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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

June 18, 2015

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-10303106, issued to STATOIL USA ONSHORE PROPERTIES, 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

Operator's Well No: CHARLES MUSGRAVE SOUTH 2

Farm Name: DORSEY, ROBERT

API Well Number: 47-10303106

Permit Type: Horizontal 6A Well

Date Issued: 06/18/2015

**Promoting a healthy environment.**

**06/19/2015**

## 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.

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### 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 within 30 days of commencement of drilling.

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

103                      01                      438

1) Well Operator: Statoil USA Onshore Properties

<u>494505083</u>	<u>Wetzel</u>	<u>Center</u>	<u>Littleton</u>
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Operator ID                      County                      District                      Quadrangle

2) Operator's Well Number: Charles Musgrave South 2H Well Pad Name: Charles Musgrave

3) Farm Name/Surface Owner: Musgrave Farm/Roberty Dorsey Public Road Access: Fairview Road

4) Elevation, current ground: 1344' (existing) Elevation, proposed post-construction: 1344' (existing pad)

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_

Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_

Horizontal  \_\_\_\_\_

6) Existing Pad: Yes or No Yes

*DMH  
3-11-15*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Marcellus: Formation Top 7465' TVD, 46' thick, 5031 Psi, Intermediate Casing MASP 2300 psi

8) Proposed Total Vertical Depth: 7510' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 16,002' MD

11) Proposed Horizontal Leg Length: 7558'

12) Approximate Fresh Water Strata Depths: 466' TVD

13) Method to Determine Fresh Water Depths: 1980 study "Freshwater & Saline Groundwater of WV" by James Foster

14) Approximate Saltwater Depths: 691' TVD

15) Approximate Coal Seam Depths: 774', 846', 904', 1126', 1206', 1228'

16) Approximate Depth to Possible Void (coal mine, karst, other): NA

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

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(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

18)

**CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft./CTS)
Conductor	20"	New	H-40	94#	120'	120'	cmt to surface-150 cuft
Fresh Water	13.375"	New	J-55	54.4#	530'	530'	cmt to surface-322 cuft
Coal	NA						
Intermediate	9.625"	New	J-55	36#	2780'	2780'	cmt to surface-1134 cuft
Production	5.5"	New	P-110	20#	16002'	16002'	cmt to 1780'-3621 cuft
Tubing	2.375"	New	L-80	4.7#	---	---	---
Liners							

*DMH*  
*3-11-15*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	26"	.438"	1530 psi	---	Class A	1.3 cu ft/sk
Fresh Water	13.375"	17.5"	.380"	2730 psi	---	Class A	2.31 cu ft/sk
Coal	NA						
Intermediate	9.625"	12.25"	.352"	3520 psi	2300	Class A	2.31 cu ft/sk
Production	5.5"	8.5"	.361"	12640 psi	3616	Class A	1.3 cu ft/sk
Tubing	2.375"	5.5"	.19"	11200 psi	3616	---	---
Liners							

**PACKERS**

Kind:	HES Versa-Set Retrievable Packer			
Sizes:	2.375" x 5.5"			
Depths Set:	6825'			

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

See Attached

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

Well will be fractured through the plug-n-perf method with +/- 25 fracturing stages per well. Each fracturing treatment will have 400,000 lbs of sand mixed in 7500 bbls of fresh water. The fracturing rate will be between 80 and 100 bpm at a pressure lower than a maximum pressure of 10,000 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 4.5 acres

22) Area to be disturbed for well pad only, less access road (acres): 2.8 acres

23) Describe centralizer placement for each casing string:

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See Attached

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

See Attached

25) Proposed borehole conditioning procedures:

See Attached

\*Note: Attach additional sheets as needed.

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06/19/2015

WW-6B – Charles Musgrave South 2H

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

20" conductor will be pre-set prior to start of operations and cemented in place to surface at approximately 120ft. A 17 1/2" surface hole will be drilled with fresh water to approximately 530md/tvd. 13 3/8" surface casing will be installed and cemented to surface in order to isolate fresh water zones and provide a competent shoe for well control while drilling deeper horizons. A 12 1/4" intermediate hole section will be drilled with air and a mud motor to approximately 2780' md/tvd through the base of the Big Injun formation. 9 5/8" Intermediate casing will be installed and cemented to surface in order to isolate the Red Beds and Big Injun formation from lower hydrocarbon bearing zones while providing a competent shoe for well control. An 8 1/2" vertical hole section will be drilled on air to planned kick-off point. The production hole will then be drilled using Synthetic Based Mud (SBM) and a conventional mud motor. The wellbore will be deviated from vertical and landed horizontally in the Marcellus Target horizon, and extended laterally to total depth of 16002' MD/7510' TVD using SBM and conventional mud motors. A 5 1/2" production casing will be installed and cemented so estimated top of cement is at least 300ft inside the previous casing shoe. The Drilling Rig will then be released to the next well.

23) Describe centralizer placement for each casing string:

Surface - 1 centralizer w/ stop collar 10 ft above float shoe. One Single Bow every joint to 100ft below surface.  
 Intermediate – 1 centralizer w/ stop collar 10 ft above float shoe. 1 centralizer w/ stop collar 10 ft above float collar. 1 centralizer every joint for the first 15 joints. One centralizer every 3 jnts to 100ft below surface.  
 Production - 1 centralizer w/ stop collar 10ft above shoe. 1 centralizer 10ft above float collar. 1 centralizer every joint (floating) until KOP. 1 centralizer every 3 joints (floating) until 200ft inside intermediate shoe. 1 centralizer 50ft below mandrel hanger.

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

Surface - Class A + 3% CaCl<sub>2</sub>  
 Intermediate - Class A cmt, 0.05% Retarder, 0.25% Defoamer, 1% Accelerator, 0.25% Dispersant, 0.65% Retarder, 9.10 gal/sk Fresh Water.  
 Production - Class A cmt, 10% bwow Dispersant, 0.6% bwoc Fluid Loss, 0.4% bwoc Retarder, 0.1% bwoc Free water control agent, 0.25% bwoc Defoamer, 0.1% bwoc Fluid Loss, 6.32 gal/sk Fresh Water.

**25) Proposed borehole conditioning procedures:**

**Surface – Drilled with fresh water to section total depth. Prior to tripping, hole will circulated clean of cuttings and back-reamed if necessary.**

**Intermediate – Drilled with air and displace to 9.0 ppg 5% KCL Polymer Water Based Mud (WBM) at section total depth. At section total depth, pump 40bbl viscous pill and circulate hole clean.**

**Production - Drilled with with air to kick-off point then 12.0-13.0 ppg Synthetic Based Mud (SBM) to section total depth. At section total depth pump 2-3 20bbl heavy weighted pill sweeps to transport excess cutting from the hole until clean. Pump rates will be maintained in excess of 600 GPM, and rotation in excess of 100 RPM to assist cuttings transport. A 60 bbl tuned weighted spacer will be pumped ahead of the cement to assist in mud cake removal and water wett both casing and formation.**



March 18, 2015

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street, SE  
Charleston, WV 23504-2345

Attention: Mr. Gene Smith

Reference: Charles Musgrave South 2H - Permit Application  
Wetzel County, WV

Mr. Smith:

Statoil USA Onshore Properties Inc. (Statoil) herein submits an application to drill, hydraulically fracture, complete and produce the Charles Musgrave South 2H from the existing Charles Musgrave pad in Wetzel, County. In support of this application enclosed please find the following:

- Required documentation for a Horizontal 6A Well Permit Application as outlined on the 'Horizontal 6A Well Permit Application Checklist'
- Check No. 2000385349 in the amount of \$5,150.00
- CD containing a copy of the MSDS, Pad As-Built/E&S Plan and the Site Safety Plan

If you have any questions or require additional information, please contact the undersigned at 713-485-2640 or at [BEKW@statoil.com](mailto:BEKW@statoil.com).

Sincerely,

A handwritten signature in blue ink, appearing to read "Bekki Winfree".

