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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Jim Justice , Governor  
Austin Caperton , Cabinet Secretary  
www.dep.wv.gov

Monday, October 16, 2017  
WELL WORK PERMIT  
Horizontal 6A / Fracture

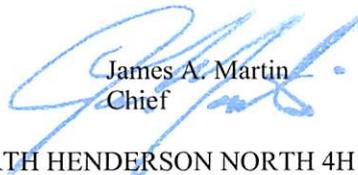
EQT PRODUCTION COMPANY  
120 PROFESSIONAL PLACE  
BUILDING II  
BRIDGEPORT, WV 26330

Re: Permit approval for NORTH HENDERSON NORTH 4H  
47-103-03068-00-00

This well work permit 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 any additional specific 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 of 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.

Per 35 CSR 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- 0450.



James A. Martin  
Chief

Operator's Well Number: NORTH HENDERSON NORTH 4H  
Farm Name: HENDERSON, HOWARD  
U.S. WELL NUMBER: 47-103-03068-00-00  
Horizontal 6A / Fracture  
Date Issued: 10/16/2017

Promoting a healthy environment.

10/20/2017

## 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. 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.
2. 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.
3. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
4. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
5. 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.
6. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto:DEPOOGNotify@wv.gov).
7. The entire well pad shall be bermed so as to prevent runoff from leaving the pad during drilling and completion operations, including a mountable berm at pad entrance.

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

1) Well Operator: EQT Production Company 306686 Wetzel Center Littleton  
Operator ID County District Quadrangle

2) Operator's Well Number: North Henderson North 4H Well Pad Name: North Henderson North

3) Farm Name/Surface Owner: Howard Henderson Public Road Access: Low Gap Rocky Run Rd

4) Elevation, current ground: 1343 Elevation, proposed post-construction: 1343

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

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

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus, 7465', 47', 5258 PSI

*DMH  
8-7-17*

8) Proposed Total Vertical Depth: 7502

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 15,386

11) Proposed Horizontal Leg Length: 7296

12) Approximate Fresh Water Strata Depths: 622

13) Method to Determine Fresh Water Depths: By offset wells

14) Approximate Saltwater Depths: 2077'

15) Approximate Coal Seam Depths: 755, 822, 882, 1102, 1182, 1222

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

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

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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	115 ft <sup>3</sup> CTS
Fresh Water	13 3/8	New	J-55	54.5#	674	674	667 ft <sup>3</sup> CTS
Coal							
Intermediate	9 5/8	New	J-55	36#	2871	2871	1362.9 ft <sup>3</sup> CTS
Production	5 1/2	New	P-110	20#	15360	15360	3431.4 ft <sup>3</sup> CTS
Tubing							
Liners							

Existing

DMH  
8-7-17

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	24	.438	1530	17	Class A	1.20
Fresh Water	13 3/8	17 1/2	.380	2730	2160	Class A	2.30
Coal							
Intermediate	9 5/8	12 1/4	.352	3520	2814	Class A	2.31
Production	5 1/2	8 1/5	.361	12640	10,112	Class A	1.29
Tubing							
Liners							

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Existing

PACKERS

Kind:				
Sizes:				
Depths Set:				

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

Well has been drilled to TD, propose to perforate and fracture the Marcellus and turn in to production

DMH  
8-7-17

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

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated internal casing pressure is expected to be approximately 10000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 350,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 400,000 pounds of sand per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): No additional disturbance

22) Area to be disturbed for well pad only, less access road (acres): No additional disturbance

23) Describe centralizer placement for each casing string:

See Attached

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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.

4710303068F

WW-6B – North Henderson North 4H

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 100ft. A 17 1/2" surface hole will be drilled with fresh water to approximately 700' md/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 5% KCL Polymer (WBM) and a conventional mud motor to approximately 2750' 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 to planned kick-off point 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 15,163' MD/7397' VD 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% CaCl2

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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## 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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103-03068F  
10303068MD

# Marcellus - Drilling Well Schematic

Well Name: North Henderson North Unit 4H	GLE (ft): 1,342.8	TVD (ft): 7,502
Field Name: Marcellus	DP (ft): 1,364.8	TMD (ft): 15,451
County: Wetzel Co., WV	BHL: X = 1754280.0 Y = 14420947.0	Profile: Horizontal
API #: 47-10303068	SIL: X = 1759184.9 Y = 14414699.3	AFE No.: 1001930

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	2,500					120		20" Conductor
										17-1/2" Surface
										Profile: Vertical Bit Type: 17-1/2" SMITH MS716 BHA: 9.5/8" Motor with Shock Sub Mud: 8.6 ppg Fresh Water Surveys: n/a Logging: n/a Casing: 13.375 54.5 J-55 BTC at 700' MD/700' TVD Centralizers: 1 centralizer w/ stop collar 10 ft above float shoe. One Single Bow every joint to 100ft below surface. Cement: 15.8 ppg Tail slurry w/ TOC @ Surface Potential Drilling Problems: Collision...
Approximate Fresh Water Strata ~622'										
Casing Point	700	700	2,000	65				700		12-1/4" Intermediate
Washington Coal	758	758	1,950							FIT/LOT: 14.0 ppg EMW Profile: Vertical Bit Type: 12-1/4" Hughes TCI VG-35ADX1 (IADC-547) w/ 3x22's BHA: 8" Directional Assy 7-8 Lobe 2.0 Sig .07 rpg 1.15ABH (0.10 rpg/375 Diff) Mud: Air/Mist Surveys: Gyro SS, MWD - EM Pulse Logging: n/a Casing/Liner: 9.625 36 J-55 BTC at MD/ TVD Csg Hanger: Mandrel Hanger Centralizers: 1 centek centralizer w/ stop collar 10 ft above float shoe. 1 centek centralizer every joint for the first 15 joints. One centralizer every 3 jnts to 100ft below surface. Cement: 15.8 ppg Tail slurry w/ TOC @ Surface Potential Drilling Problems: Hole Cleaning, Stuck Pipe, Lost Cones.
Pittsburgh Coal	1,225	1,225	1,483							
Top Salt Water	2,077	2,077	631					TOC @ 1900' MD		
Big Injun Base Weir	2,807	2,807	.99					2,900		LOT: 20 ppg Max Profile: 8-1/2" Hughes VG-30ADX1 (IADC 547) w/ 3x22's Bit Type: 8-1/2" Smith SDAIS13 Curve Lateral w/ 7 x16's BHA: Directional Assembly (Steerable Motor) + EM w/ GR 6.75in 7-8 Lobe, 2.9 Sig (1.15 deg 0.17rpg, 560 Diff) - Vert 6.75in 4/5 Lobe, 7.0 Sig (1.95 deg Fixed, 0.5rpg, 915 Diff) - HZ Mud: Air/Mist to KOP and 12.5-13.0 ppg SOBM Curve Lateral Surveys: MWD - EM Pulse w/ 30ft surveys in curve, 100ft surveys in lateral Logging: GR Casing/Liner: 5.5 20 P110EC VAM TOP HIT at 15451 ft MD/7502 ft TVD Csg Hanger: 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 ppg Tail slurry w/ TOC @ 1900' MD Potential Drilling Problems: Lost Coes, Hole Cleaning, Torque & Drag.
Casing Point	2,900	2,900	192	82		>10.0				8-1/2" Production
Weir			2,708							
Berea		3,014	-306							
Gordon		3,203	-575							
Fifth Sand		3,568	-860							
Warren		3,963	-1,255							
Java		5,675	-2,967							
Benson		5,698	-2,990							
KOP	6,765	6,737								
Middlesex		7,229	-4,521					12.5-13.0		
West River		7,262	-4,554							
Tully		7,362	-4,654							
Hamilton		7,386	-4,678					12.5-13.0		
Marcellus		7,481	-4,773					12.5-13.0		
								12.5-13.0		
Target Window		7,494	-4,786							
Landing point	8,204	7,502	-4,794							
Cherry Valley		7,510	-4,802							
Onondaga		7,513	-4,805							

Received

APR 30 2015

DMH 4-28-15

TMD: 15,451  
TVD: 7,502

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Last Revision Date: 4/28/2015 Revised by: Ryan Cardenas Note: Depths are referenced to RKB Note: Not Drawn to Scale Cement Outside Casing

Office of Oil and Gas  
WV Dept. of Environmental Protection

10/20/2017

**EQT Production**  
**Hydraulic Fracturing Monitoring Plan**  
**Pad ID: North Henderson**  
**Wetzel County, WV**

**7/24/17**

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## Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near EQT hydraulic fracturing in Wetzel County, WV prior to hydraulic fracturing at the following EQT wells on North Henderson pad: North Henderson North 2H, North Henderson North 3H, North Henderson North 4H, North Henderson North 5H.

Due to the requirements under 35CSR8 5.11, the permittee is required to review the area surrounding the proposed well pad so as to identify and evaluate potential conduits for unintended fracture propagation. A report is required to be submitted along with a well work permit application.

The plan is being implemented as an additional safety measure to be utilized in conjunction with existing best management practices and emergency action plans for the site. These additional measures include coordination with well operators of the timing and location of the hydraulic fracturing, establishment of measures well operators should implement, and assurance that the OOG is notified of the timeline, as well as any issues that may arise during fracturing.

### 1. Communications with Well Operators

EQT, using available data (WV Geological Survey, WVDEP website, and IHS data service), has identified all known wells and well operators within 500 feet of this pad and the lateral sections that are known or could reasonably be expected to be within range of the fracture propagation. A map showing these wells along with a list of the wells and operators is included in **Attachment A**.

EQT will notify these operators of the hydraulic fracturing schedule for these wells, and coordinate with them throughout the fracturing process.

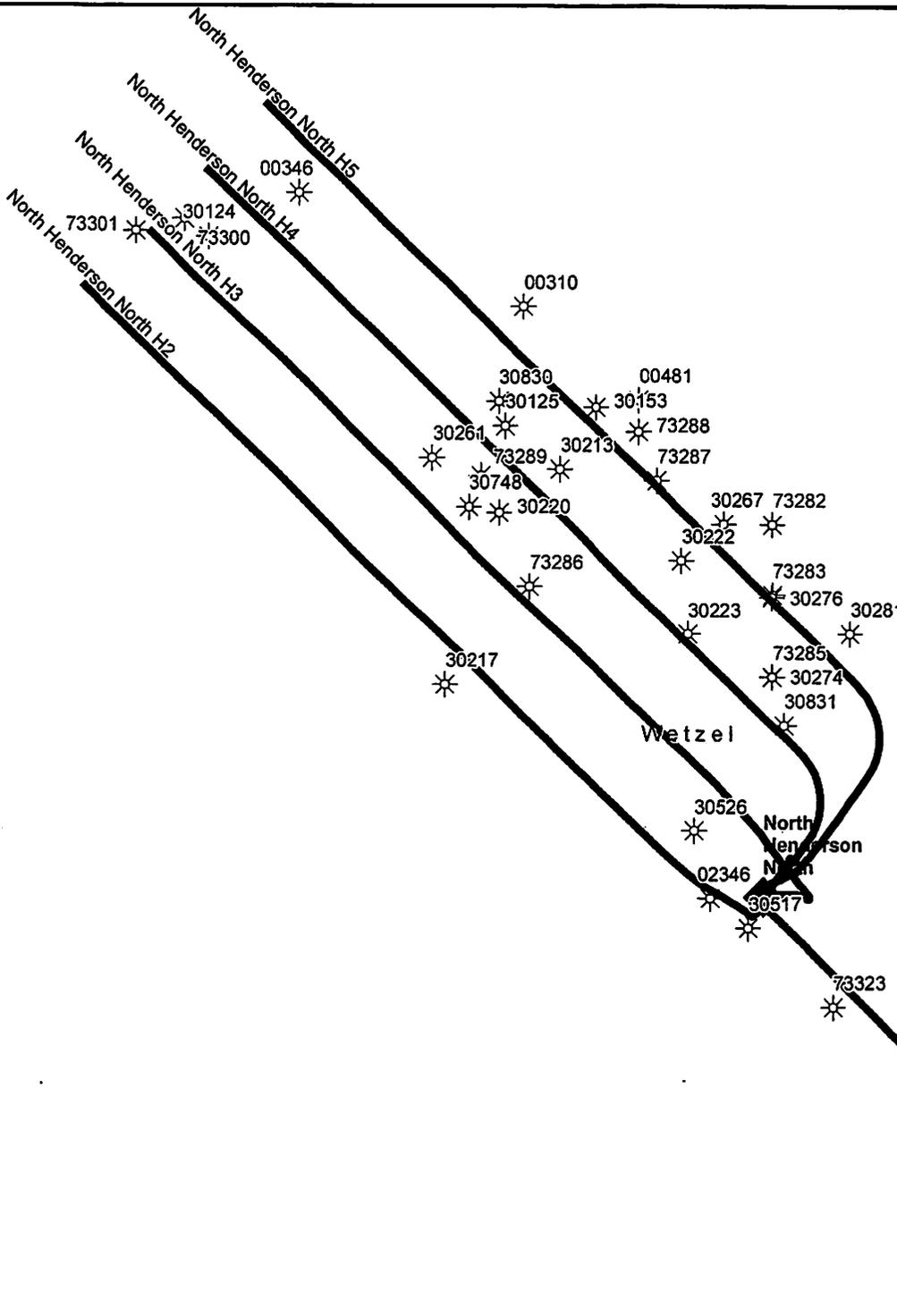
EQT will recommend to these operators at a minimum to:

1. Inspect their surface equipment prior to fracturing to establish integrity and establish pre-frac well conditions
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas or pressure
3. Inspect or install master valves or other necessary equipment for wellhead integrity capable of a pressure recommended by EQT
4. Notify the OOG and EQT if any changes in water, gas production, pressure, or other anomalies are identified

### 2. Reporting

EQT will provide information relating to the hydraulic fracturing schedule, communication with other operators, and ongoing monitoring of the work upon request of OOG or immediately in the event of any noted abnormalities.

