



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

May 21, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-5101746, 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.

A blue ink signature of James Martin, Chief, is written over the text.

James Martin
Chief

Operator's Well No: MND 6 AHS
Farm Name: CONSOLIDATION COAL COMPA
API Well Number: 47-5101746
Permit Type: Horizontal 6A Well
Date Issued: 05/21/2014

Promoting a healthy environment.

05/23/2014

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 (USACE). Through this permit, you are hereby being advised to consult with USACE 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 moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. 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.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

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

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

2) Operator's Well Number: MND 6 AHS Well Pad Name: MND 6

3) Farm Name/Surface Owner: Consolidation Coal Company Public Road Access: CR 7/4-Fish Creek Rd

4) Elevation, current ground: 722' Elevation, proposed post-construction: 721'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Marcellus at 5895' and 55' in thickness. Anticipated pressure at 3927#.

8) Proposed Total Vertical Depth: 5940'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18,804'

11) Proposed Horizontal Leg Length: 8,992'

12) Approximate Fresh Water Strata Depths: 128' and 265' *JA 4/29/14*

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

14) Approximate Saltwater Depths: None noted in offsets

15) Approximate Coal Seam Depths: 284' to 294'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated, drilling plan and mine maps attached

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17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No *MAY 08 2014*

(a) If Yes, provide Mine Info: Name: 1082' to nearest active mining
Depth: Base at 294' at deepest point
Seam: Pittsburgh
Owner: Murray American Energy (Previously Consol)

WV Department of
Environmental Protection

WW-6B
(9/13)

18)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	New	LS	117#	40'	40'	CTS
Fresh Water	13 3/8"	New	LS	94#	694'	694'	CTS
Coal	"	"	"	"	"	"	"
Intermediate	9 5/8"	New	J-55	36#	2017'	2017'	CTS
Production	5 1/2"	New	P110	20#	18,804'	18,804'	TOC 200' above 9 625 casing shoe
Tubing							
Liners							

JL 4/29/14

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	26"	0.375		Type 1/Class A	1.2
Fresh Water	13 3/8"	17 1/2"	.380	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:				RECEIVED Office of Oil and Gas
Sizes:				MAY 08 2014
Depths Set:				WV Department of Environmental Protection

WW-6B
(9/13)

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 5,940 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): 9.6

22) Area to be disturbed for well pad only, less access road (acres): 7.3

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 WWDEP 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 clear of 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 bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.

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MAI 03 2014
WV Department of Environmental Protection

*Note: Attach additional sheets as needed.

4705101746

WW-9
(9/13)

API Number 47 - _____ - _____
Operator's Well No. MND 6 AHS

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) Fish Creek Undefined (HUC 10) Quadrangle Powhatan Point

Elevation 721' 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

-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

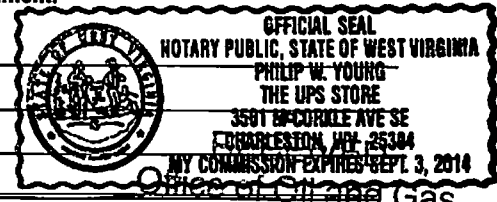
-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____

-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 19th day of MARCH, 20 14 MAR 21 2014

Philip W. Young Notary Public

My commission expires 9/3/2014

WV Department of Environmental Protection
03/23/2014

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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)
1st Chemical Component as listed on MSDS: 2,2-Dibromo-3-nitrilopropionamide
CAS: 10222-01-2
2nd Chemical Component as listed on MSDS: Polyethylene Glycol Mixture
CAS: 25322-68-3

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

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Site Water/Cuttings Disposal

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

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Form WW-9

Operator's Well No. MND 6 AHS

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed 9.6 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: Due to well pad proximity to Greysville Community, a sound barrier should be created around well pad.

