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**west virginia** department of environmental protection

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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

April 02, 2015

**WELL WORK PERMIT**

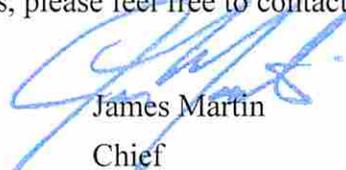
**Horizontal 6A Well**

This permit, API Well Number: 47-5101814, 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: SHL 27 BHS  
Farm Name: WARD, STEVE & ED  
**API Well Number: 47-5101814**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 04/02/2015

**Promoting a healthy environment.**

## 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

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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](mailto: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.

<u>494501907</u>	<u>051 - Marshall</u>	<u>Webster</u>	<u>Majorsville</u>
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Operator ID County District Quadrangle

2) Operator's Well Number: SHL 27 BHS Well Pad Name: SHL 27

3) Farm Name/Surface Owner: Steve & Ed Ward Public Road Access: Irish Ridge Road / Co. Rt 046

4) Elevation, current ground: 1167.4' Elevation, proposed post-construction: 1158'

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

(b) If Gas Shallow  Deep   
Horizontal

6) Existing Pad: Yes or No No

*JW 3/31/15*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Marcellus 6486' / 6537' Thick 51' / 4314 psi

8) Proposed Total Vertical Depth: 6523'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 8,812'

11) Proposed Horizontal Leg Length: 1,012'

12) Approximate Fresh Water Strata Depths: from 349' to 994'

13) Method to Determine Fresh Water Depths: nearest offset wells and nearby deep water well (PA#115834)

14) Approximate Saltwater Depths: 1408' - 1830'

15) Approximate Coal Seam Depths: 634-644

16) Approximate Depth to Possible Void (coal mine, karst, other): none

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: Shoemaker Mine  
Depth: 634-644' - drilling into a interior barrier 934' from proposed mining  
Seam: Pittsburgh No. 8  
Owner: Consolidation Coal Company (Murray American Energy Inc.)

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MAR 31 2015

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	94#	40' Minimum or to the next component formation, but no deeper than 1st Freshwater	40'	Type III from Surface to TD
Fresh Water	13 3/8"	New	LS	54.5#	1044' or to next component formation, not deeper than elevation	1044' or to next component formation, not deeper than elevation	CTS 30% excess Yield = 1.18
Coal	13 3/8"	New	J-55	54.5#	1044' due to formation issues	1044' due to formation issues	CTS 30% excess Yield = 1.18
Intermediate	9 5/8"	New	HCK-55	36.0#	3032' or 250' below 5th sand	3032' or 250' below 5th sand	CTS 30% excess Yield = 1.19
Production	5 1/2"	New	P-110	20.0#	8,812'	8,812'	10% excess Yield = 1.27 TOC=200' above 9.625" shoe
Tubing							
Liners							

*JN 3/31/15*

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	26"	0.438		Type III	surface to TD
Fresh Water	13 3/8"	17.5"	0.380	2730	Class A	30% excess Yield = 1.18
Coal	13 3/8"	17.5"	0.380	2730	Class A	30% Excess Yield = 1.18
Intermediate	9 5/8"	12 3/8"	0.352	3520	Class A	30% excess Yield = 1.19 to surface
Production	5 1/2"	8.75" - 8.5"	0.361	12,640	Class A	10% excess Yield = 1.27 TOC=200' above 9.625" shoe
Tubing						
Liners				**Max associated surface pressure (psi) (13 3/8) Freshwater casing 1200		

PACKERS

Kind:				
Sizes:				
Depths Set:				

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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 6,527 feet. Drill Horizontal leg - stimulate and be capable of producing from the Benson to the Marcellus Formation. Due to Red Rock/ Formation issues install the 13 3/8" to 1044' but not deeper than elevation. Should we encounter a unanticipated void we will install a minimum of 20' of casing 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. our maximum pressure is not to exceed 10,000 lbs. Please refer to attached list.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 19.325

22) Area to be disturbed for well pad only, less access road (acres): 10.228

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used. Fresh Water/Surface - centralized every three joints to surface. Coal - Bow Spring on first two joints then every third joint to 100' from surface. Intermediate - Bow Springs centralizers every third joint to 100' from Surface. Production - Rigid bow springs every third joint from KOP to TOC, rigid bow springs every joint to KOP.