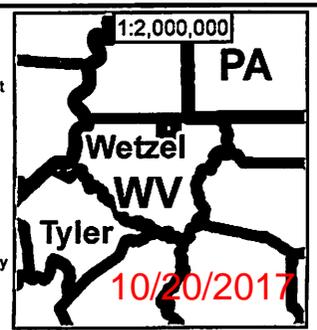
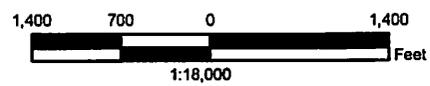
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**EQT**  
 EQT Corporation  
 625 Liberty Avenue  
 Pittsburgh, PA 15222

Vertical Offsets  
 Target Formation



North Henderson North

**Vertical Offsets and Foreign Laterals within 500'**

**Disclaimer:**

This map is confidential and is to be used only for the express informational purposes for which it was created. Unauthorized use, copying, or dissemination is strictly prohibited. EQT does not warrant the accuracy of the location of any items shown on this map, including, but not limited to, any structures, well or pipeline facilities, property boundaries, topography, roadways, or waterways. The items shown on the map may not have been placed on the map using survey lines or GPS coordinates. The specific location of any of the map items should be determined by a field survey performed by a licensed surveyor upon consultation with EQT.

Well ID	Completion Date	Current Operator	Elevation	Elevation Reference	Final Status	Lat	Long	Permit Date	SPUD Date	TD Formation Name	Total Depth	Permit
47103003460001	12/5/1949	1/31/1949 DUNN-MAR OIL & GAS COMPANY	1288	GR	D&A-G	39.7101	-80.5922	12/17/1948	1/1/1949	FIFTH SAND	3370	00346
47103004810000		12/27/1960 KNAPP OIL & GAS COMPANY	1245	GR	10&1G	39.7052	-80.5816	10/2/1960	10/17/1960	GORDON	3225	00481
47103023460000		6/21/2008 ALLIANCE PETROLEUM CORPORATION	1275	GR	GAS	39.6934	-80.5794	5/1/2008	5/15/2008	BAYARD	3597	02346
47103301240000	8/23/1934	2/15/1923 UNKNOWN		GR	ABDOGW	39.7091	-80.5950	1/1/1923	1/16/1923	HAMPSHIRE	3231	30124
47103301250000	6/9/1934	2/15/1924 UNKNOWN	940	GR	ABDOGW	39.7046	-80.5858	1/1/1924	1/16/1924	GORDON	2834	30125
47103301530000	1/1/1935	UNKNOWN	1083	GR	ABD-OW	39.7050	-80.5830			GORDON STRAY /SD/	3061	30153
47103302130000	11/23/1936	UNKNOWN	1320	GR	ABD-GW	39.7035	-80.5841			POCONO	2347	30213
47103302170000	1/1/1937	UNION GASOLINE & OIL CORP	1320	GR	ABD-OW	39.6985	-80.5877			HAMPSHIRE	3139	30217
47103302200001	12/2/1937	9/2/1924 UNKNOWN	998	GR	ABD-OW	39.7025	-80.5860	7/19/1924	8/3/1924	HAMPSHIRE	2988	30220
47103302220000	3/20/1937	UNION GASOLINE & OIL CORP	968	GR	ABD-OW	39.7014	-80.5803			GORDON	2846	30222
47103302230001	4/28/1937	10/4/1926 UNKNOWN	995	GR	ABD-OW	39.6996	-80.5801	8/20/1926	9/4/1926	HAMPSHIRE	2914	30223
47103302610000	5/1/1938	3/5/1923 HOPE CONSTRUCTION & REFINING	1063	GR	ABD-OW	39.7038	-80.5880	12/19/1922	1/3/1923	HAMPSHIRE	3172	30261
47103302670001	1/5/1938	2/16/1926 UNKNOWN	923	GR	ABD-OW	39.7022	-80.5790	1/2/1926	1/17/1926	GORDON	2848	30267
47103302740000	9/24/1938	UNKNOWN		GR	UNKWVN	39.6986	-80.5775					30274
47103302760000	1/1/1938	HOPE CONSTRUCTION & REFINING		GR	UNKWVN	39.7005	-80.5775					30276
47103302810000	1/1/1938	UNKNOWN		GR	UNKWVN	39.6996	-80.5751					30281
47103305170000	7/3/1946	1/27/1923 CARNEGIE NATURAL GAS CORPORATION	1163	GR	ABD-OW	39.6927	-80.5783	11/27/1922	12/12/1922	HAMPSHIRE	3157	30517
47103305260000	3/6/1946	9/26/1922 CARNEGIE NATURAL GAS CORPORATION	1208	GR	ABD-OW	39.6950	-80.5800	6/9/1922	6/24/1922	HAMPSHIRE	3123	30526
47103307480000	9/19/1960	3/15/1923 HOPE NATURAL GAS	1195	GR	ABD-GW	39.7027	-80.5869	12/7/1922	12/22/1922	POCONO	2246	30748
47103308300000	2/11/1949	12/25/1922 HOPE NATURAL GAS	911	GR	ABD-GW	39.7051	-80.5860	9/26/1922	10/11/1922	POCONO	1983	30830
47103308310000	10/30/1949	1/20/1923 PIPE PULLING & PLUGGING COMPANY	1114	GR	ABD-OW	39.6974	-80.5771	8/4/1922	8/19/1922	GORDON	3027	30831
47103732860000		UNKNOWN		GR	UNKWVN	39.7008	-80.5850					73286
47103732870000		UNKNOWN		GR	UNKWVN	39.7033	-80.5811					73287
47103732880000		UNKNOWN		GR	UNKWVN	39.7044	-80.5816					73288
47103732890000		UNKNOWN		GR	UNKWVN	39.7034	-80.5865					73289
47103733000000		UNKNOWN		GR	UNKWVN	39.7095	-80.5957					73300
47103733010000		MANUFACTURERS LIGHT & HEAT		GR	UNKWVN	39.7092	-80.5972					73301
47103733230000		MANUFACTURERS LIGHT & HEAT		GR	UNKWVN	39.6908	-80.5756					73323
47103003100000		5/3/1945 CNG	922		GAS	-80.5852	39.7074					00310
47103732820000					LOC	-80.5775	39.7022					73282
47103732830000					LOC	-80.5775	39.7006					73283
47103732850000					LOC	-80.5775	39.6986					73285

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103-03068F

47 10303068

WW-9  
(4/16)

API Number 47 - 103 - 03068 **F**

Operator's Well No. North Henderson North 4H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name EQT Production Company OP Code 306686

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
- Underground Injection ( UIC Permit Number 014, 8462, 4037 )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain \_\_\_\_\_)

DMH  
8-27-17

Will closed loop system be used? If so, describe: Yes, The closed loop system will remove drill cuttings from the drilling fluid. The drill cuttings are then prepared for transportation to an off-site disposal facility

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. see attached

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

Additives to be used in drilling medium? see attached

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) n/a

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

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Environmental Protection

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.

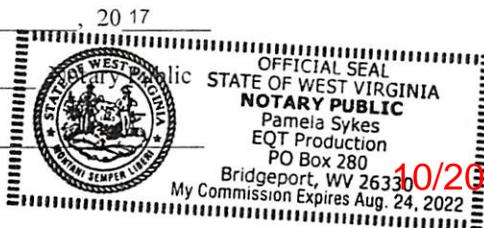
Company Official Signature *Victoria J. Roark*

Company Official (Typed Name) Victoria J. Roark

Company Official Title Regional Land Supervisor

Subscribed and sworn before me this 3 day of Aug

My commission expires 8-24-22



EQT Production Company

Proposed Revegetation Treatment: Acres Disturbed no additional disturbance Prevegetation pH \_\_\_\_\_

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type Granular 10-2-20

Fertilizer amount 1/3 lbs/acre

Mulch 2 Tons/acre

Seed Mixtures

**Temporary**

**Permanent**

Seed Type	lbs/acre
KY-31	40
Alsike Clover	5
Annular Rye	15

Seed Type	lbs/acre
Orchard	15
Alsike Clover	5

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

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Plan Approved by: [Signature]

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

Title: Oil & Gas Inspector

Date: 8/22/17

Field Reviewed? (  ) Yes (  ) No

**EQT Production Water plan**  
**Offsite disposals for Marcellus wells**

103-03008F

**CWS TRUCKING INC.**

P.O. Box 391  
Williamstown, WV 26187  
740-516-3586  
Noble County/Noble Township  
Permit # 3390

**BROAD STREET ENERGY LLC**

37 West Broad Street  
Suite 1100  
Columbus, Ohio 43215  
740-516-5381  
Washington County/Belpre Twp.  
Permit # 8462

**LAD LIQUID ASSETS DISPOSAL INC.**

226 Rankin Road  
Washington, PA 15301  
724-350-2760  
724-222-6080  
724-229-7034 fax  
Ohio County/Wheeling  
Permit # USEPA WV 0014

**TRIAD ENERGY**

P.O. Box 430  
Reno, OH 45773  
740-516-6021 Well  
740-374-2940 Reno Office Jennifer  
Nobel County/Jackson Township  
Permit # 4037

**TRI COUNTY WASTE WATER MANAGEMENT, INC.**

1487 Toms Run Road  
Holbrook, PA 15341  
724-627-7178 Plant  
724-499-5647 Office  
Greene County/Waynesburg  
Permit # TC-1009

**KING EXCAVATING CO.**

Advanced Waste Services  
101 River Park Drive  
New Castle, Pa. 16101  
Facility Permit# PAR000029132

**Waste Management - Meadowfill Landfill**

Rt. 2, Box 68 Dawson Drive  
Bridgeport, WV 26330  
304-326-6027  
Permit #SWF-1032-98  
Approval #100785WV

