



**west virginia** department of environmental protection

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

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

September 30, 2014

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-10303025, 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: 514421  
Farm Name: COASTAL FOREST RESOURCES  
**API Well Number: 47-10303025**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 09/30/2014

Promoting a healthy environment.

10/03/2014

# PERMIT CONDITIONS

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

## CONDITIONS

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

10/03/2014



CASING AND TUBING PROGRAM

18)

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: for Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu.Ft.)
Conductor	20	New	MC-50	81	40	40	38 C.T.S.
Fresh Water	13 3/8	New	MC-50	54	877/1000	877/1000	766 C.T.S.
Coal							
Intermediate	9 5/8	New	MC-50	40	3,000	3,000	1,176 C.T.S.
Production	5 1/2	New	P-110	20	12,472	12,472	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							

GCS Per  
BM

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	24	0.375	-	Construction	1.18
Fresh Water	13 3/8	17 1/2	0.38	2,480	1	1.21
Coal						
Intermediate	9 5/8	12 3/8	0.395	3,590	1	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. (Attached)

DmH  
7-29-14



47 10 30 30 25

August 11, 2014

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

Re: Casing on Wells 47-103-03025(BIG333)

Dear Mr. Smith,

EQT is requesting the 13-3/8" surface casing be set at 1000' KB, below the deepest red rock formation without setting below elevation. The previous wells drilled on this pad set 13-3/8" casing at approximately 1000' KB. 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 3000' KB, below the porosity zone in the Weir formation.

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

Sincerely,

Vicki Roark  
Permitting Supervisor

Enc.

RECEIVED  
Office of Oil and Gas

SEP 26 2014

WV Department of  
Environmental Protection

10/03/2014

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

Drill and complete a new horizontal well in the Genesee Formation. The vertical drill to go down to an approximate depth of 5477'.

Then kick off the horizontal leg into the Marcellus 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): 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.

- 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.

Tail (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.

DMH  
7-29-14



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

March 18, 2014

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

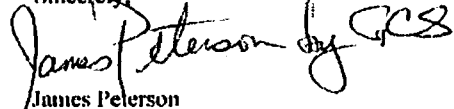
Re: Cement Variance Request

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 "I" 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.

Received  
Office of Oil and Gas  
10/03/2014  
JUL 28 2014  
WV Department of  
Environmental Protection



west virginia department of environmental protection

Office of Oil and Gas  
601 57<sup>th</sup> Street, SE  
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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.

RECEIVED  
Office of Oil and Gas  
JUL 03 2014  
WV Department of  
Environmental Protection