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

See attached sheet - Conductor - Type III. Fresh Water/Coal - 15.6 ppg Class A CaCl (CA-100), 0.25# lost circ. (CLC-CPF), 30% excess yield = 1.18. Intermediate- Allied 16.2 ppg Class A + 0.2 lb/sk C-16A, 0.3 lb/sk C-35, 0.25 lb/sk C-41P 30% Excess Yield = 1.10. Production - 14.6 ppg 65/35 Class A/POZ +/-0.5% fluid loss additive, +/-0.3% retarder, +/-0.6% dispersant, +/-0.2% antifoam, +/-0.1% antisetling 10% Excess Yield 1.27 TOC >= 200' above 9.625" shoe.

25) Proposed borehole conditioning procedures:

Conductor - The hole is drilled w/ air and casing is run in air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Coal and Fresh Water/Surface - The hole is drilled w/air and casing is run in air. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement. Intermediate - Once surface casing is set and cemented Intermediate hole is drilled either on air or SOBMs and filled w/ KCl water once filled w/ KCl water once drilled to TD. The well is conditioned with KCl circulation prior to running casing. Once casing is at setting depth, the well is circulated a minimum of one hole volume prior to pumping cement. Production - The hole is drilled with synthetic oil base mud and once at TD the hole is circulated at maximum allowable drilling pump rate for at least 6X bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.

\*Note: Attach additional sheets as needed.



51 - 01814

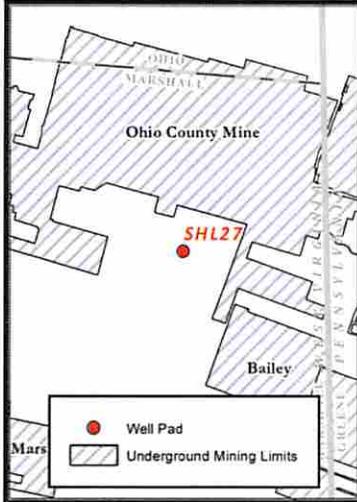
Fresh Water Protection String:		Cement Additives	
Allied Material Name	Additive (Material) Type	Additive (Material) Description	CAS #
CAC (Class A Common)	Base Cement	Grey powder	65997-15-1
A-100	Accelerator	White, flake	10043-52-4 7447-40-7 7732-18-5
LC-CPF (Cellophane Flakes)	Lost Circulation Aid	White and colored flake	7647-14-5 Non-Hazardous

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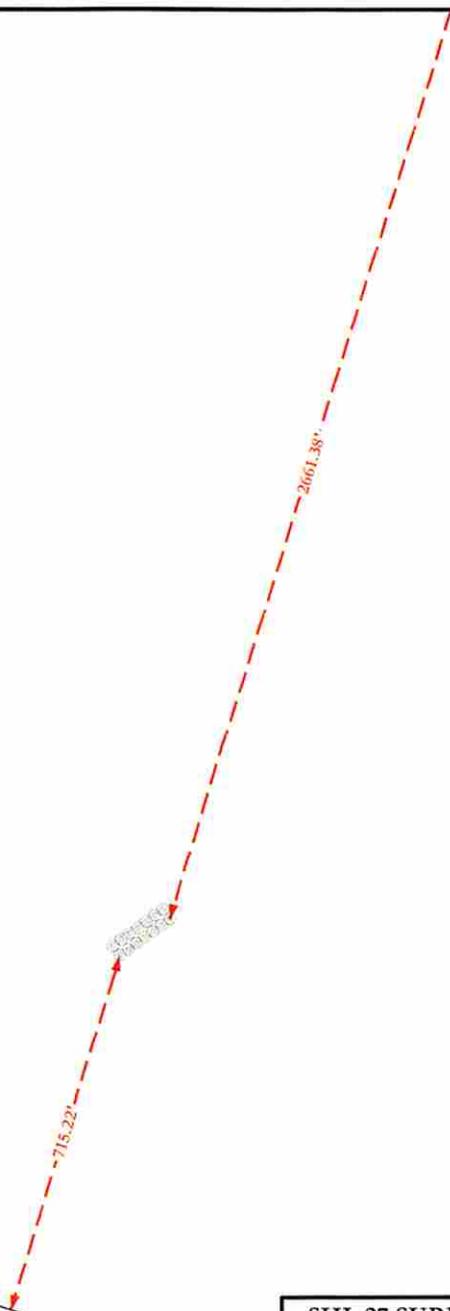
WV Department of  
Environmental Protection

