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west virginia department of environmental protection

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

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

September 30, 2014

**WELL WORK PERMIT**

**Horizontal 6A Well**

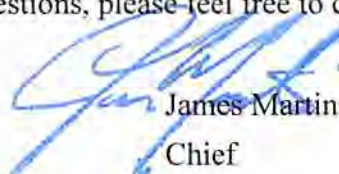
This permit, API Well Number: 47-4902334, issued to EQT PRODUCTION COMPANY, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto.

Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

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

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

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



James Martin  
Chief

Operator's Well No: 515525  
Farm Name: TONKERY, ROBERT E.  
**API Well Number: 47-4902334**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 09/30/2014

## PERMIT CONDITIONS

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

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### CONDITIONS

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







September 15, 2014

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

Re: Casing plan on Wells (GLO76 - 514745, 515495, 515496, 515497, 515524, 515525)  
API# 47-049-02329, 02330, 02331, 02332, 02333, 02334

Dear Mr. Smith,

EQT is requesting the 13-3/8" surface casing be set at 948' KB, 50' below the red rock base at 898'MD without setting below elevation. This will cover up red rock formations that have given EQT drilling issues in the past. We will set the 9-5/8" intermediate string at 3051' KB, 50' below the base of the Weir formation.

If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Vicki Roark'.

Vicki Roark  
Permitting Supervisor

Enc.

RECEIVED  
Office of Oil and Gas

SEP 24 2014

WV Department of  
Environmental Protection

**CASING AND TUBING PROGRAM**

18)

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: for Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu.Ft.)</u>
Conductor	20	New	MC-50	81	40	40	38 C.T.S.
Fresh Water	13 3/8	New	MC-50	54	948	948	825 C.T.S.
Coal							
Intermediate	9 5/8	New	MC-50	40	3,051	3,051	1,193 C.T.S.
Production	5 1/2	New	P-110	20	14,514	14,514	See Note 1
Tubing	2 3/8		J-55	4.6			May not be run, if run will be set 100' less than TD
Liners							

*UPH 9-26-14*

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20	24	0.375	-	Construction	1.18
Fresh Water	13 3/8	17 1/2	0.38	2,480	* See Note 2	1.21
Coal						
Intermediate	9 5/8	12 3/8	0.395	3,590	* See Note 2	1.21
Production	5 1/2	8 1/2	0.361	12,640	-	1.27/1.86
Tubing						
Liners						

**Packers**

Kind:	N/A		
Sizes:	N/A		
Depths Set:	N/A		

**Note 1:** EQT plans to bring the TOC on the production casing cement job 1,000' above kick off point, which is at least 500' above the shallowest production zone, to avoid communication.

**Note 2:** Reference Variance 2014-17.

WW - 6B

(3/13)

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

Drill and complete a new horizontal well in the Marcellus formation the vertical drill to go down to an approximate depth of 4978' then

kick off the horizontal leg into the marcellus formation using a slick water frac.

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 treating pressures are expected to average approximately 8500 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.

21) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 60.222) Area to be disturbed for well pad only, less access road (acres): 19.7

23) Describe centralizer placement for each casing string.

- Surface: Bow spring centralizers – One at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One cent at the shoe and one spaced every 500'.
- Production: One spaced every 1000' from KOP to Int csg shoe

24) Describe all cement additives associated with each cement type. Surface (Type 1 Cement): 0-3% Calcium Chloride

Used to speed the setting of cement slurries.

0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of the cement slurry to a thief zone.

Intermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow, low temperature formations to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling fluid or cement slurry (not filtrate) to a thief zone.

Production:

Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening time.

0.3% CFR (dispersant). Makes cement easier to mix.

Tall (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening time.

0.2-0.3% CFR (dispersant). This is to make the cement easier to mix.

60 % Calcium Carbonate. Acid solubility.

0.4-0.6% Halad (fluid loss). Reduces amount of water lost to formation.

25) Proposed borehole conditioning procedures. Surface: Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating

one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5

minutes. To ensure that there is no fill, short trip two stands with no circulation. If there is fill, bring compressors back on

and circulate hole clean. A constant rate of higher than expected cuttings volume likely indicates washouts that will not clean up.

Intermediate: Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at

surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. If foam drilling, to enhance

hole cleaning use a soap sweep or increase injection rate & foam concentration.

Production: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume.

Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across

the shakers every 15 minutes.

\*Note: Attach additional sheets as needed.