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MAY 08 2014

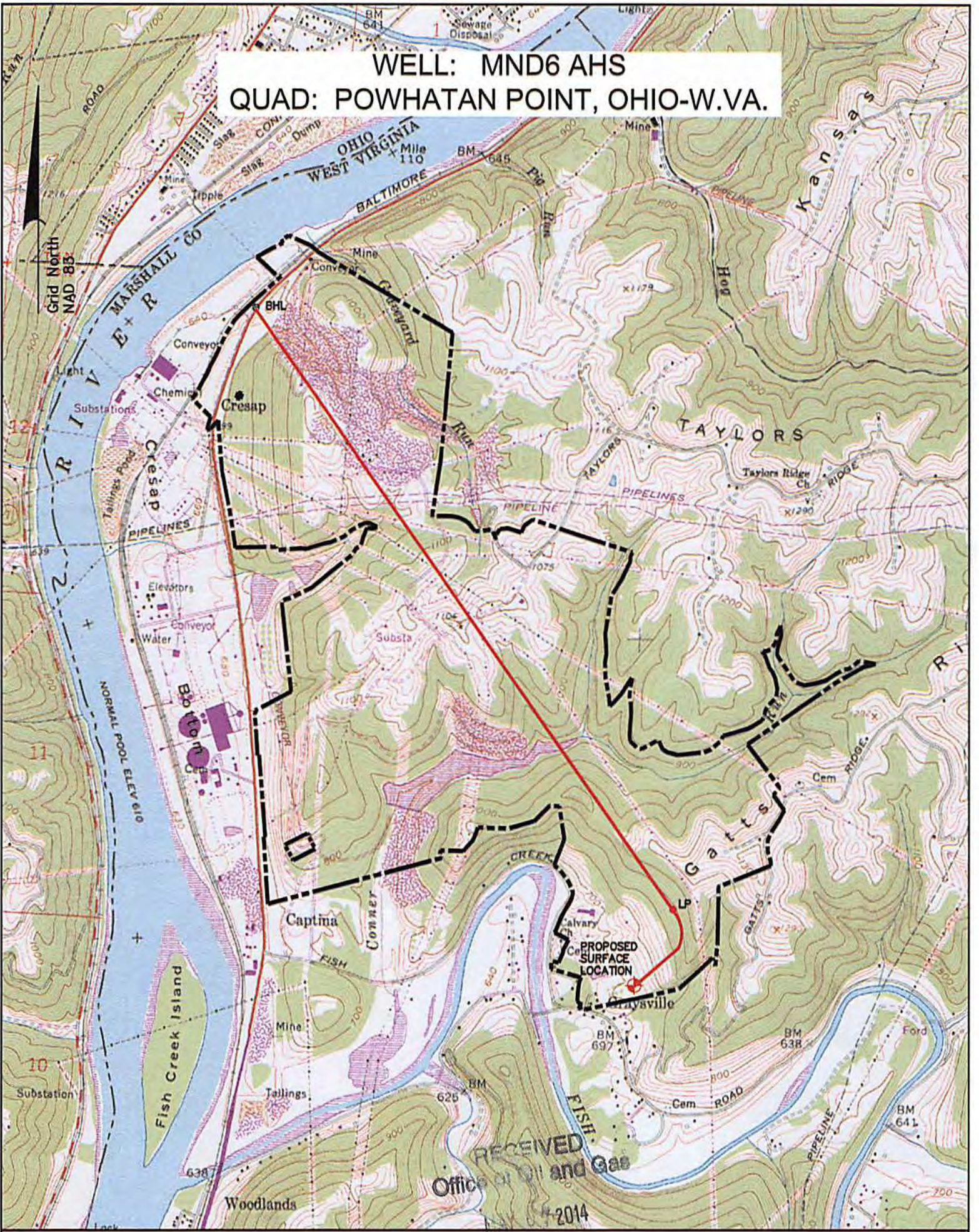
Title: Oil + Gas Inspector

Date: 4/29/14

WV Department of Environmental Protection

Field Reviewed? Yes No




WELL: MND6 AHS
QUAD: POWHATAN POINT, OHIO-W.VA.