Bekki Winfree  
Sr. Regulatory Advisor – Marcellus

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West Virginia Department of Environmental Protection  
Office of Oil and Gas  
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Sincerely,

Bekki Winfree

Sr. Regulatory Advisor – Marcellus

06/19/2015

47 10303106

## CEMENT ADDITIVES

Surface - Class A + 3% CaCl<sub>2</sub>

Intermediate - Class A cmt, 0.05% Retarder, 0.25% Defoamer, 1% Accelerator, 0.25% Dispersant, 0.65% Retarder, 9.10 gal/sk Fresh Water.

Production - Class A cmt, 10% bwow Dispersant, 0.6% bwoc Fluid Loss, 0.4% bwoc Retarder, 0.1% bwoc Free water control agent, 0.25% bwoc Defoamer, 0.1% bwoc Fluid Loss, 6.32 gal/sk Fresh Water.

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Scanned to Q drive

4710303106



Statoil

## Charles Musgrave Pad – Site Safety Plan

Statoil USA Onshore Properties, Inc.

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# Marcellus - Drilling Well Schematic

47 10 303 100

Well Name: Charles Musgrave 2H  
 Field Name: Marcellus  
 County: Wetzler, WV  
 API #: 0

BHL: X = 1760322.24 Y = 14404220.10  
 SHL: X = 1753611.14 Y = 14409188.85

GLE (ft): 1,344  
 DF (ft): 22

TVD (ft): 7,510  
 TMD (ft): 16,002  
 Profile: Horizontal  
 AFE No.: n/a

Formations & Csg Points	Depth, ft			Form. Temp. (F)	Pore Press. (EMW)	Frac Gradient (EMW)	Planned MW	Measure Depth (ft)	Program	Details
	MD	TVD	SS							
Conductor	120	120	1,246	-	-	-	-	120		20" Conductor
										17 1/2" Surface
										Profile: Vertical
										Bit Type: 17-1/2" SMITH MS1716
										BHA: 9 5/8" Motor with Schock Sub
										Mud: Water
										Surveys: n/a
										Logging: n/a
										Casing: 13.375in 54.5 # J-55 BTC set @ ~ 530 MD/530 TVD
										Centralizers: 1 centralizer w/ stop collar 10 ft above float shoe. One Single Bow every joint to 100R below surface.
										Cement: 15.8 ppg BondCem gas tight single slurry tail design to surface
										Potential Drilling Problems:
Casing Point	530	530	836	65	-	-	Water	530		
Approximate fresh water strata ~366'										
1st Salt Sand	691	691	675				Air/Mist			FIT/LOT: 14.0 ppg EMW
Washington Coal	774	774	592				Air/Mist			12 1/4" Intermediate
Waynesburg A Co	846	846	520				Air/Mist			Profile: Nudge and hold for anticollision
Waynesburg Coal	904	904	462				Air/Mist			Bit Type: 12-1/4" SMITH TCI F47YA (IADC:627Y)
Sewickley Coal	1,126	1,126	240				Air/Mist			BHA: 8" Directional Assy 7-8 Lobe 2.0 Stg. .07 rpg 1.83ABH (0.10 rpg/375 Diff)
Redstone Coal	1,206	1,206	160				Air/Mist			Mud: Air/Mist
Pittsburg Coal	1,228	1,228	138				Air/Mist			Surveys: Gyro MS, MWD EM Pulse
								TOC		Logging: n/a
								1780		Casing/Liner: 9.625in 36# J55 BTC set at 2780MD/ 2780TYD.
										Liner Hanger: n/a
										Centralizers: 1 centek centralizer w/ stop collar 10 ft above float shoe. 1 centek centralizer w/ stop collar 10 ft above float collar. 1 centralizer every joint for the first 15 joints. One centralizer every 3 jnts to 100ft below surface.
Big Injun (Base)	2,679	2,679	-1,313				Air/Mist			Cement: 15.8 ppg, BondCem gas tight, single slurry tail design to surface
										Potential Drilling Problems: Slow ROP
Casing Point	2,780	2,780	-1,414	82	-	>18.0	Air/Mist	2,780		
FIT/LOT: 16.6 ppg EMW										
Cuyahoga	2,821	2,821	-1,455				Air/Mist			8 1/2" Production
Weir	2,827	2,827	-1,461				Air/Mist			Profile: KO from Vertical, Land HZ
Berea	3,033	3,033	-1,667				Air/Mist			Bit Type: 8-1/2" SMITH TCI F47YAPS (IADC: 617Y) - Vert
Gordon	3,267	3,267	-1,901				Air/Mist			8 1/2" Smith SD1513 (curve & lateral)
Warren	3,943	3,943	-2,577				Air/Mist			BHA: Directional Assembly (Steerable Motor) + EM w/ GR
										6.75in 7-8 Lobe, 2.9 Stg (0.17rpg, 560 Diff) - Vert
										6.75in 6-7 Lobe, 5.0 Stg (1.95 deg Fixed, 0.29 rpg, 715 Diff) - HZ
										Mud: SBM
										Surveys: MWD EM Pulse
										Logging: n/a
										Casing/Liner: 5.5in 20# P110EC Vam Top HT to 0' to TD @ 16002 ft MD
										Csg Hanger: Fluted mandrel hanger
										Centralizers: 1 centek centralizer w/ stop collar 10ft above shoe. 1 centek centralizer 10ft above float collar. 1 centek centralizer every joint (floating) until KOP. 1 centek centralizer every 3 joints (floating) until 200ft inside intermediate shoe. 1 centek centralizer 50ft below mandrel hanger.
										Cement: 15.0 ppg Gas tight, single slurry tail design TOC 1000ft into previous shoe at 1512 ft MD.
										Potential Drilling Problems: Wellbore instability in lateral w/ MW < 11.5 ppg
										Notes / Comments:
Tgt Landing Point	8,447	7,485	-6,119	118			12.0 - 12.5			
Onondaga		7,511	-6,145							

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 TMD: 16,002  
 TVD: 7,510  
 06/19/2015

Last Revision Date: 2/25/2015  
Revised by: Ryan Cardenas

Note: Depths are referenced to RKB  
Note: Not Drawn to Scale

 Cement Outside Casing

API Number 47 - 4710303106  
Operator's Well No. Charles M. Murrav, South 2H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Statoil USA Onshore Properties Inc. OP Code 494505083

Watershed (HUC 10) Lower West Virginia Fork Fish Creek Quadrangle Littleton

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: \_\_\_\_\_

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

Proposed Disposal Method For Treated Pit Wastes:

- \_\_\_\_\_ Land Application
- \_\_\_\_\_ Undergound Injection ( UIC Permit Number Green Hunter API 34-121-23195 )
- \_\_\_\_\_ Reuse (at API Number \_\_\_\_\_)
- \_\_\_\_\_ 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/fresh water-vert. sec/oil based mud horiz.sec

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

Additives to be used in drilling medium? emulsifier, food grade oil, barite, surfactant, calcium carbonate, gilsonite, lubricant, lime

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

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

-Landfill or offsite name/permit number? Wetzel County Landfill

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

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.

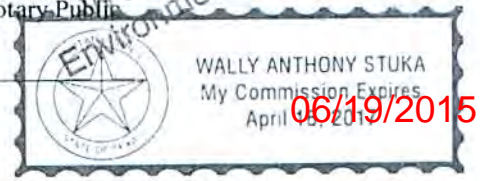
Company Official Signature Bekki Winfree  
Company Official (Typed Name) Bekki Winfree  
Company Official Title Sr. Regulatory Advisor

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Subscribed and sworn before me this 2 day of March, 2015

Wally Anthony Stuka  
Notary Public

My commission expires April 16, 2017



Statoil USA Onshore Properties Inc.

