July 28, 2016

98 VANADIUM ROAD
BUILDING D, 2nd FLOOR
BRIDGEVILLE, PA 15017
(412) 221-1100
(412) 257-6103 (FAX)
http://www.se-env.com

West Virginia Dept. of Environmental Protection
Division of Air Quality – Permitting Section
601 57th Street, SE
Charleston, WV 25304

RE: Application for Class II Administrative Update
North Liquid Management Facility
Icon Midstream Pipeline, LLC
Wetzel County, West Virginia
Permit No. R13-3304
Facility ID No. 103-00115

To Whom It May Concern:

On behalf of our client, Icon Midstream Pipeline, we are pleased to submit one hard copy and two electronic copies of the Application for an Class II Administrative Update to the above referenced permit for its North Liquid Management Facility in Wetzel County.

A fee in the amount of $3,500 ($1,000 Construction Permit Fee + $2,500 NESHAPS Fee) was determined to be applicable. A check, payable to WVDEP – Division of Air Quality in the amount of $3,500 is included herein.

If there are any questions or concerns regarding this application, please contact me at 412/221-1100, x 202 or rdhonau@se-env.com and we will provide any needed clarification or additional information immediately.

Sincerely,

SE TECHNOLOGIES, LLC

Roger A. Dhonau, PE, QEP
Principal

Enclosures
Cc: Icon Midstream Pipeline, LLC – Shane Dowell

ICON Midstream Pipeline, LLC

APPLICATION FOR
CLASS II ADMINISTRATIVE UPDATE

North Liquids Management Facility
Wetzel County, West Virginia

98 Vanadium Road
Bridgeville, PA 15017
(412) 221-1100

APPLICATION FOR CLASS II ADMINISTRATIVE UPDATE

Icon Midstream Pipeline, LLC

North Liquids Management Facility

Wetzel County, West Virginia

Table of Contents

SECTION I

Application Form

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.wvdep.org/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):*
Icon Midstream Pipeline, LLC

2. Federal Employer ID No. ***(FEIN):***
47-1115453

3. Name of facility *(if different from above):*
North Liquid Management Facility

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

5A. Applicant's mailing address:
3130 Grants Lake Blvd. Suite 18859
Sugar Land, Texas 77496

5B. Facility's present physical address:
None. Off of County Route 56 near Galmish, WV

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: **N/A**

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: **Applicant has a lease agreement with the land owner for installation of the facility**
- 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.): **Natural Gas Well Pad and Production Facility**

10. North American Industry Classification System **(NAICS)** code for the facility:
211111

11A. DAQ Plant ID No. (for existing facilities only):
103-00115

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
R13-3304

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**.

From New Martinsville, take State Route 20 east approximately 12 miles to the community of Galmish approximately 1 mile past the town of Reader. Turn right on to CR 56 (Piney Fork Road). Proceed approximately 0.6 miles to the access road on the left. Proceed up the hill to the facility.

12.B. New site address (if applicable):	12C. Nearest city or town: **Reader**	12D. County: **Wetzel**
12.E. UTM Northing (KM): **4379.2848**	12F. UTM Easting (KM): **525.7538**	12G. UTM Zone: **17**

13. Briefly describe the proposed change(s) at the facility: **Two additional Condensate Tanks and a larger Flash Gas Compressor**

14A. Provide the date of anticipated installation or change: **Upon Approval, except for engine swap.** – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: **07/01/2016 (larger flash gas compressor driver engine only)**	14B. Date of anticipated Start-Up if a permit is granted: **Upon Approval**

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	☒ Natural Gas Compressors	
☐ Dehydration		

***Leak Source Data Sheet Only**

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: **Catalyst and Vapor Recovery Unit**

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 _____ *(Please use blue ink)* DATE: 7-28-16 *(Please use blue ink)*

35B. Printed name of signee: **Shane Dowell**		35C. Title: **Operations Manager**
35D. E-mail: **iconmidstream@gmail.com**	36E. Phone: **304/904-1700**	36F. FAX: **304/628-3111**
36A. Printed name of contact person (if different from above):		36B. Title:
36C. E-mail:	36D. Phone:	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.

SECTION II

Attachments

ATTACHMENT A

Business Registration

State of West Virginia

Certificate

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

Icon Midstream Pipeline, LLC

has filed the appropriate registration documents in my office according to the provisions of the West Virginia Code and hereby declare the organization listed above as duly registered with the Secretary of State's Office.

Given under my hand and
the Great Seal of West Virginia
on this day of
March 13, 2015

Natalie E Tennant

Secretary of State

ATTACHMENT B

Site Location Map

DRAWN BY	DJF
DATE	3/16/16
CHECKED BY	RAD
SET JOB NO.	215095
SET DWG FILE	NORTH FACILITYm01.dwg
DRAWING SCALE	1"=500'

SE TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

ICON MIDSTREAM PIPELINE, LLC

NORTH LIQUIDS MANAGEMENT FACILITY
GALMISH, WEST VIRGINIA
SITE LOCATION MAP

DRAWING NAME	REV.
FIGURE 1	0

Plot: env045 03/23/2016 11:43 G:\ICON MIDSTREAM, LLC\215095\NORTH FACILITYm01.dwg

ATTACHMENT C

Construction Schedule

Icon Midstream Pipeline, LLC
North Liquids Management Facility
Attachment C – Construction Schedule

Icon seeks approval to modify its natural gas and liquids management facility. Upon receipt of approval of this application, Icon will install the additional tanks and accept condensate at a rate up to the revised maximum annual throughput. It is anticipated that this work can be completed within 10 days of receipt of approval.

As noted the larger flash gas compressor driver engine is already in place.

ATTACHMENT D

Regulatory Analysis

Icon Midstream Pipeline, LLC
Class II Administrative Update
North Liquids Management Facility
Attachment D – Regulatory Analysis

Both State and Federal environmental regulations governing air emissions apply to the planned North Station. The West Virginia Department of Environmental Protection (WVDEP) has been delegated the authority to implement certain federal air quality requirements for the state. Air quality regulations that potentially affect the modification are discussed herein.

1.1 PSD and NSR

The facility will remain a minor source with respect to Prevention of Significant Deterioration (PSD) regulations as it will not have the potential to emit more than the annual emission thresholds of any PSD regulated pollutant with the voluntary restrictions (e.g., catalytic converters on engines).

The facility is within an area designated as attainment. Consequently, the facility is not subject to the New Source Review (NSR) regulations.

1.2 Title V Operating Permit Program

West Virginia has incorporated provisions of the federal Title V operating permit program. Thresholds for inclusion under the Title V program are 10 tpy of any single Hazardous Air Pollutant (HAP) or 25 tons of any combination of HAP and/or 100 tpy of all other regulated pollutants. Additionally, facilities regulated under certain New Source Performance Standards (NSPS) require facilities to have Title V permits.

The facility will remain a minor source. Additionally, the NSPS regulating this facility does not trigger a Title V permit. Hence, a Title V permit will not be required for Icon Midstream's North Liquids Management Facility.

1.3 Aggregation

The planned equipment changes at the North Liquid Management Facility will not impact the current aggregation analysis.

1.4 New Source Performance Standards

New Source Performance Standards (NSPS) regulations promulgated under 40 CFR 60 require new and reconstructed facilities to control emissions to the level achievable by Best-Available

Control Technology (BACT). Specific NSPS requirements potentially applicable to the proposed equipment changes to the North Station are as follows:

- 40 CFR 60, Subpart K/Ka/Kb – Storage Vessels for Petroleum Liquids/Volatile Organic Liquids
- 40 CFR 60, Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engines
- 40 CFR 60, Subpart OOOO - Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

1.4.1 Subpart K/Ka/Kb

These three subparts apply to volatile organic liquid storage tanks of specific sizes constructed in certain timeframes. Their consideration is appropriate due to the presence of the condensate tanks. Subpart K applies to tanks constructed or modified between 1973 and 1978 while Subpart Ka applies to tanks constructed between 1978 and 1984. Subpart Kb applies to storage tanks constructed or modified after 1984. The condensate tanks planned for this facility were constructed after 1984. Thus, Subparts K and Ka are not applicable, but Subpart Kb is tentatively applicable. However, the capacity of these tanks (16,800 gallons or 210 BBL) is less than the threshold for this regulation (19,800 gallons or 75 cubic meters). Hence, the rule does not apply. [40 CFR 60.111(a)(1), 40 CFR 60.111a(a)(1) and 40 CFR 60.110b(d)(2)]

1.4.2 Subpart JJJJ

This subpart governs emissions from new stationary spark ignition internal combustion engines (SI ICE) manufactured after July 1, 2007. The driver for the replacement Flash Gas Compressor presented in this application will be SI ICE units manufactured well before this date (May 07, 1982). Hence, this rule does not apply to this replacement engine.

1.4.3 Subpart OOOO

This subpart governs emissions from a broad spectrum of operations in the oil and natural gas industries, including operations at processing and fractionation plants. The potentially applicable sections of this rule set restrictions on pneumatic controllers present and set requirements for storage vessels with potential VOC emissions greater than 6 tons per year.

One of the key components to this rule [40 CFR 60.5390(b)] is the requirement that all pneumatic controllers located between the well head and a processing plant must have a bleed rate of less than 6 scfh. All pneumatic controllers to be installed at the new station will meet these criteria.

This rule also stipulates that storage vessels with VOC emissions equal to or greater than 6 tpy must control those emissions by 95% by October 15, 2013. The additional condensate tanks will have estimated uncontrolled VOC emissions in excess of this amount. Hence this element of the

rule applies to the facility. Icon Midstream currently meets this requirement through installation and used of a vapor recovery unit. This device will collect organic vapors emitted by the condensate, compress it and return it to the gas process. This system is close to 100 percent effective during operation. While there will be anticipated maintenance outages on the VRU system, its overall annual effectiveness is conservatively projected to be greater than 95%.

1.5 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAPs) promulgated under 40 CFR 63 regulate the emission of Hazardous Air Pollutants (HAPs) from certain industrial processes. In general, these rules apply to major sources of HAPs with a major source being defined as having the potential to emit more than 10 tpy of any individual HAP or 25 tpy of total HAPs. Emissions standards under these rules have been established as the Maximum Achievable Control Technology (MACT) for each source category. The following NESHAP source category standards are potentially applicable to the planned modification to the North Liquids Management Facility:

- 40 CFR 63, Subpart HH – NESHAP from Oil and Natural Gas Production Facilities
- 40 CFR 63, Subpart ZZZZ – NESHAP from Stationary Reciprocating Internal Combustion Engines

1.5.1 Subpart HH

This Subpart contains MACT standards for major and area source dehydration units located at natural gas production facilities. The existing equipment for this Icon Midstream facility includes a dehydration unit. Accordingly, this rule applies. However, as controlled benzene emissions will be less than 1 ton per year, the requirements are nominal The planned equipment changes do not impact the dehydration unit or the applicability of Subpart HH.

1.5.2 Subpart ZZZZ

This Subpart governs emissions from a stationary reciprocating internal combustion engine (RICE) located both at major and area source of HAPs. The facility is not be a major source of HAPs, but is considered an area source of HAPs. Hence, this rule is potentially applicable to the replacement flash compressor driver engine. Due to the age of this engine (May 07, 1982 construction), it is considered an existing engine. In accordance with 40 CFR 63.6603(a), the driver for the proposed replacement flash gas compressor must meet the applicable requirements in Tables 2b and 2d of this rule. There are no applicable elements of Table 2b. Additionally, for a 4SRB engine less than or equal to 500 HP, there are only operational and maintenance requirements in Table 2d (Item #10). Icon will meet these requirements:

10. Non-emergency, non-black start 4SRB stationary RICE ≤500 HP	a. Change oil and filter every 1,440 hours of operation or annually, whichever comes first;[1]
	b. Inspect spark plugs every 1,440 hours of operation or annually, whichever comes first, and replace as necessary; and
	c. Inspect all hoses and belts every 1,440 hours of operation or annually, whichever comes first, and replace as necessary

1.6 Chemical Accident Prevention

Subparts B-D of 40 CFR 68 present the requirements for the assessment and subsequent preparation of a Risk Management Plan (RMP) for a facility that stores more than a threshold quantity of a regulated substance listed in 40 CFR 68.130. If a facility stores, handles or processes one or more regulated substances in an amount greater than its corresponding threshold, the facility must prepare and implement an RMP. The North Liquids Management Facility will continue to potentially store more than 10,000 lbs of a flammable mixture containing several of the substances listed in Table 3 in 40 CFR 68.130. However, an RMP is not required as this facility qualifies for the exclusion provided for remote oil and gas production facilities (40 CFR 68.115).

1.7 West Virginia State Requirements

1.7.1 45 CSR 2

The facility is subject to the opacity requirement of 45 CSR 2. Emissions from the facility cannot exceed 10% over any six minute period.

1.7.2 45 CSR 4

This regulation prohibits the emission of objectionable odors. Icon Midstream is obligated to run the station in a manner that does not produce objectionable odors.