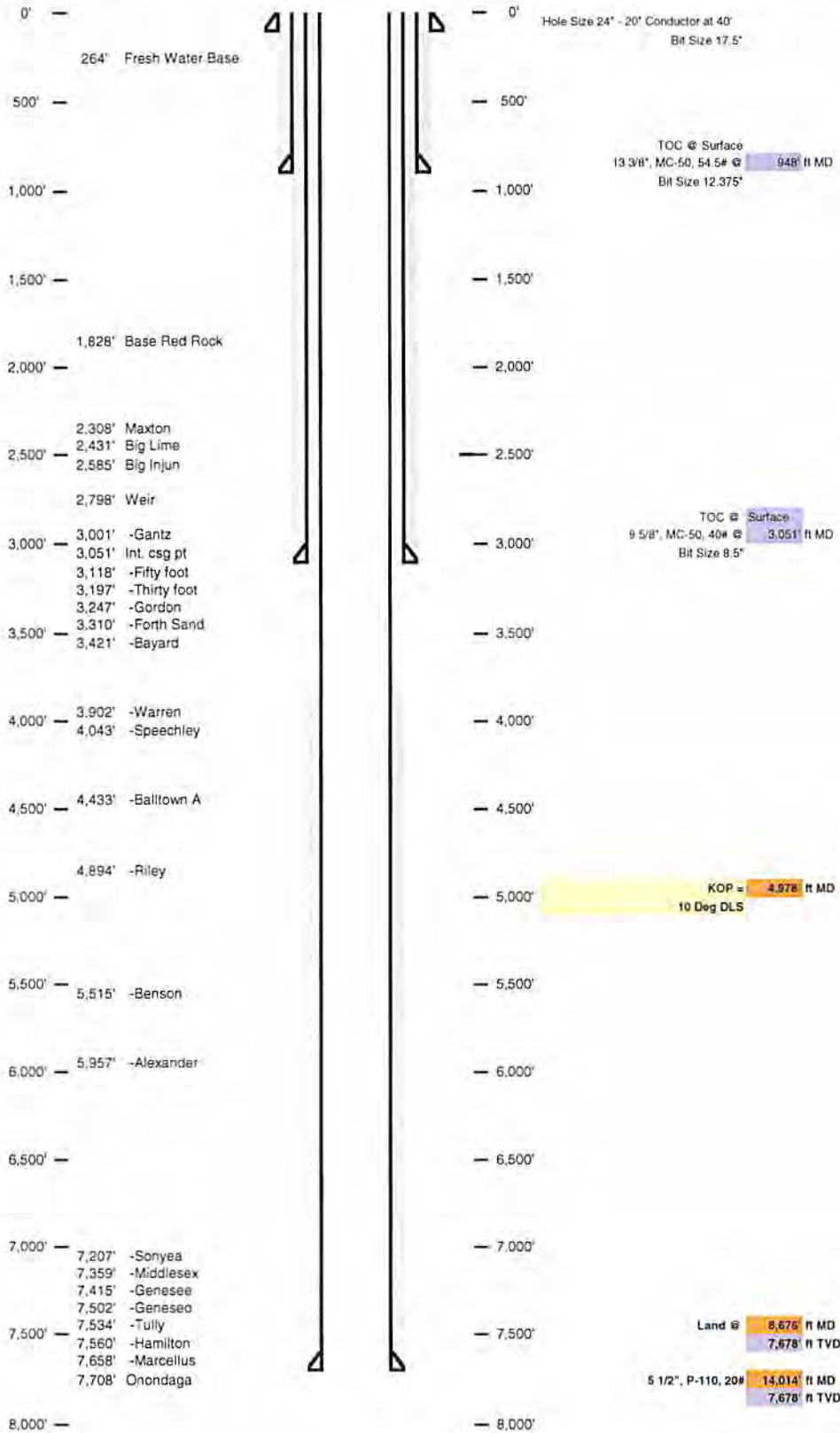
10/03/2014

Well Schematic  
EQT Production

Well Name: 519525 (GLO76H9)  
County: Marion  
State: West Virginia

Elevation KB:  
Target  
Prospect  
Azimuth  
Vertical Section

1438
Marcellus
153.45
4861





4704902334

**Well 515525 (GL076H9)**

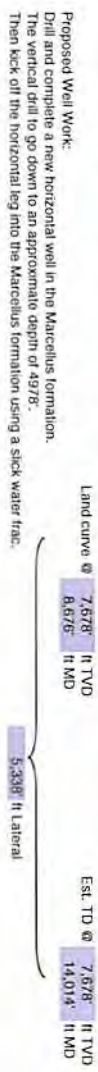
EOT Production  
Glover  
Marton

Amurh: 753.45  
Vertical Section: 4881

West Virginia

TVD Depth (feet)	Formation Tops (TVD)	Amurh	Vertical Section	Hole Size (inches)	Casing Type	Casing Size (inches)	WT (ppm)/Grade
0				24	Conductor	20	81#/MC-50
250'	Blue Fresh Water	754		17 1/2	Surface	13 3/8	54#/MC-50
500'							
750'							
1,000'							
1,250'							
1,500'							
1,750'							
2,000'	Blue Red Rock	1878	(2000')				
2,250'							
2,500'	Marton Big Lime Big Lign Wick Gartz ht. cong pit	2308 2431 2431 2585 2585 2798 3001 3049		12 3/8	Intermediate	9 5/8	40#/MC-50
2,750'							
3,000'							
3,250'	Flint foot Thiry foot Gordon Forth Sand Beyard	3119 3107 3247 3310 3308 3421 3481					
3,500'							
3,750'							
4,000'	Warren Speckley	3902 4043	4043 4175				
4,250'							
4,500'	Rebun A	4433	4584				
4,750'							
5,000'	Flint	4894	4931				
5,250'							
5,500'	Benson	5515	5604				
5,750'							
6,000'	Alexander	5937	6006				
6,250'							
6,500'							
6,750'	Sonora Middlesex Genesee Genesee Tully Hamilton Marcellus top	7207 7350 7415 7502 7534 7534 7560 7564	7350 7415 7502 7534 7534 7560 7564				
7,000'							
7,250'							
7,500'							
7,750'	Marcellus Bottom	7678	7706				

KOP @ 4,978'



Proposed Well Work:  
Drill and complete a new horizontal well in the Marcellus formation.  
The vertical drill to go down to an approximate depth of 4978'.  
Then kick off the horizontal leg into the Marcellus formation using a slick water frac.





