



**west virginia** department of environmental protection

Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304  
(304) 926-0450  
(304) 926-0452 fax

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

March 25, 2014

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-5101740, issued to NOBLE ENERGY, INC., is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin  
Chief

Operator's Well No: MND 3 DHS  
Farm Name: CONSOL MINING CO., LLC  
**API Well Number: 47-5101740**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 03/25/2014

# PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

## CONDITIONS

---

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.



4705101740

CK 2/14/14  
51500  
558

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

51 3

1) Well Operator: Noble Energy, Inc. 494501907 Marshall Franklin Powhatan Point  
Operator ID County District Quadrangle

2) Operator's Well Number: MND 3 DHS Well Pad Name: MND 3

3) Farm Name/Surface Owner: Consol Mining Co., LLC Public Road Access: CR 2/1

4) Elevation, current ground: 1128.39' Elevation, proposed post-construction: 1112'

5) Well Type (a) Gas  Oil  Underground Storage   
Other

(b) If Gas Shallow  Deep   
Horizontal

MJK  
1/24/14  
Mc  
1/21/14

6) Existing Pad: Yes or No yes-building now

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Marcellus at 6226' and 53' in thickness, pressure 4427#. Burkett at 6170', 27' in thickness, 3887# pressure. Hamilton at 6205', 21' in thickness, 3909# pressure.

8) Proposed Total Vertical Depth: 6279'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 12,921'

11) Proposed Horizontal Leg Length: 7172'

12) Approximate Fresh Water Strata Depths: 165' and 298'

13) Method to Determine Fresh Water Depths: Offset well data

14) Approximate Saltwater Depths: None noted in offsets

15) Approximate Coal Seam Depths: 612' Pittsburgh Base

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated, drilling in pillar-mine maps attached

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No

(a) If Yes, provide Mine Info: Name: Ireland Mine  
Depth: Base at 612' at deepest point  
Seam: Pittsburgh  
Owner: Murray American Energy (Previously Consol)

RECEIVED  
Office of Oil and Gas  
FEB 18 2014  
WV Department of  
Environmental Protection

WW-6B  
(9/13)

4705101740

18)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	30"	New	LS	117#	40'	40'	CTS
Fresh Water	20"	New	LS	94#	400	400'	CTS
Coal	13 3/8"	New	J-55	54.5#	1062'	1062'	CTS
Intermediate	9 5/8"	New	J-55	36#	2600'	2600'	CTS
Production	5 1/2"	New	P110	20#	12,921'	12,921'	TOC 200' above 3 5/8" casing shoe
Tubing							
Liners							

*MSK 1/21/14*      *JK 1/21/14*

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	36"	0.375		Type 1/Class A	1.2
Fresh Water	20"	26"	.438	2730	Type 1/Class A	1.2
Coal	13 3/8"	17 1/2"	.380	2730	Type 1/Class A	1.2
Intermediate	9 5/8"	12 3/8"	.352	3520	Type 1/Class A	1.19
Production	5 1/2"	8 3/4" & 8 1/2"	.361	12,640	Type 1/Class A	1.27
Tubing						
Liners						

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

**RECEIVED**  
Office of Oil and Gas  
FEB 18 2014  
WV Department of  
Environmental Protection

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6279 feet. Drill Horizontal leg - stimulate and produce the Marcellus Formation. If we should encounter an unanticipated void we will install casing at a minimum of 20' below the void but not more than 100' below the void, set a basket and grout to surface.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. See attached list. Maximum pressure not to exceed 10,000 lb.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 15.6

22) Area to be disturbed for well pad only, less access road (acres): 9.1

23) Describe centralizer placement for each casing string:

No centralizers will be used with conductor casing. Surface casing will have bow spring centralizers on first 2 joints then every third joint to 100' from surface. Intermediate casing will have bow spring centralizers on first 2 joints then every third joint to 100' from surface. Production string will have a rigid bow spring every joint to KOP, rigid bow spring every third joint from KOP to top of cement.

24) Describe all cement additives associated with each cement type:

Conductor-1.15% CaCl \*Surface and Coal (Intermediate)- Class A Portland Cement CaCl 2%, 2% Accelerator, 0.2% Antifoam and 0.125#/sk Flake. Excess Yield=1.18 Production- 14.8 ppg class A 25:75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer 15% Excess Yield=1.27 TOC greater or equal to 200' above 9.625" shoe.

\*Surface and Coal string WVDEP approved variance attached.

25) Proposed borehole conditioning procedures:

Conductor-The hole is drilled w/air and casing is run on air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Surface-The hole is drilled w/air and casing is run on air. Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement. Coal-The hole is drilled and cased w/air or on Freshwater based mud. Once casing is at setting depth, the hole is filled w/KCl water and a minimum of one hole volume is circulated prior to pumping cement. Intermediate-Once surface casing is set and cemented, intermediate hole is drilled either on air or SOBM and filled with KCl water once drilled to TD. Production-The hole is drilled with SOBM and once to TD, circulated at maximum allowable pump rate for at least 6x bottom up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.

\*Note: Attach additional sheets as needed.

RECEIVED  
Office of Oil and Gas  
Feb 28 2014  
WV Department of  
Environmental Protection