4110303106  
contractor to test

Proposed Revegetation Treatment: Acres Disturbed 3.3

Prevegetation pH contractor to test

Lime 2-4 Tons/acre or to correct to pH see E&S notes

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch Hay or Straw 2-3, Wood Fiber 0.5-0.75, Pulp Fiber 0.5-0.75 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	26 or 40	White Clover	15
Spring Oats	64 or 96	Red Top	15
Rye Grain	140	Orchard Grass	20

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: [Signature]

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Title: Oil & Gas Inspector

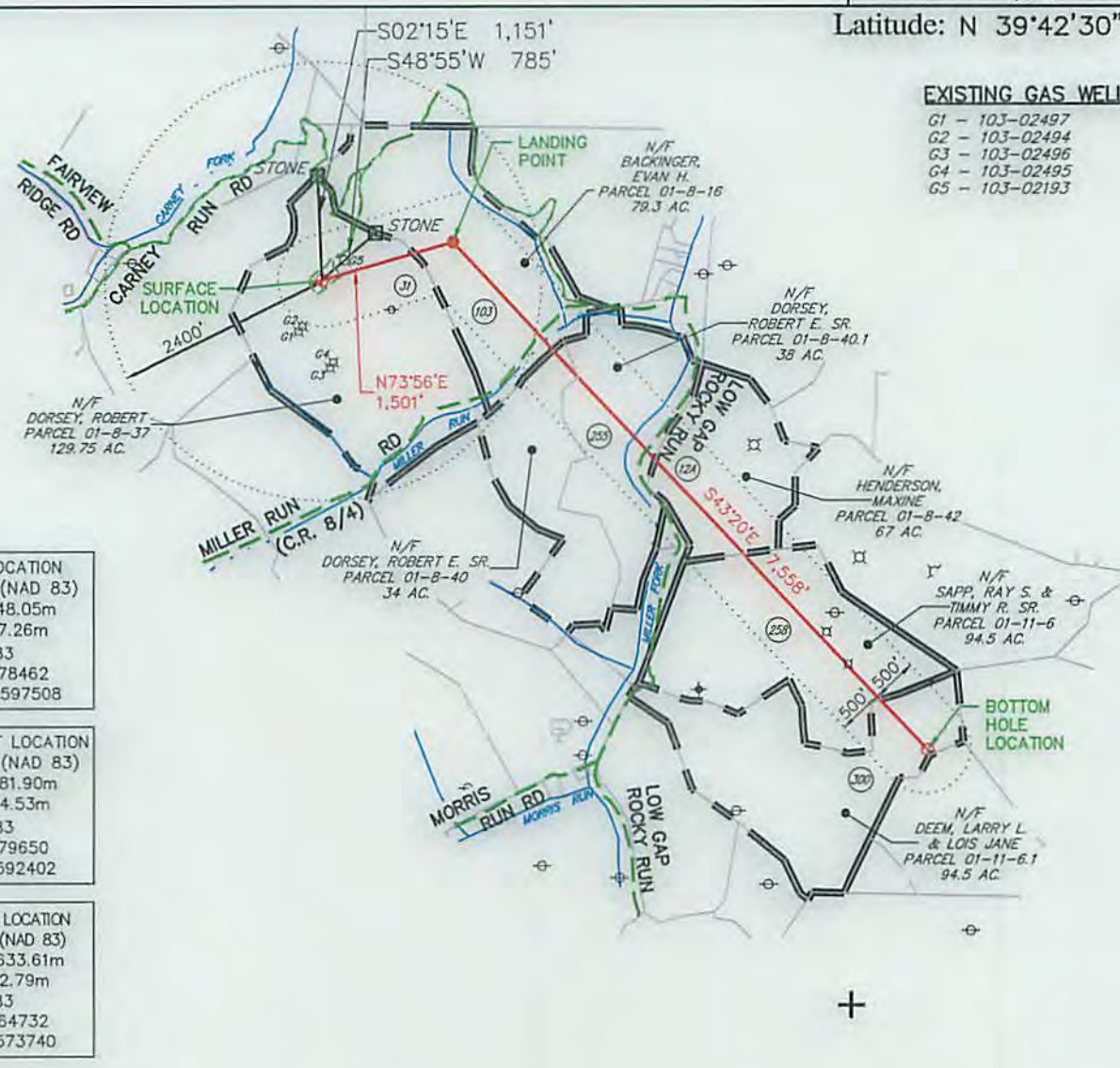
Date: 3-11-15

Field Reviewed?  Yes  No

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EXISTING GAS WELLS

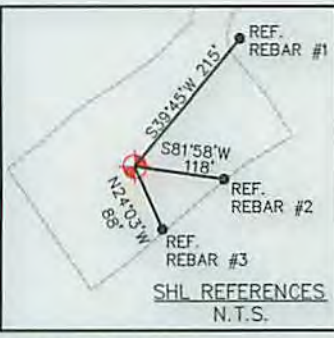
- G1 - 103-02497
- G2 - 103-02494
- G3 - 103-02496
- G4 - 103-02495
- G5 - 103-02193



**SURFACE LOCATION**  
 UTM METERS (NAD 83)  
 N) 4,392,148.05m  
 E) 534,517.26m  
 NAD 83  
 LAT) 39.678462  
 LONG) -80.597508

**LANDING POINT LOCATION**  
 UTM METERS (NAD 83)  
 N) 4,392,281.90m  
 E) 534,954.53m  
 NAD 83  
 LAT) 39.679650  
 LON) -80.592402

**BOTTOM HOLE LOCATION**  
 UTM METERS (NAD 83)  
 N) 4,390,633.61m  
 E) 536,562.79m  
 NAD 83  
 LAT) 39.664732  
 LON) -80.573740



LEGEND

- PROPOSED GAS WELL
- EXISTING GAS WELLS
- PRE-29 WELLS
- PLUGGED GAS WELLS
- PROPOSED BORE
- MINERAL TRACT BOUNDARY
- 500'/2,400' BUFFER
- STREAM LINE
- SURFACE TRACT BOUNDARY
- ROADS
- TOPO MAP POINT

MINERAL TRACT NUMBER	TAX MAP PARCEL NUMBER	TRACT GROSS ACRES	MINERAL OWNERSHIP
31	01-8-37	129.75	DIANE WYKERT, CHARLES E. MUSGRAVE & ILA MAE MUSGRAVE, ET AL
103	01-8-16	79.25	DIANA DAWN VANHORN, EARNEST H. & CALRIS C. CADLE, ET AL
255	01-8-40, 01-8-40.1	68	GREEN DOT FARM, INC., JAMES HARRY ASHCRAFT, ET AL
12A	01-8-42	67	MAXINE HENDERSON
258	01-11-6	100.5	NANCY RENZELLI, ELIZABETH DRAKE, ET AL
300	01-11-6.1	94.50	NANCY RENZELLI, ELIZABETH DRAKE, ET AL

GENERAL NOTES:

1. THE BOUNDARY LINES SHOWN HEREON ARE BASED ON RECORD DEED, PLATS, AND TAX MAPS BEST FIT TO FOUND FIELD EVIDENCE AND AERIAL PHOTOS.
2. THIS PLAT DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY OF THE INDIVIDUAL PARCELS.
3. THERE ARE NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF PROPOSED WELL.
4. THERE ARE NO EXISTING OCCUPIED DWELLINGS, BUILDINGS OR RAILROADS WITHIN 625' OF PROPOSED WELL.
5. THE PROPOSED WELL IS GREATER THAN 100' FROM PERENNIAL STREAM, WETLAND, POND, RESERVOIR OR LAKE.
6. THERE ARE NO NATIVE TROUT STREAMS WITHIN 300' OF PROPOSED WELL.