West Virginia Department of Environmental Protection

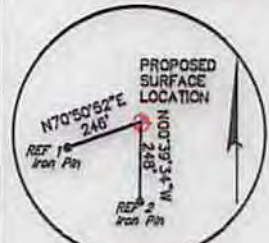
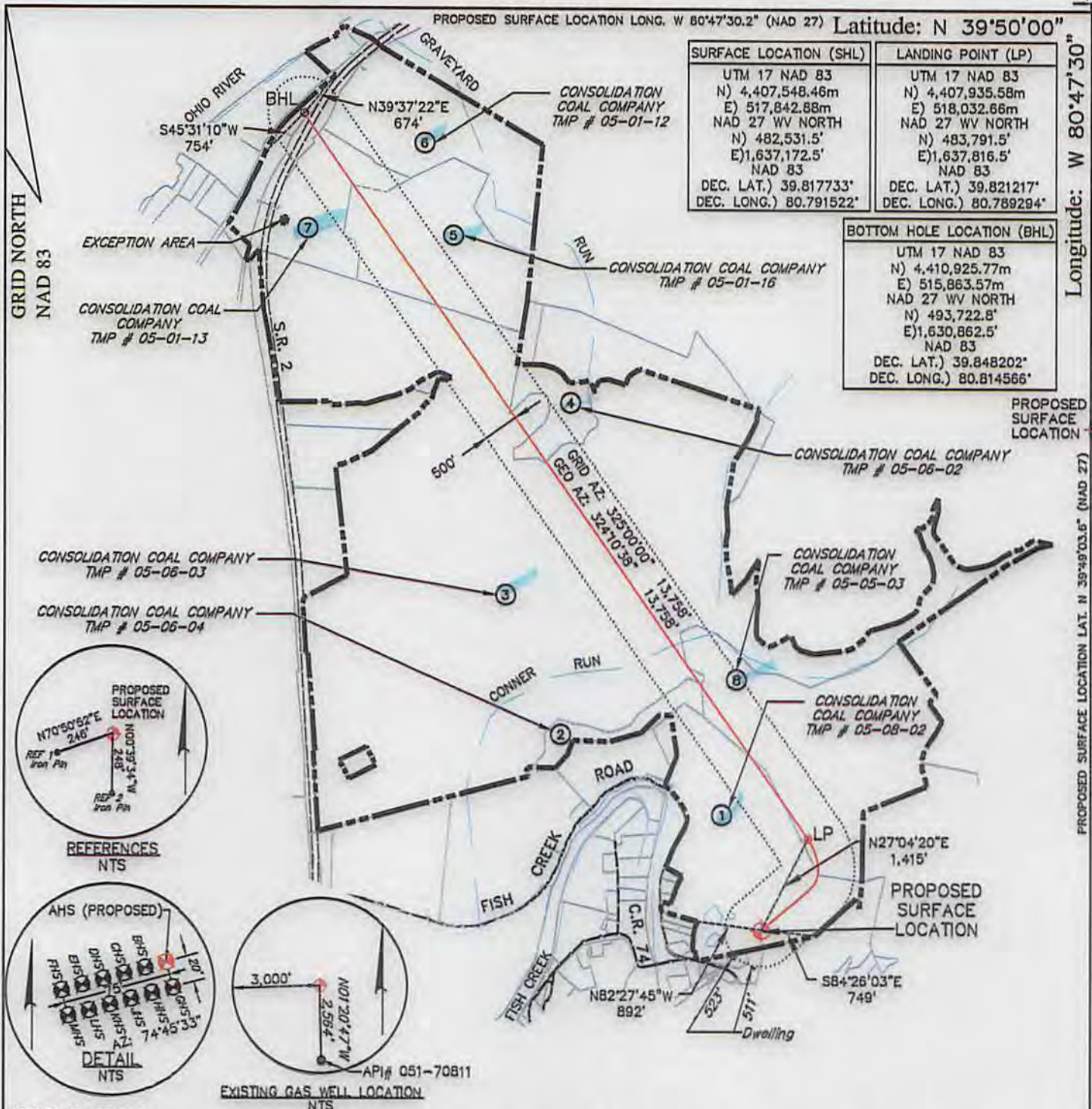
SURFACE LOCATION (SHL)	LANDING POINT (LP)	BOTTOM HOLE LOCATION (BHL)
(NAD 83) N) 482,567.7' E) 1,605,735.2' LAT.) 39°49'03.8" LONG.) 80°47'29.5" DEC. LAT.) 39.817733' DEC. LONG.) 80.791522'	(NAD 83) N) 483,827.6' E) 1,806,379.1' LAT.) 39°49'16.4" LONG.) 80°47'21.5" DEC. LAT.) 39.821217' DEC. LONG.) 80.789294'	(NAD 83) N) 493,758.9' E) 1,599,425.2' LAT.) 39°50'53.5" LONG.) 80°48'52.4" DEC. LAT.) 39.848202' DEC. LONG.) 80.814566'
(NAD 27) N) 482,531.5' E) 1,637,172.5' LAT.) 39°49'03.6" LONG.) 80°47'30.2" DEC. LAT.) 39.817657' DEC. LONG.) 80.791709'	(NAD 27) N) 483,791.5' E) 1,637,816.5' LAT.) 39°49'16.1" LONG.) 80°47'22.1" DEC. LAT.) 39.821141' DEC. LONG.) 80.789482'	(NAD 27) N) 493,722.8' E) 1,599,425.2' LAT.) 39°50'53.3" LONG.) 80°48'53.1" DEC. LAT.) 39.848127' DEC. LONG.) 80.814754'
(UTM NAD 83) N) 4,407,548.46m E) 517,842.88m	(UTM NAD 83) N) 4,407,935.58m E) 518,032.66m	(UTM NAD 83) N) 4,410,925.77m E) 515,863.57m