4705101740



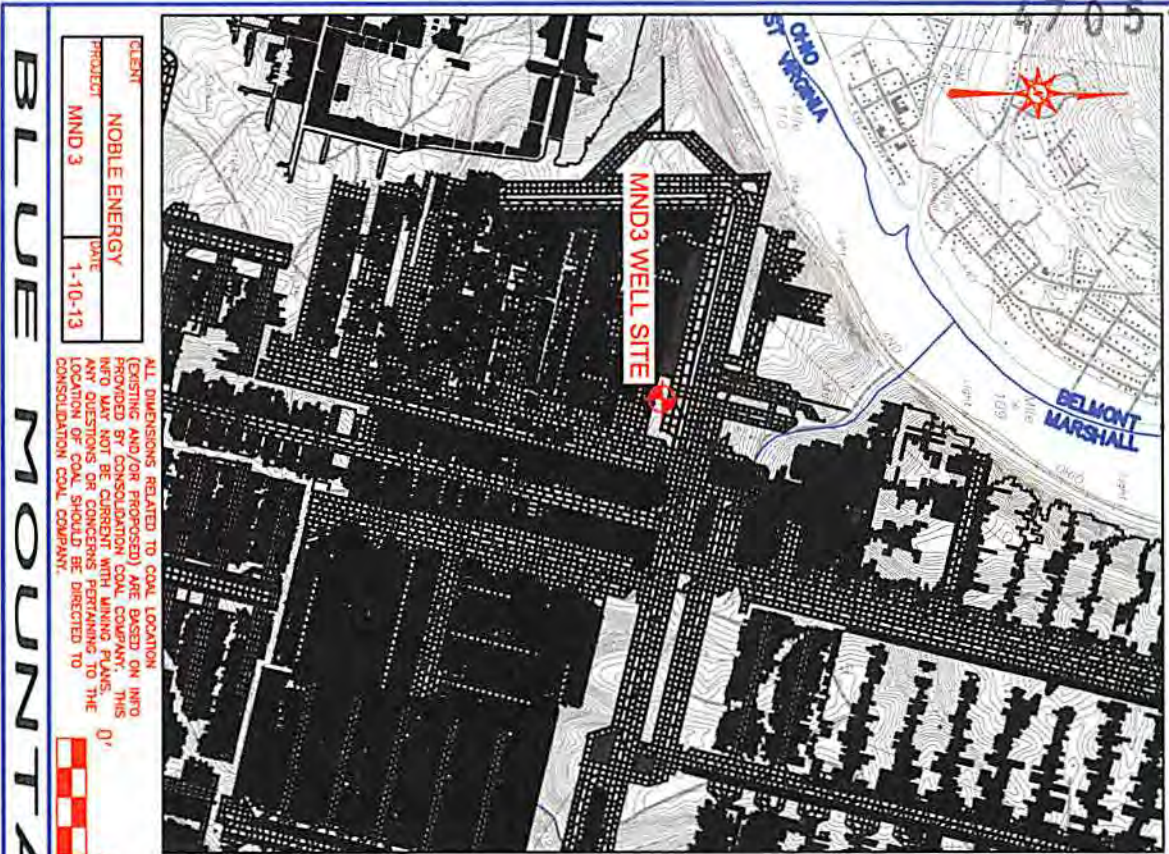
**DRILLING WELL PLAN**  
**MND-3D-HS (Marcellus HZ)**  
**Macellus Shale Horizontal**  
**Marshall County, WV**

Ground Elevation		1112'		MND-3D SHL (Lat/Long)		(494454.91N, 1637211.92E) (NAD27)			
Azm		140.674°		MND-3D LP (Lat/Long)		(494454.91N, 1637812.39E) (NAD27)			
WELLBORE DIAGRAM		MND-3D BHL (Lat/Long)		(489411.25N, 1641344E) (NAD27)					
HOLE	CASING	GEOLOGY	#D	TVD	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
36	30" 117#	Conductor	40	40	AIR	To Surface	N/A	Ensure the hole is clean at TD.	Stabilize surface fill/soil. Conductor casing = 0.375" wall thickness
		Surface Casing	400	400	AIR	15.8 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Centralized every 3 joints to surface	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Surface casing = 0.438" wall thickness Burst=2730 psi
17 1/2	13-3/8" 54.5# J-55 BTC	Pittsburgh Coal	602	602	AIR	15.8 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Bow Spring on first 2 joints then every third joint to 100' from surface	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.380" wall thickness Burst=2730 psi
		Inf. Casing	1062	1062					
12 3/8	9-5/8" 38# J-55 LTC	Price Formation	2190	2190	AIR	15.8ppg Class A +0.4% Ref, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19 To Surface	Bow spring centralizers every third joint to 100' feet from surface.	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Casing to be ran 250' below the 5th Sand. Intermediate casing = 0.352" wall thickness Burst=3520 psi
		Weir Sand	2350	2350					
		Inf. Casing	2600	2600					
8.75" Vertical		Speechley		3506	8.0ppg - 9.0ppg SOBM	14.8ppg Class A 25.75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer	Rigid Bow Spring every third joint from KOP to TOC		
		Java		4985					
		Angola		5193					
		Rheinstreet		5758					
		Sonyea		6055					
8.75" Curve	5-1/2" 20# HCP-110 TXP BTC	Cashaqua		6074	12.0ppg-12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Middlesex		6080.5					
		West River		6126					
		Burkell		6170					
		Tully Limestone		6197					
8.75" - 8.5" Lateral		Hamilton		6206	12.0ppg-12.5ppg SOBM				
		Marcellus		6226					
		TD		12921					
		Onondaga		6290					

LP @ 6279' TVD / 6763' MD      8.75 / 8.5 Hole - Cemented Long String 5-1/2" 20# HCP-110 TXP BTC      +/-6158' # Lateral      TD @ +/-6279' TVD +/-12921' MD

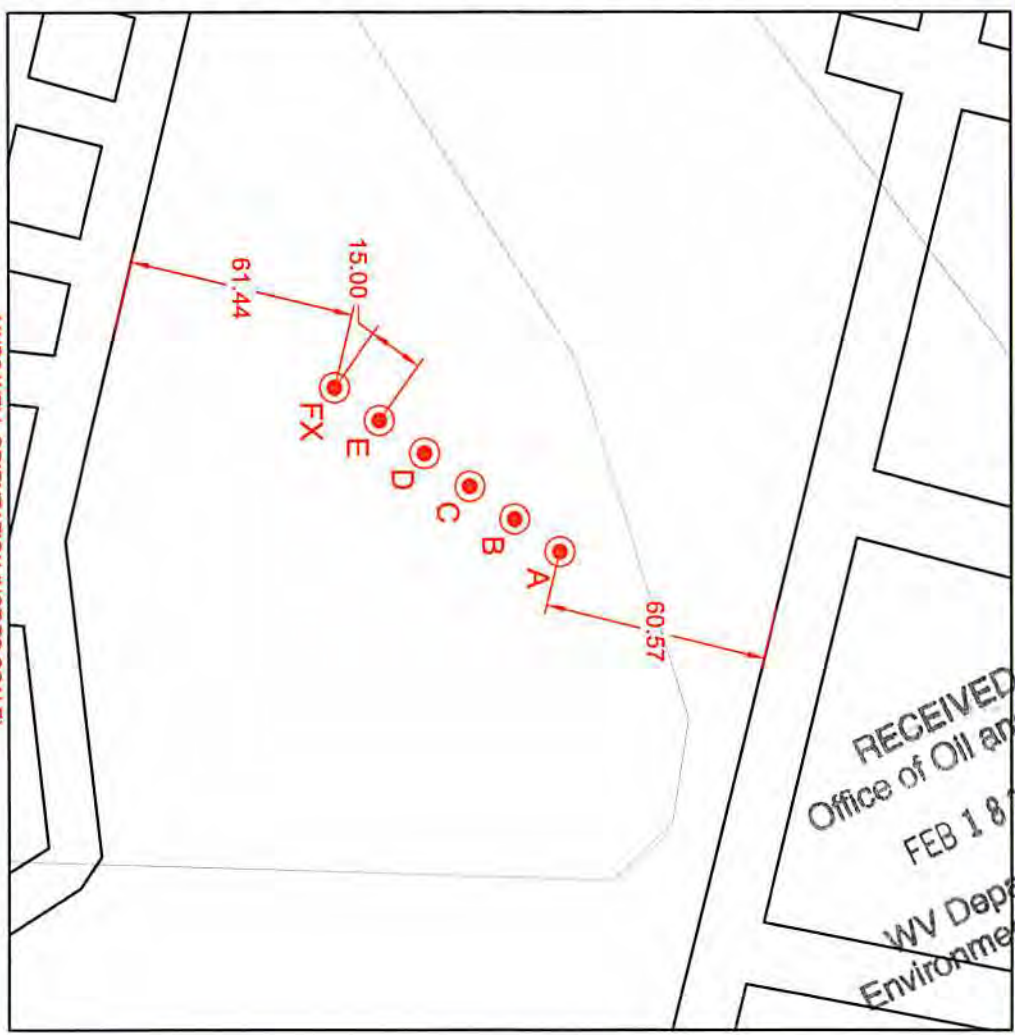
RECEIVED  
 Office of Oil and Gas  
 FEB 18 2014  
 WV Department of  
 Environmental Protection