**OHIO COUNTY MINE**  
OHIO COUNTY COAL COMPANY

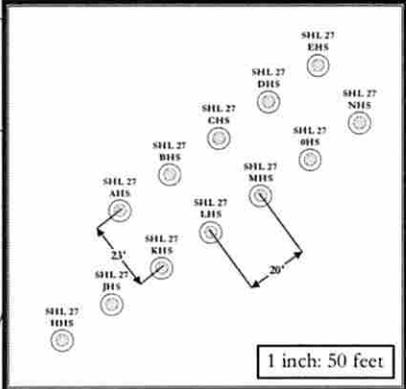


Depth To Pittsburgh Coal Seam Base = 643 Feet

4705101814



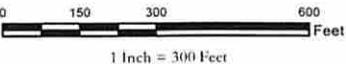
**SHL 27 SURFACE LOCATION @ 20 FT SPACING**



Note:  
- Mine data courtesy of WV Department of Environmental Protection and Control Coal Co  
- Coal seam data courtesy of WV Division of Natural Resources.

Office of Oil & Gas  
JAN 20 2015

**SHL 27 SITE SAFETY PLAN**  
- WELLHEAD TOPHOLE LOCATION -



Projection: NAD 1927 StatePlane West Virginia North FIPS 4701  
Units: Foot US



Date: 12/9/2014

Author:  
Christopher Glover

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





**DRILLING WELL PLAN**  
**SHL 27B**  
**Macellus Shale Horizontal**  
**Marshall County, WV**

Ground Elevation	1159'	SHL 27B SHL	532988.152N 1695599.024E
Azm	159°	SHL 27B LP	532923.03N 1695322.553E
		SHL 27B BHL	524164.344N 1698510.452E

WELLBORE DIAGRAM		HOLE	CASING	GEOLOGY	TOP	BASE	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	
	24	20" 94#	Fresh Water	349	AIR	15.6 ppg Type 1 + 2% CaCl <sub>2</sub> , 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		
			Water String	449	AIR	15.6 ppg Type 1 + 2% CaCl <sub>2</sub> , 0.25# Lost Circ 30% Excess Yield = 1.18	Bow Spring on first 2 joints then every third joint to 100' form surface	Circulate and condition mud at 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		
	17 1/2	13-3/8" 54.5# J-55 BTC	Pittsburgh Coal	634	AIR	15.6 ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19	Bow spring centralizers every third joint to 100' feet from surface.	Circulate and condition mud at 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		
			Int. Casing	1044							
			Big Lime	1639							
			Gordon	2639							
	12 3/8	9-5/8" 36# HCK-55 BTC	Fifth Sand	2748	AIR	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	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		
			Int. Casing	3032							
			Warren Sand	4224							
			Java Shale	4891							
	8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Angola Shale	5119	8.0ppg - 9.0ppg SOBIM						
Rhinestreet			5744								
Cashaqua			6150								
Middlesex			6238								
West River			6271								
Burkett			6326								
8.75" Curve	8.75" Curve HCP-110 TXP BTC	Tully Limestone	6346	11.5ppg-12.5ppg SOBIM							
		Hamilton	6373								
		Marcellus	6486								
		TD	8812								
8.75" - 8.5" Lateral	8.75" - 8.5" Lateral	Onondaga	8537	11.5ppg-12.5ppg SOBIM							