GENERAL NOTE:
 THE PURPOSE OF THIS PLAT IS FOR THE LOCATION OF PROPOSED GAS WELLS AND DOES NOT REPRESENT A CLOSED BOUNDARY SURVEY. PROPERTY LINES AND OWNERS WERE OBTAINED FROM VARIOUS FIELD EVIDENCE, TAX RECORDS AND AERIAL MAPPING.

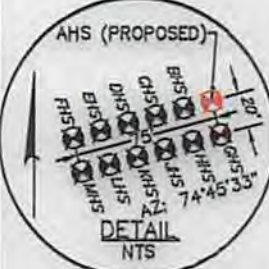
LEGEND
 PROPOSED GAS WELL
 PROPOSED BORE
 EXTERNAL LEASE LINE

Applicant / Well Operator Name NOBLE ENERGY, INC.	Well(Farm) Name MND6	Well # AHS	Serial #
Address 333 TECHNOLOGY DRIVE, SUITE 116, CANONSBURG, PA 15317	County - Code MARSHALL - 051	District FRANKLIN	
Surface Landowner / Lessor CONSOLIDATION COAL COMPANY	USGS 7 1/2 Quadrangle Map Name POWHATAN POINT, OHIO-W.VA	Scale: 1" = 2,000'	

05/23/2014



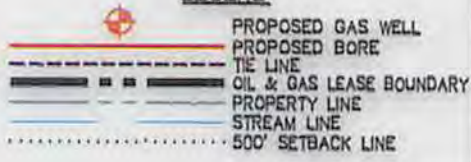
REFERENCES
NTS



GENERAL NOTES:

1. THE LOCATION OF BOUNDARY LINES SHOWN HEREON ARE BASED ON RECORD DEED, PLATS, AND TAX MAPS BEST FIT TO FOUND FIELD EVIDENCE AND AERIAL PHOTOS, UNLESS OTHERWISE NOTED.
2. THIS PLAT DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY OF THE INDIVIDUAL PARCELS.
3. THERE ARE NO EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF PROPOSED WELL.
4. PROPOSED WELL IS GREATER THAN 100' FROM PERENNIAL STREAM, WETLAND, POND, RESERVOIR OR LAKE.
5. THERE ARE NO NATIVE TROUT STREAMS WITHIN 300' OF PROPOSED WELL.
6. THERE ARE TWO DWELLINGS LOCATED WITHIN 650' OF PROPOSED WELLBORE.
7. THE SURROUNDING LANDS ARE BEING SERVED BY PUBLIC WATER BY THE GRAND VIEW DOOLIN WATER SYSTEM PROVIDED BY MARSHALL COUNTY PUBLIC HEALTH AND SANITATION DIVISION.

LEGEND



FILE #: 093842010
 DRAWING #: 093842010 SV-Plat
 SCALE: PLAT & TICK: 1" = 2,000'
 MINIMUM DEGREE OF ACCURACY: 1/200
 PROVEN SOURCE OF ELEVATION: NQS (CORS)

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

SIGNED: [Signature]
 R.P.E.: _____ L.L.S.: 2241



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WYDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: FEBRUARY 7, 2014
 OPERATOR'S WELL #: MND 6 AHS
 API WELL #: 47 051 1746
 STATE COUNTY PERMIT
176A

WELL TYPE: OIL GAS WASTE DISPOSAL LIQUID INJECTION PRODUCTION STORAGE DEEP SHALLOW

WATERSHED: FISH CREEK ELEVATION: 722' 05/23/2014

COUNTY/DISTRICT: MARSHALL / FRANKLIN QUADRANGLE: POWHATAN POINT, OHIO-W.VA

SURFACE OWNER: CONSOLIDATION COAL COMPANY ACREAGE: 136.587±

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY LLC and NOBLE ENERGY, INC. ACREAGE: _____

CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PERFORATE NEW FORMATION PLUG & ABANDON

DRILL PLUG OFF OLD FORMATION CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 5,940 ft. TMD: 18,804 ft.