03/28/2014



CLIENT	NOBLE ENERGY
PROJECT	MND 3
DATE	1-10-13

ALL DIMENSIONS RELATED TO COAL LOCATION (EXISTING AND/OR PROPOSED) ARE BASED ON INFO PROVIDED BY CONSOLIDATION COAL COMPANY. THIS INFO MAY NOT BE CORRECT WITH MINING PLANS. ANY DIMENSIONS OR SHIFTS PERTAINING TO THE LOCATION OF COAL SHOULD BE DIRECTED TO CONSOLIDATION COAL COMPANY.



BLUE MOUNTAIN ENGINEERING

DATE	11-20-13	REVISION	16
------	----------	----------	----

RECEIVED  
Office of Oil and Gas  
FEB 18 2014  
WV Department of  
Environmental Protection



4705101740

BLUE MOUNTAIN ENGINEERING

MND3AHS
COUNTY: MARSHALL
DISTRICT: FRANKLIN
NAD 83 - WV NORTH N:494522.777 E:1605797.510 LAT:39.850553 LON:-80.791912
NAD 27 - WV NORTH N:494486.629 E:1637234.689 LAT:39.850477 LON:-80.792100
MCELROY MINE N:-63827.648 E:31596.323
UTM NAD83 ZONE 17 METERS N:4411190.936 E:517801.020

MND3BHS
COUNTY: MARSHALL
DISTRICT: FRANKLIN
NAD 83 - WV NORTH N:494510.593 E:1605788.761 LAT:39.850519 LON:-80.791942
NAD 27 - WV NORTH N:494474.445 E:1637226.941 LAT:39.850443 LON:-80.792131
MCELROY MINE N:-63839.949 E:31587.741
UTM NAD83 ZONE 17 METERS N:4411187.180 E:517798.416

MND3CHS
COUNTY: MARSHALL
DISTRICT: FRANKLIN
NAD 83 - WV NORTH N:494498.407 E:1605790.012 LAT:39.850485 LON:-80.791973
NAD 27 - WV NORTH N:494462.260 E:1637217.192 LAT:39.850409 LON:-80.792161
MCELROY MINE N:-63852.252 E:31579.158
UTM NAD83 ZONE 17 METERS N:4411183.423 E:517795.813

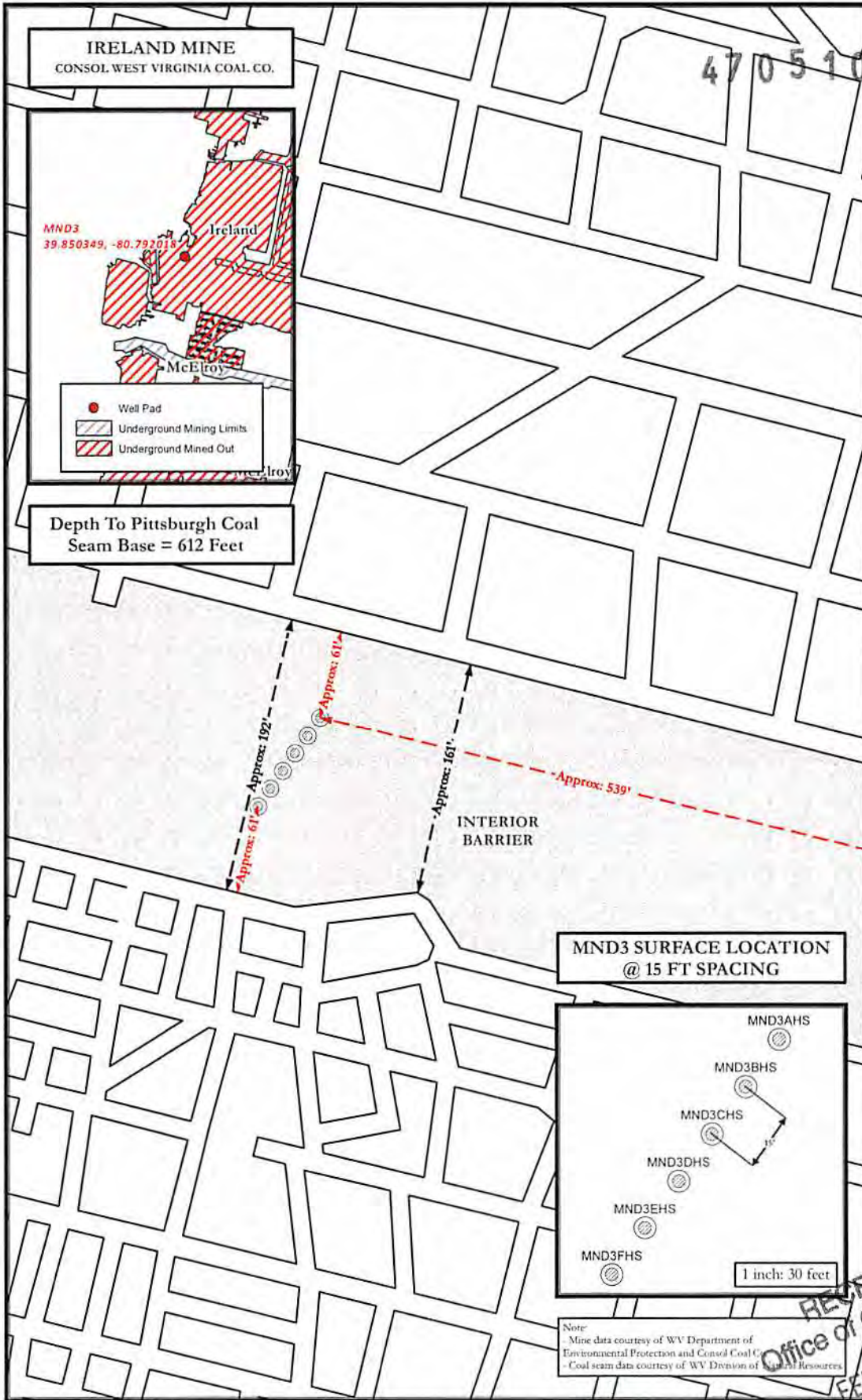
MND3DHS
COUNTY: MARSHALL
DISTRICT: FRANKLIN
NAD 83 - WV NORTH N:494486.224 E:1605771.284 LAT:39.850451 LON:-80.792003
NAD 27 - WV NORTH N:494450.076 E:1637208.444 LAT:39.850376 LON:-80.792192
MCELROY MINE N:-63864.554 E:31570.576
UTM NAD83 ZONE 17 METERS N:4411179.667 E:517793.210