**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

RECEIVED  
Office of Oil and Gas

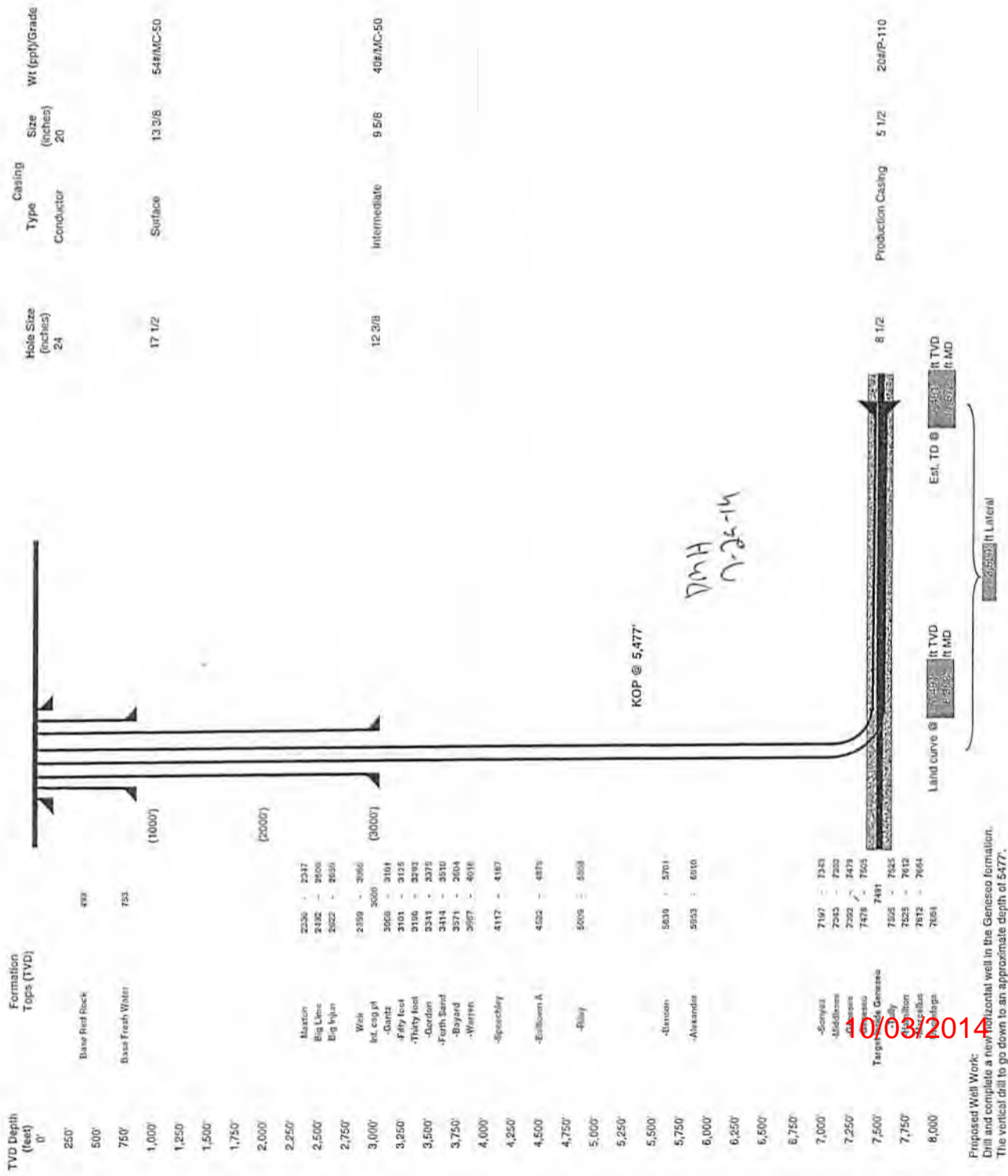
JUL 28 2014

WV Department of  
Environmental Protection

10/03/2014

Well: 514321 (51G333H6)  
 EQT Production  
 Big Run  
 West Virginia

Azimuth  
 Vertical Section



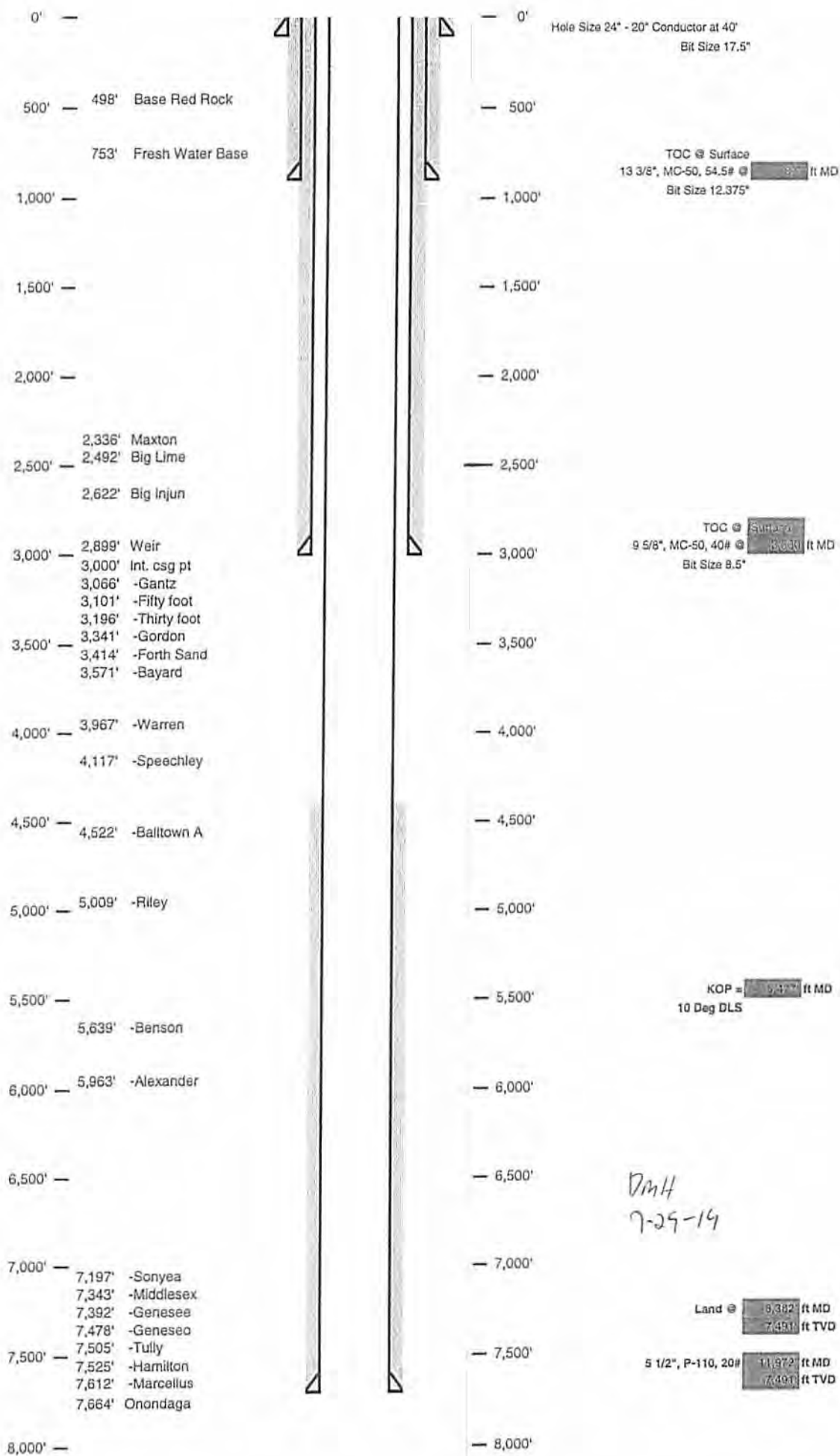
Proposed Well Work:  
 Drill and complete a new horizontal well in the Genesee formation.  
 The vertical drill to go down to an approximate depth of 5477'.