**Waste Management - Northwestern Landfill**

512 E. Dry Road  
Parkersburg, WV 26104  
304-428-0602  
Permit #SWF-1025 WV-0109400  
Approval #100833WV

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# Site Specific Safety Plan

EQT

North Henderson Unit

Center

Wetzel County, WV

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N. Henderson N. 4H

For Wells: \_\_\_\_\_

Date Prepared: June 20, 2017

[Signature]  
EQT Production

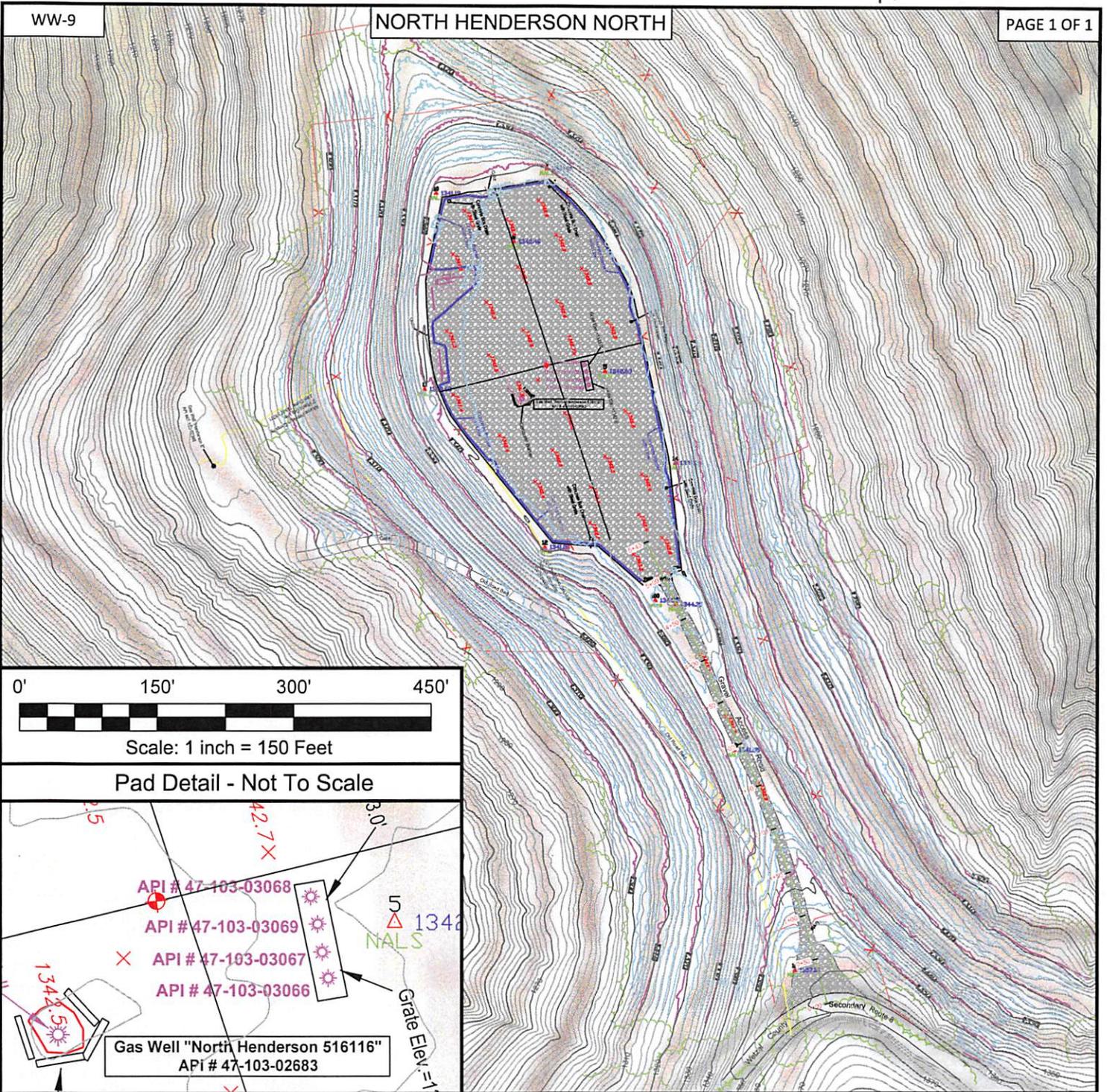
Reg. Land Supervisor  
Title

8-3-17  
Date

[Signature]  
WV Oil and Gas Inspector

Oil & Gas Inspector  
Title

8-7-17  
Date



Littleton 7.5' USGS QUADRANGLE		Proposed Disturbance Area	
Projected culvert inventory. (for bid purposes only)		Well Site Location	See Site Plan
15" minimum diameter culverts	See Site Plan	Proposed Access Road	See Site Plan
24" minimum diameter culverts	See Site Plan	Approximate Total Disturbance	See Site Plan
DRAWN BY: Scott Brown	DATE: August 2, 2017	FILE NO. 265-16	DRAWING FILE NO. North Henderson North Rec Plan

**NOTE:**  
SEE SITE PLAN OF LIT 54 FOR COMPLETE GRADING & DRAINAGE CONSTRUCTION INCLUDING EROSION & SEDIMENT CONTROL DETAILS, ETC.

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AUG 7 2017



SURVEYING AND MAPPING SERVICES PERFORMED BY:  
**ALLEGHENY SURVEYS, INC.**  
1-800-482-8606  
Birch River Office  
Phone: (304) 649-8606  
Fax: (304) 649-8608  
237 Birch River Road  
P.O. Box 438  
Birch River, WV 26610

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47 - 103 - 03068 County Wetzel District Center  
Quad Littleton Pad Name North Henderson Field/Pool Name \_\_\_\_\_  
Farm name Howard Henderson Well Number North Henderson North Unit #4H  
Operator (as registered with the OOG) EQT Production  
Address 625 Liberty Avenue City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,393,827.70 Easting 536,216.24  
Landing Point of Curve Northing 4,394,191.23 Easting 536,303.91  
Bottom Hole Northing 4,395,728.13 Easting 534,717.99

Elevation (ft) 1343 GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102  
Soda Ash, and Sodium Chloride

Date permit issued 2/27/2015 Date drilling commenced 5/6/2015 Date drilling ceased 5/22/2015  
Date completion activities began Not Yet Completed Date completion activities ceased Not Yet Completed  
Verbal plugging (Y/N) N Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

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Freshwater depth(s) ft 622' Open mine(s) (Y/N) depths N/A  
Salt water depth(s) ft 2,077' Void(s) encountered (Y/N) depths N/A  
Coal depth(s) ft 755-764, 822-834, 882-919, 1102-1160, 1182-1183, 1222-1287 Cavern(s) encountered (Y/N) depths N/A  
Is coal being mined in area (Y/N) N

Reviewed by: \_\_\_\_\_

103-03068F

WR-35  
Rev. 8/23/13

Page \_\_\_ of \_\_\_

API 47-103-03068 Farm name Howard Henderson Well number North Henderson North Unit #4H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	120	NEW	H-40, 94#	N/A	Y
Surface	17-1/2"	13-3/8"	674'	NEW	J-55, 54.5#	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,871'	NEW	J-55, 36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	15,360'	NEW	P-110, 20#	N/A	N
Tubing							
Packer type and depth set							

Comment Details Full Returns throughout job, Estimated TOC @ 830'

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	96	15.6	1.20	115	Surface	24+
Surface	BondCem	290	15.8	2.30	667	Surface	23
Coal							
Intermediate 1	BondCem	590	15.8	2.31	1362.9	Surface	8
Intermediate 2							
Intermediate 3							
Production	HalCem	2660	15.0	1.29	3431.4	830'	24+
Tubing							

Drillers TD (ft) 15,386 Loggers TD (ft) N/A  
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 8,711'

Check all wireline logs run  caliper  density  deviated/directional  induction  
 neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING

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Surface - 13-3/8" - 1 Bow spring centralizer every joint from 674' to Surface  
 Intermediates - 9-5/8" - 1 Bow Spring Centralizer Every Joint from 2,871' T/ 2,200', & Every Third Joint F/ 2,200' to 574'  
 Production - 5-1/2" - 1 Solid Body Centralizer Every Joint F/ 15,360' T/ 6,700' & Every Fourth Joint F/ 6,700' T/ 2,581'

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_  
 NOT YET COMPLETED

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_  
 NOT YET COMPLETED

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_  
 NOT YET COMPLETED

10/20/2017





SHL Latitude: 39°42'30"

10,113'

NORTH HENDERSON NORTH 4H  
NORTH HENDERSON  
EQT PRODUCTION COMPANY

BHL Latitude: 39°45'00"

3,276'



LEGEND

- PROPOSED GAS WELL
- EXISTING GAS WELLS
- PRE-29 WELLS
- PLUGGED GAS WELLS
- AS-DRILLED
- PERMITTED
- 500' BUFFER
- STREAM LINE
- SURFACE TRACT BOUNDARY
- ROADS
- TOPO MAP POINT

AS-DRILLED DATA

LANDING POINT	
SPC (NAD 83) US FEET	N) 437,675.26
	E) 1,665,599.92
UTM 17 (NAD 83) METERS	N) 4,394,176.42
	E) 536,309.56
SPC (NAD 27) US FEET	N) 437,637.73
	E) 1,697,037.09
GEO (NAD 27) DEC DEG	LAT 39.696582 N
	LONG 80.576691 W

AS-DRILLED DATA

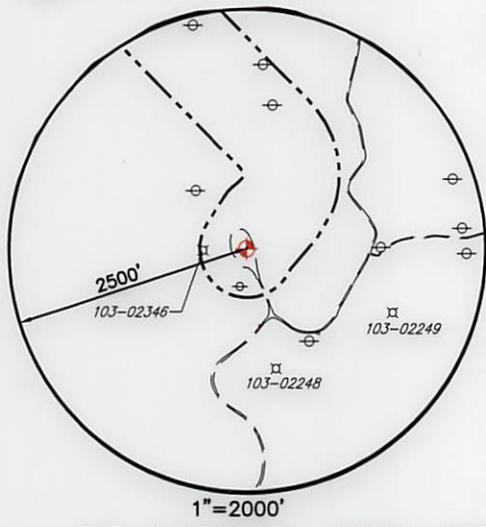
SURFACE LOCATION	
SPC (NAD 83) US FEET	N) 436,536.09
	E) 1,665,274.60
UTM 17 (NAD 83) METERS	N) 4,393,827.70
	E) 536,216.24
SPC (NAD 27) US FEET	N) 436,498.58
	E) 1,696,711.82
GEO (NAD 27) DEC DEG	LAT 39.693444 N
	LONG 80.577799 W

BOTTOM HOLE LOCATION

SPC (NAD 83) US FEET	N) 442,854.35
	E) 1,660,462.33
UTM 17 (NAD 83) METERS	N) 4,395,728.13
	E) 534,717.99
SPC (NAD 27) US FEET	N) 442,816.92
	E) 1,691,899.40
GEO (NAD 27) DEC DEG	LAT 39.710629 N
	LONG 80.595173 W

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. THIS PLAT DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY OF THE INDIVIDUAL PARCELS.
2. THERE ARE NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF PROPOSED WELL.
3. THERE ARE NO EXISTING OCCUPIED DWELLINGS, BUILDINGS OR RAILROADS WITHIN 625' OF PROPOSED WELL.
4. THE PROPOSED WELL IS GREATER THAN 100' FROM PERENNIAL STREAM, WETLAND, POND, RESERVOIR OR LAKE.
5. THERE ARE NO NATIVE TROUT STREAMS WITHIN 300' OF PROPOSED WELL.

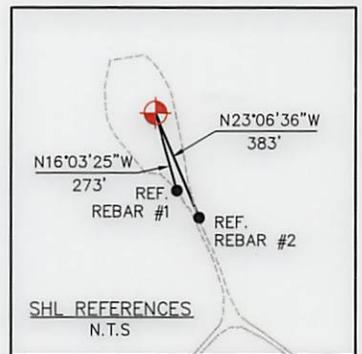


1"=2000'

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2241

MINERAL TRACT NUMBER	TAX MAP PARCEL NUMBER	TAX GROSS ACRES	MINERAL OWNERSHIP
10A	01-5-26	125.14	MAXINE HENDERSON
62A	01-5-27	8.00	MAXINE HENDERSON
62	01-5-28	170.00	TERRY RITER et al
436B	01-5-15	226.00	CHARLES E. HORNER et al
436A	01-5-4	149.54	ANN MARIE HOVK et al
448	01-2-8	133.83	SHIBEN ESTATES INC.
448B	01-5-3.2	66.40	MARGARET ANN MYERS, et al



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

WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25034

DATE: JULY 5, 2017  
SCALE: 1"=2000'  
MIN. DEGREE OF ACCURACY: 1/200  
SOURCE OF SURVEY GRADE GPS ELEVATION: (NAVD 88, US FT)

NORTH HENDERSON NORTH UNIT  
OPERATOR'S WELL #: 4H AS-DRILLED  
API WELL #: 47 103 03068  
STATE COUNTY PERMIT

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

WATERSHED: LOWER WEST VIRGINIA FORK FISH CREEK ELEVATION: 1342.80 (AS-DRILLED)

DISTRICT: CENTER COUNTY: WETZEL QUADRANGLE: LITTLETON

SURFACE OWNER: HOWARD HENDERSON ACREAGE: 125±

OIL & GAS ROYALTY OWNER: MAXINE HENDERSON ACREAGE: SEE MINERAL INTEREST TABLE

DRILL  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION

CONVERT  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,478'

WELL OPERATOR: EQT PRODUCTION COMPANY DESIGNATED AGENT: REX C. RAY  
ADDRESS: 115 PROFESSIONAL PL. P.O. BOX 280 ADDRESS: 115 PROFESSIONAL PL. P.O. BOX 280  
CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330 CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330

WW-6A1  
(5/13)