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west virginia department of environmental protection

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

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

March 18, 2014

Nabors Completion & Production Services Company  
1380 Route 286 Hwy E #121  
Indiana PA 15701

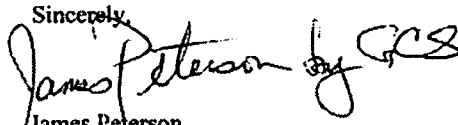
Re: Cement Variance Request

Dear Sir or Madam,

This agency is approving a variance request for the cement blend listed below to be used on surface and coal protection strings for the drilling of oil and gas wells in the state of West Virginia. The variance cannot be used without requesting its use on a permit application and approval by this agency:

- Type 1 (2% Calcium Chloride-Accelerator, 0.25% Super Flake-Lost Circulation, 5.2% Water, 94% Type "1" Cement)

If you have any questions regarding this matter feel free to contact me at 304-926-0499, ext. 1653.

Sincerely,  
  
James Peterson  
Environmental Resources Specialist / Permitting

Promoting a healthy environment.

10/03/2014



west virginia department of environmental protection

Office of Oil and Gas  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
(304) 928-0450  
(304) 928-0452 fax

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

**BEFORE THE OFFICE OF OIL AND GAS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STATE OF WEST VIRGINIA**

**IN THE MATTER OF A VARIANCE FROM ) ORDER NO. 2014 - 17  
REGULATION 35 CSR § 4-11.4/11.5/14.1 )  
AND 35 CSR § 8-9.2.h. 4/5/6/8 OF THE )  
THE OPERATIONAL )  
REGULATIONS OF CEMENTING OIL )  
AND GAS WELLS )**

**REPORT OF THE OFFICE**

Nabors Completion & Production Services Co. requests approval of a different cement blend for use in cementing surface and coal protection casing of oil and gas wells.

**FINDINGS OF FACT**

- 1.) Nabors Completion & Production Services Co. proposes the following cement blend:
  - 2% Calcium Chloride (Accelerator)
  - 0.25 % Super Flake (Lost Circulation)
  - 94% Type "1" Cement
  - 5.20 % Water
- 2.) Laboratory testing results indicate that the blend listed in Fact No.1 will achieve a 500 psi compressive strength within 6 hours and a 2,435 psi compressive strength within 24 hours.

Promoting a healthy environment.

**CONCLUSIONS OF LAW**

Pursuant to Articles 6 and 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to 35 CSR § 4-11.5 and 35 CSR § 8-9.2.h.8 the Chief of the Office of Oil and Gas may approve different cement blends upon the well operator providing satisfactory proof that different cement types are adequate.

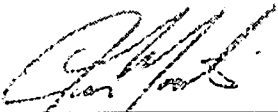
**ORDER**

It is ordered that Nabors Completion & Production Services Co. may use the cement blend listed in Findings of Fact No.1 for the cementing of surface and coal protection casing of oil and gas wells in the State as may be requested by oil and gas operators. The waiting time on the cement blend shall be 8 hours. The cement blend shall be mixed in strict accordance with the specifications for each blend and weight measurements made on-site to assure the cement slurries meet the minimum weight specifications. A sample shall be collected and, if after 8 hours the cement is not set up, additional time will be required. Nabors Completion & Production Services Co. shall keep a record of cement blend jobs in which the cement blend approved under this order is to be used and made available to the Office of Oil and Gas upon request.

Dated this, the 18th day of March, 2014.

IN THE NAME OF THE STATE OF WEST VIRGINIA

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

  
\_\_\_\_\_  
James Martin, Chief  
Office of Oil and Gas

49-02334

WW-9  
(5/13)

Page 1 of 2  
API No 47 - 049 - 02334  
Operator's Well No. 515525

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 \_\_\_\_\_  
Watershed (HUC10) Starkey Run Quadrangle Glover Gap  
Elevation 1425.0 County Marion District Mannington

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

Will a pit be used? Yes: X No: \_\_\_\_\_

If so please describe anticipated pit waste: flowback water & residual solids  
Will a synthetic liner be used in the pit? Yes X No \_\_\_\_\_ If so, what ml.? 60

Proposed Disposal Method For Treated Pit Wastes:  
\_\_\_\_\_  
• Land Application  
\_\_\_\_\_  
• Underground Injection ( UIC Permit Number 0014, 8462, 4037 )  
\_\_\_\_\_  
• Reuse (at API Number \_\_\_\_\_ )  
\_\_\_\_\_  
• Off Site Disposal (Supply form WW-9 for disposal location)  
\_\_\_\_\_  
• Other (Explain \_\_\_\_\_ )

Will closed loop system be used? 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? Air, freshwater, oil based, etc. \_\_\_\_\_  
Air is used to drill the top hole sections of the wellbore.  
Surface, intermediate, and Pilot hole sections, water based  
mud is used to drill the curve and lateral

If oil based, what type? Synthetic, petroleum, etc \_\_\_\_\_

Additives to be used in drilling medium? MILBAR, Viscosifier, Alkalinity Control, Lime, Chloride Salts, Rate Filtration Control, Deflocculant, Lubricant, Detergent, Defoaming, Walnut Shell, X-Cide, SOLTEX Terra. Of the listed chemicals the following are generally used when drilling on air: lubricant, detergent, defoaming. Water based fluids use the following chemicals: MILBAR, viscosifier, alkalinity control, lime, chloride salts, rate filtration control, deflocculant, lubricant, detergent, defoaming, walnut shell, x-cide, SOLTEX terra