10/03/2014

Well Schematic  
EQT Production

Well Name: [Redacted]  
County: [Redacted]  
State: West Virginia

Elevation KB: [Redacted]  
Target: [Redacted]  
Prospect: [Redacted]  
Azimuth: [Redacted]  
Vertical Section: [Redacted]



WW-9  
(5/13)

Page \_\_\_\_\_ of \_\_\_\_\_  
API No. 47 - 103 - 0  
Operator's Well No. 514421

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) Aunty Run of South Fork Fishing Creek Quadrangle Big Run 7.5'

Elevation 1452' County Wetzel District Grant

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: \_\_\_\_\_ No: X

If so please describe anticipated pit waste: \_\_\_\_\_

Will a synthetic liner be used in the pit? Yes \_\_\_\_\_ No X 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.

*Dmit  
7-29-14*

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, Viscosifer, 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, viscosifer, 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 July, 20 14

Notary Public

My commission expires 7/27/2018

10/03/2014



WW-9

Operator's Well No. 514421

Proposed Revegetation Treatment: Acres Disturbed ±.3 ac Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilize type

Fertilizer Amount 13 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

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

Permanent	
Seed Type	lbs/acre
Orchard Grass	15
Alsike Clover	5

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments:

Title: Oil + Gas Tract

Date: 7-29-14

Field Reviewed? ( ) Yes

( ) No

10/03/2014

4710303025

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

**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

*DMH*  
*7-24-14*

10/03/2014



4710303025

Where energy meets innovation.™

# Site Specific Safety Plan

EQT BIG 333 Pad

Jacksonburg

Wetzel County, WV

For Wells:

514421 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date Prepared:

June 30, 2014

[Signature]  
EQT Production

[Signature]  
WV Oil and Gas Inspector

Permitting Supervisor  
Title

Oil & Gas Inspector  
Title

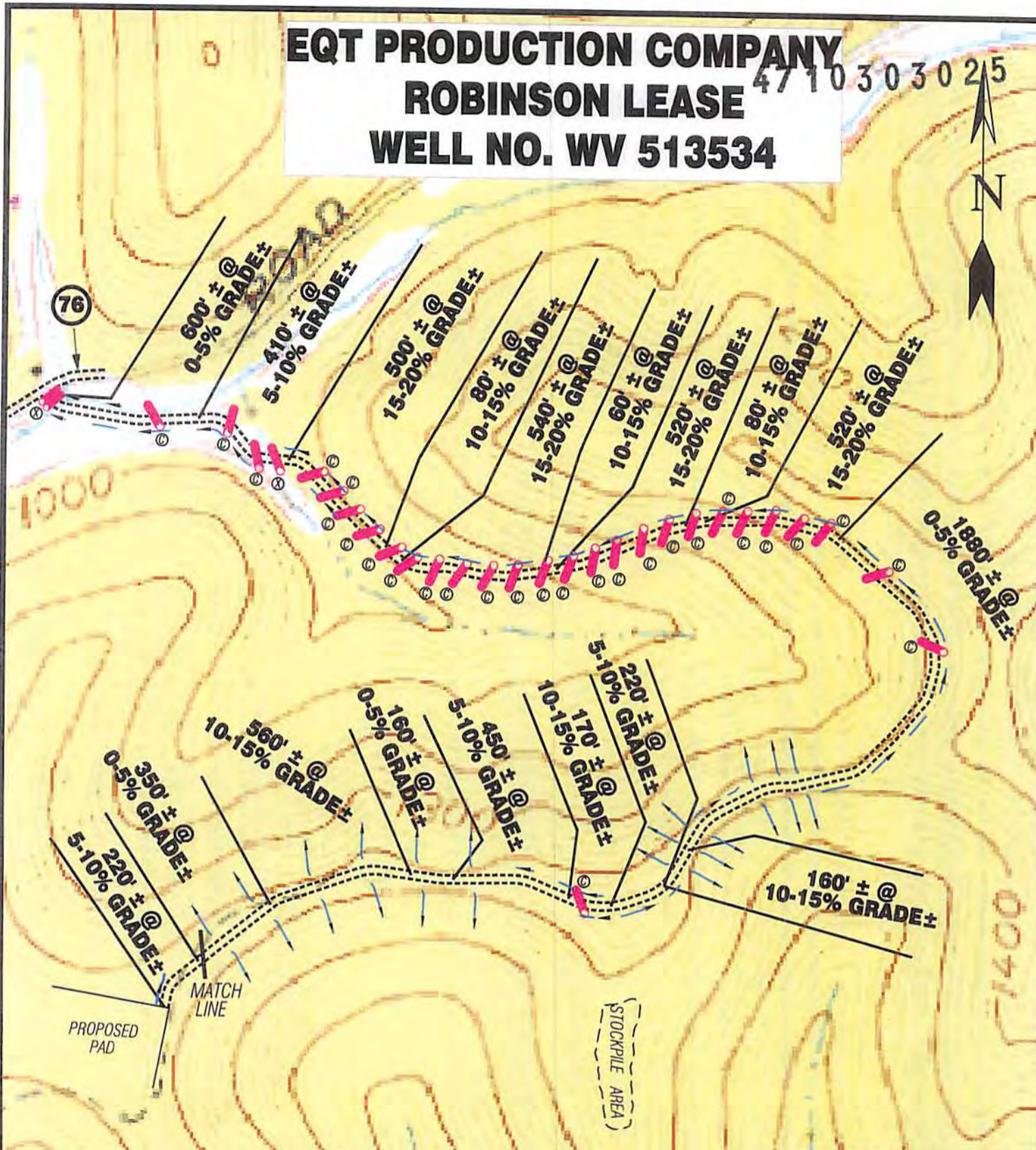
7-20-14  
Date

7-29-14  
Date

10/03/2014

# EQT PRODUCTION COMPANY ROBINSON LEASE WELL NO. WV 513534

47 10 30 30 25



**NOTE: THIS REC. PLAN TO BE USED WITH (WELL NO.'S WV 514416, WV 514417, WV 514418, WV 514419, WV 514420, WV 514421, WV 514422, WV 514423, WV 514424 & WV 514570.**

**SCALE: 1" = 500'**



ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS BMP MANUAL ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY THE D.O.T.

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 D.E.P. 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 & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & 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 (4/20/14)

JUL 28 2014

— EXISTING CULVERT      — PROPOSED CULVERT 15' MIN. UNLESS OTHERWISE NOTED

RECEIVED  
10/03/2014  
WV Department of Environmental Protection

⊗ — PROPOSED STREAM CROSSING

— APPROXIMATE LIMIT OF DISTURBANCE

**SLS**  
SMITH LAND SURVEYING, INC.  
P.O. BOX 150 GLENVILLE, WV. 26351  
PH: (304)462-5634 FAX: (304)462-5656 E-MAIL: sls@slssurveys.com

DRAWN BY K.D.W.	FILE NO. 7797	DATE 08/03/12	CADD FILE: 7797RECWS13534.DWG
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TOPO SECTION OF BIG RUN 7.5'  
USGS TOPO QUADRANGLE