1.7.3 45 CSR 10

This regulation limits emissions of sulfur oxides. As the sulfur content of the Inlet Gas contains no measurable sulfur, emissions of sulfur oxides is negligible. Thus, while parts of this rule are applicable to the facility, no actions are required on the part of Icon Midstream to attain compliance. The various non-engine combustion units have a design heat input less than 10 MMBTU/Hr each and are therefore exempt from the requirements of this rule. Additionally, other fuel-burning units at the expanded facility (e.g. engines) are not subject to 45 CSR 10, Section 3 as they do not produce power by indirect heat transfer and are therefore not considered “fuel burning units”. The fuel sulfur content is sufficiently low that the proposed engines will easily meet the requirements of this rule.

1.7.4 45 CSR 13

The state regulations applicable to the permitting of the proposed construction are in Title 45 Series 13 of the Code of State Regulations. The proposed modification to North Liquids Management Facility has the potential to emit several regulated pollutants in excess of the thresholds that define a Stationary Source. This modification will not materially change the facility's potential to emit. It will remain less than the thresholds that would classify the facility as a Major Source under 45 CSR 14.

1.7.5 45 CSR 16

This series of regulations is an incorporation, by reference, of the New Source Performance Standards codified under 40 CFR 60. As discussed under the federal regulations, the North Liquids Management Facility is subject to the emission limitations, monitoring, testing and recordkeeping of Subpart JJJJ.

1.7.6 45 CSR 30

The state regulations applicable to Title V operating permits are in Title 45 Series 30. The planned North Liquids Management Facility, as noted above, does not have the potential to emit any regulated pollutant about the threshold that would define it as a major facility. The installation of the additional tanks or the replacement flash compressor does not trigger the need for a Title V permit.

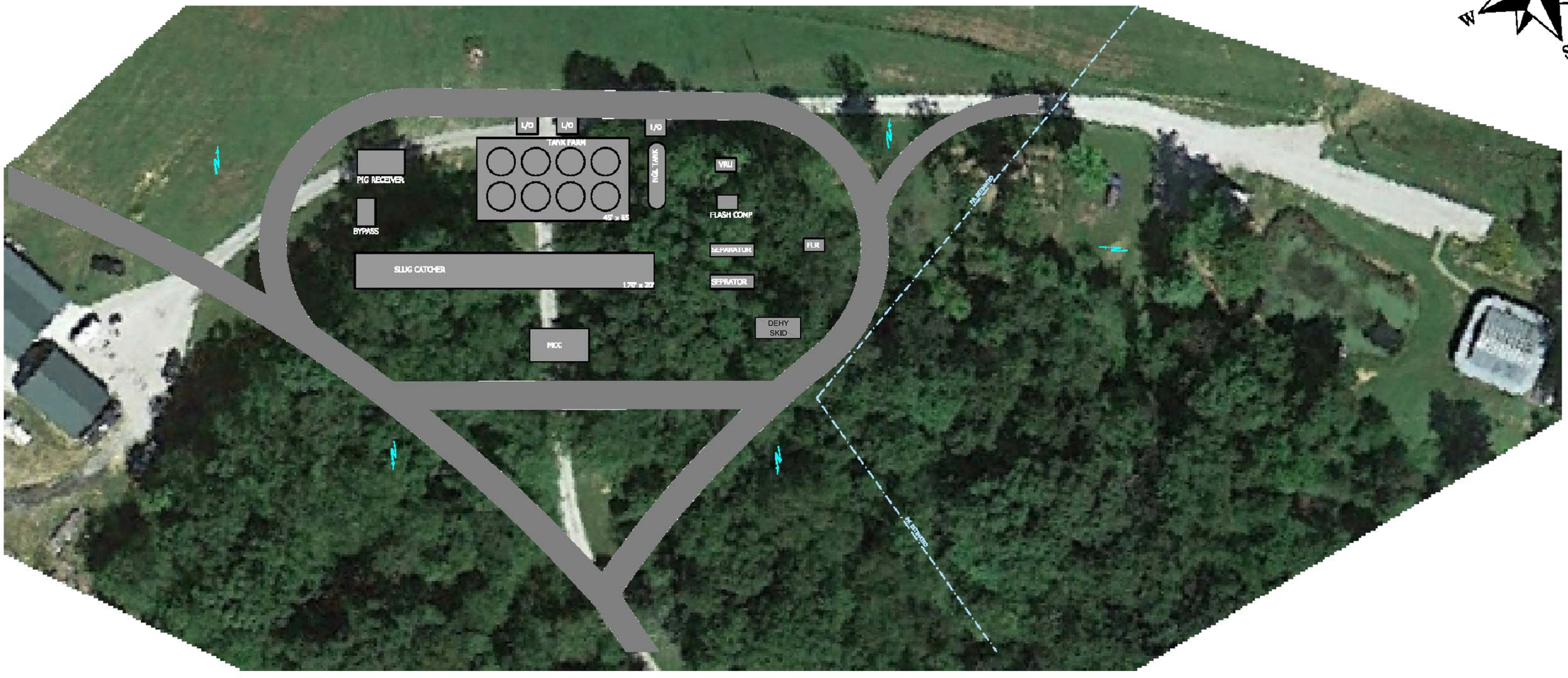
1.7.7 Other Applicable Requirements

Through Series 34, WVDEP has adopted the National Emission Standards for Hazardous Air Pollutants for Source Categories. Both of these topics have been addressed above.

ATTACHMENT E

Site Layout Diagram

PRELIMINARY



NOTES:
1) PRELIMINARY SITE LAYOUT
2) NO SURVEY OR GEOTECH HAS BEEN COMPLETED TO DATE
3) PROPERTY LINES ARE ESTIMATED

CRITICAL WEIGHTS:
1) SLUG CATCHER 183,000 LB DRY WEIGHT W/O PIERS
360,000 LB WET WEIGHT W/O PIERS
2) TANK FARM 500,000 LB ESTIMATED WET WEIGHT

PLAN VIEW

ISSUED FOR INFORMATION ONLY

REV	DATE	REV	DATE
0	11-05-15		
1	3-15-16		

ICON MIDSTREAM

GOVAN ENGINEERING
By Industry we Prosper

TITLE: DULANEY FACILITY
GENERAL ARRANGEMENT

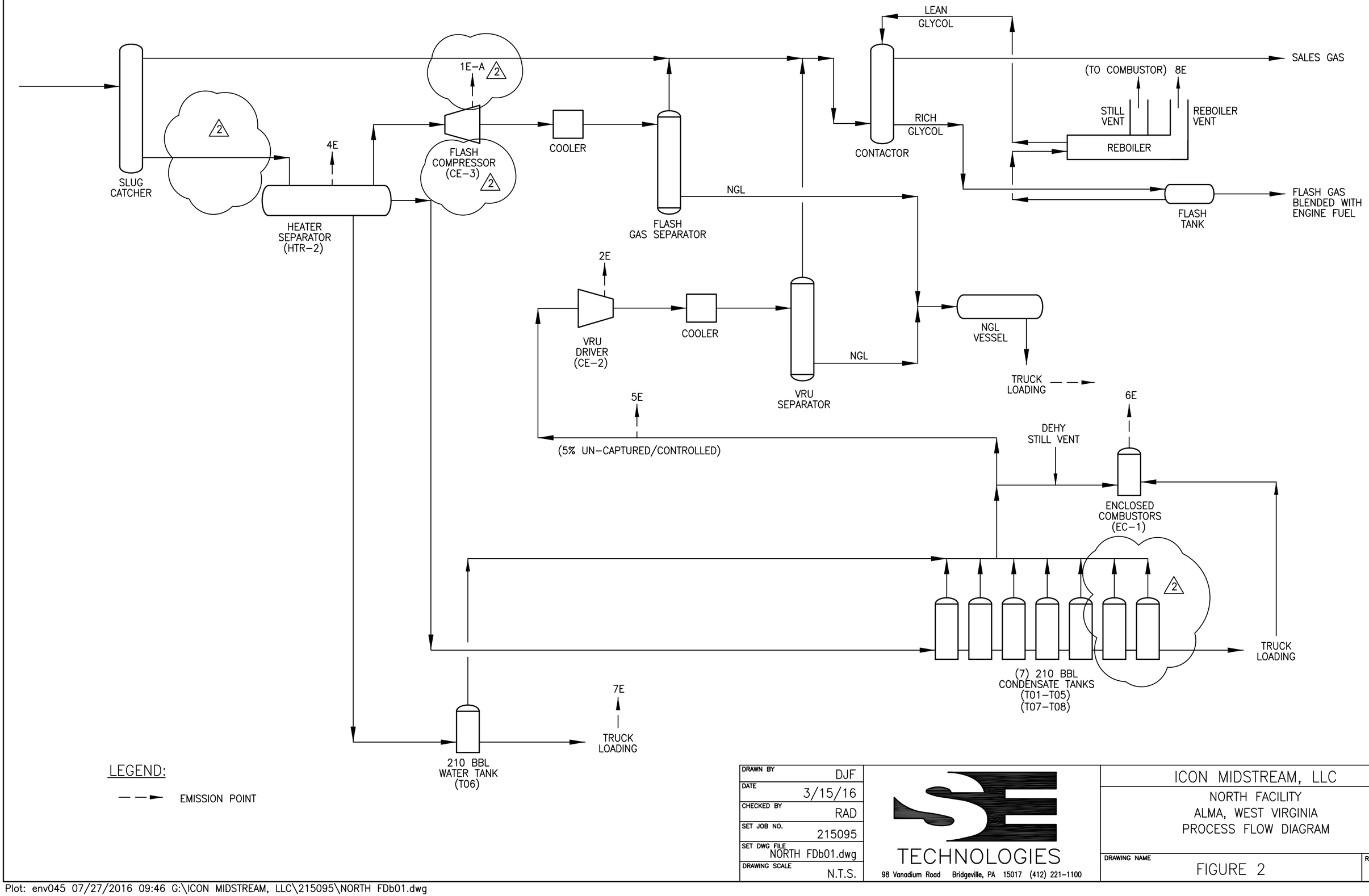
DRAWN: RMG | DATE: 11-05-2015
SCALE: 1" = 60'

CUSTOMER: ICON MIDSTREAM

DRAWING NO. 100102-D070 | SHEET 1 OF 1 | REV. 0

ATTACHMENT F

Process Flow Diagram



LEGEND:

— — ► EMISSION POINT

DRAWN BY	DJF
DATE	3/15/16
CHECKED BY	RAD
SET JOB NO.	215095
SET DWG FILE	NORTH FDb01.dwg
DRAWING SCALE	N.T.S.

TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

ICON MIDSTREAM, LLC

NORTH FACILITY
ALMA, WEST VIRGINIA
PROCESS FLOW DIAGRAM

DRAWING NAME	REV.
FIGURE 2	2

ATTACHMENT G

Process Description

Icon Midstream Pipeline, LLC
North Liquids Management Facility
Attachment G – Process Description

Icon Midstream operates its North Liquids Management Facility in Wetzel County (See Site Location Map) under Permit R13-3304. The Station receives and manages natural gas and produced fluids (primarily raw condensate) from area production well pads owned and operated by others. At the station inlet, gas and produced fluids pass through a slug catcher where liquids will be separated from the gas. The gas is dehydrated and injected into a pipeline for transportation to a processing facility owned and operated by others. A portion of the gas is used as fuel for Icon's equipment.

During the dehydration process, two gas streams are generated, the still vent vapors and the gases from the flash tank. As depicted in the Process Flow Diagram, the still vent vapors are routed to an enclosed combustor where they are destroyed at 98% + destruction efficiency. Again, as depicted in the Process Flow Diagram, the gases generated in the dehy flash tank are of sufficient quality that it is utilized for fuel for the dehydration unit reboiler with excess blended with the general facility fuel gas.

Liquids exiting the Slug Catcher enter a heated separator. In the heated separator, the liquids are first separated into Condensate and Produced Water (Brine). As the pressure is reduced, lighter components of the condensate is flashed off. The resulting stabilized condensate is routed to a series of five 210 BBL aboveground storage tanks prior to transportation (via truck) to a processing facility owned and operated by others. The separated water is routed to a single 210 BBL aboveground storage tank prior to off-site transportation by others for re-use or disposal. The flash gas coming off of the heated separator is routed to a flash gas compressor and passed through an air cooler. A fraction of the flash gas condenses during the pressurization and cooling process. This liquid (Natural Gas Liquids or NGL) is then be accumulated in a pressure vessel (approximately 120 psia) and transported via a pressurized tanker truck to a fractionation facility owned by others for further processing.

Vapors emitted by the stabilized condensate storage tanks are captured by a hard piping system that routes the vapors to a Vapor Recovery Unit (VRU). This unit compresses the vapors and injects them into the sales line. Any liquids condensing during this pressurization and cooling process are separated from the gas stream and routed to the NGL tank.

Any vapors not handled by the VRU or Flash Gas compressor are controlled by enclosed combustors if/when one or both of the VRU or Flash Gas compressor are down for maintenance or other mechanical reasons. Vapors associated with produced water and condensate truck loading will also be routed to the enclosed combustor. As NGL truck loading is completed via vapor balance between the pressurized storage vessels and the pressurized tanker truck, there are only emissions associated with the connection/disconnection of the transfer lines.