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

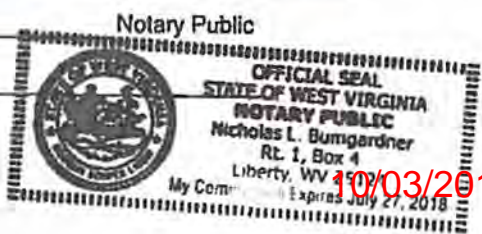
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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 \_\_\_\_\_  
Company Official (Typed Name) Victoria J. Roark  
Company Official Title Permitting Supervisor

Subscribed and sworn before me this 21 day of SEPTEMBER, 20 14

My commission expires 6-27-2018



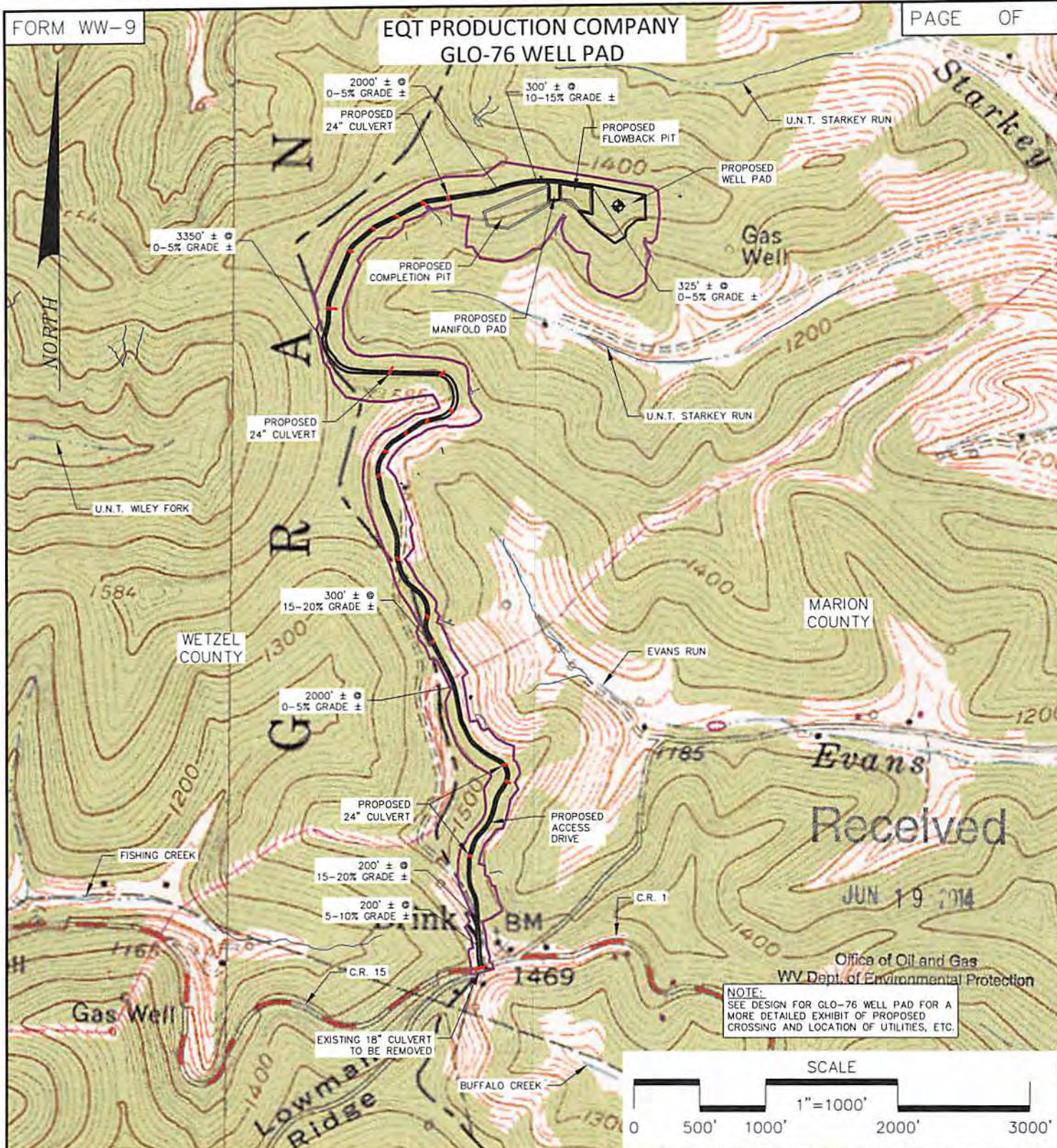
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SEP 24 2014