FILE #: 099912019  
 DRAWING #: 099912019\_WELL PLAT  
 SCALE: 1" = 2,000'  
 MINIMUM DEGREE OF ACCURACY: 1/200  
 PROVEN SOURCE  
 OF ELEVATION: SUBMETER MAPPING GPS

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:   
 R.P.E.: \_\_\_\_\_ L.L.S.: 2241



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



DATE: FEBRUARY 13, 2015  
 OPERATOR'S WELL #: CHARLES MUSGRAVE SOUTH 2H  
 API WELL #: 47 103 03106  
 STATE COUNTY PERMIT

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

WATERSHED: LOWER WEST VIRGINIA FORK FISH CREEK ELEVATION: 1,344' (AS-BUILT) 06/19/2015

COUNTY/DISTRICT: WETZEL / CENTER QUADRANGLE: LITTLETON

SURFACE OWNER: ROBERT DORSEY ACREAGE: 130±

OIL & GAS ROYALTY OWNER: DIANE WYKERT, CHARLES E. & ILA MAE MUSGRAVE, ET AL LEASE ACREAGE: SEE MINERAL INTEREST TABLE

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: 7,512'

WELL OPERATOR: STATOIL USA ONSHORE PROPERTIES INC. DESIGNATED AGENT: RICHARD PYLES

ADDRESS: 2103 CITYWEST BLVD., SUITE 800 ADDRESS: 803 NASH ROAD

CITY: HOUSTON STATE: TX ZIP CODE: 77042 CITY: MIDDLEBOURNE STATE: WV ZIP CODE: 26149



4710303106



400 White Oak Boulevard  
Bridgeport, WV 26330  
(304) 933-8000 (304) 933-8183 Fax  
www.steptoehjohnson.com

Writer's Contact Information  
(304) 933-8133  
Marsha.Hudkins@steptoehjohnson.com

November 24, 2014

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

Re: Well No.: \_\_\_\_\_  
Operator: Statoil USA Onshore Properties  
Property: Oil and Gas underlying 129.75 acres, Map 8, Parcel 37,  
Center District, Wetzel County, WV (AMI 31)  
Effective Date of Title Examination: September 3, 2010

Ladies and Gentlemen:

We have examined title to the above captioned property as of the above stated Effective Date. Based upon our review of all relevant land title records, we are of the opinion that no basis exists of record for the West Virginia Department of Highways to own or to claim any ownership of the oil and/or gas within and underlying any roads which traverse or around the above captioned property.

Very truly yours,

STEPTOE & JOHNSON PLLC

By: Marsha K. Hudkins  
Marsha Hudkins, a Member

cc: Catherine Hammock, Statoil USA Onshore Properties

6748972

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Writer's Contact Information

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Marsha.Hudkins@step-toe-johnson.com

November 24, 2014

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

Re: Well No.: \_\_\_\_\_  
Operator: Statoil USA Onshore Properties  
Property: Oil and Gas underlying 79.25 acres, Map 8, Parcel 16, Center  
District, Wetzel County, WV (AMI 103)  
Effective Date of Title Examination: December 27, 2010

Ladies and Gentlemen:

We have examined title to the above captioned property as of the above stated Effective Date. Based upon our review of all relevant land title records, we are of the opinion that no basis exists of record for the West Virginia Department of Highways to own or to claim any ownership of the oil and/or gas within and underlying any roads which traverse or abound the above captioned property.

Very truly yours,

STEPTOE & JOHNSON PLLC

By: Marsha K. Hudkins  
Marsha Hudkins, a Member

cc: Catherine Hammock, Statoil USA Onshore Properties

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(304) 933-8133

4710305106

November 24, 2014

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

Re: Well No.: \_\_\_\_\_  
Operator: Statoil USA Onshore Properties  
Property: Oil and Gas underlying 38 acres, Map 8, Parcel 40.1, Center  
District, Wetzel County, WV (AMI 255)  
Effective Date of Title Examination: April 22, 2011

Ladies and Gentlemen:

We have examined title to the above captioned property as of the above stated Effective Date. Based upon our review of all relevant land title records, we are of the opinion that no basis exists of record for the West Virginia Department of Highways to own or to claim any ownership of the oil and/or gas within and underlying any roads which traverse or abound the above captioned property.

Very truly yours,

STEP TOE & JOHNSON PLLC

By: Marsha Hudkins  
Marsha Hudkins, a Member

cc: Catherine Hammock, Statoil USA Onshore Properties

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47 103-03703  
Writer's Contact Information  
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Marsha.Hudkins@steptoe-johnson.com

November 24, 2014

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

Re: Well No.: \_\_\_\_\_  
Operator: Statoil USA Onshore Properties  
Property: Oil and Gas underlying 67 acres, Map 8, Parcel 42, Center  
District, Wetzel County, WV (AMI 12A)  
Effective Date of Title Examination: October 21, 2009

Ladies and Gentlemen:

We have examined title to the above captioned property as of the above stated Effective Date. Based upon our review of all relevant land title records, we are of the opinion that no basis exists of record for the West Virginia Department of Highways to own or to claim any ownership of the oil and/or gas within and underlying any roads which traverse or around the above captioned property.

Very truly yours,

STEPTOE & JOHNSON PLLC

By: Marsha K. Hudkins  
Marsha Hudkins, a Member

cc: Catherine Hammock, Statoil USA Onshore Properties

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November 24, 2014

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

4710303106

Re: Well No.: \_\_\_\_\_  
Operator: Statoil USA Onshore Properties  
Property: Oil and Gas underlying 195 acres, Map 11, Parcel Nos. 6 &  
6.2, Center District, Wetzel County, WV (AMI 258)  
Effective Date of Title Examination: February 3, 2010

Ladies and Gentlemen:

We have examined title to the above captioned property as of the above stated Effective Date. Based upon our review of all relevant land title records, we are of the opinion that no basis exists of record for the West Virginia Department of Highways to own or to claim any ownership of the oil and/or gas within and underlying any roads which traverse or abound the above captioned property.

Very truly yours,

STEP TOE & JOHNSON PLLC

By: Marsha Hudkins  
Marsha Hudkins, a Member

cc: Catherine Hammock, Statoil USA Onshore Properties

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47 10 303 108

November 24, 2014

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

Re: Well No.: \_\_\_\_\_  
Operator: Statoil USA Onshore Properties  
Property: Oil and Gas underlying 195 acres, Map 11, Parcel 6.1, Center  
District, Wetzel County, WV (AMI 300)  
Effective Date of Title Examination: February 3, 2010

Ladies and Gentlemen:

We have examined title to the above captioned property as of the above stated Effective Date. Based upon our review of all relevant land title records, we are of the opinion that no basis exists of record for the West Virginia Department of Highways to own or to claim any ownership of the oil and/or gas within and underlying any roads which traverse or abound the above captioned property.

Very truly yours,

STEP TOE & JOHNSON PLLC

By: Marsha Hudkins  
Marsha Hudkins, a Member

cc: Catherine Hammock, Statoil USA Onshore Properties

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4710303106

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE CERTIFICATION

Date of Notice Certification: 03/15/2015

API No. 47- \_\_\_\_\_

Operator's Well No. Charles Musgrave South 2H

Well Pad Name: Charles Musgrave

**Notice has been given:**

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>534,517.26 m</u>
County: <u>Wetzel</u>	Northing: <u>4,392,148.05 m</u>
District: <u>Center</u>	Public Road Access: <u>CR 5/1</u>
Quadrangle: <u>Littleton</u>	Generally used farm name: <u>Musgrave Farm</u>
Watershed: <u>Lower West Virginia Fork Fish Creek</u>	

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
---	---

**Required Attachments:**

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been notified as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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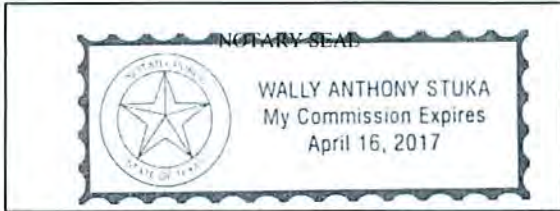
06/19/2015

4710303106

**Certification of Notice is hereby given:**

THEREFORE, I Bekki Winfree, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, 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 and imprisonment.

Well Operator:	<u>Statoil USA Onshore Properties Inc.</u>	Address:	<u>2103 City West Boulevard, Suite 800</u>
By:	<u>Bekki Winfree/ <i>Bekki Winfree</i></u>		<u>Houston, TX 77042</u>
Its:	<u>Sr. Regulatory Advisor</u>	Facsimile:	<u>713-918-8290</u>
Telephone:	<u>713-485-2640</u>	Email:	<u>BEKW@Statoil.com</u>



Subscribed and sworn before me this 16 day of March.  
*Wally Anthony Stuka* Notary Public  
 My Commission Expires April 16, 2017

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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4710305106

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 10/16/2014 **Date Permit Application Filed:** \_\_\_\_\_

**Notice of:**

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Robert Dorsey  
Address: 2052 Miller Run Road  
Littleton, WV 26581

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: CNX Land Resources, Inc.  
Address: 1000 Consol Energy Dr.  
Canonsburg, PA 15317

COAL OPERATOR

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: Robert Dorsey  
Address: 2052 Miller Run Road  
Littleton, WV 26581

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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WV Department of  
Environmental Protection

4210303106

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

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03/19/2015

**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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Environmental Protection

WW-6A  
(8-13)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Charles Musgrave South 2H  
Well Pad Name: Charles Musgrave

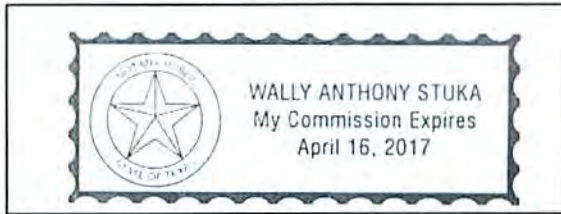
**Notice is hereby given by:**

Well Operator: Statoil USA Onshore Properties Inc.  
Telephone: (832) 929-9895 Best Copy  
Email: chamm@statoil.com

Address: 2103 CityWest Boulevard, Suite 800  
Houston, TX 77042  
Facsimile: (713) 918-8290

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 3 day of March, 2015.