LP @ 6523' TVD / 7800' MD  
 8.75' / 8.5' Hole - Cemented Long String  
 5-1/2" 20# HCP-110 TXP BTC  
 +/-1012' ft Lateral  
 TD @ +/-6523' TVD +/-8812' MD

4705101814

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN **4705101814**

Operator Name Noble Energy, Inc. OP Code 494501907

Watershed (HUC 10) Wheeling Creek (undefined) Quadrangle Majorsville

Elevation 1158.0' County 051 - Marshall District Webster

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 utilization of a pit

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 See attached sheet )
- Reuse (at API Number \_\_\_\_\_ at 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/water based mud through intermediate string then SOB

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

Additives to be used in drilling medium? Please see attached sheet

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

-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 sheet

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 [Signature]  
Company Official (Typed Name) Kim Ward  
Company Official Title Regulatory Analyst I



Subscribed and sworn before me this 14 day of Jan, 2015  
[Signature] Notary Public

Office of Oil & Gas  
JAN 20 2015

My commission expires 09/19/2023

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed 19.325 Prevegetation pH 4705101814  
6.0

Lime 2-3 Tons/acre or to correct to pH \_\_\_\_\_  
10-20-20 or equal

Fertilizer type \_\_\_\_\_

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

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5

\*\*alternative seed mixtures are shown on the Site Design.

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: *James Unhosen*

Comments: Pre seed and mulch all cut area, maintain all E & S during operation.

Received  
Office of Oil & Gas

JAN 20 2015

Title: Oil and Gas Inspector

Date: 1/14/2015

Field Reviewed? (  ) Yes (  ) No

# Cuttings Disposal/Site Water

4705101814

## Cuttings –Haul off Company:

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

Waste Management  
200 Rangos Lane  
Washington, PA 15301  
724-222-3272

Environmental Coordination Services & Recycling (ECS&R)  
3237 US Highway 19  
Cochranton, PA 16314  
814-425-7773

## 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 Inc. Permit #R30-079001 05-2010  
4301 Sycamore Ridge Road  
Hurricane, WV 25526  
304-562-2611

Max Environmental Technologies, Inc. facility Permit # PAD004835146 / 301071  
233 Max Lane  
Yukon, PA 25968  
724-722-3500

Max Environmental Technologies, Inc. Facility Permit # PAD05087072 / 301359  
200 Max Drive  
Bulger, PA 15019  
724-796-1571

Waste Management Kelly Run Permit # 100663  
1901 Park Side Drive  
Elizabeth, PA 15037

Waste Management South Hills (Arnoni) Permit # 100592  
3100 Hill Road  
Library, PA 15129 724-348-7013

Waste Management Arden Permit # 100172  
200 Rangos Lane  
Washington, PA 15301  
724-222-3272

Waste Management Meadowfill Permit # 1032  
1488 Dawson Drive  
Bridgeport, WV 26330

Brooke County Landfill Permit # SWF-103-97 / WV 0109029  
Rd 2 Box 410  
Colliers, WV 26035  
304-748-0014

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JAN 20 2015

Wetzel County Landfill Permit # SWF-1021-97 / WV 0109185  
Rt 1 Box 156A  
New Martinsville, WV 26035  
304-455-3800

4705101814

Energy Solutions, LLC Permit # UT 2300249  
423 West 300 South  
Suite 200  
Salt Lake City, UT 84101

Energy Solutions Services, Inc. Permit # R-73006-L24  
1560 Bear Creek Road  
Oak Ridge, TN 37830

**Water Haul off Companies:**

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

**Disposal Locations:**

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  
330-536-6825

Adams #1  
Permit # 34-031-2-7177  
23986 Airport Road  
Coshocton, OH 43812  
740-575-4484