Operator's Well No. North Henderson North 4H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Various	StatOil USA Onshore	EQT Production Company	Assignment	175/A707

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WV Department of  
Environmental Protection

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: EQT Production Company

By: Victoria J Roark

Its: Regional Land Supervisor

4110303068F

WW-6A1  
(5/13)

Operator's Well No. North Henderson North 4H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
(Please See Attachment)				

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- WV Division of Water and Waste Management
- WV Division of Natural Resources
- WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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Environmental Protection

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Statoil USA Onshore Properties Inc

By: [Signature]

Its: Regulatory Advisor

[Signature]

4710303068 F

**North Henderson North 4H**

**NOTE: All Mineral/Unit Tracts are identified on the Well Plat in Order from Top Hole to Bottom Hole**

**Tract 10A**

Lease Number	Grantor, Lessor	Grantee, Lessee	Royalty	Book/Page
000115298002	Maxine Henderson	Drilling Appalachian Corporation	At least 1/8	85/302
N/A	Drilling Appalachia Corporation	Grenadier Energy Partners, LLC.	Assignment	124A/9
N/A	Grenadier Energy Partners, LLC.	Statoil USA Onshore Properties Inc.	Assignment	138A/1
N/A	Drilling Appalachia Corporation	Statoil USA Onshore Properties Inc.	Assignment	138A/54

**Tract 62A**

Lease Number	Grantor, Lessor	Grantee, Lessee	Royalty	Book/Page
000116087000	Maxine Henderson	Drilling Appalachian Corporation	At least 1/8	90A/206
N/A	Drilling Appalachia Corporation	Grenadier Energy Partners, LLC.	Assignment	116A/878
N/A	Grenadier Energy Partners, LLC.	Statoil USA Onshore Properties Inc.	Assignment	138A/1
N/A	Drilling Appalachia Corporation	Statoil USA Onshore Properties Inc.	Assignment	138A/54

**Tract 62**

Lease Number	Grantor, Lessor	Grantee, Lessee	Royalty	Book/Page
000115458000	Terry Riter and Janet Riter	Drilling Appalachian Corporation	At least 1/8	89A/28
N/A	Drilling Appalachia Corporation	Grenadier Energy Partners, LLC.	Assignment	124A/9
N/A	Grenadier Energy Partners, LLC.	Statoil USA Onshore Properties Inc.	Assignment	138A/1
N/A	Drilling Appalachia Corporation	Statoil USA Onshore Properties Inc.	Assignment	138A/54

**Tract 436B**

Lease Number	Grantor, Lessor	Grantee, Lessee	Royalty	Book/Page
000116392000	Charles E. Horner et al	Grenadier Energy Partners, LLC	At least 1/8	135A/341
N/A	Grenadier Energy Partners, LLC.	Drilling Appalachia Corporation	Assignment	135A/538
N/A	Grenadier Energy Partners, LLC.	Statoil USA Onshore Properties Inc.	Assignment	138A/1
N/A	Drilling Appalachia Corporation	Statoil USA Onshore Properties Inc.	Assignment	138A/54

**Tract 436A**

Lease Number	Grantor, Lessor	Grantee, Lessee	Royalty	Book/Page
000116390001	Ann Marie Hovik	Drilling Appalachian Corporation	At least 1/8	109A/628
N/A	Drilling Appalachia Corporation	Statoil USA Onshore Properties Inc.	Assignment	138A/54

**Tract 448**

Lease Number	Grantor, Lessor	Grantee, Lessee	Royalty	Book/Page
000116370000	Shiben Estates, Inc.	Grenadier Energy Partners, LLC	At least 1/8	123A/763
N/A	Grenadier Energy Partners, LLC	Drilling Appalachia Corporation	Assignment	135A/538
N/A	Grenadier Energy Partners, LLC.	Statoil USA Onshore Properties Inc.	Assignment	138A/1
N/A	Drilling Appalachia Corporation	Statoil USA Onshore Properties Inc.	Assignment	138A/54

**Tract 448B**

Lease Number	Grantor, Lessor	Grantee, Lessee	Royalty	Book/Page
Pending	Margaret Ann Myers, et al	Statoil USA Onshore Properties Inc.	At least 1/8	155A/58

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WV Department of Environmental Protection

47 10303068F

600 Quarrier Street  
Charleston, West Virginia 25301

101 South Queen Street  
Martinsburg, West Virginia 26401

511 7th Street  
Moundsville, West Virginia 26041

501 Avery Street  
Parkersburg, West Virginia 26101



7000 Hampton Center  
Morgantown, West Virginia 26505  
(304) 285-2500

www.bowlesrice.com

Southpointe Town Center  
1800 Main Street, Suite 200  
Canonsburg, Pennsylvania 15317

333 West Vine Street, Suite 1700  
Lexington, Kentucky 40507

480 West Jubal Early Drive, Suite 130  
Winchester, Virginia 22601

November 20, 2014

Kimberly S. Croyle  
Telephone — (304) 285-2504  
Facsimile — (304) 285-2526

E-Mail Address:  
kcroyte@bowlesrice.com

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57th Street SE  
Charleston, West Virginia 25304

Re: Maxine Henderson (Mineral Owner)  
8.0000 Acres  
Center District, Wetzel County, West Virginia  
Tax Parcel No. 01-05/0027-0000  
North Henderson Unit (Well Nos. 3H; 4H; 5H)  
Statoil Tract No.: 62A  
Certification Date: September 26, 2014 at 8:00 a.m.  
Bowles Rice No.: S7774.00041

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AUG 7 2017

WV Department of  
Environmental Protection

Ladies and Gentlemen:

Based on our review of the following: (a) the land books maintained by the Office of the Clerk of the County Commission of Wetzel County, West Virginia from May 26, 1847, through the Certificate Date set forth above, (b) a draft copy of the Well Permit Plat relative to Well Nos. 3H, 4H, and 5H, in the North Henderson Unit (the "Well"), dated October 20, 2014, provided to us by our client, Statoil USA Onshore Properties Inc., a copy of which is attached as Exhibit A hereto, (c) indices maintained by the aforesaid County Clerk; and (d) a copy of the General Highway Map of Wetzel County, West Virginia, last revised January 1, 1998, provided to us by the West Virginia Department of Transportation, Division of Transportation Planning, a copy of which is attached as Exhibit B hereto, we are of the opinion that the State of West Virginia does not own any portion of the mineral fee underlying (1) the above-captioned tract, or (2) any public roadways located thereon.

While we do not believe that it affects the above-captioned tract, we reviewed that deed from Paul Henderson and Maxine Henderson, his wife, to the West Virginia Department of Highways, dated June 11, 1980, recorded July 11, 1980, of record in the aforesaid County Clerk's office in Deed Book 297, page 393. See Exhibit C, attached hereto. This deed grants to the West Virginia Department of Highways a non-controlled access right-of-way containing 17,500 square feet, more or less, as part of Project No. Disforce 352-8-3.90B; Parcel 1. The grant of a right-of-way is consistent with W. Va. Code §17-2A-17, which states that the State of West Virginia can

Office of Oil and Gas  
November 20, 2014  
WV Department of  
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West Virginia Department of Environmental Protection  
November 20, 2014  
Page 2

only acquire title to a right-of-way or easement in the road, and cannot acquire ownership of the minerals. W. Va. Code §17-2A-17. In our opinion, the title to the oil and gas underlying the 17,500 square foot right-of-way is not owned by the State of West Virginia.

Our opinion is subject to the correctness of the documents reviewed, as well as anything that may be disclosed by an accurate survey and inspection of the above-captioned tract, including a visual inspection verifying that there is no current work presently undertaken by the West Virginia Department of Transportation.

Very truly yours,

BOWLES RICE LLP

By: Kimberly S. Croyle  
Kimberly S. Croyle, its Partner

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Charleston, West Virginia 25301

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Martinsburg, West Virginia 25401

511 7th Street  
Moundsville, West Virginia 26041

501 Avery Street  
Parkersburg, West Virginia 26101



7000 Hampton Center  
Morgantown, West Virginia 26505  
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1800 Main Street, Suite 200  
Canonsburg, Pennsylvania 15317

333 West Vine Street, Suite 1700  
Lexington, Kentucky 40507

480 West Jubal Early Drive, Suite 130  
Winchester, Virginia 22601

November 18, 2014

Kimberly S. Croyle  
Telephone — (304) 285-2504  
Facsimile — (304) 285-2526

E-Mail Address:  
kcroyle@bowlesrice.com

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57th Street SE  
Charleston, West Virginia 25304

Re: Larry E. Rine and Jana L. Rine (Surface Owners)  
65.4 Acres  
Center District, Wetzel County, West Virginia  
Tax Parcel No. 01-05/0003-0002  
North Henderson Unit (Well No. 3H)  
Statoil Tract No.: 448B  
Certification Date: September 26, 2014 at 8:00 a.m.  
Bowles Rice No.: S7774.00000

Ladies and Gentlemen:

Based on our review of the following: (a) the land books maintained by the Office of the Clerk of the County Commission of Wetzel County, West Virginia from October 24, 1888, through the Certificate Date set forth above, (b) a draft copy of the Well Permit Plat relative to Well No. 3H in the North Henderson Unit (the "Well"), dated October 20, 2014, provided to us by our client, Statoil USA Onshore Properties Inc., a copy of which is attached as Exhibit A hereto, (c) indices maintained by the aforesaid County Clerk; and (d) a copy of the General Highway Map of Wetzel County, West Virginia, last revised January 1, 1998, provided to us by the West Virginia Department of Transportation, Division of Transportation Planning, a copy of which is attached as Exhibit B hereto, we are of the opinion that the State of West Virginia does not own any portion of the mineral fee underlying (1) the above-captioned tract, or (2) any public roadways located thereon.

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West Virginia Department of Environmental Protection  
November 18, 2014  
Page 2

Our opinion is subject to the correctness of the documents reviewed, as well as anything that may be disclosed by an accurate survey and inspection of the above-captioned tract, including a visual inspection verifying that there is no current work presently undertaken by the West Virginia Department of Transportation.

Very truly yours,

BOWLES RICE LLP

By: Kimberly S. Croyle  
Kimberly S. Croyle, its Partner

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Charleston, West Virginia 25301

101 South Queen Street  
Martinsburg, West Virginia 25401

511 7th Street  
Moundsville, West Virginia 26041

501 Avery Street  
Parkersburg, West Virginia 26101

Seth Wilson  
Telephone — (304) 285-2531  
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7000 Hampton Center  
Morgantown, West Virginia 26505  
(304) 285-2500

www.bowlesrice.com

November 13, 2014

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Southpointe Town Center  
1800 Main Street, Suite 200  
Canonsburg, Pennsylvania 15317

333 West Vine Street, Suite 1700  
Lexington, Kentucky 40507

480 West Jubal Early Drive, Suite 130  
Winchester, Virginia 22601

E-Mail Address:  
swilson@bowlesrice.com

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57th Street SE  
Charleston, West Virginia 25304

Re: Benjamin E. Yarber  
224 Acres, 37.67 Poles  
Center District, Wetzel County, West Virginia  
Tax Parcel No. 01-05/0014-0000  
North Henderson Unit (Well No. 2H)  
Statoil Tract No.: 448C  
Certification Date: August 4, 2014 at 8:00 a.m.  
Bowles Rice No.: S7774.00004

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Ladies and Gentlemen:

Based on our review of the following: (a) the land books maintained by the Office of the Clerk of the County Commission of Wetzel County, West Virginia from July 25, 1864 through the Certificate Date set forth above, (b) a draft copy of the Well Permit Plat relative to Well No. 2H in the North Henderson Unit (the "Well"), dated October 20, 2014, provided to us by our client, Statoil USA Onshore Properties Inc., a copy of which is attached as Exhibit A hereto, (c) indices maintained by the aforesaid County Clerk; and (d) a copy of the General Highway Map of Wetzel County, West Virginia, last revised January 1, 1998, provided to us by the West Virginia Department of Transportation, Division of Transportation Planning, a copy of which is attached as Exhibit B hereto, we are of the opinion that the State of West Virginia does not own any portion of the mineral fee underlying (1) the above-captioned tract, or (2) any public roadways located thereon.