Wally Anthony Stuka Notary Public

My Commission Expires April 16, 2017

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WV Department of  
Environmental Protection  
06/19/2015

WW-6A - Charles Musgrave South 2H

Additional Coal Owners (3)

Diane Wykert  
HC 68 Box 13  
Wileyville, WV 26186

Charles E. Musgrave and Ila Mae Musgrave  
HC 68 Box 22  
Wileyville, WV 26186

James T. Garrison & Norma Lea Garrison  
33 1 Fulton St.  
Niles, OH 44446

Additional Surface Owners of Water Wells (1)

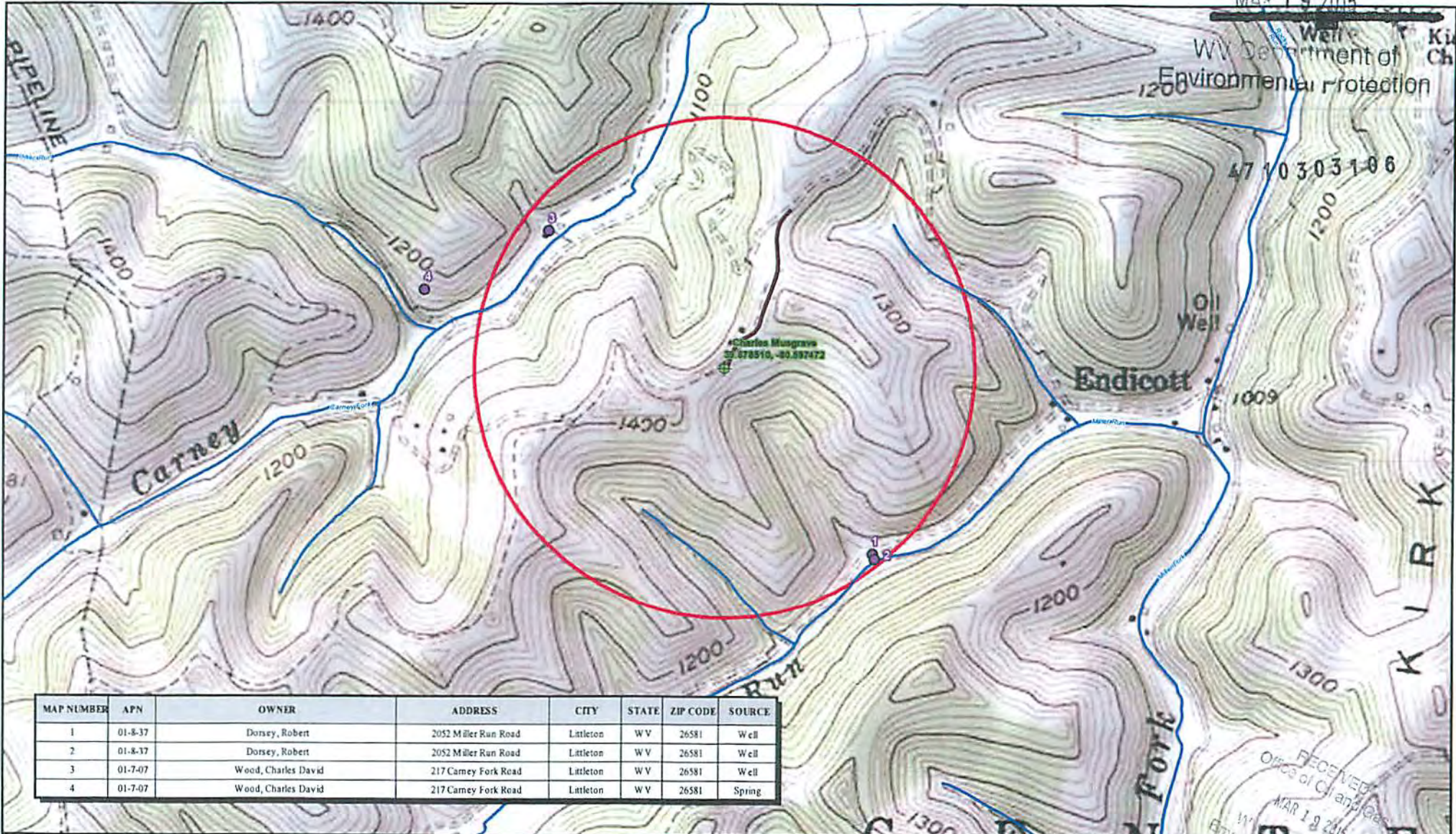
Charles David Wood  
217 Carney Fork Road  
Littleton, WV 26581

4710303106

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Environmental Protection







06/19/2015


MAR 19 2015



MAP NUMBER	APN	OWNER	ADDRESS	CITY	STATE	ZIP CODE	SOURCE
1	01-8-37	Dorsey, Robert	2052 Miller Run Road	Littleton	WV	26581	Well
2	01-8-37	Dorsey, Robert	2052 Miller Run Road	Littleton	WV	26581	Well
3	01-7-07	Wood, Charles David	217 Carney Fork Road	Littleton	WV	26581	Well
4	01-7-07	Wood, Charles David	217 Carney Fork Road	Littleton	WV	26581	Spring


**StatOil North America, Inc.**  
**Charles Musgrave Well Pad**  
 Topographic Map - Water Sources  
 Centra District, Wetzel County, WV  
 Project No. 099912019

 Water Source  
 Well Pad  
 Access Road  
 NHD Stream  
 2,000' Well Pad Radius  
 Lake/Pond (None Present)

  
 0 100 200 Feet  
 1 Inch = 200 Feet  
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 Littleton, WV USGS 7.5' Topographic Quadrangle  
 Drawn By: IPM  
 10/6/2014

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF ENTRY FOR PLAT SURVEY**

4710303706

**Notice Time Requirement:** Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

**Date of Notice:** 7/17/2014      **Date of Planned Entry:** 7/24/2014

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

- PERSONAL SERVICE     
 REGISTERED MAIL     
 METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)

Name: Robert Dorsey

Address: HC 68 BOX 38B  
Littleton, WV 26581

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: CNX Land Resources, Inc.

Address: 1000 Consol Energy Dr.  
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: Diane Wykert

Address: HC 68 Box 13  
Wileyville, WV 25186

\*please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>534,530.91/4,392,154.262</u>
County: <u>Wetzel</u>	Public Road Access: <u>CR 5/1</u>
District: <u>Center</u>	Watershed: <u>Miller Run &amp; Carney Fork</u>
Quadrangle: <u>Littleton 7.5'</u>	Generally used farm name: <u>Musgrave Farm</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: <u>Statoil USA Onshore Properties Inc</u>	Address: <u>2103 CityWest Boulevard, Suite 800</u>
Telephone: <u>(832) 929-9895</u>	<u>Houston, TX 77042</u>
Email: <u>chamm@statoil.com</u>	Facsimile: <u>(713) 918-8290</u>

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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Office of Oil and Gas  
July 19, 2015  
WV Department of  
Environmental Protection  
06/19/2015



Additional Mineral Owners (2)

Charles E. Musgrave and Ila Mae Musgrave  
HC 68 Box 22  
Wileyville, WV 26186

James T. Garrison & Norma Lea Garrison  
331 Fulton St.  
Niles, OH 44446

4710303106

Additional Coal Owners (3)