MND3EHS
COUNTY: MARSHALL
DISTRICT: FRANKLIN
NAD 83 - WV NORTH N:494474.040 E:1605762.514 LAT:39.850417 LON:-80.792034
NAD 27 - WV NORTH N:494437.892 E:1637199.695 LAT:39.850342 LON:-80.792222
MCELROY MINE N:-63876.855 E:31561.994
UTM NAD83 ZONE 17 METERS N:4411175.910 E:517790.606

MND3FXHS
COUNTY: MARSHALL
DISTRICT: FRANKLIN
NAD 83 - WV NORTH N:494461.854 E:1605753.767 LAT:39.850394 LON:-80.792064
NAD 27 - WV NORTH N:494425.707 E:1637190.948 LAT:39.850308 LON:-80.792253
MCELROY MINE N:-63889.158 E:31553.413
UTM NAD83 ZONE 17 METERS N:4411172.153 E:517788.003

DATE 11-20-13  
REVISION 16

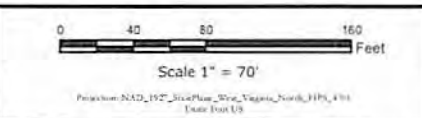




4705101740

**MND3 SITE SAFETY PLAN**  
- WELLHEAD TOPHOLE LOCATION -

Surface Hole Location  
 Target Coal Seam  
 Underground Mining Limit



**noble energy**

Disclaimer: All data is licensed for use by Noble Energy Inc. use only.

Date: 7/3/2013

Approved by: [Signature]

Checked by: [Signature]

WV Department of Environmental Protection

RECEIVED  
Office of Oil and Gas  
FEB 18 2014  
WV Department of Environmental Protection  
03/28/2014

WW-9  
(9/13)

API Number 47- 4705101740  
Operator's Well No. MND3 DHS

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Noble Energy, Inc. OP Code 494501907

Watershed (HUC 10) Short Creek-Ohio River (HUC 10) Quadrangle Powhatan Point

Elevation 1112' Post Construction County Marshall District Franklin

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes  No

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: Closed Loop-No pit will be utilized

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? \_\_\_\_\_

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number TBD-Next anticipated well)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain \_\_\_\_\_)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air thru coal string, then SOB M

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Please see attached

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfills

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) \_\_\_\_\_

-Landfill or offsite name/permit number? Please see attached

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

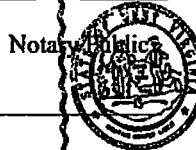
Company Official Signature Laura L. Adkins

Company Official (Typed Name) Laura Adkins

Company Official Title Regulatory Analyst

Subscribed and sworn before me this 17<sup>TH</sup> day of FEBRUARY, 2014

Philip W. Young



My commission expires 9/3/2014

RECEIVED  
Office of Oil and Gas

FEB 18 2014

OFFICIAL SEALMENT OF  
NOTARY PUBLIC, STATE OF WEST VIRGINIA  
PHILIP W. YOUNG  
THE NOTARY  
300 N. CORKLE AVE SE  
CHARLESTON, WV 25304  
MY COMMISSION EXPIRES SEPT 3, 2014



# Site Water/Cuttings Disposal

4705101740

## Cuttings

### Haul off Company:

Eap Industries, Inc. DOT # 0876278  
1575 Smith Twp State Rd. Atlasburg PA 15004  
1-888-294-5227

MAX Environmental Technologie  
233 Max Lane  
Yukon, PA 25698  
PAD004835146

### Disposal Locations:

Apex Environmental, LLC Permit # 06-08438  
11 County Road 78  
Amsterdam, OH 43903  
740-543-4389

Westmoreland Waste, LLC Permit # 100277  
111 Conner Lane  
Belle Vernon, PA 15012  
724-929-7694

Sycamore Landfill (Allied Waste) R30-07900105-2010  
4301 Sycamore Ridge Road  
Hurricane, WV 25526  
304-562-2611

## Water

### Haul off Company:

Dynamic Structures, Clear Creek DOT # 720485  
3790 State Route 7  
New Waterford, OH 44445  
330-892-0164

### Disposal Location:

Solidification  
Waste Management, Arden Landfill Permit # 100172  
200 Rangos Lane  
Washington, PA 15301  
724-225-1589

Solidification/Incineration  
Soil Remediation, Inc. Permit # 02-20753  
6065 Arrel-Smith Road  
Lowelville, OH 44436

03/28/2014

4705101740

Chemical List Including CAS#'s

Type: Friction Reducer (DWP-612)  
Chemical Component as listed on MSDS: Long Chain Polyacrylamide  
CAS: N/A

Type: Biocide (DWP-944)  
1<sup>st</sup> Chemical Component as listed on MSDS: 2,2-Dibromo-3-nitropropionamide  
CAS: 10222-01-2  
2<sup>nd</sup> Chemical Component as listed on MSDS: Polyethylene Glycol Mixture  
CAS: 25322-68-3

Type: Scale Inhibitor (DAP-901)  
1<sup>st</sup> Chemical Component as listed on MSDS: Methanol  
CAS: 67-56-1  
2<sup>nd</sup> Chemical Component as listed on MSDS: Phosphoric Acid Ammonium Salt  
CAS: Trade Secret  
3<sup>rd</sup> Chemical Component as listed on MSDS: Ammonium Chloride  
CAS: 12125-02-9  
4<sup>th</sup> Chemical Component as listed on MSDS: Organic Phosphonate  
CAS: Trade Secret  
5<sup>th</sup> Chemical Component as listed on MSDS: Amine Salt  
CAS: Trade Secret  
6<sup>th</sup> Chemical Component as listed on MSDS: Oxyalkylated Polyamine  
CAS: Trade Secret