Icon Midstream Pipeline, LLC
North Liquids Management Facility
Attachment G – Process Description

In this Class II Administrative Update, Icon wishes to:

- **Modify its permit to reflect the recent installation of a slightly larger Flash Gas compressor driver engine than what is in the permit**
- **Increase the condensate storage capacity by installation of two additional 210 BBL tanks and concurrently raising the annual condensate throughput to 30,000 BBL/year from the currently permitted 25,000 BBL/year. With the additional two tanks, throughput will drop from the current 210,000 gallons per year per tank to 180,000 gallons per year per tank.**
- **Increase condensate truck loading to 30,000 BBL/year**
- **Removed the currently permitted 0.25 MMBTU/Hr line heater as it was determined that this device is not needed to operate the facility in an efficient manner.**

There are no changes requested for produced water or NGL related equipment or throughput volumes.

In summary, emission sources at this facility will include the following:

- One Flash Gas Compressor Engine – Arrow VR 330 68 Hp **(NEW)**
- One VRU Gas Compressor Engine – Cummins G8.3 118 Hp **(EXISTING)**
- One 1.0 MMBTU/Hr Separator Heater **(EXISTING)**
- One 130 MMSCFD Dehydration Unit **(EXISTING)**
- Seven 210 BBL Stabilized Condensate Tanks **(TWO NEW)**
- One 210 BBL Produced Water Tank **(EXISTING)**
- Stabilized Condensate/Produced water truck loading **(MODIFIED THROUGHPUT)**
- NGL truck loading **EXISTING**
- Fugitive Emissions – Facility Roadways **EXISTING**
- Fugitive Emissions – Component Leaks **EXISTING**

ATTACHMENT I

Emission Unit Table

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]
CE-1	1E	Flash Gas Compressor Engine (Arrow VR 260)	July 2016	47 Hp	**REM**	1C (NSCR)
CE-2	2E	VRU Compressor Engine (Cummins G8.3)	July 2016	118 Hp	EXIST	2C (NSCR)
CE-3	**1E-A**	**Flash Gas Compressor Engine (Arrow VR 330)**	**July 2016**	**68 Hp**	**NEW**	**3C (NSCR)**
HTR-1	3E	Line Heater	July 2016	0.25 MMBTU/Hr	**REM**	None
HTR-2	4E	Separator Heater	July 2016	1.0 MMBTU/Hr	EXIST	None
T01	5E/6E	Condensate Tank	July 2016	210 BBL	EXIST	VRU-1/EC-1
T02	5E/6E	Condensate Tank	July 2016	210 BBL	EXIST	VRU-1/EC-1
T03	5E/6E	Condensate Tank	July 2016	210 BBL	EXIST	VRU-1/EC-1
T04	5E/6E	Condensate Tank	July 2016	210 BBL	EXIST	VRU-1/EC-1
T05	5E/6E	Condensate Tank	July 2016	210 BBL	EXIST	VRU-1/EC-1
T07	**5E/6E**	**Condensate Tank**	**Upon Receipt of Permit**	**210 BBL**	**NEW**	**VRU-1/EC-1**
T08	**5E/6E**	**Condensate Tank**	**Upon Receipt of Permit**	**210 BBL**	**NEW**	**VRU-1/EC-1**
EC-1	6E	Enclosed Combustor (Two at 10.0 MMBTU/Hr Each)	July 2016	20 MMBTU/Hr	EXIST	N/A
T06	5E/6E	Produced Water Tank	July 2016	210 BBL	EXIST	VRU-1/EC-1
TL-1	6E	Condensate Truck Loading	July 2016	**1,260,000 Gallons/Yr.**	**MOD**	EC-1
TL-2	7E	Produced Water Truck Loading	July 2016	58,800 Gallons/Yr.	EXIST	None
RBV-1	8E	Reboiler Vent	July 2016	2.0 MMBTU/Hr	EXIST	None

RSV-1	6E	Reboiler Still Vent	July 2016	130 MMSCFD	EXIST	EC-1
---	---	Fugitive VOC Emissions – Fittings and Connections	July 2016	N/A	EXIST	None
---	---	Haul Roads	July 2016	1 Truck per day max.	**MOD**	None

[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 Sheets

ATTACHMENT J

Emission Points Data Summary Sheet
New Equipment Only

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			
1E (removed)	Upward Vertical Stack	CE-1	Flash Comp. Driver Engine	1C	NSCR	C	0	NO_x					GAS	EE	
								CO					GAS	EE	
								VOC					GAS	EE	
								SO_2					GAS	EE	
								PM/PM10					Solid	EE	
								Formaldehyde					Gas	EE	
								CO2e					Gas	EE	
2E	Upward Vertical Stack	CE-2	VRU Driver Engine	2C	NSCR	C	8760	NO_x	3.88	14.81	0.26	1.14	GAS	EE	
								CO	2.24	9.80	0.52	2.28	GAS	EE	
								VOC	0.03	0.13	0.03	0.13	GAS	EE	
								SO_2	<0.01	<0.01	<0.01	<0.01	GAS	EE	
								PM/PM10	0.05	0.22	0.05	0.22	Solid	EE	
								Formaldehyde	0.02	0.09	0.02	0.09	Gas	EE	
								CO2e	124	542	124	542	Gas	EE	

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			
3E (removed)	Upward Vertical Vent	HTR-1	Line Heater		None	C	0	NO_x					GAS	EE	
								CO					GAS	EE	
								VOC					GAS	EE	
								PM/PM10					Solid	EE	
								Benzene					Gas	EE	
								Formaldehyde					Gas	EE	
								CO2e					Gas	EE	
4E	Upward Vertical Vent	HTR-2	Separator Heater		None	C	8760	NO_x	0.08	0.36	0.08	0.36	GAS	EE	
								CO	0.07	0.30	0.07	0.30	GAS	EE	
								VOC	<0.01	0.02	<0.01	0.02	GAS	EE	
								PM/PM10	0.01	0.03	0.01	0.03	Solid	EE	
								Benzene	<0.01	<0.01	<0.01	<0.01	Gas	EE	
								Formaldehyde	<0.01	<0.01	<0.01	<0.01	Gas	EE	
								CO2e	98	430	98	430	Gas	EE	

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			
5E	Upward Vertical Vent	T01-T08	Cond. Tanks Un-captured emissions	VRU-1	Vapor Recovery Unit	C	8760	NO_x					GAS	EE	
								CO					GAS	EE	
								VOC	133.6	585.2	6.68	29.26	GAS	EE	
								PM/PM10					Solid	EE	
								Benzene					Gas	EE	
								n-Hexane	4.02	17.6	0.20	0.88	Gas	EE	
								CO2e					Gas	EE	
6E	Upward Vertical Vent	T01-T08	Cond. Tanks + Water Tank + Cond. Truck Loading + Dehy Still Vent	EC-1	Enclosed Combustors	C	8760	NO_x			0.68	1.51	GAS	EE	
								CO			3.69	8.24	GAS	EE	
								VOC			6.31	11.53	GAS	EE	
								PM/PM10			<0.01	0.39	Solid	EE	
								Benzene			0.12	0.54	Gas	EE	
								n-Hexane			0.26	0.62	Gas	EE	
								Ethylbenzene			0.35	1.52	Gas	EE	
								Toluene			0.21	0.92	Gas	EE	
								Xylenes			0.47	2.05	Gas	EE	
								CO2e			1,410	2,620	Gas	EE	

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			
7E	Upward Vertical Vent	TL-2	Produced Water Truck Loading		None			NO_x					GAS	EE	
								CO					GAS	EE	
								VOC	0.13	<0.01	0.13	<0.01	GAS	EE	
								PM/PM10					GAS	EE	
								Benzene		<0.01		<0.01	Solid	EE	
								n-Hexane		<0.01		<0.01	Gas	EE	
								CO2e					Gas	EE	
8E	Upward Vertical Vent	RBV-1	Re-Boiler Vent		None			NO_x	0.20	0.88	0.20	0.88	GAS	EE	
								CO	0.17	0.74	0.17	0.74	GAS	EE	
								VOC	0.01	0.05	0.01	0.05	GAS	EE	
								PM/PM10	0.02	0.07	0.02	0.07	GAS	EE	
								Benzene	<0.01	<0.01	<0.01	<0.01	Solid	EE	
								Formaldehyde	<0.01	<0.01	<0.01	<0.01	Gas	EE	
								CO2e	242	1,058	242	1,058	Gas	EE	

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			

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			
1E-A	Upward Vertical Stack	CE-1	Flash Comp. Driver Engine	3C	NSCR	C	8760	NO_x			0.43	1.89	GAS	EE	
								CO			0.49	2.14	GAS	EE	
								VOC			0.02	0.08	GAS	EE	
								PM/PM10			0.01	0.05	GAS	EE	
								SO2			<0.01	<0.01	Solid	EE	
								CHOH			0.01	0.05	Gas	EE	
								CO2e			71	312	Gas	EE	
								NO_x					GAS	EE	
								CO					GAS	EE	
								VOC					GAS	EE	
								PM/PM10					GAS	EE	
								Benzene					Solid	EE	
								Formaldehyde					Gas	EE	
								CO2e					Gas	EE	

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that un-captured 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., un-captured 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 (i.e., 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, CS2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, etc. **DO NOT LIST** CO_2, 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).

ATTACHMENT J

Emission Points Data Summary Sheet
New Equipment

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
1E-A	0.25	1238	406	26	750	8		
2E	0.5	1127	528	11	750	8		
3E	0.25	1100	Est 200	1	750	8		
4E	0.33	1100	Est. 300	<1	750	8		
5E	N/A (Fugitive)	N/A (Fugitive)	N/A (Fugitive)	N/A (Fugitive)	750	N/A (Fugitive)		
6E	2.0	1100	Est. 300		750	12		
7E	0.5	Ambient	<10	<1	750	10		
8E	0.5	Ambient	3-4	<1	750	14		

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

ATTACHMENT K

Fugitive Emissions Summary Sheet

Icon Midstream Pipeline, LLC
North Liquids Management Facility
Attachment K – Fugitive Emissions Data

Equipment Fugitive Emissions

As noted in the process description, Icon Midstream Pipeline plans to install new equipment and remove existing equipment at its North Liquids Management Facility. The equipment additions and removals will, when combined not have a material impact in the component count for this facility. Thus, no changes are being requested for the fugitive emissions at this time

Estimates of these emissions are included in the calculations (Attachment N) and summarized on the form included in this section. These calculations are based on emission factors accepted by the American Petroleum Institute and EPA.

Pigging Emission Estimates

There are pig launching and receiving operations at this facility. The interior volume of both the receiver and launcher is approximately 64 cubic feet. Thus, as shown in the calculations in Attachment N, each launching and receiving event releases 4930 cubic feet of gas. With a density of 0.058 lb/cubic foot, each event releases approximately 286 pounds of gas. VOCs comprise 18.3% (by weight) of this gas. Thus, each event releases 52.3 pounds of VOCs. Additionally, with methane comprising 60.7% (by weight) of this gas, each event releases 173.6 lbs of methane or 2.17 tons CO_{2e}. It is still anticipated that there will be a maximum of 150 launching and receiving events each per year. Thus, annual pigging and receiving emissions remain at 7.85 tons of VOCs and 651 tons of CO_{2e}.

Facility Blowdown Emission Estimates

There are two small gas compressors associated with emissions control equipment that require blowdowns to allow for routine maintenance. As shown in the attached spreadsheets, the blowdown volume associated with the new VGR330 driver remains at 89 scf and for the G8.3 is 433 scf. There will be a maximum of 36 blow downs per compressor per year. Thus, there is a potential for 18,792 cubic feet of gas emitted from blow downs [(89+433)x36]. This is no change from the current permit.

The density of this gas at STP is 0.058 lb/scf (see the Inlet Gas spreadsheet in the calculations). Thus, the mass of gas released is 1090 pounds (18,792 x 0.058). As the percentage of VOCs in the gas (by weight) is 18.3 percent (see Inlet Gas spreadsheet in the calculations), the VOC emissions from pigging operations remain at approximately 199.5 lbs or 0.10 tons per year.

As the methane concentration in this gas is 60.7 % (by weight), methane emissions will be 662 pounds (1090 x 0.607) per year. Using a GHG factor of 25, methane emissions from blowdowns in CO_{2e} remains at 8.3 tons CO_2e (166.1 x 25[GHG factor] /2000).

Storage Tank and Haul Road Fugitive Emissions

Water and condensate this facility will be accumulated in atmospheric tanks prior to off-site shipment In addition to flash, working and breathing losses from these tanks (presented in Attachment N), there are also emissions associated with the loading of the condensate tanks and fugitive dust emissions from the tank trucks entering and exiting the site. There is a projected maximum of one condensate, NGL and/or water truck trips per day. Emissions from these sources are summarized in the attached form and the calculations are presented in Attachment N.

With this Class II Administrative Update, there are increases in Condensate tank emissions, condensate truck loading and associated fugitive dust increases with additional condensate truck loading. There are no changes to the produced water and NGL loading or water tank emissions.