Diane Wykert  
HC 68 Box 13  
Wileyville, WV 26186

Charles E. Musgrave and Ila Mae Musgrave  
HC 68 Box 22  
Wileyville, WV 26186

James T. Garrison & Norma Lea Garrison  
331 Fulton St.  
Niles, OH 44446

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF PLANNED OPERATION**

**Notice Time Requirement:** notice shall be provided no later than the filing date of permit application.

**Date of Notice:** 03/02/2015      **Date Permit Application Filed:** \_\_\_\_\_

47 10303106

**Delivery method pursuant to West Virginia Code § 22-6A-16(c)**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> CERTIFIED MAIL<br>RETURN RECEIPT REQUESTED | <input type="checkbox"/> HAND<br>DELIVERY |
|--|---|

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

**Notice is hereby provided to the SURFACE OWNER(s)**

(at the address listed in the records of the sheriff at the time of notice):

Name: <u>Robert Dorsey</u>	Name: _____
Address: <u>2052 Miller Run Road</u> <u>Littleton, WV 26581</u>	Address: _____

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>534,517.26</u>	
County: <u>Wetzel</u>		Northing: <u>4,392,148.05</u>	
District: <u>Center</u>	Public Road Access: <u>CR 5/1</u>		
Quadrangle: <u>Littleton 7.5"</u>	Generally used farm name: <u>Musgrave Farm</u>		
Watershed: <u>Miller Run &amp; Carney Fork</u>			

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: <u>Statoil USA Onshore Properties Inc.</u>	Address: <u>2103 CityWest Boulevard, Suite 800</u>
Telephone: <u>(832) 929-9895</u>	<u>Houston, TX 77042</u>
Email: <u>chamm@statoil.com</u>	Facsimile: <u>(713) 918-8290</u>

**Oil and Gas Privacy Notice:**

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OFFICE OF OIL AND GAS  
MAR 19 2015  
WV Department of  
Environmental Protection

06/19/2015



4710303-39

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110  
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin  
Governor

Paul A. Mattox, Jr., P. E.  
Secretary of Transportation/  
Commissioner of Highways

September 11, 2014

James A. Martin, Chief  
Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

Subject: DOH Permit for the Charles Musgrave Unit 2H Well Site

Dear Mr. Martin,

The West Virginia Division of Highways has issued Permit # 06 -2011-0128 for the subject site to Statoil USA Onshore Properties Inc. for access to the State Road for the well site located off of Wetzel County Route 8/5 SLS. This permit was originally issued in the name of Grenadier Energy Partners then transferred to Statoil.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

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Office of Oil and Gas  
MAR 19 2015  
WV Department of  
Environmental Protection  
Very Truly Yours

*Gary K. Clayton*

Gary K. Clayton  
Regional Maintenance Engineer  
Central Office Oil & Gas Coordinator

Cc: Cathy Hammock  
Statoil USA Onshore Properties Inc.  
CH, OM, D-6  
File

06/19/2015

4710303108

## Frac Additives

### BIO CLEAR 2000

Components	CAS#
Polyethylene Glycol	25322-68-3
2,2-dibromo-3-nitrilopropionamide	10222-01-2

### BUFFER

Sulfamic Acid	5329-14-6
---------------	-----------

### ACID

Hydrochloric Acid	7647-01-0
-------------------	-----------

### BREAKER

Sucrose	57-50-1
Ethylene Glycol	107-21-1

### INHIBITOR

Ethoxylated Nonylphenol	68412-54-4
Dimethylcocoamine	68607-28-3
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
Methanol	67-56-1
Propargyl Alcohol	107-19-7

### SCALE INHIBITOR

Ethylene Glycol	107-21-1
-----------------	----------

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06/19/2015

4710303106

FRICITION REDUCER

Sodium Chloride	7647-14-5
Ammonium Chloride	12125-02-9
Petroleum Distillates	64742-47-8
Alcohols, C12-16, Ethoxylated	68551-12-2

SAND

Crystalline Silica (quartz)	14808-60-7
Aluminum Oxide	1344-28-1
Iron Oxide	1309-37-1
Titanium Oxide	13463-67-7

GEL

Gelling Agent & Hydrocarbons	64742-96-7
------------------------------	------------

# CONTROL PLAN

# AVE WELL PAD

## WETZEL COUNTY, WV

4710303106



**WEST VIRGINIA 811**

**CALL BEFORE YOU DIG!** Dial 811 or 800.245.4848  
Miss Utility of West Virginia

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 1-800-245-4848. TICKET # 1425466958 DATE: 02/11/2014

### SOILS CLASSIFICATION

QdL: GILPIN-PEARODY COMPLEX, 15 TO 25 PERCENT SLOPES  
QdL: GILPIN-PEARODY COMPLEX, 35 TO 70 PERCENT SLOPES  
Sic: SKIDMORE GRAVELLY LOAM

### RECEIVING WATER CLASSIFICATION WATER QUALITY DESIGNATION

- UNNAMED TRIBUTARY NORTH TO CARNEY FORK  
- WARM WATER FISHERY (WFF)  
- UNNAMED TRIBUTARY SOUTHEAST TO MILLER RUN  
- WARM WATER FISHERY (WFF)

### LIST OF DRAWINGS

- 1 OF 7 ..... COVER SHEET
- 2 OF 7 ..... EXISTING CONDITIONS
- 3 OF 7 ..... EROSION & SEDIMENT CONTROL PLAN
- 4 OF 7 ..... WELL PAD RECLAMATION PLAN
- 5 OF 7 ..... EVACUATION ROUTE PLAN
- 6 OF 7 ..... EVACUATION ROUTE PLAN - USGS
- 7 OF 7 ..... NOTES & DETAILS

DMA  
3-11-15



FOR RETTEW ASSOCIATES BY:

MANAGER:	DESIGN BY:	CHKD BY:
	JUN	DEW
	JUN	MMP
	SURV. CHIEF:	FIELDBOOK NO.:
		DATA COLLECTOR:

CLIENT  
**STATOIL USA ONSHORE PROPERTIES, INC.**  
2103 CITY WEST BLVD., SUITE 800  
HOUSTON, TEXAS 77042

**Statoil**

**RETTEW ASSOCIATES, INC.**  
Engineers • Planners • Surveyors • Landscapers • Architects  
Environmental Consultants  
1000 N. 10th St., Suite 305, Pittsburgh, PA 15205  
Phone: (412) 446-1728 • Fax: (412) 446-1733  
Email: rettew@rettew.com  
Website: www.rettew.com

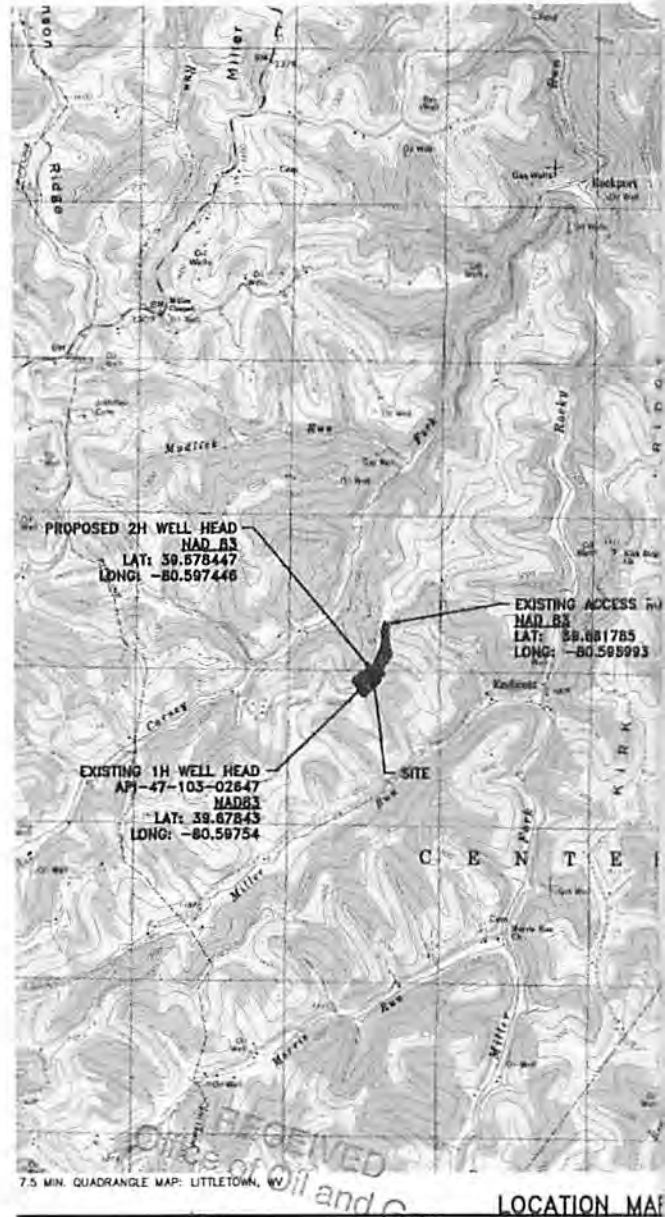
COVER SHEET  
EROSION AND SEDIMENT CONTROL PLAN  
FOR  
**CHARLES MUSGRAVE WELL PAD**  
CENTER TAX DISTRICT  
WETZEL COUNTY, WV