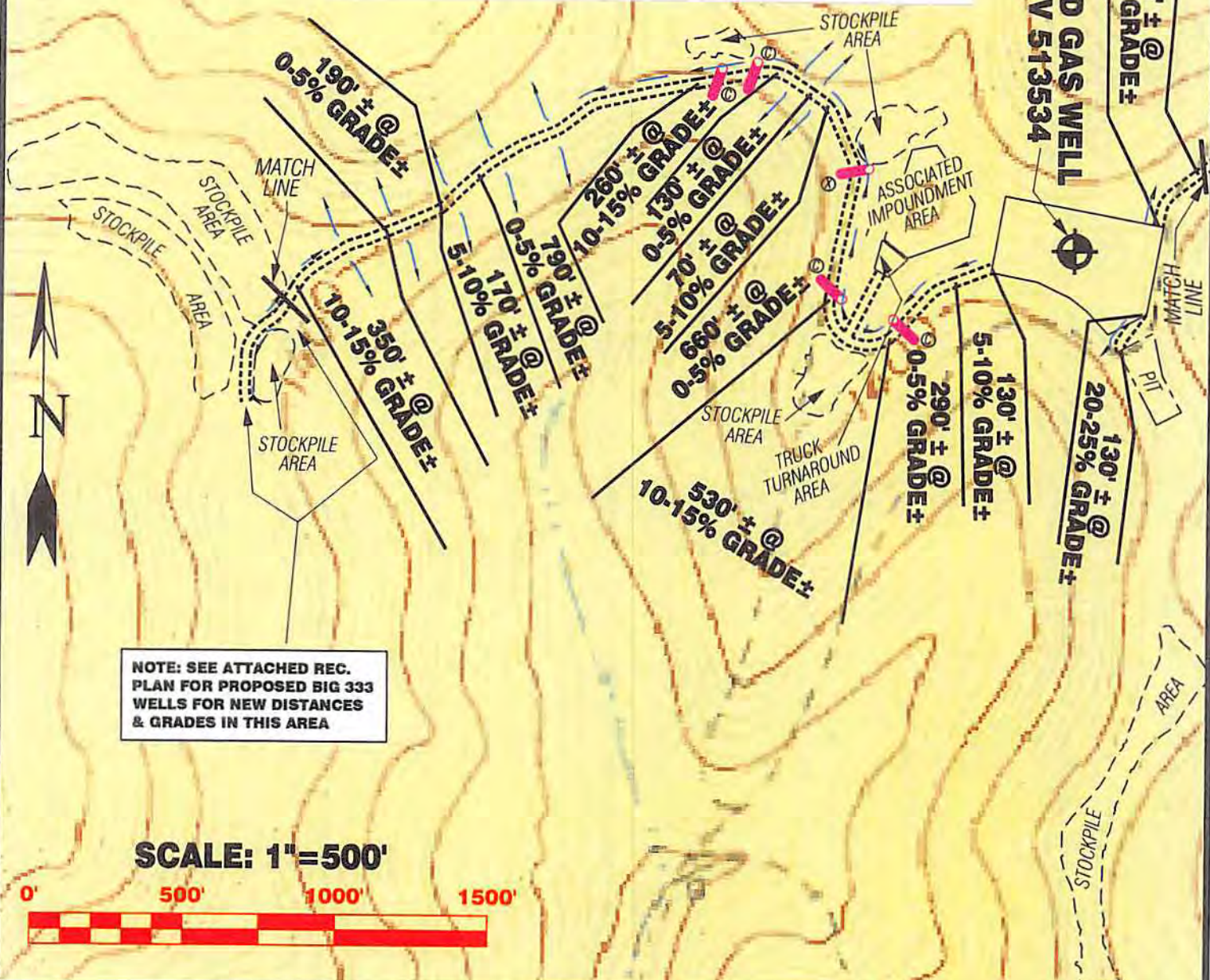


# EQT PRODUCTION COMPANY 0303025

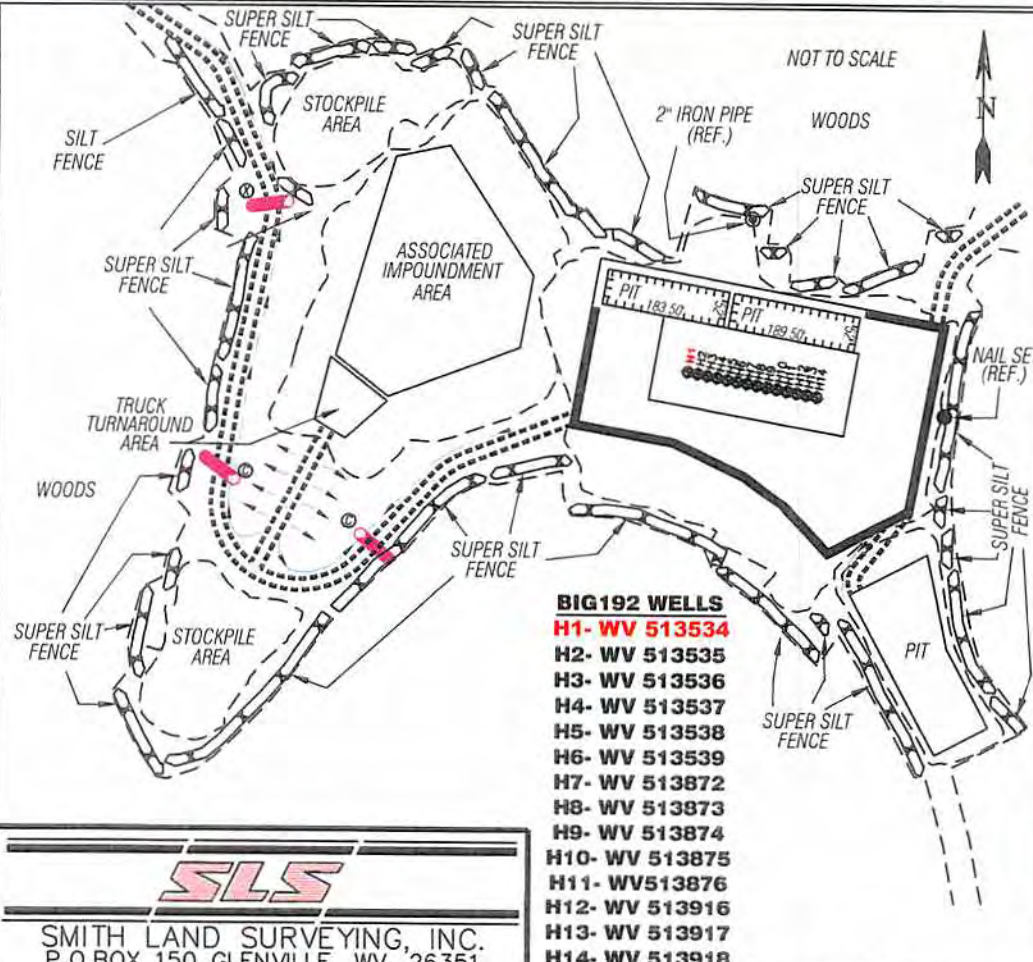
## ROBINSON LEASE

### WELL NO. WV 513534

**PROPOSED GAS WELL  
NO. WV 513534**



*Detail Sketch for Proposed Well No. WV 513534*



ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS BMP MANUAL ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY THE D.O.T.

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TEMPORARY SEED & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & STACK ALL MARKETABLE TIMBER.

STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

APPLICATIONS FOR SEPARATE PLC PERMITS FOR ACCESS ROAD STREAM CROSSINGS HAVE BEEN SUBMITTED TO THE WV DEPARTMENT OF ENVIRONMENTAL PROTECTION.

JUL 28 2014

10/03/2014

WV Department of Environmental Protection

⊗ = EXISTING CULVERT     ⊗ = PROPOSED CULVERT 15' MIN. UNLESS OTHERWISE NOTED  
⊗ = PROPOSED STREAM CROSSING     - - - - - = APPROXIMATE LIMIT OF DISTURBANCE

**SLS**  
SMITH LAND SURVEYING, INC.  
P.O. BOX 150 GLENVILLE, WV. 26351  
PH: (304)462-5634 FAX: (304)462-5656 E-MAIL: sls@slssurveys.com