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	PM	10.6	**0.46**	10.6	**0.46**	EE
Storage Pile Emissions						
Loading/Unloading Operations **(Uncaptured Emissions Only)**	VOCs	0.89	**0.07**	0.89	**0.07**	EE
Wastewater Treatment Evaporation & Operations						
Equipment Leaks	Inlet Natural Gas(VOCs)	0.56	2.47	0.56	2.47	EE
General Clean-up VOC Emissions						
Other: Blow Downs	Inlet Natural Gas(VOCs)	N/A	0.1	N/A	0.1	EE

[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

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 and TL-2**

1. Loading Area Name: **Tank Truck Loading Area**

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	**3 (on truck)**
Number of liquids loaded	**3**
Maximum number of marine vessels, tank trucks, tank cars, and/or drums loading at one time	**2**

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: **None**

6. Are cargo vessels pressure tested for leaks at this or any other location?

☐ Yes ☒ No

If YES, describe:

7. Projected Maximum Operating Schedule (for rack or transfer point as a whole):				
Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	**3**	**3**	**3**	**3**
days/month	**30**	**30**	**30**	**30**
days/year	**340**	**340**	**340**	**340**

8. Bulk Liquid Data *(add pages as necessary):*							
Pump ID No.		**N/A**	**N/A**	**N/A**			
Liquid Name		**Produced Water**	**Conden-sate**	**NGL**			
Max. daily throughput (1000 gal/day)		**3.36**	**8.4**	**9.24**			
Max. annual throughput (1000 gal/yr)		**58.8**	**1260**	**672**			
Loading Method [1]		**SP**	**BF**	**BF**			
Max. Fill Rate (gal/min)		**60**	**70**	**80**			
Average Fill Time (min/loading)		**56**	**60**	**60**			
Max. Bulk Liquid Temperature (^{o}F)		**70**	**70**	**70**			
True Vapor Pressure [2]		**0.3 psia**	**7.45 psia**	**92 psia**			
Cargo Vessel Condition [3]		**U**	**U**	**U**			
Control Equipment or Method [4]		**TO**	**TO**	**VB**			
Minimum control efficiency (%)		**96.7**	**96.7**	**99+**			
Maximum Emission Rate	Loading (lb/hr)	**0.13**	**1.94**	**N/A**			
	Annual (lb/yr)	**2.27**	**223**	**N/A**			
Estimation Method [5]		**AP-42**	**AP-42**				

[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	RECORDKEEPING
Truck load-outs per month and volume of liquid removed each load-out	**Truck load-outs per month and volume of liquid removed each load-out**
REPORTING	TESTING
Truck load-outs per month and volume of liquid removed each load-out	**None**

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

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 **N/A**

NATURAL GAS FIRED BOILER/LINE HEATER DATA SHEET

Source ID #[1]	Status[2]	Design Heat Input (mmBtu/hr)[3]	Hours of Operation (hrs/yr)[4]	Fuel Heating Value (Btu/scf)[5]	
HTR-1	**REM**	0.25 MMBTU/Hr	8760	1287 BTU/scf (HHV)	
HTR-2	EXIST	1.0 MMBTU/Hr	8760	1287 BTU/scf (HHV)	

1. Enter the appropriate Source Identification Numbers (Source ID #) for each boiler or line heater located at the compressor station. Boilers should be designated BLR-1, BLR-2, BLR-3, etc. Heaters or Line Heaters should be designated HTR-1, HTR-2, HTR-3, etc. Enter glycol dehydration unit Reboiler Vent data on the *Glycol Dehydration Unit Data Sheet*.
2. Enter the Status for each boiler or line heater using the following:

   EXIST Existing Equipment NEW Installation of New Equipment
   REM Equipment Removed
3. Enter boiler or line heater design heat input in mmBtu/hr.
4. Enter the annual hours of operation in hours/year for each boiler or line heater.
5. Enter the fuel heating value in Btu/standard cubic foot.

STORAGE TANK DATA SHEET

Source ID #[1]	Status[2]	Content[3]	Volume[4]	Dia[5]	Throughput[6]	Orientation[7]	Liquid Height[8]
T01	EXIST	Condensate	210 BBL	10.0	180,000 gallons/yr	VERT	8 feet
T02	EXIST	Condensate	210 BBL	10.0	180,000 gallons/yr	VERT	8 feet
T03	EXIST	Condensate	210 BBL	10.0	180,000 gallons/yr	VERT	8 feet
T04	EXIST	Condensate	210 BBL	10.0	180,000 gallons/yr	VERT	8 feet
T05	EXIST	Condensate	210 BBL	10.0	180,000 gallons/yr	VERT	8 feet
T06	EXIST	Produced Water	210 BBL	10.0	58,800 gallons/yr	VERT	8 feet
T07	**NEW**	Condensate	210 BBL	10.0	180,000 gallons/yr	VERT	8 feet
T08	**NEW**	Condensate	210 BBL	10.0	180,000 gallons/yr	VERT	8 feet

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.
2. Enter storage tank Status using the following:

   EXIST Existing Equipment NEW Installation of New Equipment
   REM Equipment Removed
3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, etc.
4. Enter storage tank volume in gallons.
5. Enter storage tank diameter in feet.
6. Enter storage tank throughput in gallons per year.
7. Enter storage tank orientation using the following:

   VERT Vertical Tank HORZ Horizontal Tank
8. Enter storage tank average liquid height in feet.

NATURAL GAS COMPRESSOR/GENERATOR ENGINE DATA SHEET

Source Identification Number[1]		CE-1		CE-2		CE-1	
Engine Manufacturer and Model		Arrow VRG260		Cummins G8.3		Arrow VRG330	
Manufacturer's Rated bhp/rpm		47/1800		118/1800		68/1800	
Source Status[2]		**RS**		ES		**NS**	
Date Installed/Modified/Removed[3]		Upon Receipt of Permit		July 2016		Upon Receipt of Permit	
Engine Manufactured/Reconstruction Date[4]		5/12/2010		10/01/2013		5/07/1982	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No)[5]		No		No		No	
Engine, Fuel and Combustion Data	Engine Type[6]	RB4S		RB4S		RB4S	
	APCD Type[7]	NSCR		NSCR		NSCR	
	Fuel Type[8]	RG		RG		RG	
	H_2S (gr/100 scf)	<1		<1		<1	
	Operating bhp/rpm	47/1800		118/1800		68/1800	
	BSFC (Btu/bhp-hr)	9889		8032		9000	
	Fuel throughput (ft^3/hr)	361		750		474	
	Fuel throughput ($MMft^3$/yr)	3.16		6.57		4.15	
	Operation (hrs/yr)	8760		8760		8760	
Reference[9]	Potential Emissions[10]	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
AP	NO_X	0.21	0.91	0.26	1.14	0.43	1.89
AP	CO	0.41	1.81	0.52	2.28	0.49	2.14
AP	VOC	0.01	0.06	0.03	0.13	0.02	0.08
AP	SO_2	<0.01	<0.01	0.00	0.00	<0.01	<0.01
AP	PM_{10}	0.01	0.04	0.05	0.22	0.01	0.05
AP	Formaldehyde	0.01	0.04	0.02	0.09	0.01	0.05
AP	Total HAPs	0.02	0.07	0.03	0.14	0.02	0.08
AP	CO2e	54	238	124	542	71	312

1. Enter the appropriate Source Identification Number for each natural gas-fueled reciprocating internal combustion compressor/generator engine located at the compressor station. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Generator engines should be designated GE-1, GE-2, GE-3 etc. If more than three (3) engines exist, please use additional sheets.

2. Enter the Source Status using the following codes:

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Removal of Source

3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.

4. Enter the date that the engine was manufactured, modified or reconstructed.

5. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

   Provide a manufacturer's data sheet for all engines being registered.

6. Enter the Engine Type designation(s) using the following codes:

LB2S	Lean Burn Two Stroke	RB4S	Rich Burn Four Stroke
LB4S	Lean Burn Four Stroke		

7. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	Screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	SCR	Lean Burn & Selective Catalytic Reduction

8. Enter the Fuel Type using the following codes:

PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas

9. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc™	OT	Other _____	(please list)

10. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

ATTACHMENT M

Air Pollution Control Device Sheets

USA COMPRESSION

USA Compression Unit 1011 Arrow VRG330 Engine Emissions

Date of Manufacture	May 7, 1982	Engine Serial Number	380788	Date Modified/Reconstructed	Not Any
Driver Rated HP	68	Rated Speed In RPM	1800	Combustion Type	Spark Ignited 4 Stroke
Number of Cylinders	4	Compression Ratio	N/A	Combustion Setting	Rich Burn
Displacement, in^3	330	Fuel Delivery Method	Carburetor	Combustion Air Treatment	Naturally Aspirated

Raw Engine Emissions (900 LHV BTU/SCF Fuel Gas with little to no H2S)

Fuel Consumption 8100 *LHV BTU/bhp-hr or* 9000 *HHV BTU/bhp-hr*
Altitude 500 *ft*
Maximum Air Inlet Temp 77 *F*

	g/bhp-hr [1]	lb/MMBTU [2]	lb/hr	TPY
Nitrogen Oxides (NOx)	14.4		2.159	9.455
Carbon Monoxide (CO)	16.3		2.444	10.703
TOC (Total Organic Carbon)		3.58E-01	0.219	0.960
Volatile Organic Compounds (VOC or NMNEHC)		2.96E-02	0.018	0.079
Formaldehyde (CH2O)		2.05E-02	0.013	0.055
Particulate Matter (PM) Filterable+Condensable		1.94E-02	0.012	0.052
Sulfur Dioxide (SO2)		5.88E-04	0.000	0.002

	g/bhp-hr [1]	lb/MMBTU [2]	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)		110.0	67	267
Methane (CH4)		2.30E-01	0.141	0.559

[1] g/bhp-hr are based on Arrow Specifications. Note that g/bhp-hr values are based on 100% Load Operation.
It is recommended to add a safety margin to emissions to allow for operational flexibility and fuel gas composition variability.
[2] Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combution Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines, Table 3.2-3).

Catalytic Converter Emissions

Catalytic Converter Make and Model: *Miratech RCS-1410-04*
Element Type: *3-Way; NSCR*
Number of Elements in Housing: *1*
Air/Fuel Ratio Control *Compliance Controls/ Miratech model: AFR-9*

	% Reduction	lb/hr	TPY
Nitrogen Oxides (NOx)	80	**0.43**	**1.89**
Carbon Monoxide (CO)	80.0	**0.49**	**2.14**
TOC (Total Organic Carbon)	0.0	**0.22**	**0.96**
Volatile Organic Compounds (VOC or NMNEHC)	0	**0.02**	**0.08**
Formaldehyde (CH2O)	0	**0.01**	**0.05**
Particulate Matter (PM)	0	**1.19E-02**	**5.20E-02**
Sulfur Dioxide (SO2)	0	**3.60E-04**	**1.58E-03**

	% Reduction	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	0	**67**	**267**
Methane (CH4)	0	**0.14**	**0.56**

DCL America Inc.

12620 FM 1960 W, Ste A4 Box # 560, Houston, TX 77065
Tel.: 877-897-9759 Fax: 281-605-5858 E-mail: info@dclamerica.com

To	Chris Magee	**Phone**	
	USA Compression	**Fax**	
Date	July 26, 2016	**Email**	cmagee@usacompression.com

RE: Emissions Guarantee – Unit 1011

ENGINE DATA

Engine model	**Arrow VRG330**
Power	68 hp
Fuel	PQNG

CATALYST SYSTEM DATA

Catalyst Housing	RCS-1410-04
Catalyst Elment	DCIQ10 (A70Y-01-4YW5-31)
Catalyst Diameter	8.75" x 3.16" w /bonnet
Catalyst Type	NSCR, 3-Way
Number of Elements	1
Cell Density	300 cpsi

EMISSION REQUIREMENTS

Exhaust Gas Component	Engine Output (g/bhp-hr)	Converter Output (% Reduction)
NOx	14.40	80
CO	16.30	80

Regards

Sam Kirk
Regional Sales Manager
DCL America
281-253-3091

ENGINE MODEL:	K-6	C-46	C-66	C-96	C-101	C-106	C-255	L-795	A-42 (VRG 260)	A-54 (VRG 330)	A-54 CF (VRG 330 CF)	A-62 (VRG 380)	A-62 TA (VRG 380 TA)
Rich/Lean Burn	Rich	Rich	Rich	Rich	Rich	Rich	Rich	Lean	Rich	Rich	Rich	Rich	Rich
2 or 4 Cycle	4	4	4	4	4	4	4	2	4	4	4	4	4
Bore	4.00	5.00	5.25	7.00	7.50	7.50	7.50	7.50	4.134	3.875	3.875	4.134	4.134
Stroke	4.50	6.25	7.50	8.50	8.50	8.50	7.50	9.00	4.724	4.665	4.665	4.724	4.724
Displacement (CI.)	56.5	122.7	195	327	376	376	660	795	253	330	330	380.8	380.8
No. Cylinders	1	1	1	1	1	1	2	2	4	6	6	6	6
RPM Max/Min.	800/400	800/400	700/350	600/300	800/400	800/400	750/400	600/300	1800/1000	1800/1000	1800/1000	1800/1000	1800/1000
Max HP (cont.)	4.8	9	13	19	24.5	32	55	65	47	68	72	80	115
BMEP	84	73	75	77	65	84	88	54	82	91	96	92	133
BSFC (BTU/HP-HR)	14950	11640	11450	13000	13050	10350	11900	13500	8900	9000	8800	8268	8580
Exhaust Stack													
NPT Dia. (in.)	1 1/4"	1 1/2"	2"	2 1/2"	2 1/2"	2 1/2"	4"	4"	2"	2 1/2"	2 1/2"	*3"	*3"
Height (in.) **	©28.5"	"5.5"	"7.5"	"11"	"11"	"11"	©20"	©7"	27"	28"	27 1/4"	28"	29 1/2"
Temp. (Deg. F)	1260	1300	1300	1300	1275	1302	1300	900	1230	1238	1238	1230	1350
Flow (acfm)	31	70	97	139	210	213	350	625	310	406	406	466	1331
Emissions (g/hp-hr)													
Pre-Cat Nox	N/A	N/A	N/A	N/A	N/A	14	IP	1.89	12.8	14.4	12.3	14.7	15.5
Pre-Cat CO	N/A	N/A	N/A	N/A	N/A	11.5	IP	2.58	5.1	16.3	11	5.8	11.15
Pre-Cat VOC	N/A	N/A	N/A	N/A	N/A	N/A	IP	N/A	0.04	0.04	0.04	0.04	0.10
Pre-Cat HCHO	N/A	N/A	N/A	N/A	N/A	N/A	IP	N/A	0.09	0.09	0.09	0.09	0.09
	*6℗	*6℗											
Max. Exhaust Back Pressure ("W.C.)	20	20	20	20	20	20	20	TE	20	20	20	20	20
Weight (lb.)Dry	670	1360	1640	2580	2690	2690	3980	4510	1234	1000	1000	1851	1900

* = EPA emission regulation limits as of March 1, 2011. Check with your local DEQ, as they maybe lower than the EPA requirements.

