



WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

**PERMIT DETERMINATION FORM
(PDF)**

FOR AGENCY USE ONLY: PLANT I.D. # _____
PDF # _____ PERMIT WRITER: _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):

Noble Energy, Inc.

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):

Moundsville 3 (MND 3)

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE:

2 1 1 1 1 1

4A. MAILING ADDRESS:
1000 Noble Energy Drive
Canonsburg, PA 15317

4B. PHYSICAL ADDRESS:
2795 Taylor's Ridge Rd
Moundsville, WV

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE MAP AS ATTACHMENT A):

From WV Route 2 south at traffic signal, make a left turn onto WV Alternate 2 (Round Bottom Hill Road) and travel 1.54 miles to CR 88/5 (Lindsay Lane), make a right onto Lindsay Lane and travel 1.77 miles to CR 21 (Roberts Ridge Road), make a right onto Roberts Ridge Road and travel 3.35 miles to CR 2/1 (Taylors Ridge/McFarland Run), make a right onto Taylors Ridge/McFarland Run Road and travel 1.26 miles to intersection, make a right and follow road until you reach a gate. Travel through the gate to the intersection, make a right and travel for 2500 feet to the lease road on the right.

5B. NEAREST ROAD:

Taylors Ridge Rd

5C. NEAREST CITY OR TOWN:

Moundsville, WV

5D. COUNTY:

Marshall

5E. UTM NORTHING (KM):

517.8081

5F. UTM EASTING (KM):

4411.1768

5G. UTM ZONE:

17N

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:

Phil Schlagel

6B. TITLE:

Air Quality Manager

6C. TELEPHONE:

281-872-3202

6D. FAX:

6E. E-MAIL:

phil.schlagel@nblenergy.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY):

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST:

8A. TYPE OF EMISSION SOURCE (CHECK ONE):

NEW SOURCE ADMINISTRATIVE UPDATE

MODIFICATION OTHER (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?

YES NO

9. IS DEMOLITION OR PHYSICAL RENOVATION AT AN EXISTING FACILITY INVOLVED? YES NO

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:

____/____/20__

10B. DATE OF ANTICIPATED START-UP:

____/____/20__

11A. PLEASE PROVIDE A DETAILED PROCESS FLOW DIAGRAM SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS ATTACHMENT B.

11B. PLEASE PROVIDE A DETAILED PROCESS DESCRIPTION AS ATTACHMENT C.

12. PLEASE PROVIDE MATERIAL SAFETY DATA SHEETS (MSDS) FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS ATTACHMENT D. FOR CHEMICAL PROCESSES, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. REGULATED AIR POLLUTANT EMISSIONS:

⇒ **FOR A NEW FACILITY**, PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY**, PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	0.04	0.16
PM ₁₀	0.04	0.16
VOCs	3.85	16.88
CO	0.42	1.82
NO _x	0.50	2.17
SO ₂	0.00	0.01
Pb		
HAPs (AGGREGATE AMOUNT)	0.30	1.33
TAPs (INDIVIDUALLY)*	0.06	0.27
OTHER (INDIVIDUALLY)*		

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. CERTIFICATION OF DATA

I, RJ Moses (TYPE NAME) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A **RESPONSIBLE OFFICIAL**** (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____