WV Department of Environmental Protection

10/03/2014



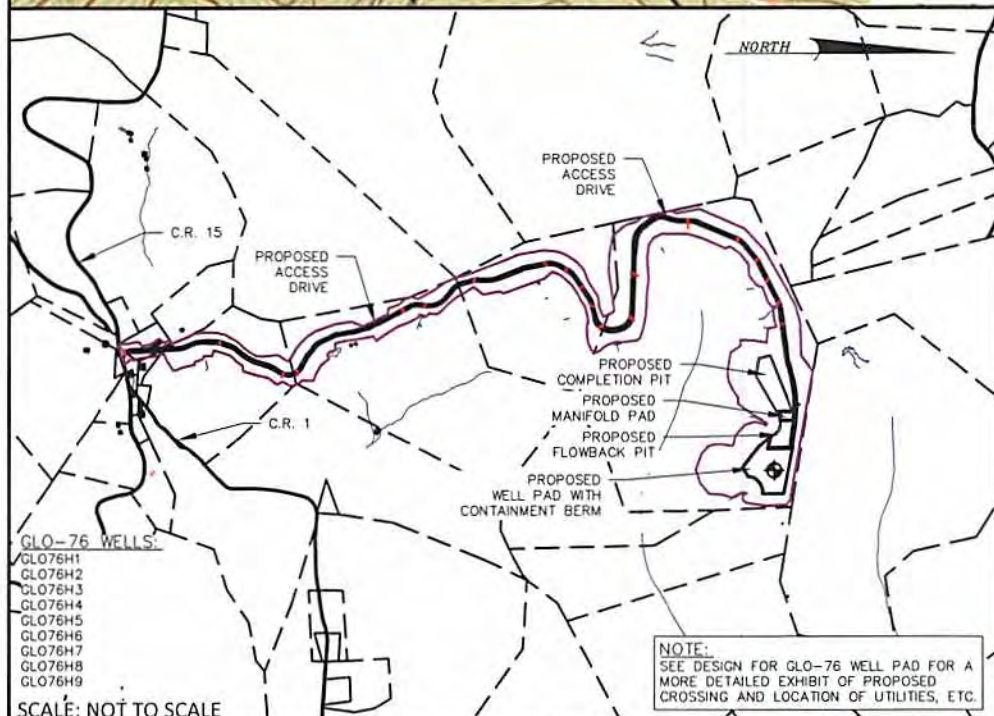
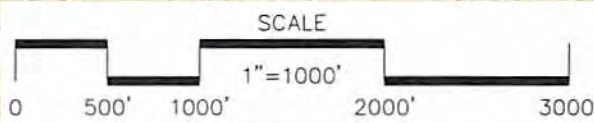


Received

JUN 19 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

NOTE:  
SEE DESIGN FOR GLO-76 WELL PAD FOR A  
MORE DETAILED EXHIBIT OF PROPOSED  
CROSSING AND LOCATION OF UTILITIES, ETC.



NOTE:  
SEE DESIGN FOR GLO-76 WELL PAD FOR A  
MORE DETAILED EXHIBIT OF PROPOSED  
CROSSING AND LOCATION OF UTILITIES, ETC.

ALL ROADS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV DEP OIL AND GAS BMP MANUAL. ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV DOT REGULATION SEPARATE PERMITS MAY BE REQUIRED BY DOT.

SEDIMENT BASINS (TRAPS) AND APPROPRIATE EROSION CONTROL BARRIERS ARE TO BE CONSTRUCTED AT ALL CULVERT AND CROSS DRAIN INLETS AND OUTLETS AS REQUIRED IN THE WV DEP OIL AND GAS BMP MANUAL. FIELD CONDITIONS (ROCK OUTCROPS AND BEDROCK) MAY PROHIBIT INLET TRAPS BEING INSTALLED. WHEN THESE CONDITIONS EXIST ADDITIONAL EROSION CONTROL MEASURES SHALL BE EVALUATED AND UTILIZED AS NEEDED.

EARTHWORK CONTRACTORS ARE RESPONSIBLE FOR NOTIFICATION TO THE OPERATOR AND INSPECTOR PRIOR TO ANY DEVIATION FROM THIS PLAN.

TEMPORARY SEED AND MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT AND STACK ALL MARKETABLE TIMBER.

STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

APPLICATIONS FOR SEPARATE PLC PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLIES).

- = PROPOSED CULVERT UNLESS OTHERWISE NOTED
- = EXISTING CULVERT
- = APPROXIMATE LIMIT OF DISTURBANCE

- GLO-76 WELLS:
- GLO76H1
  - GLO76H2
  - GLO76H3
  - GLO76H4
  - GLO76H5
  - GLO76H6
  - GLO76H7
  - GLO76H8
  - GLO76H9

SCALE: NOT TO SCALE

CONSTRUCTION AND RECLAMATION PLAN

GLO-76 WELL PAD



DRAWN BY: KRM  
DATE: 05/29/2014  
SCALE: AS NOTED

GRANT & MANNINGTON TAX DISTRICTS

WETZEL & MARION COUNTIES, WV



Proposed Revegetation Treatment: Acres Disturbed 60.2 Prevegetation pH         

Lime 3 Tons/acre or to correct to pH 6.5

Fertilize type         

Fertilizer Amount 1/3 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
KY-31	40	Orchard Grass	15
Alsike Clover	5	Alsike Clover	5
Annual Rye	15		

Attach:  
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *William Overholt*

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

Title: *Environmental Inspector* Date: *7-30-14*

Field Reviewed? ( */* ) Yes (          ) No

<b>EQT Production Water plan</b> <b>Offsite disposals for Marcellus wells</b>
--

**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

Received

JUN 19 2014

Office of Oil and Gas  
 WV Dept. of Environmental Protection

10/03/2014



Where energy meets innovation.™

# Site Specific Safety Plan

EQT GLO76 Pad

Mannington

Marion County, WV

For Wells:

515525

Date Prepared:

May 20, 2014

[Signature]  
EQT Production

[Signature]  
WV Oil and Gas Inspector

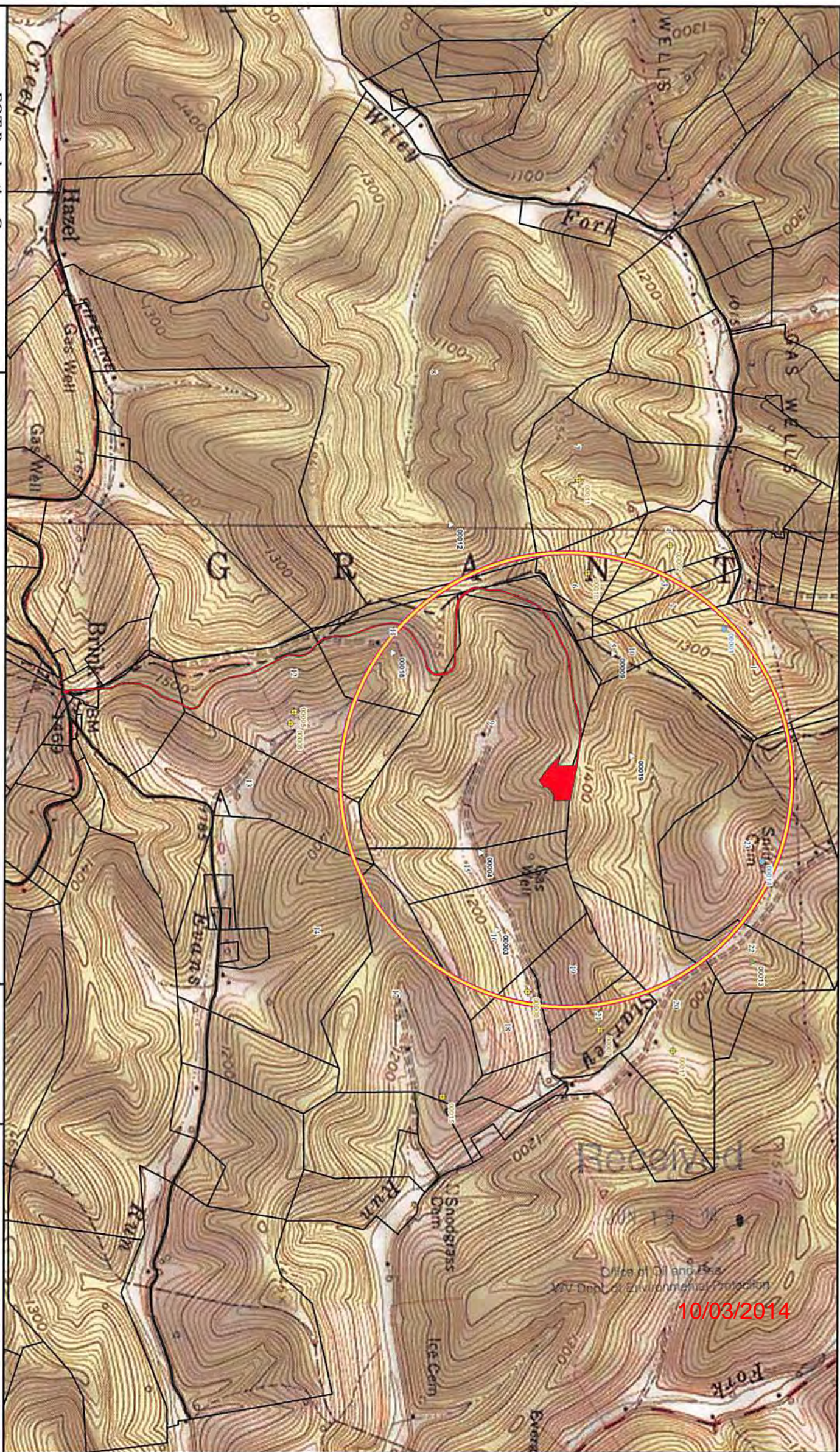
[Signature]  
Title

[Signature]  
Title

6-16-14  
Date

7-30-14 10/03/2014  
Date





**EQT Production Company**  
**GLO76 Pad**  
 Residential Water Supply Map  
 Project No. 092612026  
 Grant and Mahoning Tax Districts, Marion and Weir Counties, WV

- Well Pad Location
- Well Confirmed Not in Use (None Present)
- Well Location
- Spring
- Source Unconfirmed
- Pond
- 2,500 ft Buffer
- Well Road
- Parcel Boundary



**EQT** Where energy meets innovation.  
**RTI**

Office of Oil and Gas  
 WV Dept. of Environmental Protection  
 10/03/2014



**EQT PRODUCTION COMPANY  
BROWER et al LEASE  
111.0 ACRES ±  
WELL NO. WV 515525**

**GLO 76 WELLS**

- H1 - WV 514744
- H2 - WV 514745
- H3 - WV 514746
- H4 - WV 514747
- H5 - WV 515495
- H6 - WV 515496
- H7 - WV 515497
- H8 - WV 515524
- H9 - WV 515525