** = Stack height is from the base of the mounting feet to the exhaust manifold outlet.

*= Catalyst equiped engines.

" = MUF-1 standard muffler outlet height.

TE = Tuned Exhaust.

IP = In Process

Emissions vary depending on AFR set point and emission equipment from engine to engine. This information is for reference only.

© = Center of exhaust outlet

N/A = Not available at this time.

℗ = Does not require a catalyst to meet the current requirements

BSFC (BTU/HP-HR) @ max rated RPM

ATTACHMENT N

Supporting Calculations

Icon Midstream Pipeline ,LLC

North
Wetzel County, WV

POTENTIAL EMISSIONS SUMMARY

Source	Description	NOx lb/hr	CO lb/hr	CO2e lb/Hr	VOC lb/hr	SO2 lb/hr	PM lb/hr	n-Hexane tpy	benzene lb/hr	formaldehyde lb/hr	Total HAPs lb/hr
HTR-1	Line Heater **(REM)**	0.00	0.00	0	0.00	0.00	0.00	0.000	0.000	0.000	0.0000
CE-1	Flash Compressor **(REM)**	0.21	0.41	54	0.01	0.00	0.01		0.001	0.010	0.0149
CE-2	VRU Compressor Engine	0.26	0.52	124	0.03	0.00	0.05		0.014	0.021	0.1125
CE-3	Flash Compressor **(NEW)**	0.43	0.49	71	0.02	0.00	0.01		0.001	0.013	0.0191
HTR-2	Separator Heater	0.08	0.07	95	0.00	0.00	0.01			0.000	0.000
RBV-1	Dehy Reboiler Vent	0.20	0.17	242	0.01	0.00	0.02	0.004	0.004	0.000	0.004
T01-T06	Condensate and Water Tank (Flash+Breathing+Working)[1]				6.68			0.200			0.216
	Fugitive VOC Emissions			3	0.56						
	Flash Gas Compressor Blowdowns			N/A	N/A						
	Haul Road Fugitive Dust						10.60				
	Pigging Emissions			N/A	N/A						
TL-2	Water Truck Loading				0.13						
	NGL Truck Loading				0.90						
TL-1	Condensate Truck Loading (Uncaptured)[2]				0.76						0.05
EC-1	Captured/Controlled Tank,Truck Loading and Dehy Still Vent Emissions[3]	0.68	3.69	1,235	6.31	0.00	0.00	0.260	0.120	0.0000	1.41
	Total	**1.86**	**5.34**	**1,825**	**15.42**	**0.00**	**10.70**	**0.464**	**0.139**	**0.04**	**1.83**

Source		NOx tpy	CO tpy	CO2e tpy	VOC tpy	SO2 tpy	PM tpy	n-Hexane tpy	benzene tpy	formaldehyde tpy	Total HAPs tpy
HTR-1	Line Heater **(REM)**	0.00	0.00	0	0.00	0.00	0.00			0.00	
CE-1	Flash Compressor **(REM)**	0.00	0.00	0	0.00	0.00	0.00		0.000	0.00	0.00
CE-2	VRU Compressor Engine	1.14	2.28	542	0.13	0.00	0.22		0.007	0.09	0.49
CE-3	Flash Compressor **(NEW)**	1.89	2.14	312	0.08	0.00	0.05		0.004	0.05	0.08
HTR-2	Separator Heater	0.35	0.29	418	0.02	0.00	0.03			0.00	0.00
RBV-1	Dehy Reboiler Vent	0.88	0.74	1,058	0.05	0.01	0.07	0.016	0.000	0.00	0.02
T01-T06	Condensate and Water Tank (Flash+Breathing+Working)[1]				29.26			0.880			0.96
	Fugitive VOC Emissions			13	2.47						
	Flash Gas Compressor Blowdowns			8	0.10						
	Haul Road Fugitive Dust						0.46				
	Pigging Emissions			651	7.85						
TL-2	Water Truck Loading				0.01						
	NGL Truck Loading				0.04						
TL-1	Condensate Truck Loading (Uncaptured)[2]				0.06						0.01
EC-1	Captured/Controlled Tank,Truck Loading and Dehy Still Vent Emissions[3]	1.51	8.24	2620	11.53	0.00	0.39	0.620	0.540	0.00	5.65
	Total	**5.77**	**13.68**	**5,623**	**51.59**	**0.01**	**1.22**	**1.516**	**0.552**	**0.15**	**7.22**
	Current Permit	**4.86**	**13.36**	**5,632**	**46.69**	**0.01**	**1.21**	**1.366**	**0.551**	**0.14**	**7.04**
	Increase/Decrease	0.91	0.32	-9.40	4.90	0.00	0.01	0.15	0.00	0.01	0.18

[1] Condensate tank emissions are captured are routed to VRU with Combustor as backup.
Per WVDEP Guidance on VRUs, a capture efficiency of 95% is claimed. This represents uncaptured.
[2] Truck loading VOC emissions captured at 98.7% per AP-42 Chapter 5.2.2.1.1 for NSPS-certified trucks. This entry represents the 1.3% not captured.
[3]98.7% captured truck loading emissions routed to combustor EC-1

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Controlled Emission Rates

Source CE-2

Engine Data:

Engine Manufacturer	Cummins	
Engine Model	G8.3	
Type (Rich-burn or Low Emission)	Rich Burn	
Aspiration (Natural or Turbocharged)	Natural	
Manufacturer Rating	118	hp
Speed at Above Rating	1,800	rpm
Configeration (In-line or Vee)	In-line	
Number of Cylinders	6	
Engine Bore	4.490	inches
Engine Stroke	5.320	inches
Engine Displacement	505	cu. in.
Engine BMEP	103	psi
Fuel Consumption (HHV)	8,924	Btu/bhp-hr

Emission Rates:

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	AP-42 4strokerich lb/mmbtu	
Oxides of Nitrogen, NOx	1.000	0.26	1.14	118	6.24		Comment
Carbon Monoxide CO	2.000	0.52	2.28	236	12.49		453.59 grams = 1 pound
VOC (NMNEHC)	0.110	0.03	0.13	13	0.69		2,000 pounds = 1 ton
CO2	452	118	515	53,336	2,822		
CO2e		124	542				
							0 ppmv H2S
Total Annual Hours of Operation	**8,760**						
SO2		0.0006	0.0028			0.0006	
PM (Condensable + Filterable)		0.0509	0.2228			0.0483	Per Mfg.
CH_4		0.1261	0.5524			0.0022	Factor From 40 CFR 98, Table C-2
N_2O		0.0115	0.0502			0.0002	Factor From 40 CFR 98, Table C-2
acrolein		0.0028	0.0121			0.00263	
acetaldehyde		0.0029	0.0129			0.00279	
formaldehyde	0.080	0.0208	0.0912				Per Mfg.
benzene		0.0017	0.0073			0.00158	
toluene		0.0006	0.0026			0.000558	
ethylbenzene		3E-05	0.0001			2.48E-05	
xylene s		0.0002	0.0009			0.000195	
methanol		0.0032	0.0141			0.00306	
total HAPs		0.0322	0.1411				

Exhaust Parameters:

Exhaust Gas Temperature	1,127	deg. F			
Exhaust Gas Mass Flow Rate		lb/hr			
Exhaust Gas Mass Flow Rate	528	acfm			
Exhaust Stack Height	137	inches			
	8.67	feet			
Exhaust Stack Inside Diameter	6	inches			
	0.500	feet			
Exhaust Stack Velocity	44.8	ft/sec	4	x acfm	
	2,689.1	ft/min	3.1416	x (stack diameter)^2	

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Potential Emission Rates

Line Heater
Source HTR-1
(REMOVED)

Burner Duty Rating	250.0	Mbtu/hr
Burner Efficiency	98.0	%
Gas Heat Content (HHV)	1291.5	Btu/scf
Total Gas Consumption	4,740.5	scfd
H2S Concentration	0.000	Mole %
Hours of Operation	0	

NOx	0.0198	lbs/hr	0.000	TPY
CO	0.0166	lbs/hr	0.000	TPY
CO2e	24	lbs/hr	0	tpy
VOC	0.0011	lbs/hr	0.000	TPY
SO2	0.0001	lbs/hr	0.000	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0015	lbs/hr	0.000	TPY
CHOH	0.0000	lbs/hr	0.000	TPY

AP-42 Factors Used

NOx	**100**	**Lbs/MMCF**	
CO	**84**	**Lbs/MMCF**	
CO_2	**120,000**	**Lbs/MMCF**	**Global Warming Potential = 1**
VOC	**5.5**	**Lbs/MMCF**	
PM	**7.6**	**Lbs/MMCF**	
SO_2	**0.6**	**Lbs/MMCF**	
CH_4	**2.3**	**Lbs/MMCF**	**Global Warming Potential = 21**
N_2O	**2.2**	**Lbs/MMCF**	**Global Warming Potential =310**
HCOH	**0.075**	**Lbs/MMCF**	

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Controlled Emission Rates

Source CE-1 (REMOVED)

Engine Data:

Engine Manufacturer	Arrow	
Engine Model	VGR260	
Type (Rich-burn or Low Emission)	Rich Burn	
Aspiration (Natural or Turbocharged)	Natural	
Manufacturer Rating	47.0	hp
Speed at Above Rating	1,800	rpm
Configeration (In-line or Vee)	In Line	
Number of Cylinders	4	
Engine Bore	4.134	inches
Engine Stroke	4.724	inches
Engine Displacement	254	cu. in.
Fuel Consumption	9,889	Btu/bhp-hr

Emission Rates:	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	AP-42 4strokerich lb/mmbtu	
Oxides of Nitrogen, NOx	2.0	0.21	0.00	94	4.97		Comment
Carbon Monoxide CO	4.0	0.41	0.00	188	9.92		453.59 grams = 1 pound
VOC (NMNEHC)	0.1	0.01	0.00	6	0.32		2,000 pounds = 1 ton
CO2e		54	0	0	1,304		
Total Annual Hours of Operation	**0**						
SO2		0.0003	0.0000			0.0006	
PM (Condensable + Filterable)		0.009	0.0000			0.0194	MFG. Spec
CO2		51.126	0.0000			110	
$CH_{4\ CO2e}$		2.6725	0.0000			0.23	**MFG. Spec**
$N_2O\ CO_{2e}$		0.5518	0.0000			0.0001	Factor From 40 CFR 98, Table C-2
acrolein		0.0012	0.0000			0.00263	
acetaldehyde		0.0013	0.0000			0.00279	
formaldehyde	0.095	0.01	0.0000				**MFG. Spec**
benzene		0.0007	0.0000			0.00158	
toluene		0.0002	0.0000			0.000508	
ethylbenzene		1E-05	0.0000			2.48E-05	
xylene s		9E-05	0.0000			0.000195	
methanol		0.0014	0.0000			0.00306	
total HAPs		0.0149	0.0000				

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Controlled Emission Rates

Source CE-1
Un-Controlled

Engine Data:

Engine Manufacturer	FORD	
Engine Model	VR260	
Type (Rich-burn or Low Emission)	Rich Burn	
Aspiration (Natural or Turbocharged)	Natural	
Manufacturer Rating	47.0	hp
Speed at Above Rating	1,800	rpm
Configeration (In-line or Vee)	In Line	
Number of Cylinders	4	
Engine Bore	4.134	inches
Engine Stroke	4.724	inches
Engine Displacement	254	cu. in.
Fuel Consumption	9,889	Btu/bhp-hr