Adams #2  
Permit # 34-031-2-7178  
740-575-4484

Escrowed  
Office of Gas  
JAN 20 2015

4705101814



# Site Safety Plan

**Noble Energy, Inc.**

**SHL 27 Well Pad**

*BNS*

**January 2015: Version 1**

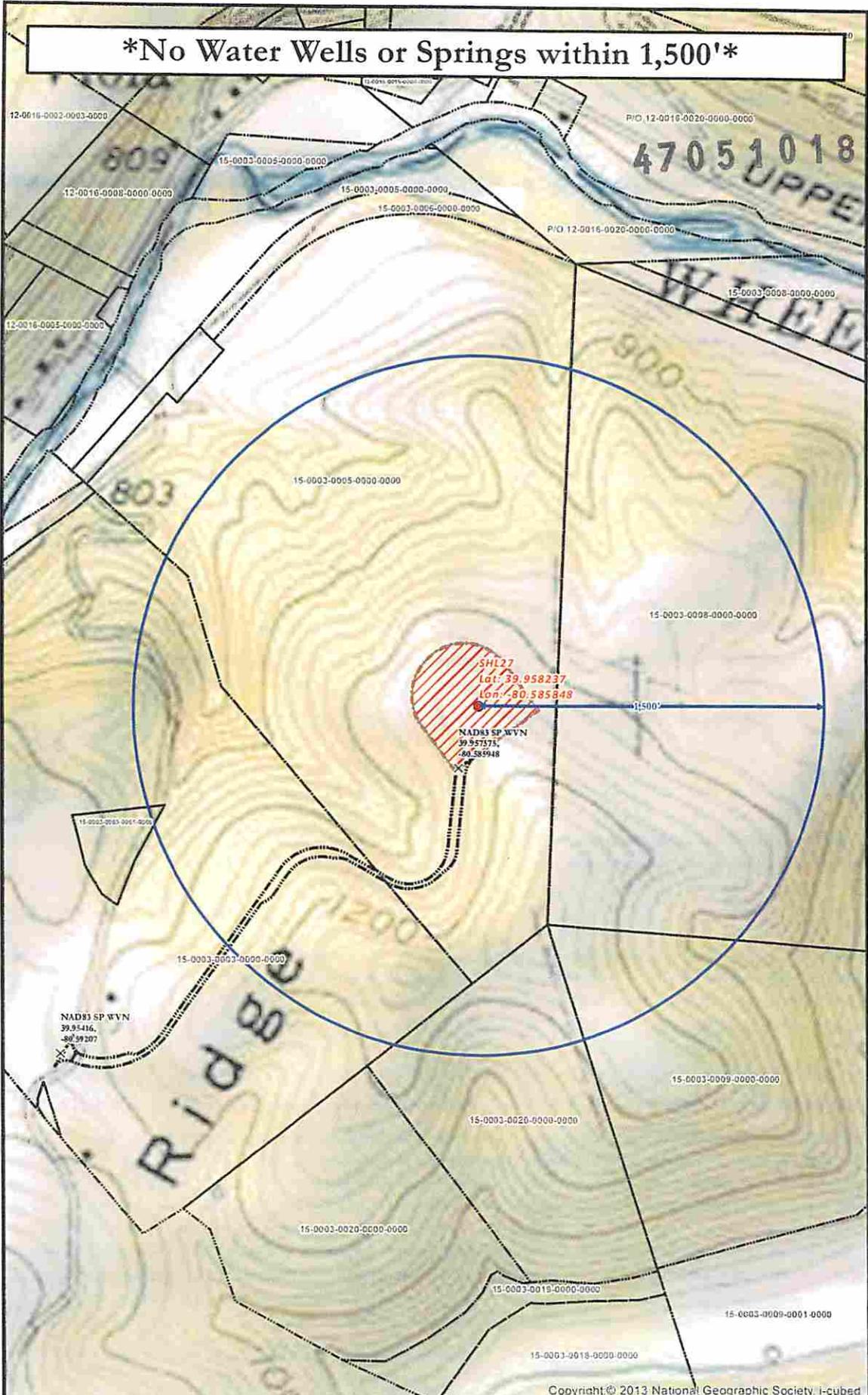
For Submission to *JL*  
*11/14/2015*  
**West Virginia Department of Environmental Protection,  
Office of Oil and Gas**