TITLE: Operations Manager

DATE: 10 / 24 / 16

** THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

ATTACHMENT A ATTACHMENT B ATTACHMENT C ATTACHMENT D ATTACHMENT E

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq

Noble Energy, Inc.
MND 3 Production Facility

INTRODUCTION NARRATIVE

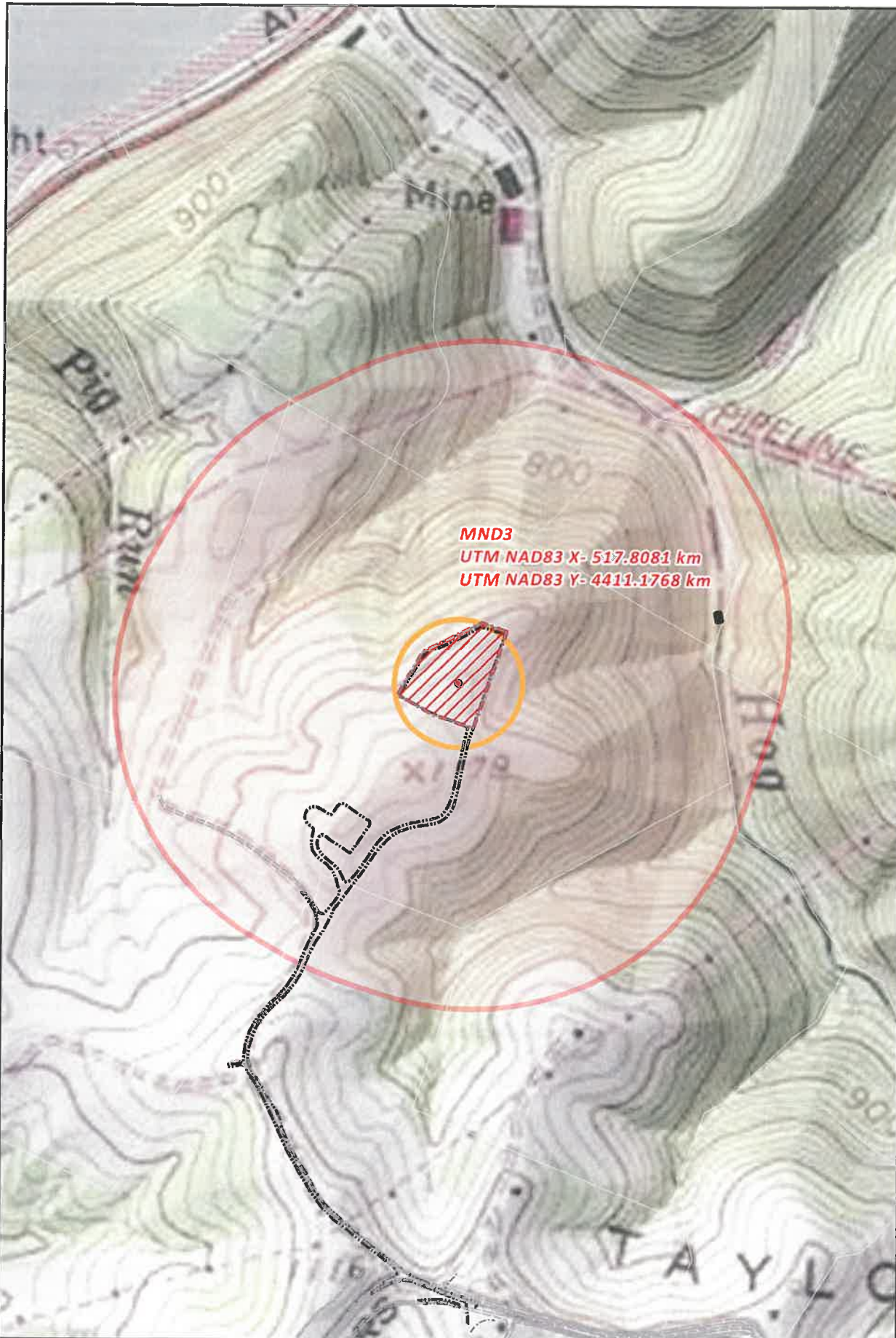
Noble Energy, Inc. (Noble) operates an oil and natural gas production facility at the MND 3 well pad, located in Marshall County, West Virginia. The well pad consists of 6 natural gas wells, 6 gas production units and associated heaters, 4 - 400 bbl Prod Water Storage Tanks and a produced water truck loadout.

Noble has estimated that potential and actual emissions from the production facility have not and will not exceed the WV 45CSR13 permitting thresholds. The produced water production used in this determination is the maximum actual production rate of any 12 months. Produced water production is expected to decline further through the life of the wells.

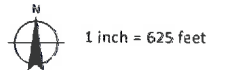
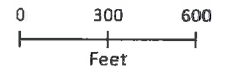
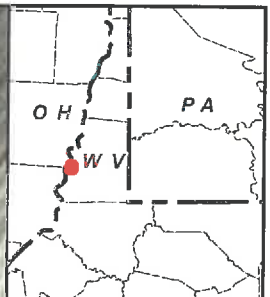
**MND 3
Permit Determination**