WELL OPERATOR: NOBLE ENERGY, INC. DESIGNATED AGENT: STEVE 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

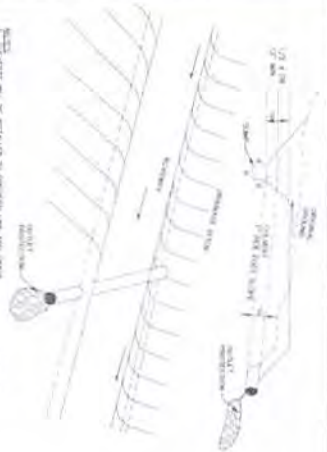


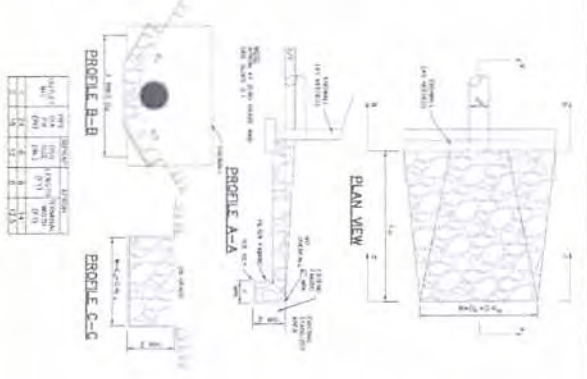
TABLE 1 - SUMMARY OF DITCH RELIEF CULVERTS

SECTION #	LENGTH (FEET)	TYPE	NO. OF	NO. OF	NO. OF	NO. OF
			PILES	PILES	PILES	PILES
1	100	18" DIA.	1	1	1	1
2	100	18" DIA.	1	1	1	1
3	100	18" DIA.	1	1	1	1
4	100	18" DIA.	1	1	1	1
5	100	18" DIA.	1	1	1	1
6	100	18" DIA.	1	1	1	1
7	100	18" DIA.	1	1	1	1
8	100	18" DIA.	1	1	1	1
9	100	18" DIA.	1	1	1	1
10	100	18" DIA.	1	1	1	1