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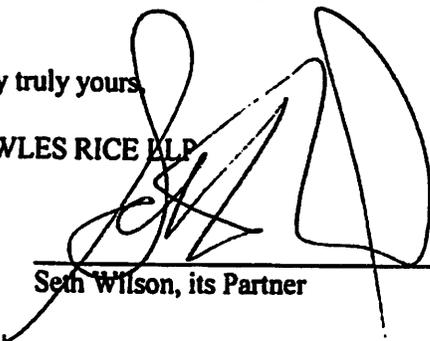
West Virginia Department of Environmental Protection  
November 13, 2014  
Page 2

Our opinion is subject to the correctness of the documents reviewed, as well as anything that may be disclosed by an accurate survey and inspection of the above-captioned tract, including a visual inspection verifying that there is no current work presently undertaken by the West Virginia Department of Transportation.

Very truly yours,

BOWLES RICE LLP

By:

  
Seth Wilson, its Partner

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August 31, 2011

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

Tl. 10A

Re: Ownership of oil and gas in place by Howard M. Henderson within and underlying two (2) tracts or parcels of land containing (i) 100 acres, more or less; and (ii) 40 acres, more or less, situate in Center District, West Virginia (AM Tract No. 10A (North Henderson Unit No. 2H))

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WV Department of  
Environmental Protection

Ladies and Gentlemen:

We hereby certify to you that, in our opinion, subject to the correctness of the indices and to anything which may be disclosed by an accurate survey and inspection of the Subject Property, being more particularly described on Exhibit A, as Tract No. 1, and Tract No. 2, attached hereto, (the "Subject Property"), including the oil and gas along with all operational rights within and underlying any and all public streets, roadways and highways overlying the Subject Property, including County Road 8, that good and marketable record title to the above-captioned property, is vested, as follows:

As of the 28<sup>th</sup> day of January, 2011, in Howard M. Henderson, subject to the qualifications and limitations contained in our title opinion letter to Drilling Appalachian Corporation ("DAC") dated March 29, 2007, and updated by our letters dated June 30, 2009 and February 3, 2011.

all subject to a visual inspection indicating that that no new Department of Highways work is presently underway for those portions of County Road 8 crossing the Subject Property.

Additionally, for the purpose of clarification, we are of the opinion that: (i) the West Virginia Department of Highways does not own any of the oil and/or gas within and underlying the portions of County Road 8 which crosses the Subject Property; and (ii) DAC has a leasehold interest in one-hundred percent (100%) of the oil and gas within and underlying the

NOV 21 2011

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West Virginia Department of Environmental Protection  
August 31, 2011  
Page 2

Subject Property, including the oil and gas within and underlying those portions of County Road 8 which cross the Subject Property, pursuant to the following:

A lease dated February 7, 2006, and recorded in the Office of the Clerk of the County Commission of Wetzel County, West Virginia, in Oil and Gas Lease Book No. 85A, at page 302, and amended by an agreement dated June 1, 2009, recorded in Oil and Gas Lease Book No. 101A, at page 122, between Maxine Henderson and DAC; and

Grenadier Energy Partners, LLC has the right to drill the North Henderson Unit No. 2H Well, laterally under those portions of County Road 8 which cross the Subject Property pursuant to a Farmout Agreement from DAC, a memorandum of which was recorded in said Clerk's office on September 28, 2009 in Oil and Gas Lease Book No. 103A, at page 58.

Very truly yours,

STEPTOE & JOHNSON PLLC

By: Marsha K. Hudkins  
Marsha K. Hudkins, a Member

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AUG 7 2017

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BECKMEN, CHERKASSY, DEAN & ASSOCIATES

Statoil USA Onshore Properties, Inc.  
2101 Citywest Blvd.  
Houston, Texas 77042

May 22, 2014

ATTN: Anna McNew  
Senior Landman

Re: Horner Hovik Unit - Tract Index No. 62  
Prospect No. 20140213.1  
District No. 1, Tax Map No. 5, Parcel No. 28  
Terry Lee Riter, 162 acres  
Wetzel County, West Virginia

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**SUPPLEMENTAL DRILLING TITLE OPINION**

*The purpose of this Supplemental is to amend the Original Drilling Title Opinion, dated April 18, 2008, to include additional Assignments of Oil and Gas Leases dated subsequent to the abstract provided for the Original Drilling Title Opinion, and which vest Statoil USA Onshore Properties, Inc., with an interest in the Oil and Gas Leases covering the Subject Lands, and to include multiple estate instruments concerning a one-half royalty interest affecting the Subject Lands. Further, this Supplemental Opinion amends multiple sections of the Original Opinion, most notably the Ownership Section, based on this additional information.*

**DESCRIPTION OF LANDS**

**Tract:** District No. 1, Map No. 5, Parcel No. 28, containing 162 acres, more or less, located in Wetzel County, West Virginia, and being described in that certain Deed dated June 5, 2012, from Janet S. Riter, to Terry Lee Riter, recorded in Deed Book 431, Page 766, Wetzel County, West Virginia.<sup>1</sup>

The above lands are hereinafter referred to as the Subject Lands, and a map depicting the approximate location of the Subject Lands is attached to this Opinion as Exhibit "A".

**OWNERSHIP**

Based upon our examination of the materials referenced below in Exhibit "B", and subject to the comments, requirements, and limitations hereinafter set forth, we find title to the Subject

<sup>1</sup> As described in the Prior Opinion.

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Statoll USA Onshore Properties, Inc.  
May 22, 2014

Page | 19

**REQUIREMENT 6:**

You should locate all lands burdened by the easements and rights-of-way referred to above and satisfy yourself that your proposed development of the Subject Lands does not conflict with those rights.

**OBJECTION 7: MORTGAGES AND LIENS**

The Materials Examined did not contain any additional enforceable mortgage liens burdening the Subject Lands. See Prior Opinion.

**REQUIREMENT 7:**

None. This comment is advisory only.

**OBJECTION 8: UNDOCUMENTED PUBLIC ROADS**

The Materials Examined reflected the existence of the following road and/or street bordering or traversing the Subject Lands for which we have no instruments creating them:

County Route No. 8 a/k/a Low Gap Rocky Run

Our examination did not reveal any conveyances of the lands lying in and under said roads so as to vest title to the same, including title to the oil, gas and minerals thereunder in the State of West Virginia or a municipality. Accordingly, we have assumed for purposes of this Opinion, that said roads were established by virtue of a right-of-way and easement acquired by prescription, or unrecorded right-of-way conveyances, and that no governmental entity is vested with any title of the oil, gas, and minerals lying in and under said roads.

**REQUIREMENT 8: REQUIREMENT 8:**

You should determine the origin of the above referenced road, and you should submit the results of such determination for our examination. In the alternative, you may choose to assume the business risk of satisfying yourself that our assumption is correct and if such is not possible, you should contact the undersigned for further comment and requirement.

**OBJECTION 9: REFERENCED DOCUMENTS**

The Assignments described in the Assignment of Oil and Gas Lease Section of this Opinion may reference, either in their body or in attached exhibits, documents that were not included in the Materials Examined. We have assumed, for the purposes of this Opinion, that such referenced documents do not affect the ownership interests as stated above. The referenced documents are included as part of the Examiner's Note in the Assignment of Oil and Gas Lease Section of this Opinion.

**REQUIREMENT 9:**

You should obtain and submit for our examination copies of all the documents referenced by the Assignments described in the Assignment of Oil and Gas Lease Section of this Opinion that were not included in the Materials Examined. In the alternative, you may choose to assume the business risk of satisfying yourself that our assumption is correct.

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Matter No. STO/786-0051

10/20/2017

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BECKMEN, CHERKASSY, DEAN & ASSOCIATES

Statoil USA Onshore Properties, Inc.  
2101 Citywest Blvd.  
Houston, Texas 77042

May 7, 2014

ATTN: Anna McNew  
Senior Landman

Re: Horner Hovik Unit – Tract Index No. 436B  
Prospect No. 20140213.1  
District No. 1, Tax Map No. 5, Parcel No. 15  
Charles E. Horner and John M. Horner, 226 acres, more or less  
Wetzel County, West Virginia

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**SUPPLEMENTAL DRILLING TITLE OPINION**

*The purpose of this Supplemental is to amend the Title Opinion, dated October 17, 2012, certified to September 12, 2012, rendered by Steptoe and Johnson, PLLC, is to include additional instruments which are dated subsequent to the abstract provided for the Title Opinion. Further, this Supplemental Opinion amends multiple sections of the original Title Opinion, most notably the Ownership Section, based on additional assignments of oil and gas leases provided.*

**DESCRIPTION OF LANDS<sup>1</sup>**

**Tract:** District No. 1, Map No. 5, Parcel No. 15, containing 226 acres, more or less, located in Wetzel County, West Virginia, and being the same lands described in that certain Deed dated October 27, 1914, from A. L. Knapp and Ura Knapp, his wife, et al., to G. W. Knapp, recorded in Deed Book 119, Page 418, Wetzel County, West Virginia.

The above lands are hereinafter referred to as the Subject Lands, and a map depicting the approximate location of the Subject Lands is attached to this Opinion as Exhibit "A".

**OWNERSHIP**

Based upon our examination of the materials referenced below in Exhibit "B", and subject to the comments, requirements, and limitations hereinafter set forth, we find title to the Subject

<sup>1</sup> See Objection and Requirement No. 9 regarding Prior Opinions.

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Statoll North America, Inc.  
May 7, 2014

**OBJECTION 4: PRIOR UNRELEASED OIL AND GAS LEASES**

The Materials Examined did not contain any additional prior, unreleased Oil and Gas Leases affecting the Subject Lands. See Prior Opinion.

**REQUIREMENT 4:**

None. This comment is advisory only.

**OBJECTION 5: COAL ESTATE**

It could not be determined from the Materials Examined if any marketable coal exists on the Subject Lands. Furthermore, we note that the Prior Opinion makes no reference to ownership of the coal underlying the Subject Lands, and there is nothing in the Materials Examined regarding said ownership.

**REQUIREMENT 5:**

You should determine if coal exists on the Subject Lands and if so, comply with West Virginia statutes and regulations relating to notification of the coal owner as to oil and gas operations.

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**OBJECTION 6: EASEMENTS AND RIGHT-OF-WAY AGREEMENTS**

The Materials Examined did not contain any additional easements and rights-of-way affecting the Subject Lands. See Prior Opinion.

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**REQUIREMENT 6:**

None. This comment is advisory only.

**OBJECTION 7: UNDOCUMENTED PUBLIC ROADS**

The Materials Examined do not reflect the existence of any roads and/or streets bordering or traversing the Subject Lands.

Our examination did not reveal any conveyances of lands for roadway purposes so as to vest title to the same, including title to the oil, gas and minerals thereunder, in the State of West Virginia or a municipality. Accordingly, we have assumed for purposes of this Opinion, that any roads bordering or traversing the Subject Lands were established by virtue of a right-of-way and easement acquired by prescription, or unrecorded right-of-way conveyances, and that no governmental entity is vested with any title of the oil, gas, and minerals lying in and under such roads.

**REQUIREMENT 7:**

You should conduct an investigation to determine whether any roads exist bordering or traversing the Subject Lands and determine the origin of the same. Submit the results of such investigation for our examination. In the alternative, you may choose to assume the business risk of satisfying yourself that our assumption is correct and if such is not possible, you should contact the undersigned for further comment and requirement.

Matter No. STO/786-0046



BECKMEN, CHERKASSY, DEAN & ASSOCIATES

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Statoil USA Onshore Properties, Inc.  
2101 Citywest Blvd.  
Houston, Texas 77042

May 22, 2014

ATTN: Anna McNew  
Senior Landman

Re: Horner Hovik Unit - Tract Index No. 436A  
Propsect No. 20140213.1  
District No. 1, Tax Map No. 5, Parcel No. 4  
William E. Renner, 149.54 acres  
Wetzel County, West Virginia

**SUPPLEMENTAL DRILLING TITLE OPINION**

*The purpose of this Supplemental is to amend the Title Opinion, dated November 5, 2010, to include additional instruments which are dated subsequent to the abstract provided for the Title Opinion. Further, this Supplemental Opinion amends multiple sections of the original Title Opinion, most notably the Ownership Section, based on additional assignments of oil and gas leases provided.*

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**DESCRIPTION OF LANDS**

**Tract:** District No. 1, Tax Map No. 5, Parcel No. 4, containing 149.54 acres, more or less, located, Wetzel County, West Virginia, and being the same lands described in that certain Deed dated April 28, 1960, from Harold Cain and Julia A. Cain, his wife, Doris Wright, single, and Marie Guzek, single, to Eunice Cain, recorded in Deed Book 204, Page 299, Wetzel County, West Virginia.<sup>1</sup>

The above lands are hereinafter referred to as the Subject Lands, and a map depicting the approximate location of the Subject Lands is attached to this Opinion as Exhibit "A".