ATTACHMENT A

MAP OF MND 3 PRODUCTION FACILITY



MND3
 UTM NAD83 X- 517.8081 km
 UTM NAD83 Y- 4411.1768 km



Main Data Frame Projection:
 NAD 1983 UTM Zone 17N

Units: Meter

Author: devincreighton
 Date Created: 10/6/2016

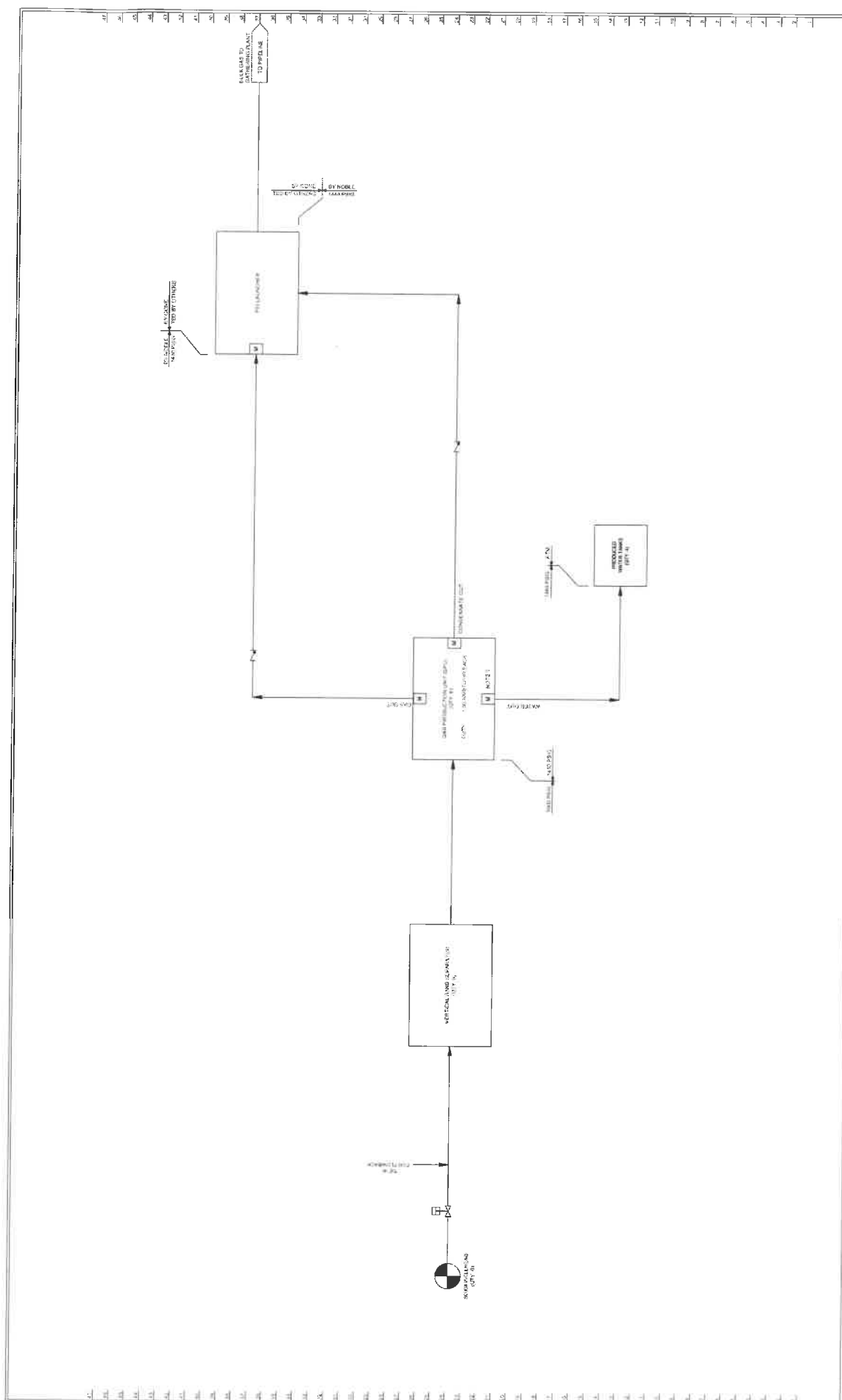
- Approx. Pad Center
- Built Road
- Existing Road
- - - Trail
- Existing Buildings
- ▨ Well Pad Boundary
- 1/4 mi. Pad Extent Buffer
- 300 ft Pad Center Buffer
- Surface Parcels (Resolved)

Disclaimer: All data is licensed for Noble Energy, Inc. use only. Noble Energy, Inc. makes every effort to ensure this map is free of errors, but does not warrant the map or its features are either spatially or temporally accurate or fit for a particular use. Noble Energy, Inc. provides this map without any warranty of any kind.