Noble Energy, Inc.  
Appalachia Offices  
1000 Noble Energy Drive  
Canonsburg, PA 15317-9504

Received  
Office of Oil & Gas

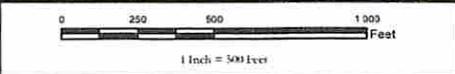
JAN 20 2015

**\*No Water Wells or Springs within 1,500'\***



**SHL 27 SITE SAFETY PLAN**  
**- SITE WELL LOCATION -**

- Well Pad
- Spring
- Water Well
- Intersection
- Access Road
- 1500' Water Well Buffer
- Well Pad Boundary
- Surface Parcels (Revised)



Projection: NAD 1927 StatePlane West Virginia North FIPS 4701  
 Units: Foot US

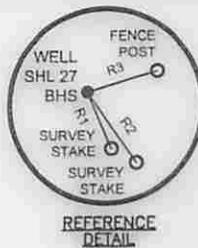
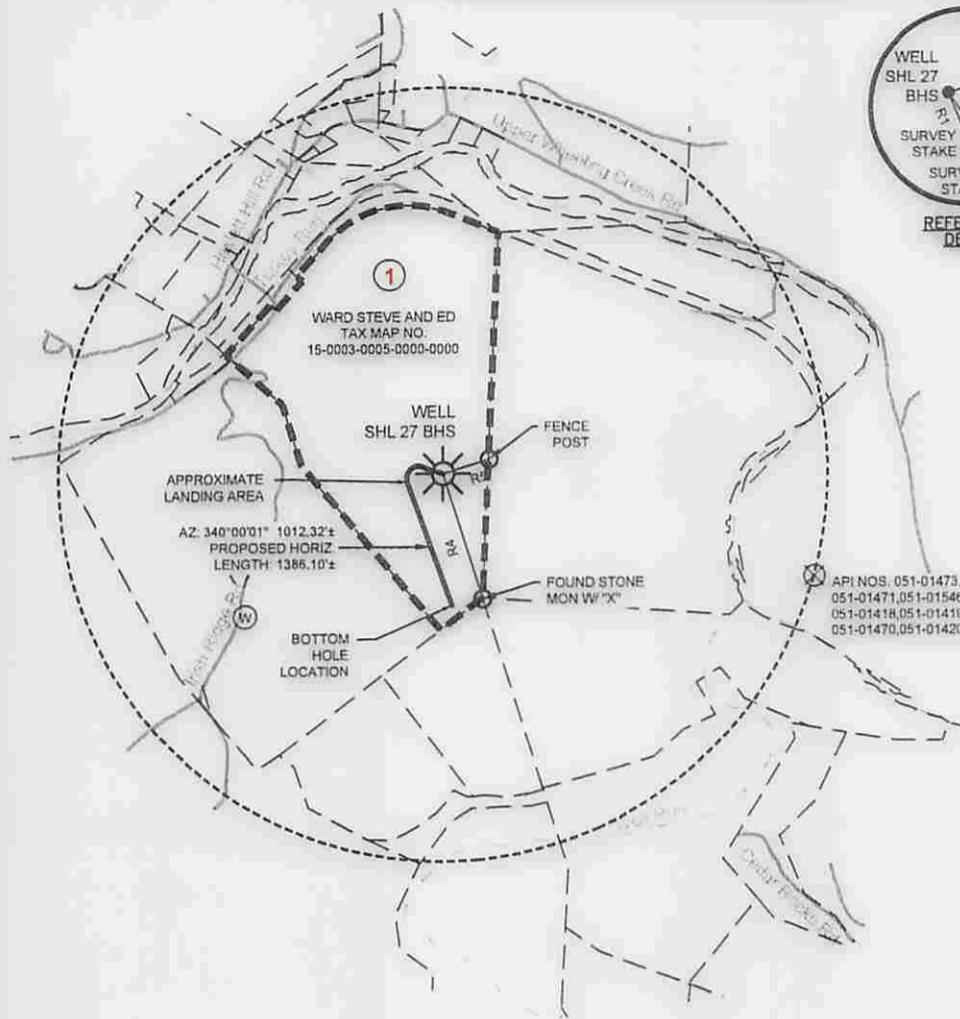
**\*\*Disclaimer: All data is licensed for use by Noble Energy Inc. use only.\*\***