DRAWN BY: K.D.W. FILE NO.: 7797 DATE: 08/03/12 CADD FILE: 7797REC\WV513534.DWG

TOPO SECTION OF BIG RUN 7.5'  
USGS TOPO QUADRANGLE

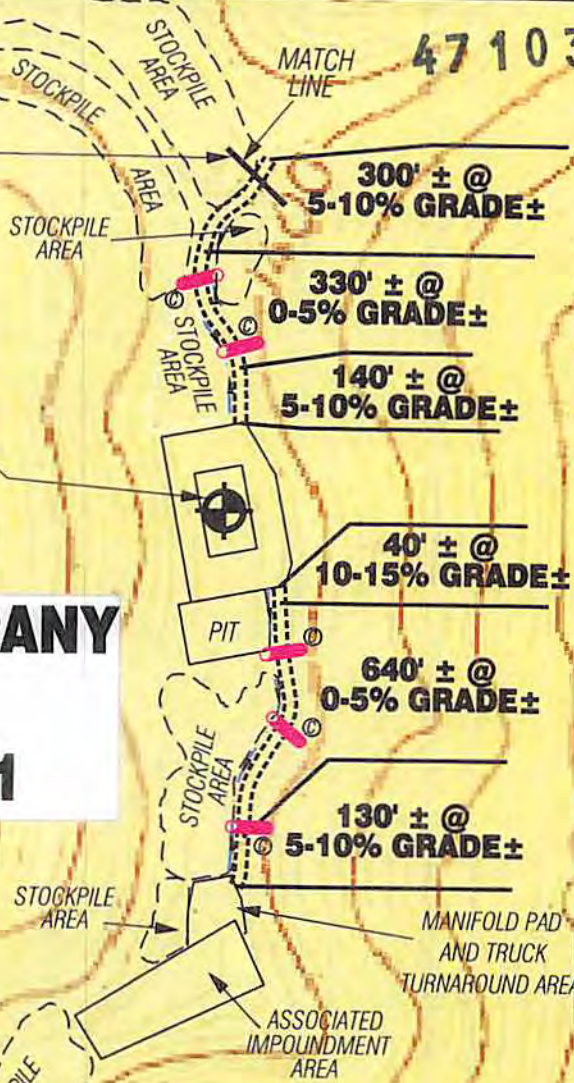
4710303025

**NOTE: SEE ATTACHED RECLAMATION PLAN FOR WELL NO. WV 513534 FOR INFO FROM HERE TO COUNTY ROAD.**



**PROPOSED GAS WELL NO. WV 514420**

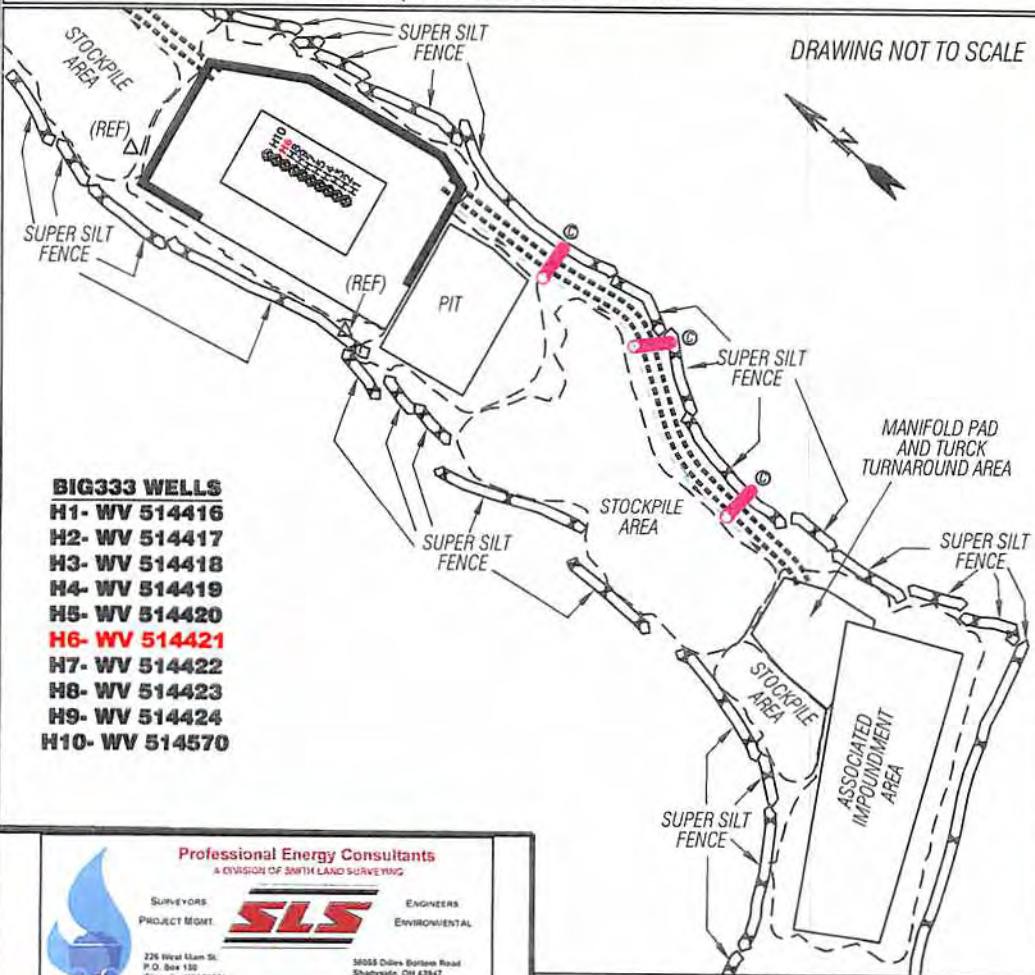
**EQT PRODUCTION COMPANY  
HART LEASE  
WELL NO. WV 514421**



**SCALE: 1"=500'**



*Detail Sketch for Proposed Well No. WV 514421*



- BIG333 WELLS**
- H1- WV 514416
  - H2- WV 514417
  - H3- WV 514418
  - H4- WV 514419
  - H5- WV 514420
  - H6- WV 514421**
  - H7- WV 514422
  - H8- WV 514423
  - H9- WV 514424
  - H10- WV 514570

ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS BMP MANUAL ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY THE D.O.T.