**OWNERSHIP**

Based upon our examination of the materials referenced below in Exhibit "B", and subject to the comments, requirements, and limitations hereinafter set forth, we find title to the Subject

<sup>1</sup> As referenced in the Prior Opinion.

10/20/2017

**OBJECTION 6: EASEMENTS AND RIGHT-OF-WAY AGREEMENTS**

The Materials Examined did not contain any additional easement and right-of-way agreements and other surface encumbrances. See Prior Opinion.

**REQUIREMENT 6:**

None. This comment is advisory only.

**OBJECTION 7: MORTGAGES AND LIENS**

The Materials Examined did not contain any additional enforceable mortgage liens burdening the Subject Lands. See Prior Opinion.

**REQUIREMENT 7:**

None. This comment is advisory only.

**OBJECTION 8: UNDOCUMENTED PUBLIC ROADS**

The Materials Examined did not reflect the existence of any roads and/or streets bordering or traversing the Subject Lands. Further, our examination did not reveal any conveyances of the lands lying in and under said roads so as to vest title to the same, including title to the oil, gas and minerals thereunder in the State of West Virginia or a municipality. Accordingly, we have assumed for purposes of this Opinion, that said roads were established by virtue of a right-of-way and easement acquired by prescription, or unrecorded right-of-way conveyances, and that no governmental entity is vested with any title of the oil, gas, and minerals lying in and under said roads.

**REQUIREMENT 8:**

You should conduct an investigation to determine whether any roads exist bordering or traversing the Subject Lands, determine the origin of the same, and you should submit the results of such determination for our examination. In the alternative, you may choose to assume the business risk of satisfying yourself that our assumption is correct and if such is not possible, you should contact the undersigned for further comment and requirement.

**OBJECTION 9: REFERENCED DOCUMENTS**

The Assignments described in the Assignment of Oil and Gas Lease Section of this Opinion may reference, either in their body or in attached exhibits, documents that were not included in the Materials Examined. We have assumed, for the purposes of this Opinion, that such referenced documents do not affect the ownership interests as stated above. The referenced documents are included as part of the Examiner's Note in the Assignment of Oil and Gas Lease Section of this Opinion.

**REQUIREMENT 9:**

You should obtain and submit for our examination copies of all the documents referenced by the Assignments described in the Assignment of Oil and Gas Lease Section of this Opinion that

Matter No. STO/786-0048

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BECKMEN, CHERKASSY, DEAN & ASSOCIATES

Statoil USA Onshore Properties, Inc.  
2101 Citywest Blvd.  
Houston, Texas 77042

May 31, 2014

ATTN: Anna McNew  
Senior Landman

Re: Horner Hovik Unit - Tract Index No. 437  
Prospect No. 20140213.1  
District No. 1, Tax Map No. 5, Parcel No. 5  
William E. Renner and William J. Renner, 5.125 acres  
Wetzel County, West Virginia

**ORIGINAL DRILLING TITLE OPINION**

**DESCRIPTION OF LANDS**

**Tract:** District No. 1, Map No. 5, Parcel No. 5, containing 5.125 acres, more or less, located in Wetzel County, West Virginia, and being the same lands described in that certain Deed dated March 27, 1995, from Richard Ochsenbein, unmarried, and Sarah McGovern, widow, to William E. Renner and William J. Renner, father and son, and unto the survivor of them, recorded in Deed Book 350, Page 205, Wetzel County, West Virginia.

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The above lands are hereinafter referred to as the Subject Lands, and a map depicting the approximate location of the Subject Lands is attached to this Opinion as Exhibit "A".

**OWNERSHIP**

Based upon our examination of the materials referenced below in Exhibit "B", and subject to the comments, requirements, and limitations hereinafter set forth, we find title to the Subject Lands, for the period of time from March 31, 1874, to April 1, 2014, at 2:00 p.m., to vest as follows:

**SURFACE ESTATE:**

OWNER	INTEREST
William E. Renner and William J. Renner, father and son, and unto the survivor of them, as joint tenants and not as tenants in common	.50000000
William E. Renner	.25000000

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WV Department of  
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10/20/2017

Gas Leases covering the Subject Lands. The Affidavit or Landman's Statement should address operations and production from all of the land described in the prior, unreleased Oil and Gas Leases and all lands pooled therewith, if any.

**OBJECTION 4: COAL ESTATE**

It could not be determined from the Materials Examined if any marketable coal exists on the Subject Lands. The Materials Examined contained the following Deeds in which the ownership of a portion of the coal underlying the Subject Lands and other lands was severed. Ownership of a portion of the coal of the Subject Lands differs from the ownership of the oil and gas estate set forth in this Opinion.

1. Deed dated September 5, 1902, from Elizabeth Marshall, widow, and Frances Marshall, widower, to Josiah L. Evans and Isaac G. Roby, recorded in Book 80, Page 108, conveying all the coal underlying the Subject Lands. We note that the Materials Examined indicated that Elizabeth Marshall and Francis Marshall did not own any interest in the Subject Lands at the time of this Deed.
2. Deed dated August 22, 1980, from Nellie Frances Evans, to Consol Land Development Company, recorded in Book 298, Page 273, conveying a 1/6 interest in the "Pittsburgh coal" of the Subject Lands.

**REQUIREMENT 4:**

You should determine if coal exists on the Subject Lands and if so, comply with West Virginia statutes and regulations relating to notification of the coal owner as to oil and gas operations.

**OBJECTION 5: EASEMENTS AND RIGHT-OF-WAY AGREEMENTS**

The Materials Examined contained the easement and right-of-way agreements and other surface encumbrances as reflected above.

**REQUIREMENT 5:**

You should locate all lands burdened by the easements and rights-of-way referred to above and satisfy yourself that your proposed development of the Subject Lands does not conflict with those rights.

**OBJECTION 6: UNDOCUMENTED PUBLIC ROADS**

The Materials Examined reflected the existence of a road and/or street bordering the Subject Lands. However, the Materials Examined did not contain sufficient information to identify the roadway. Further, our examination did not reveal any conveyances of lands for roadway purposes so as to vest title to the same, including title to the oil, gas and minerals thereunder, in the State of West Virginia or a municipality. Accordingly, we have assumed for purposes of this Opinion, that any roads bordering or traversing the Subject Lands were established by virtue of a right-of-way and easement acquired by prescription, or unrecorded right-of-way conveyances, and that no governmental entity is vested with any title of the oil, gas, and minerals lying in and under such roads.

**REQUIREMENT 6:**

You should determine the origin of the above referenced roads, and you should submit the results of such determination for our examination. In the alternative, you may choose to assume the business risk of satisfying yourself that our assumption is correct and if such is not possible, you should contact the undersigned for further comment and requirement.

**OBJECTION 7: 1955 TAX SALE - INTEREST CONVEYED IN DEED DATED SEPTEMBER 27, 1955**

The Materials Examined contained the following instruments affecting the Subject Lands:

1. Deed dated August 12, 1899, from Elizabeth Marshall, to W. A. Evans and Thos. Parriott, recorded in Book 57, Page 476, conveying the Subject Lands.
2. Deed dated September 27, 1955, from W. E. Lemon, Deputy Commissioner of Forfeited and Delinquent Lands for Wetzel County, West Virginia, to Ross Arnett and Bruce Brookover, recorded in Book 195, Page 261, conveying an undivided one-half interest in the oil and gas underlying the Subject Lands for delinquent taxes for the year 1955 in the name of T. E. Parriott and W. A. Evans.
3. Deed dated March 27, 1995, from Richard Ochsenbein, unmarried, and Sarah McGovern, widow, to William E. Renner and William J. Renner, father and son, and unto the survivor of them, as joint tenants and not as tenants in common, recorded in Book 350, Page 205, conveying Thomas Parriott's undivided one-half interest in the Subject Lands.
4. Deed dated November 21, 2002, from G. Russell Rollyson, Jr., Deputy Commissioner of Delinquent and Nonentered Lands of Wetzel County, West Virginia, to William E. Renner and William J. Renner, recorded in Book 384, Page 529, conveying a one-half interest in the Subject Lands for delinquent taxes for the year 1997 in the name of W. A. Evans.

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Although the Deed dated September 27, 1955, conveys the Subject Lands in the name of W. A. Evans and Thomas Parriott, the interest conveyed therein is only a one-half interest in the oil and gas estate of the Subject Lands. We have assumed that the Deed dated September 27, 1955, conveys Thomas E. Parriott's one-half oil and gas interest in the Subject Lands only, and does not convey any portion of W. A. Evan's one-half interest in the Subject Lands.

**REQUIREMENT 7:**

You should obtain and submit for our review a Stipulation of Interest between all parties with an interest in the Subject Lands, stipulating their ownership interests. In the alternative, you should obtain and submit instruments confirming our assumption. If our assumption is incorrect, it would affect the ownership interest as shown in the chart above. If such is not possible, you should contact the undersigned for further comment.

**OBJECTION 8: ESTATE OF W. A. EVANS**

The Materials Examined contained the following instruments affecting the Subject Lands:

1. Deed dated August 12, 1899, from Elizabeth Marshall, to W. A. Evans and Thos. Parriott, recorded in Book 57, Page 476, conveying the Subject Lands.
2. Deed dated August 22, 1980, from Nellie Frances Evans, by her Attorney-in-Fact, Ralph N. Evans, to Consol Land Development Company, recorded in Book 298, Page 273, conveying an interest in the coal estate of the Subject Lands, and indicating that Wiley A. Evans died

4710303068F



BECKMEN, CHERKASSY, DEAN & ASSOCIATES

Statoil USA Onshore Properties, Inc.  
2101 Citywest Blvd.  
Houston, Texas 77042

May 28, 2014

ATTN: Anna McNew  
Senior Landman

Re: Horner Hovik Unit- Tract Index No. 448  
Prospect No. 20140213.1  
District No. 1, Tax Map No. 2, Parcel No. 8  
Shiben Estates, Inc., 133.83 acres  
Wetzel County, West Virginia

**SUPPLEMENTAL DRILLING TITLE OPINION**

*The purpose of this Supplemental is to amend the Title Opinion, dated May 13, 2011, to include additional instruments which are dated subsequent to the abstract provided for the Title Opinion. Further, this Supplemental Opinion amends multiple sections of the original Title Opinion, most notably the Ownership Section, based on additional assignments of oil and gas leases provided.*

**DESCRIPTION OF LANDS**

**Tract:** District No. 1, Map No.2, Parcel No. 8, containing 133.83 acres, more or less, located, Wetzel County, West Virginia, and being the same lands described in that certain Deed dated January 17, 1939, from W. J. Postlethwait, Special Commissioner, to Joseph Shiben, recorded in DeedBook 156, Page 401, Wetzel County, West Virginia.<sup>1</sup>

The above lands are hereinafter referred to as the Subject Lands, and a map depicting the approximate location of the Subject Lands is attached to this Opinion as Exhibit "A".

**OWNERSHIP**

Based upon our examination of the materials referenced below in Exhibit "B", and subject to the comments, requirements, and limitations hereinafter set forth, we find title to the Subject

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<sup>1</sup>As referenced in the Prior Opinion.

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Statoil North America, Inc.  
May 28, 2014

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**REQUIREMENT 5:**

None. This comment is advisory only.

**OBJECTION 6:            UNDOCUMENTED PUBLIC ROADS**

The Materials Examined reflected the existence of a road and/or street traversing the Subject Lands. However, the Materials Examined did not contain sufficient information to identify the roadway. Further, our examination did not reveal any conveyances of lands for roadway purposes so as to vest title to the same, including title to the oil, gas and minerals thereunder, in the State of West Virginia or a municipality. Accordingly, we have assumed for purposes of this Opinion, that any roads bordering or traversing the Subject Lands were established by virtue of a right-of-way and easement acquired by prescription, or unrecorded right-of-way conveyances, and that no governmental entity is vested with any title of the oil, gas, and minerals lying in and under such roads.

**REQUIREMENT 6:**

You should conduct an investigation to determine whether any roads exist bordering or traversing the Subject Lands and determine the origin of the same. Submit the results of such investigation for our examination. In the alternative, you may choose to assume the business risk of satisfying yourself that our assumption is correct and if such is not possible, you should contact the undersigned for further comment and requirement.

**OBJECTION 7:            REFERENCED DOCUMENTS**

The Assignments described in the Assignment of Oil and Gas Lease Section of this Opinion may reference, either in their body or in attached exhibits, documents that were not included in the Materials Examined. We have assumed, for the purposes of this Opinion, that such referenced documents do not affect the ownership interests as stated above. The referenced documents are included as part of the Examiner's Note in the Assignment of Oil and Gas Lease Section of this Opinion.