MND 3
Permit Determination

ATTACHMENT B

PROCESS FLOW DIAGRAM



REV	BY	DATE	DESCRIPTION
1	AK	11/04/11	ISSUED FOR CONSTRUCTION
2	AK	11/04/11	ISSUED FOR CONSTRUCTION
3	AK	11/04/11	ISSUED FOR CONSTRUCTION
4	AK	11/04/11	ISSUED FOR CONSTRUCTION
5	AK	11/04/11	ISSUED FOR CONSTRUCTION
6	AK	11/04/11	ISSUED FOR CONSTRUCTION
7	AK	11/04/11	ISSUED FOR CONSTRUCTION
8	AK	11/04/11	ISSUED FOR CONSTRUCTION
9	AK	11/04/11	ISSUED FOR CONSTRUCTION
10	AK	11/04/11	ISSUED FOR CONSTRUCTION
11	AK	11/04/11	ISSUED FOR CONSTRUCTION
12	AK	11/04/11	ISSUED FOR CONSTRUCTION
13	AK	11/04/11	ISSUED FOR CONSTRUCTION
14	AK	11/04/11	ISSUED FOR CONSTRUCTION
15	AK	11/04/11	ISSUED FOR CONSTRUCTION
16	AK	11/04/11	ISSUED FOR CONSTRUCTION
17	AK	11/04/11	ISSUED FOR CONSTRUCTION
18	AK	11/04/11	ISSUED FOR CONSTRUCTION
19	AK	11/04/11	ISSUED FOR CONSTRUCTION
20	AK	11/04/11	ISSUED FOR CONSTRUCTION
21	AK	11/04/11	ISSUED FOR CONSTRUCTION
22	AK	11/04/11	ISSUED FOR CONSTRUCTION
23	AK	11/04/11	ISSUED FOR CONSTRUCTION
24	AK	11/04/11	ISSUED FOR CONSTRUCTION
25	AK	11/04/11	ISSUED FOR CONSTRUCTION
26	AK	11/04/11	ISSUED FOR CONSTRUCTION
27	AK	11/04/11	ISSUED FOR CONSTRUCTION
28	AK	11/04/11	ISSUED FOR CONSTRUCTION
29	AK	11/04/11	ISSUED FOR CONSTRUCTION
30	AK	11/04/11	ISSUED FOR CONSTRUCTION
31	AK	11/04/11	ISSUED FOR CONSTRUCTION
32	AK	11/04/11	ISSUED FOR CONSTRUCTION
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41	AK	11/04/11	ISSUED FOR CONSTRUCTION
42	AK	11/04/11	ISSUED FOR CONSTRUCTION
43	AK	11/04/11	ISSUED FOR CONSTRUCTION
44	AK	11/04/11	ISSUED FOR CONSTRUCTION
45	AK	11/04/11	ISSUED FOR CONSTRUCTION
46	AK	11/04/11	ISSUED FOR CONSTRUCTION
47	AK	11/04/11	ISSUED FOR CONSTRUCTION
48	AK	11/04/11	ISSUED FOR CONSTRUCTION
49	AK	11/04/11	ISSUED FOR CONSTRUCTION
50	AK	11/04/11	ISSUED FOR CONSTRUCTION

MND 3
Permit Determination

ATTACHMENT C

MND 3 PROCESS DESCRIPTION

The MND 3 is an oil and gas production facility.

Condensate, gas, produced water and sand come from 6 natural gas wells through 6 sand separators.

Sand is routed from the sand separators to a sand storage box for disposal.

Condensate, gas and produced water are routed through 6 Gas Production Units (GPUs) with 6 - 1.0 MMBtu/hr Heaters where separation occurs.

The condensate and gas from the GPUs exit the facility via sales pipeline.

Produced water from the separators flows to 4 - 400 bbl Prod Water Storage Tanks.

Produced water is transported off-site by tanker truck or waterpipeline.