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 D.E.P. 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 & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & STACK ALL MARKETABLE TIMBER.

STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

APPLICATIONS FOR SEPARATE PIC PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLICABLE)

JUL 28 2014

RECEIVED

WV Department of Environmental Protection

10/03/2014

LEGEND:

- EXISTING CULVERT
- ⊗ = PROPOSED CULVERT 15' MIN UNLESS OTHERWISE NOTED
- ⊗ = PROPOSED STREAM CROSSING
- - - APPROXIMATE LIMIT OF DISTURBANCE

**Professional Energy Consultants**  
A DIVISION OF SMITH LAND SURVEYING

SURVEYORS PROJECT MGMT. **SLS** ENGINEERS ENVIRONMENTAL

226 West Main St. P.O. Box 130 Glenville, WV 26031 (206) 462-0534

38033 Collins Bottom Road Shady Side, OH 43047 (740) 671-9911

DRAWN BY: K.D.W. FILE NO.: 7856 DATE: 10/18/13 CADD FILE: 7856RECVW514421.DWG

TOPO SECTION OF BIG RUN 7.5' USGS TOPO QUADRANGLE

# EQT PRODUCTION COMPANY HART LEASE 285 ACRES± WELL NO. WV 514421

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT) N. 375,113.2 E. 1,692,015.6  
NAD'27 GEO. LAT-(N) 39.524767 LONG-(W) 80.591835  
NAD'83 UTM (M) N. 4,375,102.0 E. 535,096.9

### LANDING POINT

NAD'27 S.P.C.(FT) N. 373,727.3 E. 1,690,999.0  
NAD'27 GEO. LAT-(N) 39.520929 LONG-(W) 80.595379  
NAD'83 UTM (M) N. 4,374,674.6 E. 534,794.2

### BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 370,557.6 E. 1,692,684.4  
NAD'27 GEO. LAT-(N) 39.512283 LONG-(W) 80.589269  
NAD'83 UTM (M) N. 4,373,717.5 E. 535,323.8

LATITUDE 39°32'30"

### NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.

### ROYALTY OWNERS

ED BROOME, INC. ET AL 1100 AC± LEASE NO. 104225

NAD'27 GRID NORTH

LARRY LAREW ET AL  
104.8 ACRES±

LEASE# 190015

PLUGGED WELL

LEASE# 104225

### LEGEND

LEASE LINE	---
SURFACE LINE	----
WELL LATERAL	- - - -
OFFSET LINE	----
TIE LINE	----
CREEK	~~~~~
ROAD	====
STATE ROUTE	====
PROPOSED WELL	⊙
PERMITTED WELL	○
TAX MAP--PARCEL	00--00

### REFERENCES

NAIL SET ○ 1" = 200'

**BIG 333 WELLS**

H1: WV514416  
H2: WV514417 (47-103-02851)  
H3: WV514418 (47-103-02849)  
H4: WV514419  
H5: WV514420 (47-103-02848)  
H6: WV514421  
H7: WV514422 (47-103-02850)  
H8: WV514423 (47-103-02857)  
H9: WV514424 (47-103-02852)  
H10: WV514570 (47-103-2853)

WOODS  
WOODS  
WOODS

N 37°49' W 217.01'  
S 27°06' W 283.94'

NAIL SET ○



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**SLS**  
SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
PROJECT MGMT.

(204) 882-6834 WWW.SLSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 *Gregory A. Smith*



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

DATE OCTOBER 21, 20 13

REVISED JUNE 17, 20 14

OPERATORS WELL NO. WV 514421

API WELL NO. 47 - 103 - 03025

STATE WEST VIRGINIA COUNTY WETZEL PERMIT 10/03/2014

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7856P514421R

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 1000'

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: ELEVATION 1452'(PAD ELEVATION) WATERSHED AUNTY RUN OF SOUTH FORK FISHING CREEK

DISTRICT GRANT COUNTY WETZEL QUADRANGLE BIG RUN 7.5'

SURFACE OWNER COASTAL FOREST RESOURCES CO. d/b/a COASTAL TIMBERLANDS CO. ACREAGE 283.6±

ROYALTY OWNER ALEX HART ET AL ACREAGE 285

PROPOSED WORK: 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 GENESECO

ESTIMATED DEPTH TVD 7478'

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

COUNTY NAME PERMIT