Type: Surfactant (DWP-938)  
Chemical Component as listed on MSDS: Soap  
CAS: N/A

Type: Hydrochloric Acid  
Chemical Component as listed on MSDS: Hydrochloric Acid  
CAS: 7647-01-0

Type: PA Breaker (DWP-690)  
Chemical Component as listed on MSDS: Hydrogen Peroxide  
CAS: Trade Secret

Type: Gel Slurry (DWP-111)  
Chemical Component as listed on MSDS: Viscosifier  
CAS: N/A

Type: Oxidizer Breaker (DWP-901)  
Chemical Component as listed on MSDS: Ammonium Persulfate  
CAS: 7727-54-0

Type: Buffer (DWP-204)  
Chemical Component as listed on MSDS: Formic Acid  
CAS: 64-18-6

RECEIVED  
Office of Oil and Gas  
FEB 18 2014  
WV Department of  
Environmental Protection

03/28/2014



4705101740

MND 3 DHS

Form WW-9

Operator's Well No.

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed 15.6 acres Prevegetation pH \_\_\_\_\_

Lime 2 to 3 Tons/acre or to correct to pH \_\_\_\_\_

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch Hay or straw at 2 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5
See site plans for full list	

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5
See site plans for full list	

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Jim Nicholson WVOOG State Inspector

Comments:

Title: Oil & Gas Inspector

Date: 1/21/14

Field Reviewed?  Yes  No

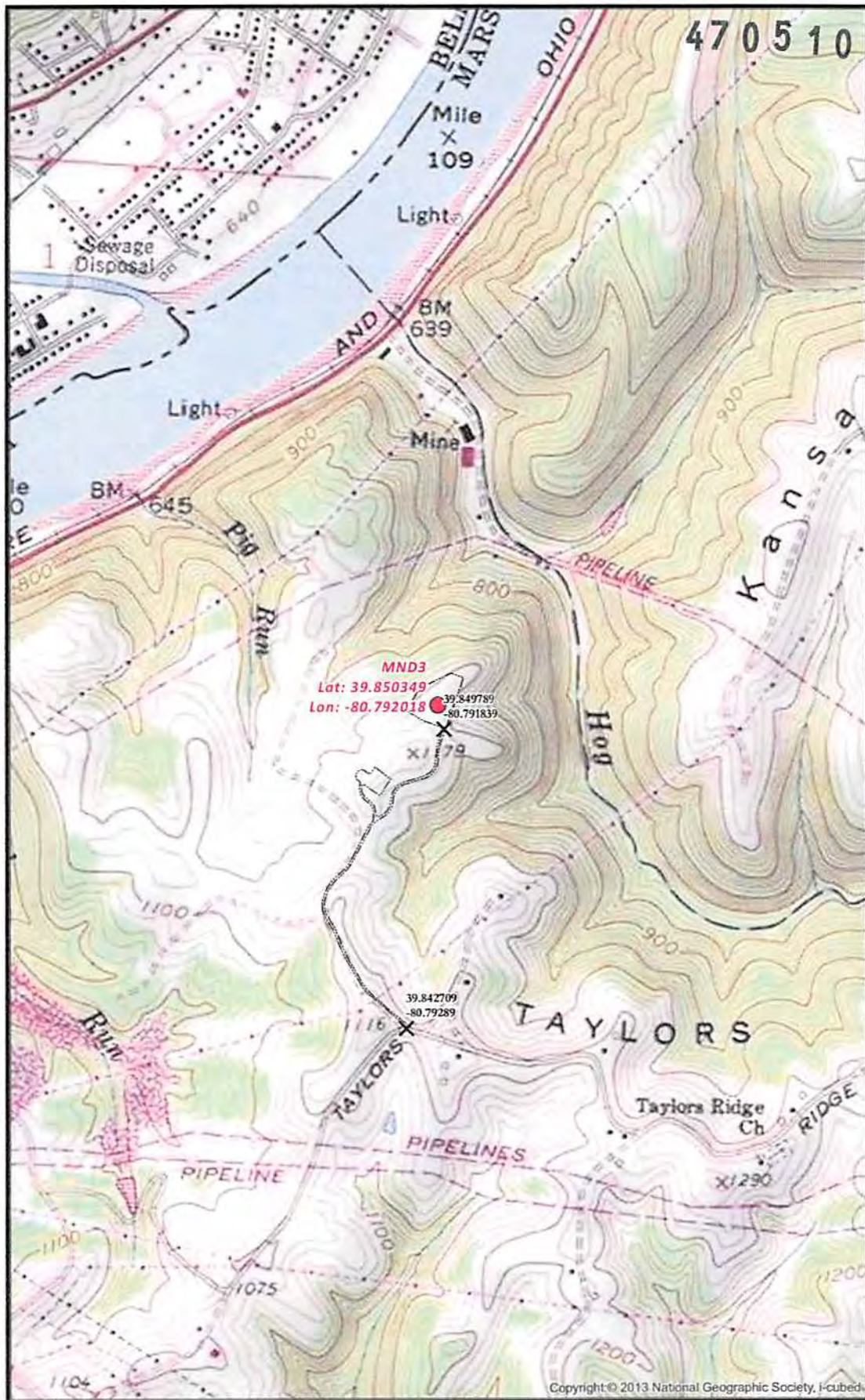
RECEIVED  
Office of Oil and Gas  
FEB 18 2014  
WV Department of  
Environmental Protection

03/28/2014



Plat spotted

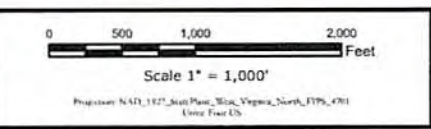
4705101740



**MND3 SITE SAFETY PLAN**  
**- SITE WELL LOCATION -**

X Across Road Intersection    ● Well Pad Center

--- PROPOSED



**noble energy**

Date: 7/3/2013  
 Author: Christopher Glover

Disclaimer: All data is licensed for use by Noble Energy Inc. use only.