Date: 12/9/2014  
 Author:  
 Christopher Zinner

Well is located on topo map 15,166 feet south of Latitude: 40° 00' 00"

Well is located on topo map 661

feet west of Longitude: 80° 35' 00"



**SURFACE HOLE LOCATION (SHL)**

UTM 17 - NAD83  
 N: 4423218.098  
 E: 535386.475  
 NAD27, WV NORTH  
 N: 532988.152  
 E: 1695599.024  
 LAT/LON DATUM-NAD83  
 LAT: 39.958363  
 LON: -80.585695

**APPROX. LANDING POINT**

UTM 17 - NAD83  
 N: 4423196.848  
 E: 535302.576  
 NAD27, WV NORTH  
 N: 532923.029  
 E: 1695322.552  
 LAT/LON DATUM-NAD83  
 LAT: 39.958175  
 LON: -80.586678

**BOTTOM HOLE LOCATION**

UTM 17 - NAD83  
 N: 4422908.805  
 E: 535412.904  
 NAD27, WV NORTH  
 N: 531971.749  
 E: 1695668.788  
 LAT/LON DATUM-NAD83  
 LAT: 39.955575  
 LON: -80.585402

LINE	BEARING	DISTANCE
R1	N22°43'24\"W	315.09'
R2	N34°30'32\"W	440.86'
R3	S72°57'14\"W	376.30'
R4	N17°45'07\"W	1016.74'
R5	S72°57'14\"W	376.30'

**LEGEND**

- TOPO MAP POINT
- PROPOSED WELL
- WATER SOURCE
- LEASED NUMBER BASED ON ATTACHED WW6A1 ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- PROPOSED HORIZONTAL WELL
- WELL REFERENCE
- STREAM/WATERWAY
- ROAD

**WELLS WITHIN 3000'**

- EXISTING GAS WELL
- RECORD GAS WELL

**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 hereon. The location of the boundary lines, as shown, and based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

WATER WELLS:  
NONE FOUND



Waterfront Corporate Park III, Suite 101  
 2000 Georgetowne Drive  
 Sewickley, PA 15143-8992  
 Phone: 724-444-1100

FILE #: SHL 27 BHS  
 DRAWING #: SHL 27 BHS  
 SCALE: 1"=1500'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE: USGS MONUMENT  
 OF ELEVATION: U 124: 951.16'

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.: 18766 L.L.S.: P.S. NO.



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



DATE: OCTOBER 16, 2014 - REV. FEBRUARY 12, 2015

OPERATOR'S WELL #: SHL 27 BHS  
 API WELL # 47 051 01814  
 STATE COUNTY PERMIT

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

WATERSHED: WHEELING CREEK ELEVATION: 1,167.4'  
 COUNTY/DISTRICT: MARSHALL / WEBSTER QUADRANGLE: MAJORSVILLE, W. VA  
 SURFACE OWNER: STEVE WARD AND ED WARD ACREAGE: 122.47  
 OIL & GAS ROYALTY OWNER: BOUNTY MINERALS, LLC ACREAGE: 122.47

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,527' ± TMD: 8,812' ±  
 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