DATE:	12/10/2014
SHEET NO.:	1 OF 7
DWG. NO.:	06/19/2015

# EROSION & SEDIMENT FOR CHARLES MUSGRAVE CENTER TAX DISTRICT, W

## GENERAL NOTES

1. THE TOPOGRAPHIC AND AS-BUILT SURVEY UTILIZED FOR THIS BASE MAPPING WAS PERFORMED BY RETTEW ASSOCIATES, INC. IN AUGUST AND SEPTEMBER 2014.
2. PROPERTY BOUNDARIES, LANDOWNER INFORMATION AND ROAD NETWORKS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS PARCEL DATA.
3. EXISTING STRUCTURES, TREE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
4. THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH ZONE.
5. THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
6. 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 1-800-245-4848.
7. A WETLANDS PRESENCE/ABSENCE SURVEY WAS PERFORMED BY RETTEW ASSOCIATES IN AUGUST 2014.
8. ALL EXISTING UTILITIES HAVE BEEN SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION.
9. 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.
10. 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.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE AND LAWNS.
12. CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION.
13. CONTRACTOR TO RELOCATE UTILITIES AS REQUIRED.
14. CONTRACTOR MAY WIDEN ACCESS ROAD DUE TO STEEP SLOPES IF DEEMED NECESSARY AND PER APPROVAL BY THE OWNER AND ENGINEER.
15. PROPOSED ROCK CONSTRUCTION ENTRANCE TO BE BUILT SUCH THAT RUNOFF FROM PROPOSED ACCESS WILL NOT SHEET FLOW ON TO PUBLIC ROAD.
16. SEED AND MULCH ALL DISTURBED AREAS PER DETAILS IN THIS PLAN.
17. CONTRACTOR SHALL STOP WORK IMMEDIATELY AND CONTACT STATOIL AND APPROPRIATE RESPONSIBLE AUTHORITIES SHOULD ANY HISTORICAL ARTIFACTS (I.E. BONES, POTTERY, ETC.) BE ENCOUNTERED DURING CONSTRUCTION.
18. NO WORK SHALL BE DONE OUTSIDE THE LIMITS OF DISTURBANCE OR IN PROTECTED AREAS.



MAR 19 2015  
WV Department of  
Environmental Protection

06/19/2015

# EROSION & SEDIMENT CONTROL PLAN

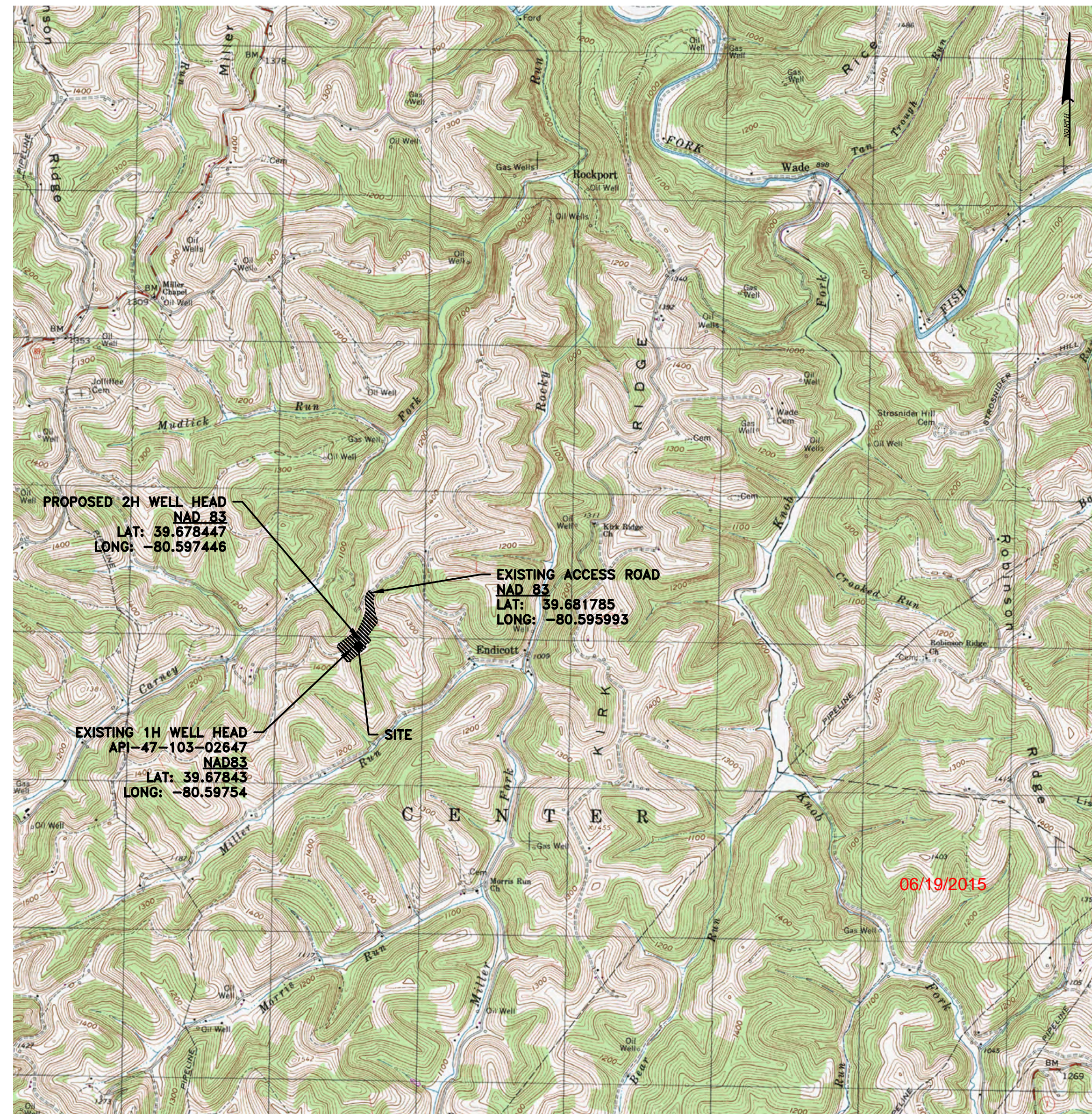
## FOR

# CHARLES MUSGRAVE WELL PAD

## CENTER TAX DISTRICT, WETZEL COUNTY, WV

### GENERAL NOTES

1. THE TOPOGRAPHIC AND AS-BUILT SURVEY UTILIZED FOR THIS BASE MAPPING WAS PERFORMED BY RETTEW ASSOCIATES, INC IN AUGUST AND SEPTEMBER 2014.
2. PROPERTY BOUNDARIES, LANDOWNER INFORMATION AND ROAD NETWORKS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS PARCEL DATA.
3. EXISTING STRUCTURES, TREE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
4. THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH ZONE.
5. THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
6. 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 1-800-245-4848.
7. A WETLANDS PRESENCE/ABSENCE SURVEY WAS PERFORMED BY RETTEW ASSOCIATES IN AUGUST 2014.
8. ALL EXISTING UTILITIES HAVE BEEN SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION.
9. 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.
10. 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.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE AND LAWNS.
12. CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION.
13. CONTRACTOR TO RELOCATE UTILITIES AS REQUIRED.
14. CONTRACTOR MAY WIDEN ACCESS ROAD DUE TO STEEP SLOPES IF DEEMED NECESSARY AND PER APPROVAL BY THE OWNER AND ENGINEER.
15. PROPOSED ROCK CONSTRUCTION ENTRANCE TO BE BUILT SUCH THAT RUNOFF FROM PROPOSED ACCESS WILL NOT SHEET FLOW ON TO PUBLIC ROAD.
16. SEED AND MULCH ALL DISTURBED AREAS PER DETAILS IN THIS PLAN.
17. CONTRACTOR SHALL STOP WORK IMMEDIATELY AND CONTACT STATOIL AND APPROPRIATE RESPONSIBLE AUTHORITIES SHOULD ANY HISTORICAL ARTIFACTS (I.E. BONES, POTTERY, ETC.) BE ENCOUNTERED DURING CONSTRUCTION.
18. NO WORK SHALL BE DONE OUTSIDE THE LIMITS OF DISTURBANCE OR IN PROTECTED AREAS.