**REQUIREMENT 7:**

You should obtain and submit for our examination copies of all the documents referenced by the Assignments described in the Assignment of Oil and Gas Lease Section of this Opinion that were not included in the Materials Examined. In the alternative, you may choose to assume the business risk of satisfying yourself that our assumption is correct.

**OBJECTION 8:            PRIOR OPINION(S)**

The Materials Examined contained the Prior Opinion as described in Exhibit B. This Supplemental Opinion is subject to the accuracy and the completeness of the Prior Opinion and should be reviewed together with the Prior Opinion. The comments, requirements and limitations set forth herein are based exclusively on our examination of the items included in the Materials Examined, including the instruments provided with the Supplemental Runsheet. You should note that any errors, omissions and/or inaccuracies in ownership of the Subject Lands reported in the Prior Opinion may not be ascertainable from an examination of only the Supplemental materials provided, and as such, this Supplemental Opinion may not be relied upon to determine whether ownership of the Subject Lands was accurately reflected in the Prior Opinion. We have assumed, for

Matter No. STO/786-0043

10/20/2017



103-03068F

August 3, 2017

Mr. James Martin  
West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304

Re: North Henderson North  
Center District, Wetzel County

Dear Mr. Martin,

EQT Production Company is submitting an application for a new well work permit for the above well number. Upon information and belief, Operator's lease and/ or other real property rights permit it to conduct drilling operations for the subject well in the location shown on the plat, including under any public roads that the well lateral crosses.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Vicki Roark', is written over a light blue horizontal line.

Vicki Roark  
Regional Land Supervisor

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

Date of Notice Certification: 8-3-17

API No. 47- 103 - 03068  
Operator's Well No. North Henderson North 4H  
Well Pad Name: North Henderson North

**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>WV</u>	UTM NAD 83 Easting: <u>536,216.244</u>
County: <u>Wetzel</u>	Northing: <u>4,393,827.704</u>
District: <u>Center</u>	Public Road Access: <u>Low Gap Rocky Run Rd</u>
Quadrangle: <u>Littleton</u>	Generally used farm name: <u>Howard Henderson</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 type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p><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>
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**Required Attachments:**

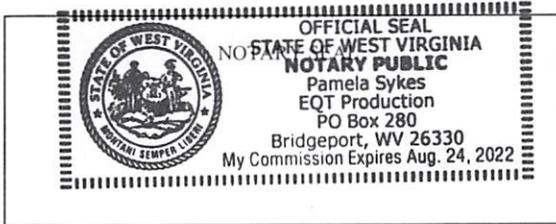
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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 noticed 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.

**Certification of Notice is hereby given:**

THEREFORE, I *Victoria J Roark*, 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: EQT Production Company  
By: Victoria J Roark  
Its: Regional Land Supervisor  
Telephone: 304.848.0076

Address: 115 Professional Place, PO Box 280  
Bridgeport WV 26330  
Facsimile: 304.848.0041  
Email: vroark@eqt.com



Subscribed and sworn before me this 3 day of Aug 2017.  
*Pamela Sykes* Notary Public  
My Commission Expires 8.24.22

**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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**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:** 8-3-17 **Date Permit Application Filed:** 8-3-17

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: Howard & Linda Henderson  
Address: 4721 Low Gap Run Rd  
Littleton WV 26581

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

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

Name: Howard & Linda Henderson  
Address: \_\_\_\_\_

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

SURFACE OWNER(s) (Impoundments or Pits)

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

COAL OWNER OR LESSEE

Name: See Attached  
Address: \_\_\_\_\_

COAL OPERATOR

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

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

Name: See Attached  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

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

\*Please attach additional forms if necessary

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**Coal Owners:**

Howard & Linda Henderson  
 4721 Low Gap Run Rd  
 Littleton WV 26581

Consol Mining Company  
 C/O Casey Saunders  
 1000 Consol Energy Dr  
 Canonsburg PA 15317

**Owners of Water Wells:**

Howard & Linda Henderson  
 4721 Low Gap Run Rd  
 Littleton WV 26581

7016 2140 0000 5638 8917

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.

OFFICIAL USE

Certified Mail Fee	\$
Extra Services & Fees (check box, add fee as appropriate)	
<input type="checkbox"/> Return Receipt (hardcopy)	\$
<input type="checkbox"/> Return Receipt (electronic)	\$
<input type="checkbox"/> Certified Mail Restricted Delivery	\$
<input type="checkbox"/> Adult Signature Required	\$
<input type="checkbox"/> Adult Signature Restricted Delivery	\$

Postage

Total Postage \$ Howard & Linda Henderson  
 4721 Low Gap Run Rd  
 Littleton WV 26581

Sent To N Henderson Permit App & Planned Op

Street and Apt.  
 City, State, ZIP

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions



7016 2140 0000 5638 8924

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.

OFFICIAL USE

Certified Mail Fee	\$
Extra Services & Fees (check box, add fee as appropriate)	
<input type="checkbox"/> Return Receipt (hardcopy)	\$
<input type="checkbox"/> Return Receipt (electronic)	\$
<input type="checkbox"/> Certified Mail Restricted Delivery	\$
<input type="checkbox"/> Adult Signature Required	\$
<input type="checkbox"/> Adult Signature Restricted Delivery	\$

Postage

Total Pos \$ CNX Land Resources Inc  
 1000 Consol Energy Dr  
 Canonsburg PA 15317

Sent To N Henderson Permit App

Street and Apt.  
 City, State

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions



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WW-6A  
(8-13)

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Environmental Protection

API NO. 47- 103 - 03068 F  
OPERATOR WELL NO. North Henderson North 4H  
Well Pad Name: North Henderson North

**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

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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

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Environmental Protection

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.**

10/20/2017

**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- 103 - 03068 **F**  
OPERATOR WELL NO. North Henderson North 4H  
Well Pad Name: North Henderson North

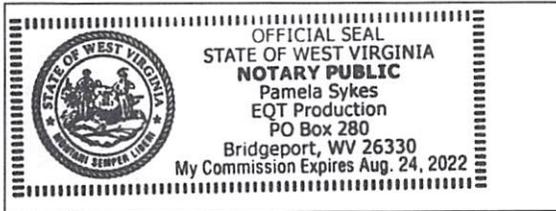
**Notice is hereby given by:**

Well Operator: EQT Production Company  
Telephone: 304.848.0076  
Email: vroark@eqt.com

Address: 115 Professional Place PO Box 280  
Bridgeport WV 26330  
Facsimile: 304.848.0041

**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).



*[Handwritten signature]*

Subscribed and sworn before me this 3 day of Aug, 2017.

*[Handwritten signature]* Notary Public

My Commission Expires 8-24-22

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Environmental Protection

10/20/2017

103-03068F

Topo Quad: Littleton 7.5'      Scale: 1" = 1000'

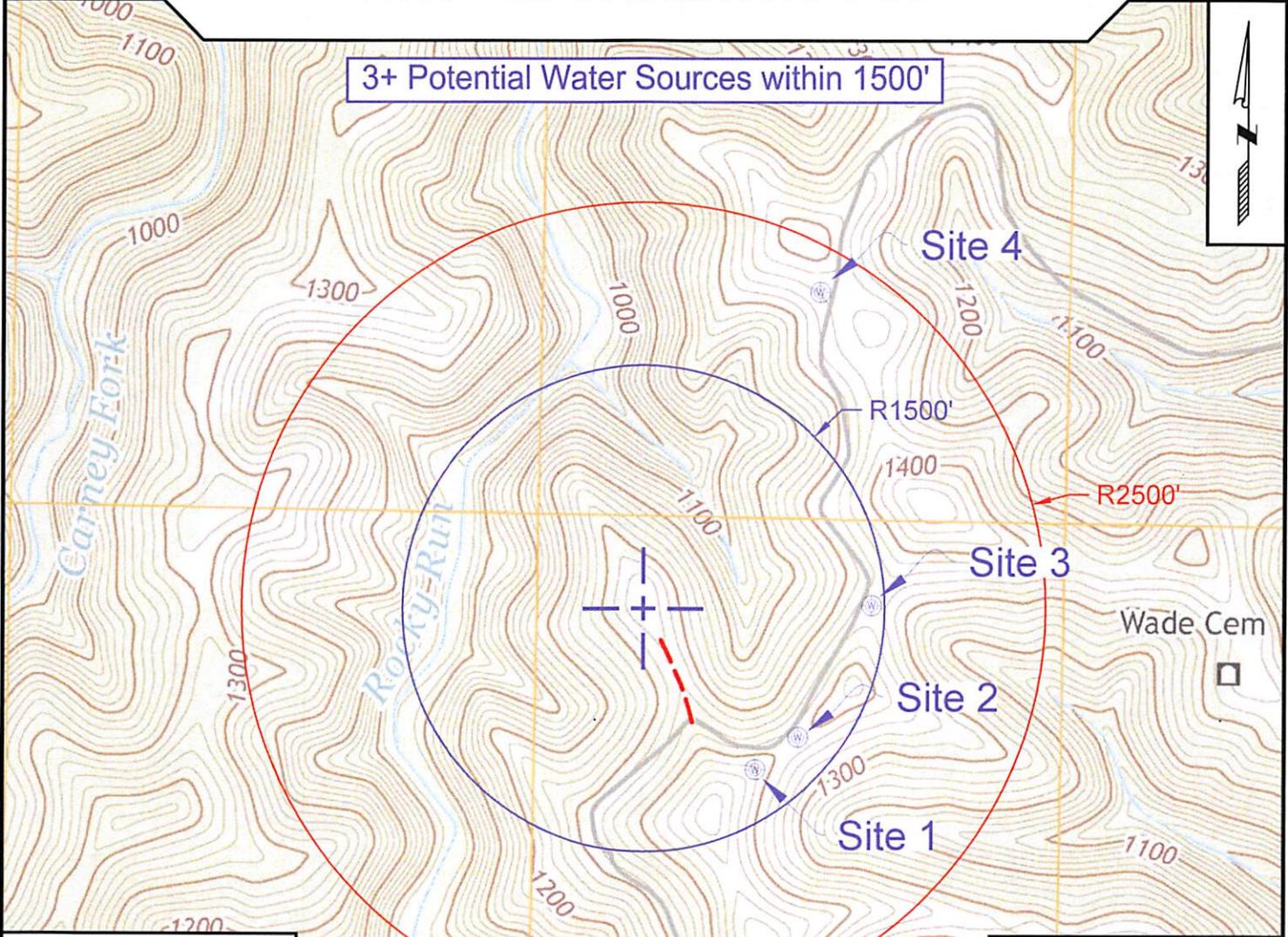
County: Wetzel      Date: July 14, 2017

District: Center      Project No: 265-34-G-16

Water

# North Henderson North Pad

3+ Potential Water Sources within 1500'



### LEGEND

- Red Symbol - Declined Sampling
- Blue Symbol - Requested Sampling / Unable to Contact
- Well
- Spring
- Pond
- Building

NAD 27, North Zone  
 N: 436497.79  
 E: 1696669.89

WGS 84  
 LAT: 39.693522  
 LONG: -80.577754  
 ELEV: 1342'



SURVEYING AND MAPPING SERVICES PERFORMED BY:  
**ALLEGHENY SURVEYS, INC.**  
 1-800-482-8606  
 237 Birch River Road  
 Birch River, WV 26610  
 PH: (304) 649-8606  
 FAX: (304) 649-8608

PREPARED FOR:  
**EQT Production Company**  
 P.O. Box 280  
 Bridgeport, WV 26330

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 Department of Environmental Protection

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

**Notice Time Requirement:** Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

**Date of Notice:** 07/10/2017 **Date Permit Application Filed:** 07/20/2017

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

- HAND DELIVERY       CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

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

Name: Howard & Linda Henderson  
Address: 4721 Low Gap Run Rd  
Littleton WV 26581

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

**Notice is hereby given:**

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

State: WV UTM NAD 83 Easting: 536,216.244  
County: Wetzel Northing: 4,393,827.704  
District: Center Public Road Access: Low Gap Rocky Run Rd  
Quadrangle: Littleton Generally used farm name: Howard Henderson  
Watershed: Lower West Virginia Fork Fish Creek

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. 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).