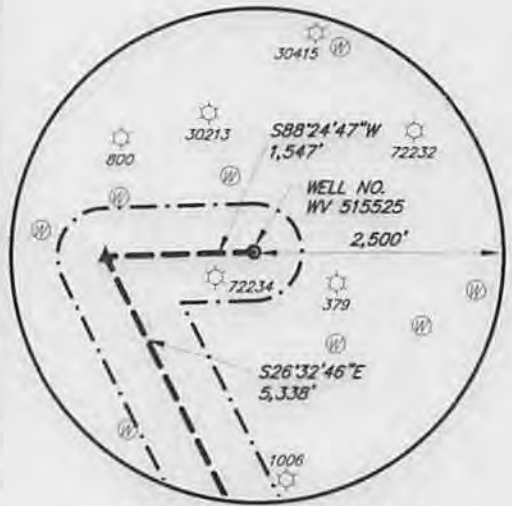
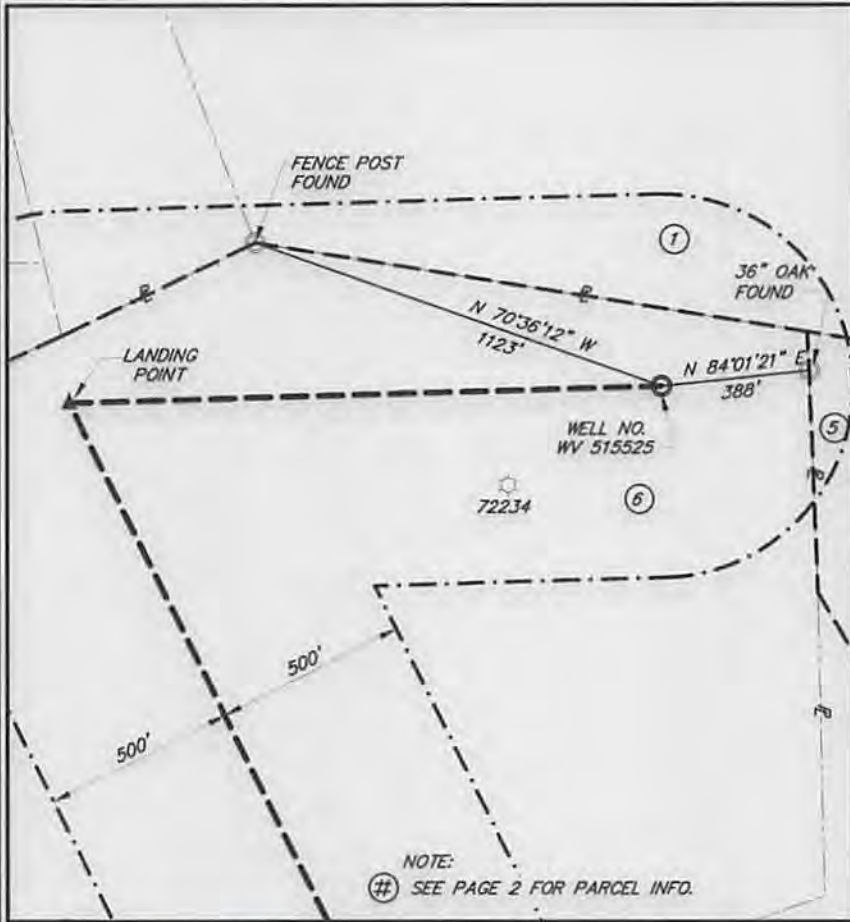
**WELLHEAD LAYOUT**

1" = 100'

**NOTES ON SURVEY**

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '83
2. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN JANUARY, 2014
3. WELL LAT./LONG. (NAD'27) ESTABLISHED BY GPS
4. THE LOCATION OF BOUNDARY LINES SHOWN HEREIN ARE BASED ON RECORD DEED, PLATS AND TAX MAPS BEST FIT TO FOUND FIELD EVIDENCE AND AERIAL PHOTOS, UNLESS OTHERWISE NOTED.
5. THIS PLAT DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY OF THE INDIVIDUAL PARCELS.
6. THERE ARE NO EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF PROPOSED WELL.
7. PROPOSED WELL IS GREATER THAN 100' FROM PERENNIAL STREAM, WETLAND, POND, RESERVOIR, OR LAKE
8. THERE ARE NO DWELLINGS OR BARNs GREATER THAN 2,500SF WITHIN 625' OF PROPOSED WELL HEAD.

GRID NORTH  
NAD 83



**EXISTING WELL LOCATIONS**

SCALE: 1" = 2000'



**WELLHEAD TIES**

1" = 500'

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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S.  
923

*Kevin D. Schaffer*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
DATE SEPTEMBER 25, 20 14  
OPERATORS WELL NO. WV 515525  
API WELL NO. 47 STATE 049 COUNTY 02334 PERMIT

MINIMUM DEGREE OF ACCURACY ±3' FILE NO. BROWER et al WELL PLAT  
PROVEN SOURCE OF ELEVATION GPS SCALE: AS NOTED

SHEET NO. 1 OF 2

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



WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW   
LOCATION: 1455' (GROUND)  
ELEVATION 1425' (PROPOSED) WATERSHED STARKEY RUN  
DISTRICT MANNINGTON COUNTY MARION QUADRANGLE GLOVER GAP, WV  
SURFACE OWNER ROBERT E. TONKERY ACREAGE 111.00 09/03/2014  
ROYALTY OWNER LYNN ANN BROWER, et al LEASE ACREAGE 111.00± AC  
PROPOSED WORK: LEASE NO. 991935  
DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD   
FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER   
PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
ESTIMATED DEPTH 7,649'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT: REX C. RAY  
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS: 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