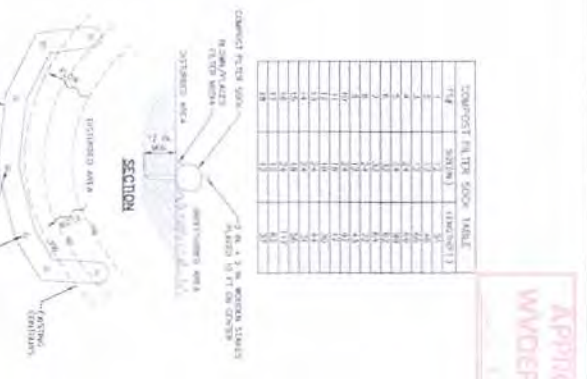


8 DITCH RELIEF CULVERT
SEE LIST TO SCALE

9 STABILIZED CONSTRUCTION ENTRANCE
SEE LIST TO SCALE



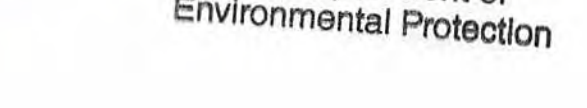
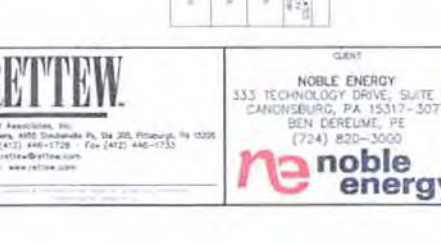
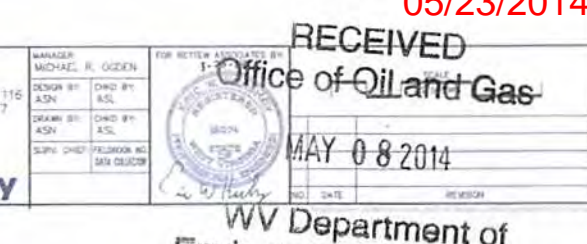
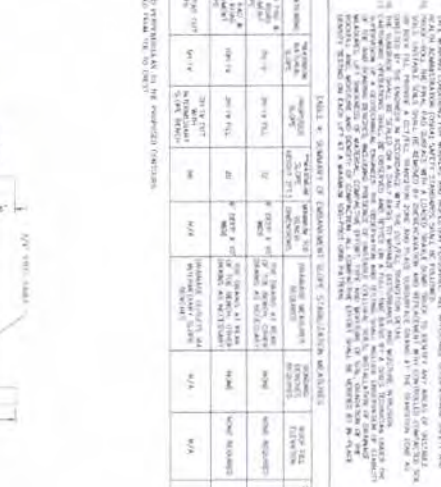
10 WELL PAD CONTAINMENT TRENCH DETAIL
SEE LIST TO SCALE



11 STANDARD COMPOST FILTER SOCK DETAIL #4-1
SEE LIST TO SCALE



12 CONTROLLED FILL EMBANKMENT
SEE LIST TO SCALE



APPROVED
WDEP DOG
DATE: 5/23/2014

05/23/2014

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Office of Oil and Gas
MAY 08 2014

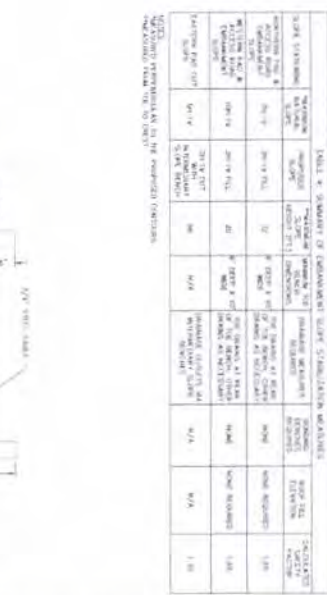


WV Department of Environmental Protection

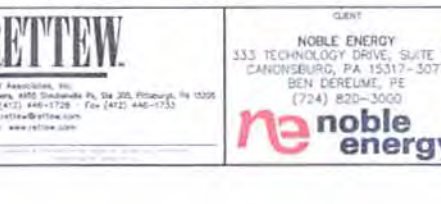
TABLE 2 - SUMMARY OF DRAINAGE DITCH STABILIZATION MATERIALS

SECTION #	LENGTH (FEET)	TYPE	NO. OF	NO. OF	NO. OF	NO. OF
			PILES	PILES	PILES	PILES
1	100	18" DIA.	1	1	1	1
2	100	18" DIA.	1	1	1	1
3	100	18" DIA.	1	1	1	1
4	100	18" DIA.	1	1	1	1
5	100	18" DIA.	1	1	1	1
6	100	18" DIA.	1	1	1	1
7	100	18" DIA.	1	1	1	1
8	100	18" DIA.	1	1	1	1
9	100	18" DIA.	1	1	1	1
10	100	18" DIA.	1	1	1	1

13 POST AND CABLE FENCE
SEE LIST TO SCALE



14 BERM BREACH
SEE LIST TO SCALE



DETAILS
FOR
MND 6 WELL PAD

RETTEW
RETTEW Associates, Inc.
400 North 40th Street, Suite 200, Pittsburgh, PA 15206
Phone: (412) 446-1728 Fax: (412) 446-1733
Email: rettew@rettew.com Website: www.rettew.com

NOBLE ENERGY
333 TECHNOLOGY DRIVE, SUITE 116
CANONSBURG, PA 15317-3077
BEN DERLUME, PE
(724) 820-3000

MANAGER: MICHAEL R. GAZDAR
DESIGNER: ASH
CHECKER: ASL
SUPERVISOR: ASL

FOR RETTEW ASSOCIATES BY
Office of Oil and Gas
MAY 08 2014

DATE: 3/9/2014
SHEET NO. 12 OF 110
PROJECT NO. 0932A21010
FRANKLIN DISTRICT MARSHALL COUNTY, WV