Emission Rates:	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	AP-42 4strokerich lb/mmbtu	
Oxides of Nitrogen, NOx	12.8	1.33	5.81	602	31.83		Comment
Carbon Monoxide CO	5.1	0.53	2.31	240	12.68		453.59 grams = 1 pound
VOC (NMNEHC)	0.0	0.00	0.01	1	0.07		2,000 pounds = 1 ton
CO2e		54	238	0	1,304		
Total Annual Hours of Operation	**8,760**						
SO2		0.0003	0.0012			0.0006	
PM2.5		0.0044	0.0193			0.0095	
PM (Condensable)		0.0046	0.0202			0.00991	
CO2		51.126	223.9324			110	
$CH_{4\ CO2e}$		2.6725	11.7056			0.23	**MFG. Spec**
$N_2O\ CO_{2e}$		0.5518	2.4169			0.0001	Factor From 40 CFR 98, Table C-2
acrolein		0.0012	0.0054			0.00263	
acetaldehyde		0.0013	0.0057			0.00279	
formaldehyde	0.095	0.01	0.0431				**MFG. Spec**
benzene		0.0007	0.0032			0.00158	
toluene		0.0002	0.0010			0.000508	
ethylbenzene		1E-05	0.0001			2.48E-05	
xylene s		9E-05	0.0004			0.000195	
methanol		0.0014	0.0062			0.00306	
total HAPs		0.0149	0.0651				

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Controlled Emission Rates

Source CE-3

Engine Data:

Engine Manufacturer	Arrow	
Engine Model	VGR330	
Type (Rich-burn or Low Emission)	Rich Burn	
Aspiration (Natural or Turbocharged)	Natural	
Manufacturer Rating	68.0	hp
Speed at Above Rating	1,800	rpm
Configeration (In-line or Vee)	In Line	
Number of Cylinders	4	
Engine Bore	4.134	inches
Engine Stroke	4.724	inches
Engine Displacement	254	cu. in.
Fuel Consumption	9,000	Btu/bhp-hr

Emission Rates:	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	AP-42 4strokerich lb/mmbtu	
Oxides of Nitrogen, NOx	2.9	0.43	1.89	196	10.36		Comment
Carbon Monoxide CO	3.3	0.49	2.14	222	11.73		453.59 grams = 1 pound
VOC (NMNEHC)	0.12	0.018	0.08	8	0.43		2,000 pounds = 1 ton
CO2e		71	312	0	1,712		
Total Annual Hours of Operation	**8,760**						
SO2		0.0004	0.0016			0.0006	
PM (Condensable + Filterable)		0.0119	0.0520			0.0194	
CO2		67.32	294.8616			110	
$CH_{4\ CO2e}$		3.519	15.4132			0.23	Factor From 40 CFR 98, Table C-2
$N_2O\ CO_{2e}$		0.4828	2.1145			0.0001	Factor From 40 CFR 98, Table C-2
acrolein		0.0016	0.0070			0.00263	
acetaldehyde		0.0017	0.0075			0.00279	
formaldehyde		0.0125	0.0550			0.0205	
benzene		0.001	0.0042			0.00158	
toluene		0.0003	0.0014			0.000508	
ethylbenzene		2E-05	0.0001			2.48E-05	
xylene s		0.0001	0.0005			0.000195	
methanol		0.0019	0.0082			0.00306	
total HAPs		0.0191	0.0839				

Icon Midstream Pipeline,LLC

North
Wetzel County, WV

tential Emission Ra

Source RBV-1

Burner Duty Rating	2000.0	Mbtu/hr
Burner Efficiency	98.0	%
Gas Heat Content (HHV)	808.5	Btu/scf
Total Gas Consumption	60,584	scfd
H2S Concentration	0.000	Mole %
Hours of Operation	8760	

NOx	0.2001	lbs/hr	0.876	TPY
CO	0.1681	lbs/hr	0.736	TPY
CO2	240.1	lbs/hr	1051.6	TPY
CO2e	242	lbs/hr	1,058	tpy
VOC	0.0110	lbs/hr	0.048	TPY
SO2	0.0012	lbs/hr	0.005	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0152	lbs/hr	0.067	TPY
CHOH	0.0002	lbs/hr	0.001	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hexane	0.0036	lbs/hr	0.016	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0038	lbs/hr	0.016	TPY

AP-42 Factors Used

NOx	**100**	**Lbs/MMCF**	
CO	**84**	**Lbs/MMCF**	
CO_2	**120,000**	**Lbs/MMCF**	**Global Warming Potential = 1**
VOC	**5.5**	**Lbs/MMCF**	
PM	**7.6**	**Lbs/MMCF**	
SO_2	**0.6**	**Lbs/MMCF**	
CH_4	**2.3**	**Lbs/MMCF**	**Global Warming Potential = 25**
N_2O	**2.2**	**Lbs/MMCF**	**Global Warming Potential =310**
HCOH	**0.075**	**Lbs/MMCF**	
Benzene	**0.0021**	**Lbs/MMCF**	
n-Hexane	**1.8**	**Lbs/MMCF**	
Toluene	**0.0034**	**Lbs/MMCF**	

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

tential Emission Ra

Source EC-1

Enclosed Combustor Pilot

Burner Duty Rating	58.5	Mbtu/hr
Burner Efficiency	98.0	%
Gas Heat Content (HHV)	1291.5	Btu/scf
Total Gas Consumption	1109.3	scfd
H2S Concentration	0.000	Mole %
Hours of Operation	8760	

NOx	0.0059	lbs/hr	0.026	TPY
CO	0.0049	lbs/hr	0.022	TPY
CO2	7.0	lbs/hr	30.8	TPY
CO2e	7	lbs/hr	31	TPY
VOC	0.0003	lbs/hr	0.001	TPY
SO2	0.0000	lbs/hr	0.000	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0004	lbs/hr	0.002	TPY
CHOH	0.0000	lbs/hr	0.000	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hezane	0.0001	lbs/hr	0.000	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0001	lbs/hr	0.000	TPY

AP-42 Factors Used (Tables 1.4.1-1.4.3)

NOx	**100**	**Lbs/MMCF**	
CO	**84**	**Lbs/MMCF**	
CO_2	**120,000**	**Lbs/MMCF**	**Global Warming Potential = 1**
VOC	**5.5**	**Lbs/MMCF**	
PM	**7.6**	**Lbs/MMCF**	
SO_2	**0.6**	**Lbs/MMCF**	
CH_4	**2.3**	**Lbs/MMCF**	**Global Warming Potential = 25**
N_2O	**2.2**	**Lbs/MMCF**	**Global Warming Potential =298**
HCOH	**0.075**	**Lbs/MMCF**	
Benzene	**0.0021**	**Lbs/MMCF**	
n-Hexane	**1.8**	**Lbs/MMCF**	
Toluene	**0.0034**	**Lbs/MMCF**	

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Potential Emission Rates

Source EC-1

Enclosed Vapor Combustor

Destruction Efficiency	98.0	%		
Gas Heat Content (HHV)	693.0	Btu/scf		
Max Flow to T-E	0.01371	MMSCFH	103.339	MMCF/Yr
Max BTUs to Flare	9.96	MMBTU/Hr	44,520	MMBTU/Yr

NOx	0.68	lbs/hr	1.51	tpy
CO	3.69	lbs/hr	8.24	tpy
CO2	1,164.22	lbs/hr	2,601.97	tpy
CO2e	1,235.29	lb/hr	2,619.98	tpy
VOC	6.31	lb/hr	11.53	tpy
CH4	0.02	lbs/hr	0.0490	tpy
N2O	0.002	lbs/hr	0.0049	tpy
PM	0.004	lb/hr	0.39	tpy
Benzene	0.120	lb/hr	0.54	tpy
CHOH	0.000	lb/hr	0.0039	tpy
n-Hexane	0.260	lb/hr	0.62	tpy
Ethylbenzene	0.350	lb/hr	1.52	tpy
Toluene	0.210	lb/hr	0.92	tpy
Xylenes	0.470	lb/hr	2.05	tpy
Total HAPs	1.410	lb/hr	5.65	tpy

Notes: Condensate Tank and Water Tank vapors to combustor as backup for VRU Only.
From Attached Work Sheet, max loading to the combustors is 332,334 scfd and 9.31 MMBTU/Hr

VOC and HAP emissions represent 2% of the captured emissions

Factors Used

AP-42 Table 13.5-1	**NOx**	**0.068**	**Lbs/MMBTU**
AP-42 Table 13.5-1	**CO**	**0.37**	**Lbs/MMBTU**
40 CFR 98 Table C-1	**CO2**	**116.89**	**Lbs/MMBTU**
40 CFR 98 Table C-2	**CH4**	**0.0022**	**Lbs/MMBTU**
40 CFR 98 Table C-2	**N2O**	**0.00022**	**Lbs/MMBTU**
AP-42 Table 1.4-2	**PM**	**7.6**	**lb/MMSCF**
AP-42 Table 1.4-3	**CHOH**	**0.075**	**lb/MMSCF**

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Potential Emission Rates

Separator Heater
Source HTR-2

Burner Duty Rating	1000.0	Mbtu/hr
Burner Efficiency	98.0	%
Gas Heat Content (HHV)	1291.5	Btu/scf
Total Gas Consumption	18961.9	scfd
H2S Concentration	0.000	Mole %
Hours of Operation	8760	

NOx	0.0790	lbs/hr	0.346	TPY
CO	0.0664	lbs/hr	0.291	TPY
CO2e	95	lbs/hr	418	tpy
VOC	0.0043	lbs/hr	0.019	TPY
SO2	0.0005	lbs/hr	0.002	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0060	lbs/hr	0.026	TPY
CHOH	0.0001	lbs/hr	0.000	TPY

AP-42 Factors Used

NOx	**100**	**Lbs/MMCF**	
CO	**84**	**Lbs/MMCF**	
CO_2	**120,000**	**Lbs/MMCF**	**Global Warming Potential = 1**
VOC	**5.5**	**Lbs/MMCF**	
PM	**7.6**	**Lbs/MMCF**	
SO_2	**0.6**	**Lbs/MMCF**	
CH_4	**2.3**	**Lbs/MMCF**	**Global Warming Potential = 21**
N_2O	**2.2**	**Lbs/MMCF**	**Global Warming Potential =310**
HCOH	**0.075**	**Lbs/MMCF**	

Icon Midstream Pipeline, LLC

North
Wetzel County, WV

Fugitive VOC Emissions

Volatile Organic Compounds, non-methane and non-ethane from gas analysis:	20.63	weight percent
Methane from gas analysis:	58.26	weight percent
Carbon Dioxide from gas analysis:	0.33	weight percent
Gas Density	0.0595	lb/scf

Emission Source:	Number	Oil & Gas Production*	VOC %	VOC, lb/hr	VOC TPY	CO2 lb/Hr	CO2 TPY	CH4 lb/hr	CH4 TPY	CO2e
Valves:										
Gas/Vapor:	55	0.02700 scf/hr	20.6	0.018	0.080	0.000	0.001	0.051	0.2254	5.637
Light Liquid:	64	0.05000 scf/hr	100.0	0.190	0.834					0.000
Heavy Liquid (Oil):	-	0.00050 scf/hr	100.0	0.000	0.000					0.000
Low Bleed Pneumatic	4	1.39000 scf/hr	20.6	0.068	0.299	0.193	0.844	0.193	0.8440	21.944
Relief Valves:	22	0.04000 scf/hr	20.6	0.011	0.047	0.000	0.001	0.030	0.1336	3.340
Open-ended Lines, gas:	-	0.06100 sfc/hr	20.6	0.000	0.000					0.000
Open-ended Lines, liquid:	-	0.05000 lb/hr	100.0	0.000	0.000					0.000
Pump Seals:										0.000
Gas:	-	0.00529 lb/hr	20.6	0.000	0.000	0.000	0.000	0.000	0.0000	0.000
Light Liquid:	-	0.02866 lb/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00133 lb/hr	100.0	0.000	0.000					0.000
Compressor Seals, Gas:	2	0.01940 lb/hr	20.6	0.008	0.035	0.000	0.001	0.001	0.0059	0.148
Connectors:										0.000
Gas:	104	0.00300 scf/hr	20.6	0.004	0.017	0.000	0.000	0.011	0.0474	1.184
Light Liquid:	44	0.00700 scf/hr	100.0	0.308	1.349					0.000
Heavy Liquid (Oil):	-	0.00030 scf/hr	100.0	0.000	0.000					0.000
Flanges:										0.000
Gas:	48	0.00086 lb/hr	20.6	0.009	0.037	0.000	0.001	0.024	0.1053	2.634
Light Liquid:	88	0.00300 scf/hr	100.0	0.016	0.069					0.000
Heavy Liquid:	0	0.0009 scf/hr	100.0	0.000	0.000					0.000

Fugitive Calculations:

	lb/hr	t/y
VOC	**0.563**	**2.468**
CH4	**0.118**	**0.518**
CO2	**0.001**	**0.004**
CO2e	**2.955**	**12.94**

Notes: *Factors are from 40 CFR 98, Table W-1A (scf/hr), where available. Remaining are API (lb/hr)