WWW.ENCOMPASSSERVICES.COM PLOT DATE: 9/25/2014 CAD FILE: GLO76\_WELL\_PLAT\_9-25-2014.DWG

COUNTY NAME PERMIT



GRID NORTH  
NAD 83

**LEGEND**

- EXISTING GAS WELL
- WATER FEATURE
- LEASE BOUNDARY
- PROPERTY LINE
- STREAM
- COUNTY LINE

**WELL NO. WV 515525**

1. BUILD-OUT  
BEARING - S88°24'47"W  
LENGTH - 1,547'
2. LATERAL  
BEARING - S26°32'46"E  
LENGTH - 5,338'

**EQT PRODUCTION COMPANY  
BROWER et al LEASE  
111.0 ACRES ±  
WELL NO. WV 515525**

**TOP HOLE**

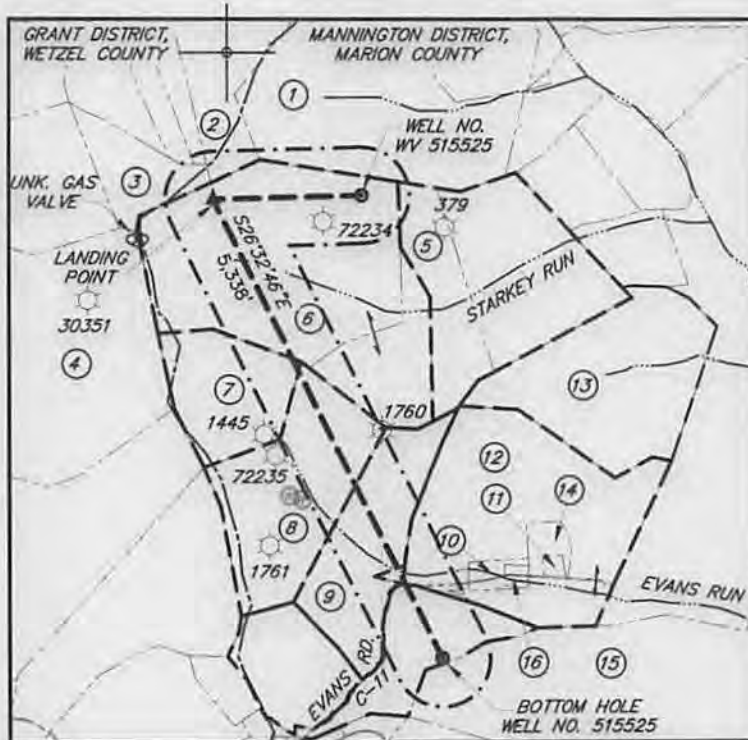
NAD'27 S.P.C. (FT)	N. 389,078.6	E. 1,720,927.1
NAD'27 GEO	LAT-(N) 39.564027	LONG-(W) 80.489895
NAD'83 UTM 17N (M)	N. 4,379,503.9	E. 543,834.5
NAD'83 S.P.C. (FT)	N. 389,116.2	E. 1,689,488.4

**LANDING POINT**

NAD'27 S.P.C. (FT)	N. 389,035.7	E. 1,719,381.2
NAD'27 GEO	LAT-(N) 39.563862	LONG-(W) 80.495377
NAD'83 UTM 17N (M)	N. 4,379,483.0	E. 543,363.7
NAD'83 S.P.C. (FT)	N. 389,073.4	E. 1,687,942.4

**BOTTOM HOLE**

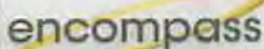
NAD'27 S.P.C. (FT)	N. 384,260.7	E. 1,721,766.9
NAD'27 GEO	LAT-(N) 39.550825	LONG-(W) 80.486729
NAD'83 UTM 17N (M)	N. 4,378,040.4	E. 544,114.8
NAD'83 S.P.C. (FT)	N. 384,298.3	E. 1,690,328.0



**LATERALS - LAYOUT PLAN**  
1" = 2,000'

PARCEL OWNERS			
NUMBER	TAX MAP ID	OWNER	ACRES ±
1	TM 43-22	PAUL ABLE TRUSTEE, et. al.	83
2	TM 15-36	WILLIAM JACK & BEVERLY LYNN BARR	7
3	TM 15-35	DONALD JOSEPH D'LUSKY, JR.	17.6
4	TM 20-01	COASTAL LUMBER CO.	520
5	TM 43-10	ROBERT S. & GLORIA L. THORN	25.33
6	TM 43-11	ROBERT E. TONKERY	111
7	TM 43-11.1	DAVID A. & DIANE E. FLOYD	30
8	TM 45-29	DELBERT C. TEAGARDEN	61.17
9	TM 45-28	DELBERT C. TEAGARDEN	40.8
10	TM 45-26.4	RICHARD & WANDA JONES	2.82
11	TM 45-26.1	WAYMAN & KATHERINE WYCKOFF	1
12	TM 45-26	GLENN & BONNIE ANN WYCKOFF	97.46
13	TM 43-5	RONNIE STARKEY	67.25
14	TM 45-26.3	WAYMAN & CATHERINE WYCKOFF	4.22
15	TM 45-17	HEARTWOOD FORESTLAND FUND	125.73
16	TM 45-26.2	RICHARD & WANDA JONES	1
17	TM 45-16	KEITH A. & RITA G. POWELL	27

**LEASE OWNERS**  
 991926 (30AC) - KENNIS S. KETTERER JR. et. al.  
 49-12-234 (60.17AC) - TRANS ENERGY  
 49-12-233 (40.8AC) - TRANS ENERGY  
 993303 (106.5AC) - EAST RESOURCES INC. et. al.  
 991922 (27AC) - DELILAH HARRIS et. al.



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923



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 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY ±3' FILE NO. BROWER et al WELL PLAT  
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SHEET NO. 2 OF 2

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