**Notice is hereby given by:**

Well Operator: EQT Production Company  
Address: 115 Professional Place, PO Box 280  
Bridgeport WV 26330  
Telephone: 304.848.0076  
Email: vroark@eqt.com  
Facsimile: 304.848.0041

Authorized Representative: Victoria Roark  
Address: 115 Professional PL PO Box 280  
Bridgeport WV 26330  
Telephone: 304.848.0076  
Email: vroark@eqt.com  
Facsimile: 304.848.0041

**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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**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:** \_\_\_\_\_ **Date Permit Application Filed:** \_\_\_\_\_

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

CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      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: Howard & Linda Henderson                                      Name: \_\_\_\_\_  
Address: 4721 Low Gap Run Rd                                      Address: \_\_\_\_\_  
Littleton WV 26581                                      \_\_\_\_\_

**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: WV                                      UTM NAD 83      Easting: 536,216.244  
County: Wetzel                                      Northing: 4,393,827.704  
District: Center                                      Public Road Access: Low Gap Rocky Run Rd  
Quadrangle: Littleton                                      Generally used farm name: Howard Henderson  
Watershed: Lower West Virginia Fork Fish Creek

**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).

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Environmental Protection  
10/20/2017



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

July 28, 2016

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 N. Henderson Pad Wetzel County

47-103-03068

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit # 06 -2011-0386 for the subject site from Statoil USA Onshore Properties Inc. to EQT Production Company for access to the State Road for the well site located off of Wetzel County Route 8 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.

Very Truly Yours,

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

Cc: Nick Bumgardner  
EQT Production Company  
CH, OM, D-6  
File

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Anticipated Frac Additives 47 1 0 3 0 3 0 6 8 F  
Chemical Names and CAS numbers

<u>Material</u>	<u>Ingredient</u>	<u>CAS Number</u>
Water		
Sand	Hydrotreated light petroleum distillate	14808-60-7
Friction Reducer	Tributyl tetradecyl phosphonium chloride	64742-47-8
Biocide	Ammonium chloride	81741-28-8
Scale Inhibitor	Hydrochloric Acid	12125-02-9
15% Hydrochloric Acid	Propargyl Alcohol	7647-01-0
Corrosion Inhibitor	Methanol	107-19-7
Corrosion Inhibitor	Guar Gum	67-56-1
Gelling Agent	Sodium Persulfate	9000-30-0
Oxidizing Breaker	Potassium Carbonate	7775-27-1
Buffering Agent		584-08-7

DML  
8-7-17

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AUG 22 2017  
WV Department of  
Environmental Protection

# NORTH HENDERSON NORTH AS-BUILT GRADING PLAN EQT PRODUCTION COMPANY

  
 West Virginia Coordinate System of 1983  
 State Plane Grid North  
 Elevations NAVD83  
 Established By Survey Grade GPS



Allegany Surveys Inc.  
 P.O. Box 438  
 237 Birch River Road  
 Birch River, WV 26610  
 304-649-8606

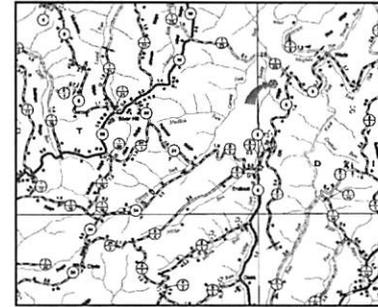
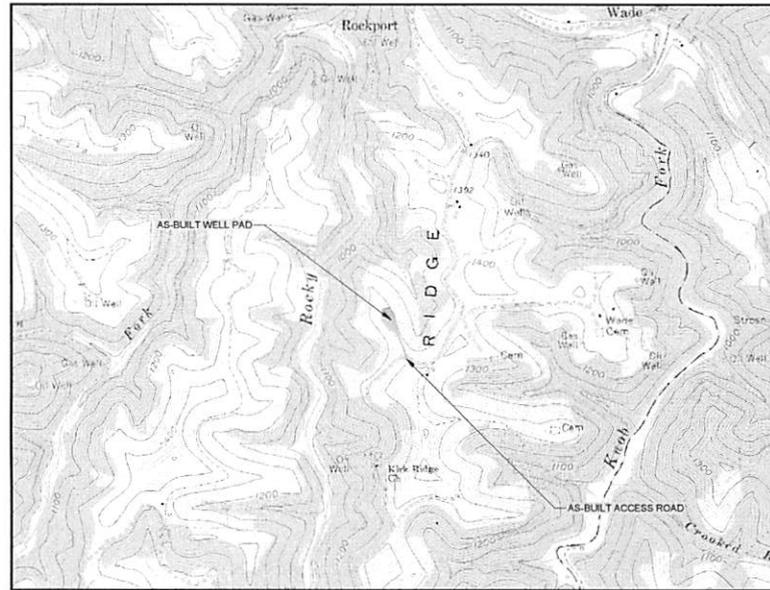
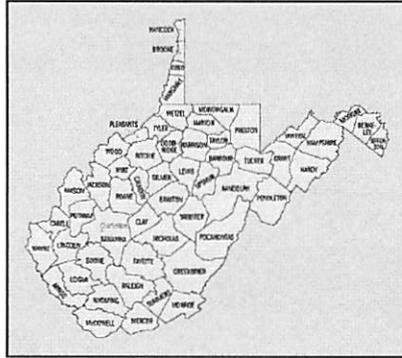
**Hornor**  
 Since 1954  
 Bros. Engineers  
 Civil, Mechanical, and  
 Consulting Engineering  
 146 South Main Street, And Overton, WV  
 Charleston, West Virginia 25301-1000



THIS DOCUMENT  
 PREPARED FOR  
 EQT PRODUCTION  
 COMPANY

AS-BUILT GRADING PLAN  
**NORTH HENDERSON NORTH**  
**WELL PAD SITE**  
 CENTER DISTRICT, WV  
 WETZEL COUNTY, WV

DATE	REVISIONS	Date: 6/5/2017
7/6/2017	CHANGED TITLE PER EQT	Scale: 1"=50'
		Designed By: SJS
		File No. 17-0000000000
		Page: 1 of 3



FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	NO
FLOODPLAIN SHOWN ON DRAWINGS:	NO
FIRM MAP NUMBER(S) FOR SITE:	54103C0100C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	N.A.

SITE LOCATIONS ROAD #8		
	LATITUDE	LONGITUDE
Center of Well Pad	39.693522	-80.577754
Existing Main Access Road	39.691518	-80.576630
@ Wetzel Co. Secondary Route #		

**WELL LEGEND - AS-BUILT**

API #47-103-03068 - LAT. 39.693527 / LONG -80.577606  
 API #47-103-03069 - LAT. 39.693506 / LONG -80.577599  
 API #47-103-03067 - LAT. 39.693485 / LONG -80.577595  
 API #47-103-03066 - LAT. 39.693466 / LONG -80.577589

SHEET INDEX	
COVER SHEET / LOCATION MAP	1
AS-BUILT GRADING PLAN VIEW	2
ACCESS ROAD PROFILES	3

**As-Built Certification**

These drawings have been prepared from actual field surveys dated 05/31/2017 and reflect the locations and as-built conditions known to exist following construction of this site, to the best of my knowledge. No certification is made with respect to the design or construction of this location.

**WVDEP OOG**  
**ACCEPTED AS-BUILT**  
 10 / 4 / 2017

MISS Utility of West Virginia  
 1-800-245-4848  
 West Virginia State Law  
 (Section XIV: Chapter 24-C)  
 Requires that you call two business  
 days before you dig in the state of  
 West Virginia.  
**IT'S THE LAW!!**



**Know what's below.**  
**Call before you dig.**

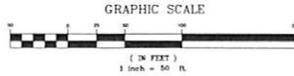
# NORTH HENDERSON NORTH AS-BUILT GRADING PLAN

Legend

-  As Built Gravel
-  Original 2' Contour
-  Original 10' Contour
-  As-Built Tree Line
-  Existing Utility Pole
-  Existing Gas Line CL
-  Existing Fenceline
-  As Built 2' Contour
-  As Built 10' Contour

**WVDEP OOG  
ACCEPTED AS-BUILT**

*WJ* 10 / 4 / 2017



All topographic information shown herein is based on 3d scan proved by ASI with a date of 5/21/2015 and aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2015.



Allegheny Surveys Inc.  
P.O. Box 438  
237 Birch River Road  
Birch River, WV 26610  
304-649-8606

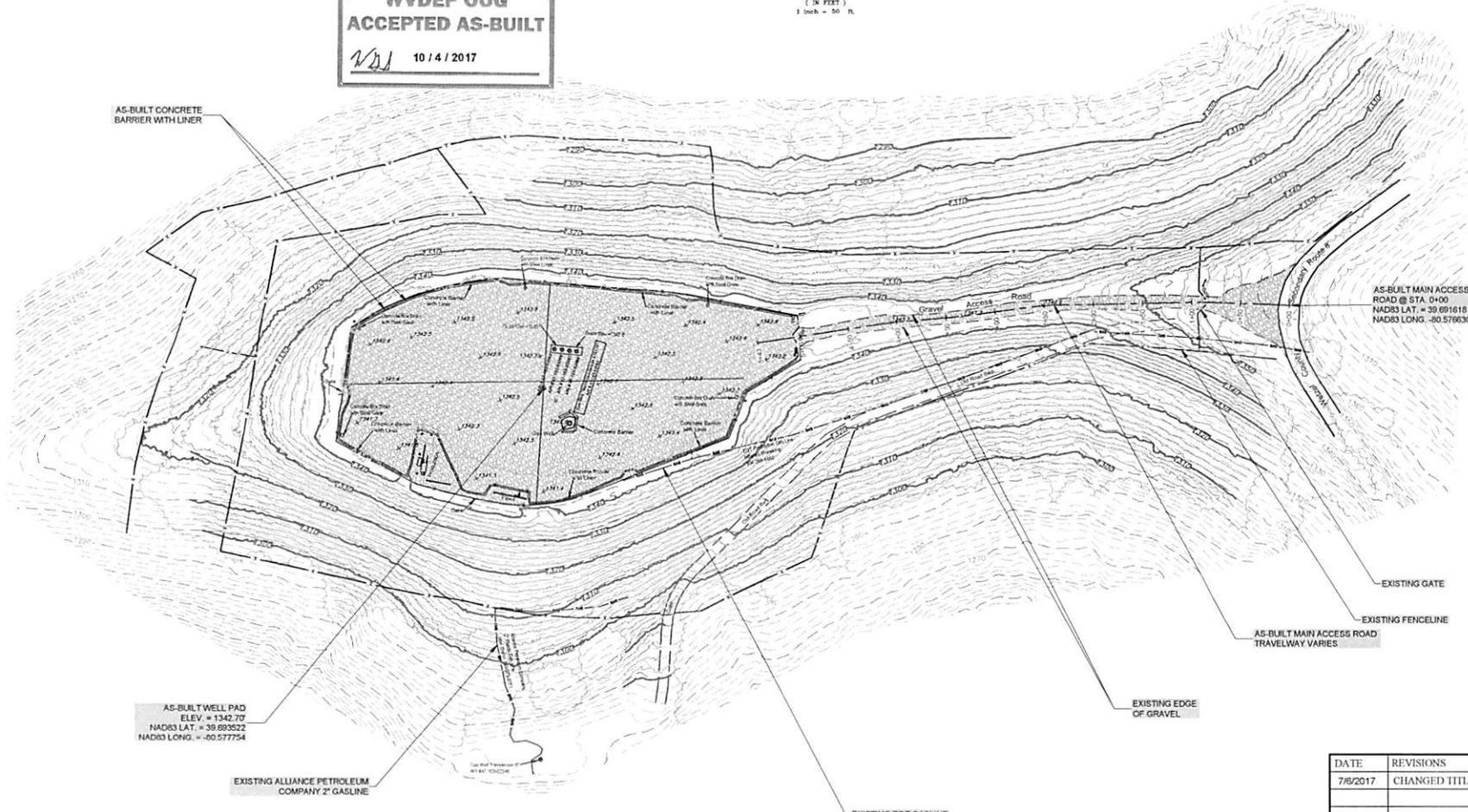


**Horner**  
Since 1966  
**Bros. Engineers**  
Civil, Mechanical, Electrical, and  
Plumbing Engineering  
1400 South Main Street, Wheeling, West Virginia 26003  
304-272-1111



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PREPARED FOR  
EQT PRODUCTION  
COMPANY

AS-BUILT GRADING PLAN  
**NORTH HENDERSON NORTH  
WELL PAD SITE**  
CENTER DISTRICT  
WETZEL COUNTY, WV



DATE	REVISIONS	Date: 6/5/2017
7/6/2017	CHANGED TITLE PER EQT	Scale: 1"=50'
		Designed By: SED
		File No: 17-00000000
		Page: 2 of 3

DATE PLOTTED: 7/11/2017 10:58:11 AM