MND 3
Permit Determination

ATTACHMENT E

SUPPORTING CALCULATIONS

MND 3
Emission Summary Sheet

Emission Unit ID Number	Source Description	Potential Emissions (tpy)															
		NOx	CO	VOC	SOx	PM	PM10	Formaldehyds	n-Hexane	Benzene	Toluene	Ethylbenzene	Xylene	224-TMP	Single HAP	Total HAPs	
PW TK 1-4	400 bbl Prod Water Storage Tanks	---	---	1.67	---	---	---	---	---	---	---	---	---	---	---	---	---
GPU 1-6	1.0 MMbtu/hr Heaters	2.15	1.81	0.12	0.01	0.16	0.0016	0.0388	0.0015	0.0030	0.0002	0.0024	0.0000	0.0121	0.0191		
TL	Produced Water Truck Loading Detail	---	---	0.16	---	---	---	0.0263	0.0000	0.0001	0.0000	0.0000	0.0000	0.0388	0.0407		
FUG	Equip Component Fugitives Estimate	---	---	5.27	---	---	---	0.19	0.0000	0.0009	0.0000	0.0027	0.0000	0.0263	0.0036		
TE Gen	Thermo Electric Generator	0.02	0.01	0.00	0.00	0.00	---	---	0.01	0.05	0.01	0.03	0.02	0.1949	0.37		
Pneumatic Controllers	Pneumatic Controllers	---	---	11.33	---	---	---	---	---	---	---	---	---	---	---	---	
Total TPY		2.17	1.82	16.88	0.01	0.16	0.00	1.16	0.01	0.06	0.01	0.10	0.02	0.27	1.33		
Total lb/hr		0.90	0.42	3.85	0.00	0.04	0.00	0.26	0.01	0.01	0.00	0.02	0.00	0.06	0.30		
Total lb/day		11.90	9.97	92.49	0.07	0.90	0.01	6.33	0.07	0.33	0.07	0.56	0.08	1.49	7.30		

MND 3

Heater Detail Sheet

Equipment ID GPU 1-6
 Equipment Count 6
 Equipment Usage 1.0 MMBtu/hr Heaters
 Fuel Heating Value 1220 Btu/scf
 Design Heat Rate* 1.00 MMBtu/hr
 Site Heat Rate* 1.00 MMBtu/hr
 Potential Operation 8760 hr/yr
 Potential Fuel Usage 7.18 MMscf/yr

* These are heat release rates and not the duty for the heater

Potential Emissions

Pollutant	Emission Factor (lb/MMscf)	Nominal Rating (MMBtu/hr)	Hrs of Operation (hrs/yr)	Estimated Emissions		Source of Emission Factor
				(lb/hr)	(tpy)	
NOx	100.00	6.000	8760	0.49	2.15	AP-42 ¹
CO	84.00	6.000	8760	0.41	1.81	AP-42 ¹
VOC	5.50	6.000	8760	0.03	0.12	AP-42 ²
SO2	0.60	6.000	8760	0.00	0.01	AP-42 ²
PM10	7.60	6.000	8760	0.04	0.16	AP-42 ²
Benzene	0.002	6.000	8760	0.00	0.0000	AP-42 ³
Toluene	0.003	6.000	8760	0.00	0.0001	AP-42 ³
N-Hexane	1.80	6.000	8760	0.01	0.0388	AP-42 ³
Formaldehyde	0.08	6.000	8760	0.00	0.0016	AP-42 ³
Total HAPs	1.89	6.000	8760	0.01	0.04	AP-42 ³
CO ₂	120000.00	6.000	8760	590.16	2584.92	AP-42 ²
CH ₄	2.30	6.000	8760	0.01	0.05	AP-42 ²
CO ₂ e					2585.96	

¹ EPA AP-42, Volume I, Fifth Edition - July 1998, Table 1.4-1, Emission Factors for Nitrogen Oxides (NOx) and Carbon Monoxide (CO) from Natural Gas Combustion

² EPA AP-42, Volume I, Fifth Edition - July 1998, Table 1.4-2, Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion

³ EPA AP-42, Volume I, Fifth Edition - July 1998, Table 1.4-3, Emission Factors for Speciated Organic Compounds from Natural Gas Combustion

**MND 3
Tank Detail Sheet**

Source ID Number	PW TK 1-4								
Equipment ID	PW TK								
Tank Description	400 bbl Prod Water Storage	Tank Potential operation							
Tank Usage	Produced Water Storage								
Tank Count	4	Maximum water production							
Tank Capacity	400	bbl							
Tank Contents	Produced Water								
Emission Controls	NO								
Tank Orientation	Vertical, above ground								
Shell Height / Length	20 ft								
Shell Diameter	12 ft								
Roof Slope	0.06								
Roof Type (Cone, Dome, IFR, EFR, None)	Cone								