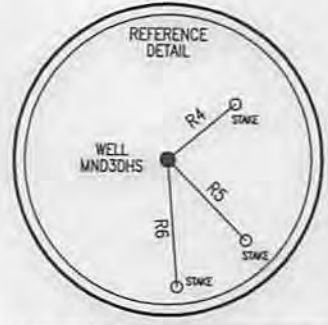
1/6

03/28/2014



Well is located on topo map 8,975' feet south of Latitude: 39° 52' 30"

Well is located on topo map 146' feet west of Longitude: 80° 47' 30"



LINE	BEARING	DISTANCE
R1	S 67°45'13" W	1473.47'
R2	N 11°43'14" W	1074.56'
R3	S 69°02'37" E	1442.55'
R4	N 50°29'36" E	180.96'
R5	S 44°43'46" E	232.44'
R6	S 04°29'51" E	263.48'

**SURFACE HOLE LOCATION (SHL)**  
 UTM 17-NAD83  
 N:4411179.667  
 E:517793.210  
 NAD27, WV NORTH  
 N:494450.076  
 E:1637208.444  
 LAT/LON DATUM-NAD83  
 LAT:39.850451127  
 LON:80.792003351

**APPROX. LANDING POINT**  
 UTM 17-NAD83  
 N:4411184.22  
 E:517977.18  
 NAD27, WV NORTH  
 N:494454.91  
 E:1637812.39  
 LAT/LON DATUM-NAD83  
 LAT:39.850488253  
 LON:80.789852650

**BOTTOM HOLE LOCATION (BHL)**  
 UTM 17-NAD83  
 N:4409665.65  
 E:519078.78  
 NAD27, WV NORTH  
 N:489411.25  
 E:1641344.00  
 LAT/LON DATUM-NAD83  
 LAT:39.836781927  
 LON:80.777019732

- NOTES:**
- There are no water wells or developed springs within 250' of proposed well.
  - There are no existing buildings within 625' of proposed well.
  - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
  - There are no native trout streams within 300' of proposed well.
  - Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
  - It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted herein. The location of the boundary lines, as shown, are based on record deed descriptions; field evidence found and/or tax map position, unless otherwise noted.

**LEGEND**

- ⊕ - TOPO MAP POINT
- ☼ - WELL
- - ALL ARE POINTS UNLESS OTHERWISE NOTED.
- (W) - WATER SOURCE
- - LEASE NUMBER BASED ON ATTACHED WW-6A1
- - MINERAL TRACT BOUNDARY
- - - - - PARCEL LINES
- - - - - WELL REFERENCE
- — — — — PROPOSED HORIZONTAL WELL
- — — — — ROAD
- — — — — STREAM CENTER LINE

**WELLS WITHIN 3000'**

- - EXISTING WELLS
- ⦿ - PLUGGED WELLS

**Blue Mountain Inc.**  
 11023 MASON DIXON HIGHWAY  
 BURTON, WV 26562  
 PHONE: (304) 662-6486

FILE #: MND3DHS  
 DRAWING #: MND3DHS  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: [Signature]  
 R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2000

**GEORGE D. SIX**  
 LICENSED  
 No. 2000  
 STATE OF  
 WEST VIRGINIA  
 PROFESSIONAL SURVEYOR

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP

OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

DATE: OCTOBER 29, 2013  
 OPERATOR'S WELL #: MND3DHS  
 API WELL #: 47 51 01740 H6A  
 STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: SHORT CREEK ELEVATION: 1126.02'  
 COUNTY/DISTRICT: MARSHALL / FRANKLIN QUADRANGLE: POWHATAN POINT, OH-WV 7.5'  
 SURFACE OWNER: CONSOLIDATION COAL COMPANY / Consol Mining CO. ACREAGE: 180.214±  
 OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 560.513±

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,279'± TMD: 12,921'±  
 WELL OPERATOR NOBLE ENERGY, INC. DESIGNATED AGENT STEVEN M. GREEN  
 Address 333 TECHNOLOGY DRIVE, SUITE 116 Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590  
 City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

03/28/2014



# EROSION & SEDIMENT CONTROL PLAN FOR MND 3 WELL PAD FRANKLIN DISTRICT, MARSHALL COUNTY, WV

**RECEIVED**  
Office of Oil and Gas  
FEB 18 2014  
WV Department of  
Environmental Protection  
**APPROVED**  
WV DEP OGG  
470510174

NO.	DATE	REVISION
1	11/11/13	ISSUED FOR WVP DEP COMMENTS



FOR BETTER ASSOCIATES BY  
MANAGER: MICHAEL R. O'BRIEN  
DESIGN BY: ASH  
DRAWN BY: ASH  
SURV. CHECK: BILLYWOOD WMA  
DATE: 02/22/14

CLIENT  
NOBLE ENERGY SUITE 116  
333 TECHNOLOGY DRIVE  
CANTON OHIO 44705-7307  
BEN DEBELINE, P.E.  
(724) 820-3000  
**noble energy**

**RETTEW**  
1000 University Blvd.  
Martinsburg, WV 26158  
Phone: (336) 444-7258 • Fax: (336) 444-1733  
Website: www.rettew.com

COVER SHEET  
FOR  
**MND 3 WELL PAD**  
FRANKLIN DISTRICT  
MARSHALL COUNTY, WV  
DATE: 6/24/13  
SHEET NO. 1 OF 18  
DWG. NO. 063842008

**GENERAL NOTES**

- THE TOPOGRAPHIC SURVEY UTILIZED FOR THIS BASE MAPPING WAS PERFORMED BY RETTEW ASSOCIATES, INC IN MAY 2013.
- PROPERTY BOUNDARIES, LANDOWNER INFORMATION AND ROAD NETWORKS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS PARCEL DATA.
- EXISTING STRUCTURES, TREE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
- THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH ZONE.
- THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAV 88).
- THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATION PRIOR TO ANY EXCAVATION BY NOTIFYING MISS UTILITY OF WEST VIRGINIA AT 1-800-245-6846.
- A WETLANDS PRESENCE/ABSENCE SURVEY WAS PERFORMED BY RETTEW ASSOCIATES IN MAY 2013.
- CONTRACTOR TO PROTECT ALL WETLANDS, NO WETLAND IMPACTS ARE PROPOSED IN THIS PLAN.
- THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR PERMITTING AND INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND TO VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.
- ALL EXISTING UTILITIES HAVE BEEN SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION.
- THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL ABOVE AND BELOW GROUND UTILITIES AND STRUCTURES AND WILL BE RESPONSIBLE FOR THE PROTECTION OF THESE UTILITIES AND STRUCTURES AT ALL TIMES.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AND COMPLETELY AT HIS EXPENSE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE AND LAWN.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION.
- CONTRACTOR TO RELOCATE UTILITIES AS REQUIRED.
- CONTRACTOR MAY WIDEN ACCESS ROAD DUE TO STEEP SLOPES IF DEEMED NECESSARY AND PER APPROVAL BY THE OWNER AND ENGINEER.
- PROPOSED ROCK CONSTRUCTION ENTRANCE TO BE BUILT SUCH THAT RUNOFF FROM PROPOSED ACCESS WILL NOT SHEET FLOW ON TO PUBLIC ROAD.
- SEED AND MULCH ALL DISTURBED AREAS PER DETAILS IN THIS PLAN.
- ALL CLEARED TREE BRINDINGS SHALL BE PLACED ON UPWIND SIDE OF COMPOST FILTER SOCKS AND NOT STOCKPILED ON-SITE.
- CONTRACTOR SHALL STOP WORK IMMEDIATELY AND CONTACT NOBLE ENERGY AND APPROPRIATE RESPONSIBLE AUTHORITIES SHOULD ANY HISTORICAL ARTIFACTS (I.E. BONES, POTTERY, ETC.) BE ENCOUNTERED DURING CONSTRUCTION.
- NO WORK SHALL BE DONE OUTSIDE THE LIMITS OF DISTURBANCE OR IN PROTECTED AREAS.