7.5 MIN. QUADRANGLE MAP: LITTLE TOWN, WV

**LOCATION MAP**  
SCALE - 1"=2000'



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 1-800-245-4848. TICKET #: 1425466958 DATE: 09/11/2014

### SOILS CLASSIFICATION

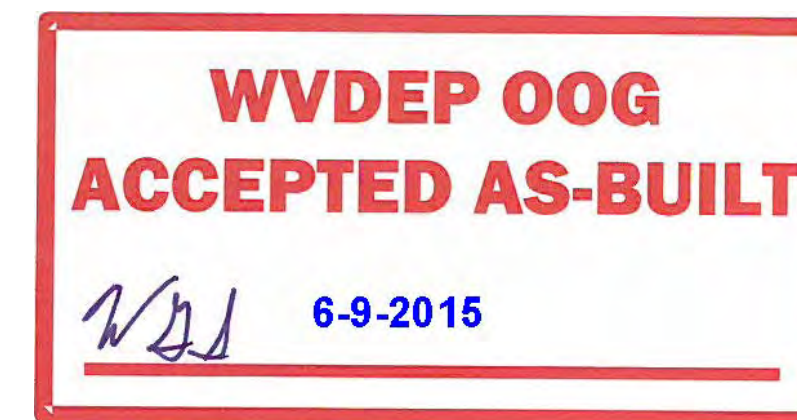
GrL: GILPIN-PEABODY COMPLEX, 15 TO 25 PERCENT SLOPES  
 SCL: GILPIN-PEABODY COMPLEX, 35 TO 70 PERCENT SLOPES  
 SkL: SKIDMORE GRAVELLY LOAM

### RECEIVING WATER CLASSIFICATION WATER QUALITY DESIGNATION

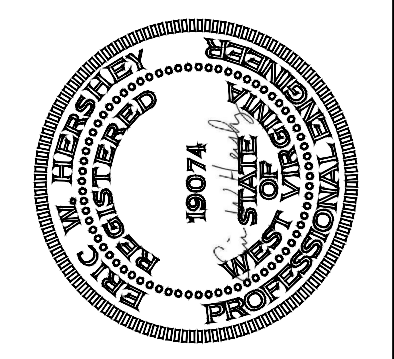
- UNNAMED TRIBUTARY NORTH TO CARNEY FORK - WARM WATER FISHERY (WWF)
- UNNAMED TRIBUTARY SOUTHEAST TO MILLER RUN - WARM WATER FISHERY (WWF)

### LIST OF DRAWINGS

- |        |                                 |
|--------|---------------------------------|
| 1 OF 7 | COVER SHEET                     |
| 2 OF 7 | EXISTING CONDITIONS             |
| 3 OF 7 | EROSION & SEDIMENT CONTROL PLAN |
| 4 OF 7 | WELL PAD RECLAMATION PLAN       |
| 5 OF 7 | EVACUATION ROUTE PLAN           |
| 6 OF 7 | EVACUATION ROUTE PLAN - USGS    |
| 7 OF 7 | NOTES & DETAILS                 |



NO.	DATE	REVISION



FOR RETTEW ASSOCIATES BY:	CHKD BY: DEW	CHKD BY: MWP	FELDBOOK NO. DATA COLLECTOR
MANAGER:	DESIGN BY: JUN	DRAWN BY: JUN	SURV. CHIEF: DATA COLLECTOR

CLIENT: STATOIL USA ONSHORE PROPERTIES, INC.  
 2103 CITY WEST BLVD., SUITE 800 HOUSTON, TEXAS 77042

**RETTEW**  
 RETTEW Associates, Inc.  
 Twin Towers, 4855 Stubenville Pk, Ste 305, Pittsburgh, PA 15205  
 Phone (412) 446-1728 • Fax (412) 446-1733  
 Email: rettew@rettew.com  
 Website: www.rettew.com

Engineers • Planners • Surveyors • Landscape Architects  
 Environmental Consultants

COVER SHEET  
 EROSION AND SEDIMENT CONTROL PLAN  
 FOR  
**CHARLES MUSGRAVE WELL PAD**  
 CENTER TAX DISTRICT WETZEL COUNTY, WV

DATE:	06/03/15
SHEET NO.:	1 OF 7
DWG. NO.:	099912019



**LEGEND**

- EXISTING PROPERTY LINE
- EXISTING GRAVEL
- PROPOSED GRAVEL
- EXISTING PAVEMENT
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING CONTOUR LINE
- PROPOSED MAJOR CONTOUR LINE
- PROPOSED MINOR CONTOUR LINE
- LIMITS OF DISTURBANCE
- PROPOSED WELL HEAD
- APPROXIMATE PAD CENTER
- EXISTING WETLAND
- EXISTING STREAM
- EXISTING UTILITY POLE
- EXISTING OVERHEAD ELECTRIC LINE
- PROPOSED FILTER SOCK
- PROPOSED CONTAINMENT WALL
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- SOIL TYPE BOUNDARY LINE
- SOIL TYPE DESIGNATION
- EXISTING GASLINE

NOTE:  
ALL COMPOST FILTER SOCK TO BE 18".

NOTE:  
DRAINAGE VALVES TO BE CLOSED PRIOR TO MOBILIZATION OF DRILLING EQUIPMENT ONTO PAD SITE AND DURING DRILLING AND COMPLETION OPERATIONS.

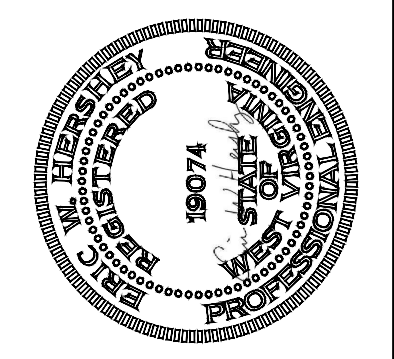
**WVDEP OOG  
ACCEPTED AS-BUILT**

*WJ* 6-9-2015

SCALE  
1" = 50'

0 25 50 100 150'

NO.	DATE	REVISION



FOR RETTEW ASSOCIATES BY:

MANAGER:	CHKD BY: DEW
DESIGN BY: JUN	CHKD BY: MWP
DRAWN BY: JUN	FIELDBOOK NO. DATA COLLECTOR
SURV. CHIEF:	

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EROSION & SEDIMENT CONTROL PLAN  
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FOR  
**CHARLES MUSGRAVE  
WELL PAD**

CENTER TAX DISTRICT  
WETZEL COUNTY, WV

**NAD 83 WV NORTH COORDINATE DATA**

POINT	DESCRIPTION	LATITUDE	LONGITUDE
PAD CENTER APPROX.	CENTER OF PAD	39.678510	-80.597472
2H	WELL HEAD	39.678462	-80.597508
3H	WELL HEAD	39.678451	-80.597530
4H	WELL HEAD	39.678439	-80.597552
5H	WELL HEAD	39.678428	-80.597575

DATE: 06/03/15

SHEET NO. 3 OF 7

DWG. NO. 099912019

NOT FOR CONSTRUCTION/NOT FOR BIDDING