Icon Midstream Pipeline, CCL
GAS ANALYSIS INFORMATION

North
Wetzel County, WV

Inlet Gas Composition Information

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	
Nitrogen, N2	0.3808	0.107	0.004	0.499			-		0.0038	
Carbon Dioxide, CO2	0.1622	0.071	0.002	0.334			-		0.0016	
Hydrogen Sulfide, H2S		-	-	-			-		-	
Helium, He		-	-	-			-		-	
Oxygen, O2		-	-	-			-		-	
Methane, CH4	77.6248	12.453	0.430	58.257	705.9	784.0	7.398		0.7747	
Ethane, C2H6	14.4188	4.336	0.150	20.283	233.4	255.2	2.405		0.1430	
Propane	3.3306	1.469	0.051	6.871	77.1	83.8	0.793	6.871	0.0327	
Iso-Butane	0.6710	0.390	0.013	1.824	20.1	21.8	0.208	1.824	0.0065	
Normal Butane	1.2759	0.742	0.026	3.469	38.4	41.6	0.395	3.469	0.0123	
Iso Pentane	0.3729	0.269	0.009	1.259	13.8	14.9	0.142	1.259	0.0037	
Normal Pentane	0.3483	0.251	0.009	1.176	12.9	14.0	0.133	1.176	0.0035	
Hexanes	0.9196	0.792	0.027	3.707	40.5	43.7	0.416	3.707	0.0091	
Heptane +	0.4951	0.496	0.017	2.321	25.3	27.2	0.259	2.321	0.0049	
	100.000	21.376	0.738		1,167.4	1,286.3	12.150	20.627	0.9959	-

Gas Density (STP) = 0.059

Ideal Gross (HHV)	1,286.3
Ideal Gross (sat'd)	1,264.6
	-
Real Gross (HHV)	1,291.5
Real Net (LHV)	1,172.2

Icon Midstream, LLC
GAS ANALYSIS INFORMATION

North
Wetzel County, WV

Condenstate Tank Breathing Vapor

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	
Nitrogen, N2	0.185	0.052	0.002	0.078			-		0.0018	
Carbon Dioxide, CO2	0.018	0.008	0.000	0.012			-		0.0002	
Hydrogen Sulfide, H2S	-	-	-	-			-		-	
Water	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	-	-	-	-			-		-	
Ethane, C2H6	0.202	0.061	0.002	0.091	3.3	3.6	0.034		0.0020	
Propane	10.137	4.470	0.154	6.703	234.7	255.1	2.415	6.703	0.0996	
Iso-Butane	8.852	5.145	0.178	7.716	265.6	287.9	2.741	7.716	0.0860	
Normal Butane	30.537	17.749	0.613	26.617	919.4	996.2	9.457	26.617	0.2952	
Iso Pentane	15.123	10.911	0.377	16.363	559.4	605.1	5.763	16.363	0.1512	
Normal Pentane	17.412	12.563	0.434	18.840	645.4	698.0	6.636	18.840	0.1741	
Hexanes	13.160	11.341	0.392	17.007	579.5	625.9	5.956	17.007	0.1300	
Heptane +	4.374	4.383	0.151	6.573	223.1	240.7	2.292	6.573	0.0435	
	100.000	66.683	2.302		3,430.4	3,712.3	35.295	99.819	0.9837	-

Gas Density (STP) = 0.186

Ideal Gross (HHV)	3,712.3
Ideal Gross (sat'd)	3,648.3
	-
Real Gross (HHV)	3,774.0
Real Net (LHV)	3,487.4

Icon Midstream, LLC
GAS ANALYSIS INFORMATION

North
Wetzel County, WV

Dehydration Still Vent Gas

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	
Nitrogen, N2	0.002	0.000	0.000	0.004			-		0.0000	
Carbon Dioxide, CO2	0.065	0.028	0.001	0.255			-		0.0006	
Hydrogen Sulfide, H2S	-	-	-	-			-		-	
Water	90.900	3.638	0.126	32.622			-		0.9095	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	0.315	0.051	0.002	0.453	2.9	3.2	0.030		0.0031	
Ethane, C2H6	0.613	0.184	0.006	1.653	9.9	10.8	0.102		0.0061	
Propane	0.479	0.211	0.007	1.894	11.1	12.1	0.114	1.894	0.0047	
Iso-Butane	0.178	0.103	0.004	0.928	5.3	5.8	0.055	0.928	0.0017	
Normal Butane	0.508	0.295	0.010	2.647	15.3	16.6	0.157	2.647	0.0049	
Iso Pentane	0.170	0.123	0.004	1.100	6.3	6.8	0.065	1.100	0.0017	
Normal Pentane	0.219	0.158	0.005	1.417	8.1	8.8	0.083	1.417	0.0022	
Hexanes	1.462	1.260	0.044	11.297	64.4	69.5	0.662	11.297	0.0144	
Heptane +	5.090	5.100	0.176	45.731	259.6	280.1	2.668	45.731	0.0506	
	100.000	11.153	0.385		382.9	413.6	3.936	65.014	0.9997	-

Gas Density (STP) = 0.031

Ideal Gross (HHV)	413.6
Ideal Gross (sat'd)	407.3
	-
Real Gross (HHV)	413.7
Real Net (LHV)	383.0

GAS INFORMATION

Specific Graivity of Air, @ 29.92 in. Hg and 60 -F, 28.9625
One mole of gas occupies, @ 14.696 psia & 32 -F 359.2 cu ft. per lb-mole
One mole of gas occupies, @ 14.696 psia & 60 -F 379.64 cu ft. per lb-mole

Hydrogen Sulfide (H2S) conversion chart:

0 grains H2S/100 scf	=	0.00000 mole % H2S
		0.0 ppmv H2S
0 mole % H2S	=	0 grains H2S/100 scf
		0.0 ppmv H2S
0 ppmv H2S	=	0.000 grains H2S/100 scf
		0.00000 mole % H2S

Ideal Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Z factor
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	0.9997
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	0.9964
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	587	637	6,545	7,100	7.15	0.9846
Helium	He	4.003	0.1382	0.0105	94.848						1.0006
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	0.9992
Methane	CH4	16.043	0.5539	0.0423	23.664	909.4	1,010.0	21,520	23,879	9.53	0.9980
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,618.7	1,769.6	20,432	22,320	16.68	0.9919
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,314.9	2,516.1	19,944	21,661	23.82	0.9825
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,000.4	3,251.9	19,629	21,257	30.97	0.9711
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,010.8	3,262.3	19,680	21,308	30.97	0.9667
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,699.0	4,000.9	19,478	21,052	38.11	1.0000
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,706.9	4,008.9	19,517	21,091	38.11	1.0000
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,403.8	4,755.9	19,403	20,940	45.26	0.9879
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,100.0	5,502.5	22,000	23,000	52.41	0.9947

Real Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Gal/Mole	
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	4.1513	
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	6.4532	
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	621	672	6,545	7,100	7.15	5.1005	
Helium	He	4.003	0.1382	0.0105	94.848						3.8376	
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	3.3605	
Methane	CH4	16.043	0.5539	0.0423	23.664	911	1,012	21,520	23,879	9.53	6.4172	
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,631	1,783	20,432	22,320	16.68	10.126	
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,353	3,354	19,944	21,661	23.82	10.433	
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,101	3,369	19,629	21,257	30.97	12.386	
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,094	3,370	19,680	21,308	30.97	11.937	
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,709	4,001	19,478	21,052	38.11	13.86	
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,698	4,009	19,517	21,091	38.11	13.713	
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,404	4,756	19,403	20,940	45.26	15.566	16.3227
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,101	5,503	22,000	23,000	52.41	17.468	17.468

Icon Midstream Pipeline, LLC
North Liquids Management Facility
Tank Emissions Calculations

Icon Midstream will operate seven 210 BBL atmospheric pressure tanks that receives condensate that has been received via pipeline and separated from entrained water and NGL. Condensate is accumulated in these tanks, pending truck transportation to a fractionation facility. A maximum of 30,000 BBL will pass through these tanks per year. No changes are being requested for operation of the single 210 BBL tank where produced water is accumulated prior to truck transportation to a re-use center or a disposal facility. A maximum of 1400 BBL per year remains in place for this tank. The following summarizes the revised potential emissions from these tanks.

Emissions from the condensate tanks is a combination of flash emissions (as the pressure is reduced on the liquid to atmospheric) plus working and breathing losses while the condensate is in the tanks. Using data from a well pad that will be routing condensate to this facility, flash and working/breathing losses were calculated (following this summary). In a similar manner, flash emissions from the water tank were determined using actual data from a produced water tank from a well pad similar to those routing produced water to the North facility. Working and breathing losses for the water tank is considered negligible.

Emissions from the condensate tanks and produced water tank are routed to a vapor recovery unit via a hard pipe system. A capture efficiency of 95% is claimed. It is important to note that when the VRU is down for maintenance or repair, the condensate tank vapors are routed to a combustor with a 98% capture and control efficiency.

	Flash Emissions (tpy)	W&B Emissions (tpy)	Uncontrolled Total (tpy)	Un-captured Total (tpy)
Condensate	580.28 VOCs	4.89 VOCs	585.17 VOCs	29.26 VOCs
	18.97 HAPs	0.14 HAPs	19.11 HAPs	0.96 HAPs
	17.4 n-Hexane	0.13 n-Hexane	17.5 n-hexane	0.88 n-Hexane
Water	0.16 VOC	<0.01 VOCs	0.16 VOCs	0.01 VOCs
	0.01 HAPs	<0.01 HAPs	0.01 HAPs	<0.01 HAPs
	<0.01 n-Hexane	<0.01 n-Hexane	<0.01 n-Hexane	<0.01 n-Hexane
Total	**580.44 VOCs**	**4.89 VOCs**	**585.33VOCs**	**29.27 VOCs**
	18.98 HAPs	**0.14 HAPs**	**19.12 HAPs**	**0.96 HAPs**
	17.41 n-Hexane	**0.13 n-Hexane**	**17.54 n-Hexane**	**0.88 n-Hexane**

It is assumed that emissions will generally be continuous and consistent over the year. However, in order to account for day to day variances, the requested hourly maximum emissions are 25% higher than a straight extrapolation from the annual emission rates.

Loading to Enclosed Combustor from Tank Emissions

As noted above, Flash, working and Breathing losses from the condensate tanks are normally controlled by a VRU. When that unit is down for maintenance or repairs, the gas flow is routed to an enclosed combustor (EC-1). As noted in the following worksheets, there are 826.97 tpy of Flash Gas and 4.89 tpy of Working and Breathing potential emissions from the condensate tanks. This is equivalent to 189.9 lb/hr. As it is the largest component of this gas stream, the flash gas characteristics are assumed to be representative of the entire gas stream. Thus, this gas will have a density of 0.112 lb/scf and a heat content of 2282 BTU/scf. Potential loading to the combustor is then 1695.7 scf/hr (40,700 scfd) and 3.87 MMBTU/Hr.

For permitting purposes, it is assumed that the VRU will be unavailable for 500 hours per year. Thus annual loading to the combustor will be 847,915 scf [40,700 scf/day x 500/24] or 1,935 MMBTU/Yr.

The stream going to the combustor when the VRU is down has a composition that is 70.3% VOCs and 2.1% n-Hexane. Thus, with a 98% destruction efficiency and maximum loading of 189.9 lb/hr, potential VOC emissions would be 2.67 lb/hr [189.9 x 0.703 x 0.02]. Potential n-Hexane emissions would be 0.080 lb/hr [189.9 x 0.021 x 0.02].