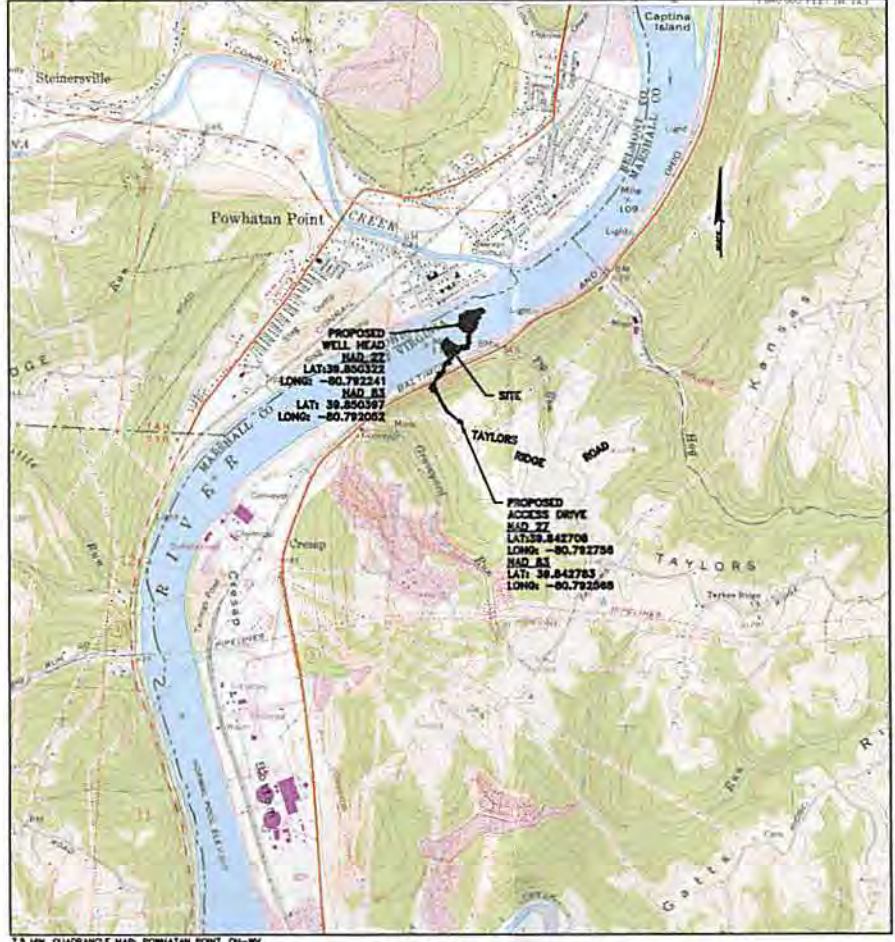
**DIRECTIONS TO THE SITE**

FROM INTERSECTION OF I-470 AND US-25/99W-2:  
TAKE 99W-2 SOUTH FOR 8.5 MILES. TURN LEFT ON WV-3 ALT AND THEN IMMEDIATELY BEAR LEFT ON ROBERTS RIDGE ST JOSEPH RD/29-21 AND FOLLOW FOR 4.8 MILES. TURN RIGHT ON TAYLORS RIDGE ROAD. FOLLOW FOR 2.7 MILES EXISTING ACCESS DRIVE WILL BE ON RIGHT.

**CUT & FILL**

	WELL PAD	WELL ACCESS	TANK PAD	TANK ACCESS	TOTAL SITE
CUT	+31,250 C.Y.	+11,349 C.Y.	+5,293 C.Y.	+2,100 C.Y.	+50,000 C.Y.
STONE	+ 2,127 C.Y.	+ 2,127 C.Y.	+ 243 C.Y.		+ 4,500 C.Y.
FILL	-34,794 C.Y.	- 1,283 C.Y.	-8,991 C.Y.	- 194 C.Y.	-45,262 C.Y.
10% COMPACTION	- 988 C.Y.	- 988 C.Y.	- 988 C.Y.	- 210 C.Y.	- 3,098 C.Y.
TOTAL	- 3,064 C.Y.	- 3,042 C.Y.	-1,664 C.Y.	- 317 C.Y.	- 8,087 C.Y.
NET	- 7,064 C.Y.	+ 8,098 C.Y.	-2,601 C.Y.	+1,581 C.Y.	+ 9 C.Y.

- NOTES:**
- THE ASSUMED TOP SOIL DEPTH IS 7".
  - THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.



7.5 MIN. QUADRANGLE MAP: POWHATAN POINT, OH-WV  
**LOCATION MAP**  
SCALE - 1"=2000'

**WEST VIRGINIA**

CALL BEFORE Dial

AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES. ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT 811 OR 1-800-945-6846. TYPED & LEGIMANDED DATE: 02/22/14

**SOILS CLASSIFICATION**

- D20: GALLENA-GORHOLT COMPLEX, 8% TO 15% SLOPES
- D21: GALLENA-GORHOLT COMPLEX, 15% TO 25% SLOPES
- D22: GALLENA-GORHOLT-PEARBODY COMPLEX, 8% TO 15% SLOPES
- D23: GALLENA-GORHOLT-PEARBODY COMPLEX, 15% TO 25% SLOPES
- D24: GORHOLT-GALLENA COMPLEX, 25% TO 70% SLOPES, VERY STONY
- D25: GALLENA-GORHOLT-PEARBODY COMPLEX, 8% TO 15% SLOPES

