	lb/VMT	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM_{10})
k = $PM_{2.5}$ Particle Size Multiplier	0.15	lb/VMT	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 ($PM_{2.5}$)
s = Surface Material Silt Content	9.0	%	
P = Number of days > 0.01 inch of rain	150	days/year	
a = PM Constant	0.70	unitless	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM)
a = PM_{10} and $PM_{2.5}$ Constant	0.90	unitless	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM_{10} and $PM_{2.5}$)
b = PM, PM_{10}, and $PM_{2.5}$ Constant	0.45	unitless	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2
Total hourly fleet vehicle miles travelled (miles/hr)	0.42	VMT/hr	
Total annual fleet vehicle miles travelled (miles/yr)[4]	3,668.96	VMT/yr	
Average wheels[5]	11		
Average vehicle weight of the fleet (W)[6]	16.3	tons	
Moisture Ratio	1.00		Estimated based on 0.2% uncontrolled surface water content assuming no watering — EPA - BID Document 13.2.2 - 1998
Control Efficiency (CF)	0.00	%	Based on Moisture Ratio and Figure 13.2.2-2 Control

Emission Calculations

Vehicle Type	Emission Factors PM lb/VMT	Emission Factors PM_{10} lb/VMT	Emission Factors $PM_{2.5}$ lb/VMT	Control Efficiency (%)	Total Vehicle Miles Travelled VMT/hr	Total Vehicle Miles Travelled VMT/yr	Uncontrolled Emission Rates Total PM lb/hr	Uncontrolled Emission Rates Total PM_{10} lb/hr	Uncontrolled Emission Rates $PM_{2.5}$ lb/hr	Uncontrolled Emission Rates Total PM TPY	Uncontrolled Emission Rates Total PM_{10} TPY	Uncontrolled Emission Rates $PM_{2.5}$ TPY
Light Vehicles	5.05	1.46	0.15	0.00	0.04	320.00	0.18	0.05	0.01	0.81	0.23	0.02
Medium Trucks	5.05	1.46	0.15	0.00	0.32	2,800.00	1.61	0.47	0.05	7.07	2.04	0.21
Heavy Trucks	5.05	1.46	0.15	0.00	0.06	548.96	0.32	0.09	0.01	1.39	0.40	0.04
			Total =	**0.00**	**0.42**	**3,668.96**	**2.12**	**0.61**	**0.06**	**9.26**	**2.68**	**0.28**

Proposed Maximum Daily Rate (Maximum Pounds Per Day = Total Weighted Fraction * Average lb/hr Rate * 24) =	**53.34**	**15.42**	**1.58**	

West Virginia Oil Gathering, LLC
Brooksville Station
Fugitive Haul Road Emissions Calculations

Notes:

1) Facility vehicle data based on estimates, GP5.1 and AP-42 13.2.2-2 defaults for industrial unpaved roads
2) Tank trucker average vehicle weight as $(W_{(empty)}+W_{(full)})/2 = (7 + 40)/2 = 23.7$ tons
3) Weighted fraction of max. trips per day versus average trips per day determined for each vehicle type. Total weighted fraction used as overall pad adjustment factor to determine max. daily rate in pounds per day.
4) Average vehicle miles travelled (VMT/yr) as (No. of round trip/vehicle * No. of vehicles/type * Roundtrip miles/trip)* 365 days/yr * No. of vehicle type)
5) Average wheels calculated as average of (No. of wheels per vehicle type * No. of vehicle/type)
6) Average vehicle fleet calculated as (Average weight of vehicle type * Percentage of each vehicle type on unpaved surface). Percentage of each vehicle type= $VMT_{vehicle\ type}/VMT$
7) Minimum one-per-day average pick-up trucks and service trucks even if tanker not required every day.
8) Per EPA BID calculations, all emissions based on average trips. Estimated maximum hourly, daily and yearly trips provided for information only.

Calculation of Emission Factors (AP-42, 13.2.2)

Equation 1a: $EF = k(s/12)^a (W/3)^b$ *where k, a, and b are empirical constants and*
EF = size-specific emission factor (lb/VMT)
s = surface material silt content %
W = mean vehicle weight (tons)

Equation 2: $EF_{ext} = EF*((365-P)/365)$ *where:*
EF_{ext} *= annual size-specific emission factor extrapolated for natural mitigation, lb/VMT*
EF = emission factor from Equation 1a
P = number of days in a year with at least 0.01 inches of precipitation

Example Calculation

$E = EF_{ext} * VMT/yr * ((1-CF)/100) * 1\ ton/2000\ lbs$ *where:*
E = annual emissions (tons/yr)
EF_{ext} *= annual size-specific emission factor extrapolated for natural mitigation, lb/VMT*
CF = control efficiency (%)

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Brooksville Station Oil Tank
City:	Charleston
State:	West Virginia
Company:	West Virginia Oil Gathering, LLC
Type of Tank:	Internal Floating Roof Tank
Description:	One (1) 15,000-bbl tank storing oil (RVP 5)

Tank Dimensions

Diameter (ft):	53.33
Volume (gallons):	630,000.00
Turnovers:	365.00
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	0.70

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Bolted
Construction:	Sheet
Deck Seam:	Sheet: 5 Ft Wide
Deck Seam Len. (ft):	446.75

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	26
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Stub Drain (1-in. Diameter)/Slit Fabric Seal 10% Open	12
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Brooksville Station Oil Tank - Internal Floating Roof Tank
Charleston, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude oil (RVP 5)	All	56.67	51.31	62.04	55.00	2.6947	N/A	N/A	50.0000			207.00	Option 4: RVP=5

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

Brooksville Station Oil Tank - Internal Floating Roof Tank
Charleston, West Virginia

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude oil (RVP 5)	122.82	4,178.28	338.54	83.36	4,723.00

ATTACHMENT P: PUBLIC NOTICE

Notice is given that West Virginia Gathering, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a permit for crude oil storage tanks located on State Route 5, in Bigbend, West Virginia in Calhoun County. The latitude and longitude coordinates are: 38.9598371, -81.1735558.

The applicant estimates the potential to discharge the following Regulated Air Pollutants are:

Volatile Organic Compounds	27.67 tpy
Particulate Matter	9.26 tpy

No change in operation is planned. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 24th day of August, 2017.

By: West Virginia Oil Gathering, LLC
Steve Cornelison
Director, Fleet Operations
2501 Cedar Springs Road Suite 100
Dallas, TX 75201