Icon Midstream Pipeline - North

Flash Emission Calculations

Using Gas-Oil Ratio Method

Un-Controlled

Site specific data			
Gas-Oil-ratio	=	500	scf/bbl Using Actual GOR from RPT-8
Throughput	=	30,000	bbl/yr
Stock tank gas molecular weight	=	39.56	g/mole

Conversions			
1 lb	=	453.6	g
1 mole	=	22.4	L
1 scf	=	28.32	L
1 ton	=	2000	lb

Equations

$$E_{TOT} = Q\frac{(bbl)}{(yr)} \times R\frac{(scf)}{(bbl)} \times \frac{28.32(L)}{1(scf)} \times \frac{1(mole)}{22.4(L)} \times MW\frac{(g)}{(mole)} \times \frac{1(lb)}{453.6(g)}) \times \frac{1(ton)}{2000(lb)}$$

E_{TOT} = Total stock tank flash emissions (TPY)

R = Measured gas-oil ratio (scf/bbl)

Q = Throughput (bbl/yr)

MW = Stock tank gas molecular weight (g/mole)

$$E_{spec} = E_{TOT} \times X_{spec}$$

E_{spec} = Flash emission from constituent

X_{spec} = Weight fraction of constituent in stock tank gas

Flash Emissions

Constituent	TPY
Total	826.9700
VOC	**580.2765**
Nitrogen	2.07E-01
Carbon Dioxide	1.30E+00
Methane	8.21E+01
Ethane	1.63E+02
Propane	2.14E+02
Isobutane	5.80E+01
n-Butane	1.33E+02
2,2 Dimethylpropane	1.63E+00
Isopentane	4.57E+01
n-Pentane	4.79E+01
2,2 Dimethylbutane	1.73E+00
Cyclopentane	0.00E+00
2,3 Dimethylbutane	2.51E+00
2 Methylpentane	1.33E+01
3 Methylpentane	7.95E+00
n-Hexane	1.74E+01
Methylcyclopentane	1.27E+00
Benzene	2.98E-01
Cyclohexane	1.79E+00
2-Methylhexane	3.85E+00
3-Methylhexane	3.79E+00
2,2,4 Trimethylpentane	0.00E+00
Other C7's	3.61E+00
n-Heptane	5.57E+00
Methylcyclohexane	3.47E+00
Toluene	6.78E-01
Other C8's	5.66E+00
n-Octane	1.89E+00
Ethylbenzene	4.13E-02
M & P Xylenes	4.88E-01
O-Xylene	6.62E-02
Other C9's	2.35E+00
n-Nonane	5.62E-01
Other C10's	8.85E-01
n-Decane	1.16E-01
Undecanes (11)	1.24E-01

E_{TOT}

Sum of C3+

Condensate Truck Loading Lost Emissions Per AP-42

Per AP-42, Chapter 5.2.2.1.1, the uncontrolled loading loss emission factor L_L can be estimated as follows:

$$L_L = 12.46[SPM/T]$$

Where:

L_L = uncontrolled loading loss in pounds per 1000 gallons of liquid loaded
S= saturation factor (0.6)
P=true vapor pressure of liquid loaded: 7.45 psia
M= Molecular weight of vapor in lb/lb-mole (66.6 From Lab Report)
T= temperature of bulk liquid loaded in deg R or 460+deg F (60 Deg F)

Thus, $L_L = 12.46[0.6 \times 7.45 \times 66.6]/[460+60]$
$L_L = 7.13$ lb/1000 gallons loaded

Based on sample data of breathing vapor (attached), these emissions are 99.6% VOCs. It is assumed that vapor composition from truck loading is the same as that from the tank breathing vapors.

Given a maximum loading of 200 BBL (8400 gallons) a day, uncontrolled VOC emissions are estimated at 59.65 lb of VOC per day [8.4 x 7.13 x .996]. With all daily loading taking place within 1 hour, the hourly uncontrolled emission rate is estimated at 59.65 lb/hr. NSPS certified trucks will be used for condensate transportation. Thus, a 98.7% capture efficiency can be claimed. Accordingly, potential un-captured VOC emissions are estimated at 0.76 lb/hr.

Maximum annual throughput is 30,000 BBL (1,260,000 gallons) per year. Thus, un-captured VOC emissions are conservatively estimated at 116.3 pounds per year [1260 x 7.13 x .996 x 1.3%] or 0.06 tons per year.

Based on the attached analysis of a representative tank's breathing emissions, HAPs represent 6.8 percent of the emissions. Thus, hourly un-captured HAPs emissions equals 0.05 lb/hr [8.4 x 7.13 x 1.3% x 6.8%]. Annual maximum uncaptured HAPs emissions are estimated at 7.9 lb/yr [1260 x 7.13 x 1.3% x 6.8%] or <0.01 tpy.

Loading to Combustor from Truck Loading
Captured emissions are 98.7% of total emissions or 59.11 lb/Hr during loading [8.4 x 7.13 x 98.7%]. Using the composition of the measured condensate breathing vapors from a well that will be sending condensate to this facility (a heat content of 3921 BTU/scf and a density of 0.186 lb/scf) total hourly load to the combustor from truck loading will be 59.11/0.186 or 318 scf/hr. Heat loading to the combustor will be 1.25 MMBTU/Hr.

Annual loading to the combustor will be 8867 lbs [1260 x 7.13 x .987] or 47,672 scf and 186.92 MMBTU/YR

Using a combustion efficiency of 98%, captured/controlled VOC emissions are 1.18 lb/hr [8.4 x 7.13 x 98.7% x 0.02] and 177 lb/yr [1260 x 7.13 x 98.7% x 2%] or 0.09 tpy.

Icon Midstream Pipeline, LLC
North Liquids Management Facility
Total Loading to Combustor

Three waste gas streams are being routed to the combustor: Tank Emissions, Truck Loading Emissions and the Dehydration Unit's still vent gases. The following is a summary of the hourly and annual loading to the combustor from these three sources:

	SCF/Hr	MMBTU/Hr	MMSCF/Yr	MMBTU/Yr
Tanks Emissions	1695.7	3.87	0.8479	1,935
Truck Loading	318	1.25	0.0477	187
Dehy Still Vent	11,700	4.84	102.492	42,398
TOTAL	**13,714**	**9.96**	**103.339**	**44,520**
Initial Application	13,431	9.31	103.238	44,166
Increase	**283**	**0.65**	**0.101**	**354**

These values were entered into the Combustor Work Sheet in the preceding calculations spreadsheet.

The facility will be equipped with two Hy-Bon CH 10.0 enclosed combustors. The combined capacity of these two units is 20.0 MMBTU/Hr. Thus, there is sufficient capacity to control emissions during day to day variations in flow, even at maximum throughput. A conservative 98% control efficiency is claimed.

From the Tank Emissions calculations sheet, the Condensate Truck Loading calculations sheet and the GRI-GLYCalc report, the following controlled potential emissions are estimated (note that the tanks emit to the combustor a maximum of 500 hrs per year):

	Tanks		Truck Loading		Dehy Still Vent		**Total**	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	**lb/hr**	**tpy**
VOC	2.67	0.67	1.18	0.09	2.46	10.77	**6.31**	**11.53**
n-Hexane	0.08	0.02	0.04	<0.01	0.14	0.60	**0.26**	**0.62**
Benzene	<0.01	<0.01	<0.01	<0.01	0.12	0.54	**0.12**	**0.54**
Toluene	<0.01	<0.01	<0.01	<0.01	0.21	0.92	**0.21**	**0.92**
Ethylbenzene	<0.01	<0.01	<0.01	<0.01	0.35	1.52	**0.35**	**1.52**
Xylenes	<0.01	<0.01	<0.01	<0.01	0.47	2.05	**0.47**	**2.05**

These values have been inserted into the enclosed combustor emissions sheet in the preceding Excel spreadsheet.

GAS ANALYTICAL SERVICES

C6+ Gas Analysis Report

Gas Analytical

Report Date: Mar 9, 2016 9:09a

Client:	Jay-Bee Oil & Gas	Date Sampled:	Feb 25, 2016
Site:	Sleepy 3H	Analysis Date:	Mar 8, 2016 1:05p
Field No:		Collected By:	Justin Whipkey
Meter:		Date Effective:	Mar 1, 2016 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	1,235.0
Lab File No:	**X_CH1-10062.CHR**	Sample Temp (°F):	97
Sample Type:	Spot	Field H2O:	No Test
Reviewed By:		Field H2S:	No Test

Component	Mol %	Gal/MSCF
Methane	77.6248	
Ethane	14.4188	3.83
Propane	3.3306	0.92
I-Butane	0.6710	0.22
N-Butane	1.2759	0.40
I-Pentane	0.3729	0.14
N-Pentane	0.3483	0.13
Nitrogen	0.3808	
Oxygen	<MDL	
Carbon Dioxide	0.1622	
Hexanes+	1.4147	0.58
TOTAL	100.0000	6.21

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,295.3098 BTU/ft³
BTU/SCF (Saturated):	1,273.6435 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99622
Z Factor (Saturated):	0.99579

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,295.3098 BTU/ft³
BTU/SCF (Saturated):	1,273.6435 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99622
Z Factor (Saturated):	0.99579

Calculated Specific Gravities			
Ideal Gravity:	0.7391	Real Gravity:	0.7416
Molecular Wt:	21.4055 lb/lbmol		

Gross Heating Values are Based on:
GPA 2145-09, 2186
Compressibility is Calculated using AGA-8.

Source	Date	Notes

<MDL = Less than Method Detection Limits, NG = Not Given, NT = Not Tested

May 9, 2014

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: Jay-Bee Oil & Gas, Inc.
1720 Route 22 East
Union, New Jersey 07083

Sample: T 103-6
Breathing Vapor
From 0 psig & 70 °F to 0 psig & 100 °F

Date Sampled: 04/07/14 Job Number: 42799.011

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.000	
Carbon Dioxide	0.032	
Methane	0.023	
Ethane	0.533	0.144
Propane	13.669	3.768
Isobutane	9.746	3.214
n-Butane	31.720	10.079
2-2 Dimethylpropane	0.415	0.160
Isopentane	15.075	5.557
n-Pentane	16.449	6.010
Hexanes	9.639	4.004
Heptanes Plus	2.799	1.199
Totals	100.000	34.134

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.521	(Air=1)
Molecular Weight	97.70	
Gross Heating Value	5232	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	2.319	(Air=1)
Compressibility (Z)	0.9579	
Molecular Weight	64.35	
Gross Heating Value		
Dry Basis	3781	BTU/CF
Saturated Basis	3716	BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stained Tube Method (GPA 2377)
Results: 0.031 Gr/100 CF, 0.5 PPMV or 0.0001 Mol %

Base Conditions: 14.850 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: MR
Processor: AL
Cylinder ID: ST# 2

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT - GPA 2286

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.000		0.000
Carbon Dioxide	0.032		0.022
Methane	0.023		0.004
Ethane	0.533	0.144	0.249
Propane	13.569	3.768	9.299
Isobutane	9.746	3.214	8.803
n-Butane	31.720	10.079	28.652
2,2 Dimethylpropane	0.415	0.160	0.465
Isopentane	15.075	5.557	16.903
n-Pentane	16.449	6.010	18.443
2,2 Dimethylbutane	0.444	0.187	0.595
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.617	0.255	0.826
2 Methylpentane	3.194	1.336	4.278
3 Methylpentane	1.835	0.755	2.458
n-Hexane	3.549	1.471	4.753
Methylcyclopentane	0.250	0.087	0.327
Benzene	0.052	0.015	0.063
Cyclohexane	0.293	0.101	0.383
2-Methylhexane	0.386	0.181	0.601
3-Methylhexane	0.362	0.166	0.564
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.440	0.193	0.678
n-Heptane	0.390	0.181	0.607
Methylcyclohexane	0.251	0.102	0.383
Toluene	0.040	0.014	0.057
Other C8's	0.234	0.110	0.401
n-Octane	0.053	0.027	0.094
Ethylbenzene	0.001	0.000	0.002
M & P Xylenes	0.009	0.003	0.015
O-Xylene	0.001	0.000	0.002
Other C9's	0.034	0.017	0.067
n-Nonane	0.003	0.002	0.006
Other C10's	0.000	0.000	0.000
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	34.134	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity	2.319	(Air=1)
Compressibility (Z)	0.9579	
Molecular Weight	64.35	
Gross Heating Value		
Dry Basis	3781	BTU/CF
Saturated Basis	3716	BTU/CF

FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

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

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
p =	Number of days per year with precipitation >0.01 in.	157	157

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	Produced Water Tanker Trucks	10	27	10	0.6	1	18	None	0
2	Condensate Truck	18	27	10	0.6	1	**150**	None	0
3	NGL Trucks	18	27	10	0.6	1	75	None	0
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:

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
S =	Mean vehicle speed (mph)	10	10
W =	Mean vehicle weight (tons)	27	27
w =	Mean number of wheels per vehicle	18	18
p =	Number of days per year with precipitation >0.01 in.	157	157

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	3.0	0.03	3.0	0.03	0.4	<0.01	0.4	<0.01
2	3.8	**0.29**	3.8	**0.29**	0.51	**0.04**	0.51	**0.04**
3	3.8	0.14	3.8	0.14	0.51	0.02	0.51	0.02
4								
5								
6								
7								
8								
TOTALS	10.6	**0.46**	10.6	**0.46**	1.42	**0.06**	1.42	**0.06**

FUGITIVE EMISSIONS FROM PAVED HAULROADS

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	None						
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 O

Monitoring, Recordkeeping, Reporting &Testing Plan

ATTACHMENT O

Icon Midstream Pipeline, LLC

North Liquids Management Facility

Monitoring, Recordkeeping, Reporting and Testing Plan

The proposed equipment changes at the North Liquids Management Facility will not change any of the monitoring, recordkeeping, testing or reporting requirements currently required under the existing permit.

Attachment P

Public Notice Affidavit

Affidavit Notice Will Be Submitted Upon Receipt

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Icon Midstream Pipeline, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II Administrative Update to its air emissions permot for its North Liquids Management Facility located off of Piney Fork Road near the community of Galmish, in Wetzel County., West Virginia (Lat.39.43011, Long. -80.78876)

The applicant estimates the following increases in potential to discharge the following regulated air pollutants:

0.91 tons of Nitrogen Oxides per year
0.32 tons of Carbon Monoxide per year
4.90 tons of Volatile Organics per year
0.01 tons of Particulate Matter per year
0.15 tons of n-Hexane
0.01 tons of formaldehyde

The applicant estimates the following decreases in potential to discharge the following regulated air pollutants:

9.4 tons of CO_{2e} per year

Startup of the modified operation is planned to begin on or about the 30th day of August, 2016. 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 **(Day)** day of **(Month)**, **(Year)**.

By: Mr. Shane Dowell
Operations Manager
Icon Midstream Pipeline, LLC