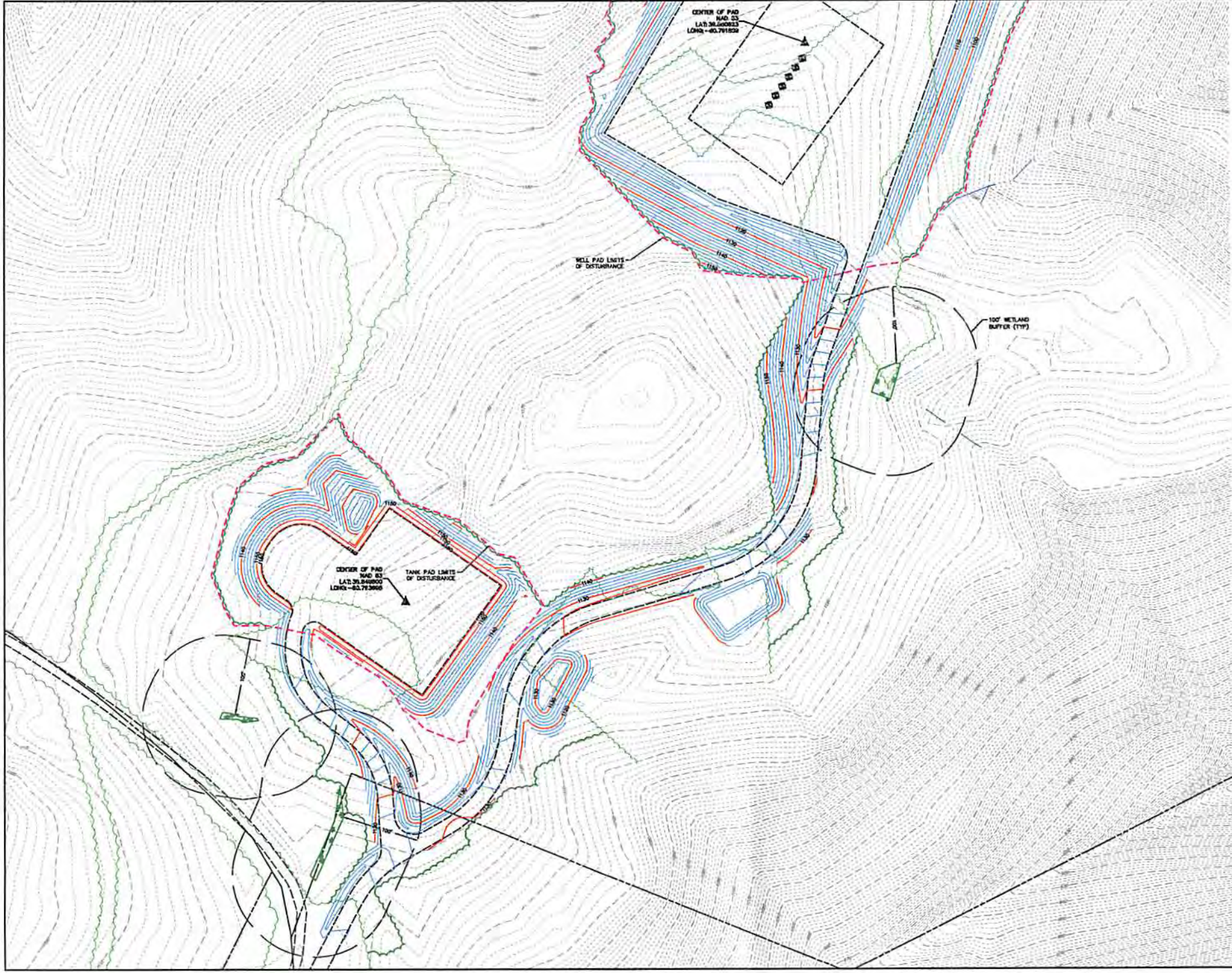
**LIST OF DRAWINGS**

- 1 OF 18 ..... COVER SHEET
- 2 OF 18 ..... ENVIRONMENTAL RESOURCES BUFFER PLAN
- 3 OF 18 ..... OVERALL SITE PLAN
- 4 OF 18 ..... AREAS "A" & "B" LAYOUT PLAN
- 5 OF 18 ..... AREA "C" LAYOUT PLAN
- 6 OF 18 ..... AREA "D" LAYOUT PLAN
- 7 OF 18 ..... AREAS "A" & "B" EROSION & SEDIMENT CONTROL PLAN
- 8 OF 18 ..... AREA "C" EROSION & SEDIMENT CONTROL PLAN
- 9 OF 18 ..... AREA "D" EROSION & SEDIMENT CONTROL PLAN
- 10 OF 18 ..... ACCESS DRIVE PROFILES
- 11 OF 18 ..... ACCESS DRIVE PROFILES
- 12 OF 18 ..... CROSS SECTIONS PLAN VIEW
- 13 OF 18 ..... CROSS SECTIONS
- 14 OF 18 ..... CROSS SECTIONS
- 15 OF 18 ..... WELL PAD RECLAMATION PLAN
- 16 OF 18 ..... TANK PAD RECLAMATION PLAN
- 17 OF 18 ..... NOTES & DETAILS
- 18 OF 18 ..... DETAILS

**DISTURBANCE SUMMARY**

TOTAL LIMITS OF DISTURBANCE	= 15.8 ACRES
CLEARING REQUIRED	= 11.1 ACRES
PAD DISTURBANCE	= 4.7 ACRES





APPROVED  
WVDEP OOG  
11/13/2013

RECEIVED  
Office of Oil and Gas  
FEB 1 2014

ENVIRONMENTAL RESOURCES BUFFER PLAN FOR <b>MND 3 WELL PAD</b> FRANKLIN DISTRICT MARSHALL COUNTY, WV		<b>REVIEW</b> <small>1000 Pennsylvania Ave., Suite 200, Martinsburg, WV 26001          Phone (336) 444-1778 • Fax (336) 444-1733          Website: www.reviewinc.com          Mobile: 304-267-0100</small>		CLIENT <b>NOBLE ENERGY</b> SUITE 116 333 TECHNOLOGY DRIVE, 7-3077 CANTONMENT, PENNSYLVANIA BEN DEBELINE, PE (724) 820-3000		MANAGER: MICHAEL R. OGDEN DESIGN BY: ASN DRAWN BY: ASN SURV. CHECK: MATT GILLESPIE		CHECKED BY: ASN APPROVED BY: MATT GILLESPIE PROJECT NO.: 093642008	
DATE: 8/24/13 SHEET NO. 2 OF 18 DWG. NO. 093642008		FOR BETTER ASSOCIATES BY:		SCALE: 1" = 400' FEB 1 2014		RECEIVED Office of Oil and Gas FEB 1 2014		RECEIVED WV Department of Environmental Protection FEB 1 2014	

Environmental Protection