8760 hr/yr

181,277 bbl/yr

1.00 % Oil

1812.8 bbl/yr Oil

0.01846 lb/bbl VOC from FESCO Flash Study

0.00056 lb/bbl BTEX from FESCO Flash Study

(Welded, Bolted, Fiberglass)

(eg. light brown, good)

(eg. white, fair)

Welded

Gray/Medium, good

Gray/Medium, good

N/A

N/A

Vent pressure setting 0.03 +/- psig

VOC Control Efficiency 0 %

Potential Emissions

Pollutant	CAS	Hrs of Operation (hrs/yr)	Estimated Uncontrolled Emissions ¹ (lb/hr)	(tpy)	Emission Factor (lb/yr)	Source of Emission Factor
VOC		8760	0.38	1.67	3346.37	FESCO Flash Study

Weight % of VOC

Benzene	0.09	tpy
Ethylbenzene	0.01	0.001
Toluene	0.18	0.000
Xylenes	0.14	0.003
N-Hexane	0.72	0.002
224-TMP	0.00	0.012
		0.000

MND 3

Produced Water Truck Loading Detail

TL

Select Model Liquid \rightarrow Gasoline RVP 7

or Enter These Factors Directly Below

P= **psia** true vapor pressure
M= **lb/lb-mol** molecular weight of vapors

S= **0.6** saturation factor
P= **4.3 psia** true vapor pressure
M= **68 lb/lb-mol** molecular weight of vapors
T= **70 °F** temperature
L₁= **4.12 lb/1000 gallons = 12.46*S*P*M/(T+460)**
L₁= **0.173 lb/bbl** Loading Losses

Production: 181,277 bbl/year Produced Water
 1,813 bbl/year oil based on 1% oil in the Produced Water
4.96649315 bbl/day

Potential Emissions

Pollutant	Component		Uncontrolled		Controlled	
	Wt%	lb/bbl	lb/yr	tpy	(lb/yr)	(tpy)
VOC	100%	0.173	314	314	0.1568	0.1568
TOTAL HAPS	2.3%	0.004	7	7	0.0036	0.0036
n-hexane	16.67%	0.029	53	53	0.0263	0.0263
224-TMP	0.00%	0.000	0	0	0.0000	0.0000
Benzene	0.04%	0.000	0	0	0.0000	0.0000
Toluene	0.49%	0.001	2	2	0.0009	0.0009
Ethylbenzene	0.19%	0.000	0	0	0.0000	0.0000
Xylene	1.62%	0.003	5	5	0.0027	0.0027

¹ EPA AP-42, Volume I, Fifth Edition - January 1995, Table 5.2-1, Saturation (S) Factors for Calculating Petroleum Liquid Loading Losses

² API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, Table 5-12

MND 3
Equip Component Fugitives Estimate
FUG

	Counts	Emission Factor ¹ lb/hr/component em.	% Control Efficiency	% VOC	VOC Emissions		Benzene	Toluene	E-benzene	Xylene	n-Hexane	224-TMP		%CH4	CH4 Emissions		CO ₂ e tpy
					lb/hr	tpy						lb/yr	lb/yr		lb/hr	tpy	
Valve																	
Gas/Vapor	30	0.00992	0	16	0.05	0.21	0.06	0.13	0.01	0.20	4.35	0.00	0.00	59.83	0.18	0.78	16.38
Light Liquid ¹	48	0.00551	0	100	0.26	1.16	2.66	14.25	3.48	26.76	176.31	18.53	0.00	1.17	0.00	0.01	0.28
Water/Oil	48	0.000216	0	50	0.01	0.02	0.10	0.56	0.14	1.05	0.69	0.00	0.00	1.17	0.00	0.00	0.01
Pumps/Seals																	
Light Liquid	0	0.02866	0	100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00
Water/Oil	0	0.0000529	0	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00
Flanges																	
Gas/Vapor	30	0.00086	0	16	0.00	0.02	0.01	0.01	0.00	0.02	0.38	0.00	0.00	59.83	0.02	0.07	1.42
Light Liquid	30	0.000243	0	100	0.01	0.03	0.07	0.39	0.10	0.74	4.86	0.51	0.00	100	0.01	0.03	0.67
Water/Oil	36	0.00000617	0	50	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.00	0.00	100	0.00	0.00	0.02
Open-Ended Lines																	
Gas/Vapor	0	0.00441	0	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.83	0.00	0.00	0.00
Light Liquid	0	0.00309	0	100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100	0.00	0.00	0.00
Water/Oil	0	0.00006	0	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100	0.00	0.00	0.00
Other																	
Gas/Vapor	12	0.0194	0	16	0.04	0.16	0.05	0.10	0.01	0.16	3.41	0.00	0.00	59.83	0.14	0.61	12.81
Light Liquid ¹	6	0.0165	0	100	0.10	0.43	1.00	5.33	1.30	10.02	66.00	6.94	0.00	100	0.10	0.43	9.11
Water/Oil	42	0.0309	0	50	0.65	2.84	13.07	69.92	17.05	131.31	86.52	0.00	0.00	100	1.30	5.68	119.37
Connectors																	
Gas/Vapor	150	0.000441	0	16	4.01	0.05	0.01	0.03	0.00	0.05	0.97	0.00	0.00	59.83	0.04	0.17	3.64
Light Liquid	150	0.000463	0	100	0.07	0.30	0.70	3.74	0.91	7.03	46.30	4.87	0.00	100	0.07	0.30	6.39
Water/Oil	84	0.000243	0	50	0.01	0.04	0.21	1.10	0.27	2.07	1.36	0.00	0.00	100	0.02	0.09	1.88
Total Emissions					1.19	5.27	17.74	94.47	23.01	177.35	389.79	30.85	1.85	8.10	170.10		

Note
1. Heavy liquids are defined as having vapor pressure 0.044 psia or less at 68°F. Light Liquids are defined as having vapor pressure higher than 0.044 psia at 68°F
2. Factors from EPA Document EPA-453/R-95-017, November 1995.

MND 3

Thermo Electric Generator

Source ID Number TE Gen
 Equipment ID TE Gen
 Equipment Usage Thermo Electric Generator
 Equipment Make Global Thermoelectric
 Equipment Model Model 5220
 Emission Controls None
 Design Heat Rate* 0.03 MMBtu/hr
 Potential Operation 8760 hr/yr
 Potential Fuel Usage 7.4 gal/day
 Fuel Propane

Potential Emissions

Pollutant	Emission Factor (lb/10 ³ gal)	Nominal Rating (MMBtu/hr)	Hrs of Operation (hrs/yr)	Estimated Emissions		Source of Emission Factor
				(lb/hr)	(tpy)	
NOx	13.00	0.028	8760	0.00	0.02	AP-42 ¹
CO	7.50	0.028	8760	0.00	0.01	AP-42 ¹
TOC	1.00	0.028	8760	0.00	0.00	AP-42 ¹
SO2	0.10	0.028	8760	0.00	0.00	AP-42 ¹
PM10	0.70	0.028	8760	0.00	0.00	AP-42 ¹
CO ₂	12500.00	0.028	8760	3.85	16.88	AP-42 ¹
CH ₄	0.20	0.028	8760	0.00	0.00	AP-42 ¹

¹ EPA AP-42, Volume I, Fifth Edition - July 2008, Table 1.5-1, Emission Factors for LPG Combustion

MND 3

Pneumatic Controllers

Equipment ID	CB PC	IB PC
Equipment Usage	Flow / Back Pressure Control	
Equipment Make	Fischer Control	
Equipment Model	DVS 6200	
Emission Controls	None	
Equipment Count	7	18
Design Flow*	19.83 SCFH	0.02 SCFH
Potential Operation Service	8760 hr/yr NG	8760

Potential Emissions

Pollutant	% of VOC	Emission Factor (lb/SCF)	Hrs of Operation (hrs/yr)	Estimated Emissions		Source of Emission Factor
				(lb/hr)	(tpy)	
VOC		0.02	8760	2.59	11.33	Gas Analysis
n-Hexane	7.80E-02			0.20	0.88	HYSYS % of VOC
Benzene	1.70E-04			0.00	0.00	HYSYS % of VOC
Toluene	7.23E-04			0.00	0.01	HYSYS % of VOC
Ethylbenzene	9.26E-05			0.00	0.00	HYSYS % of VOC
Xylenes	6.95E-04			0.00	0.01	HYSYS % of VOC
Total HAPs			8760	0.00	0.00	HYSYS % of VOC