



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

March 13, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-1706443, 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: WV 514390
Farm Name: SECRIST, MARY FARR
API Well Number: 47-1706443
Permit Type: Horizontal 6A Well
Date Issued: 03/13/2014

Promoting a healthy environment.

03/14/2014

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

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE 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.

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	Varies	Varies	40	40	38 CTS
Fresh Water	13 3/8	New	MC-50	81	903	903	787 CTS
Coal							
Intermediate	9 5/8	New	MC-50	40	5,238	5,238	2072 CTS
Production	5 1/2	New	P-110	20	12,051	12,051	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							

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.

*DCN
1-31-2014*

Received 03/04/2014

FEB 5 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 Marcellus formation. The vertical drill to go down to an approximate depth of 6678'.
 Tag the Onondaga not more than 100', run logs, then plug back to approximately 5558'. Then kick off the horizontal leg 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): 37.4

22) Area to be disturbed for well pad only, less access road (acres): 16.3

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.

03/14/2014

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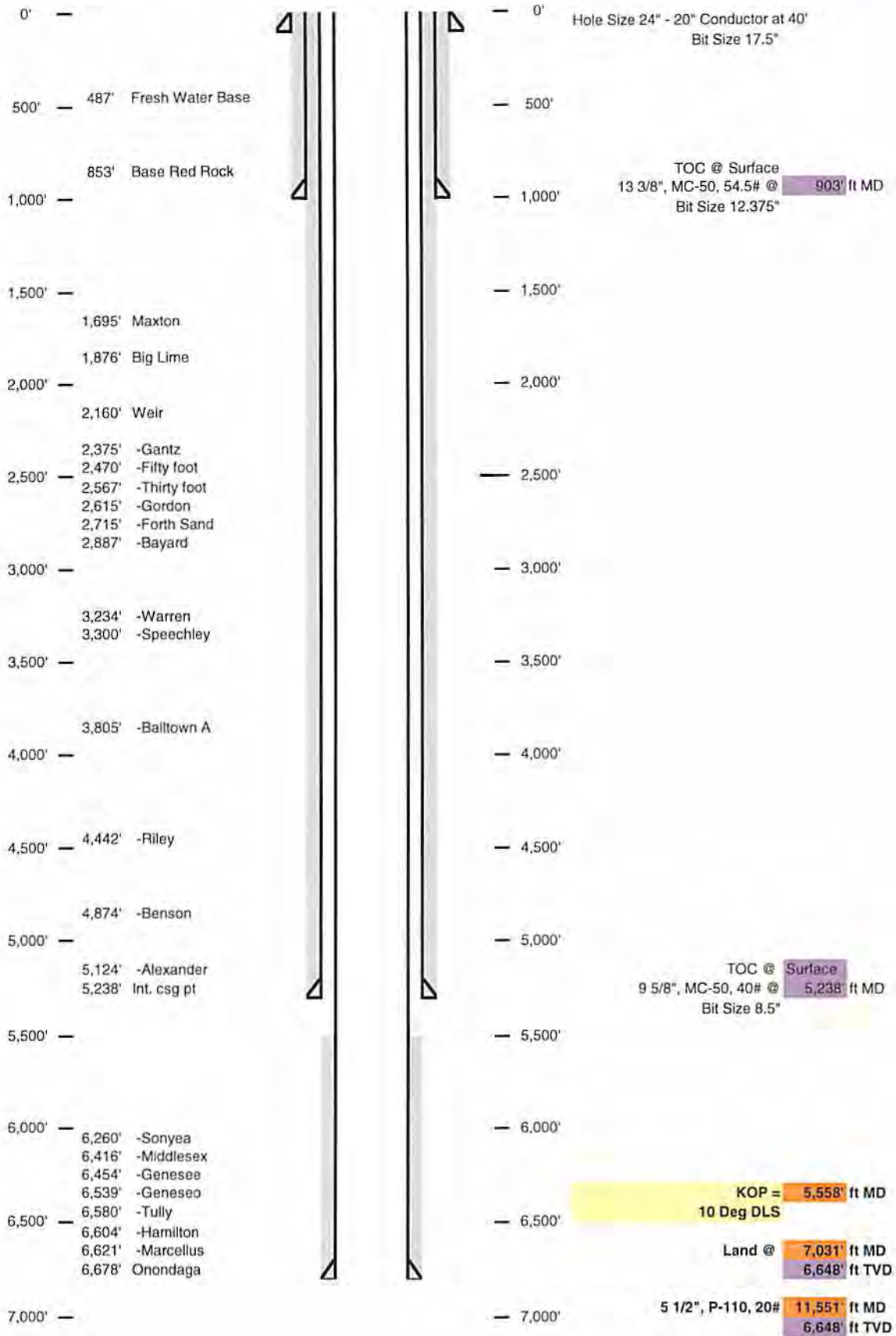
FEB 5 2014

Well Schematic
EQT Production

017 06443

Well Name: 514390 (WEU49H1)
County: Doddridge
State: West Virginia

Elevation KB: 1143
Target: Marcellus
Prospect: 155
Azimuth: 4969
Vertical Section:



03/14/2014

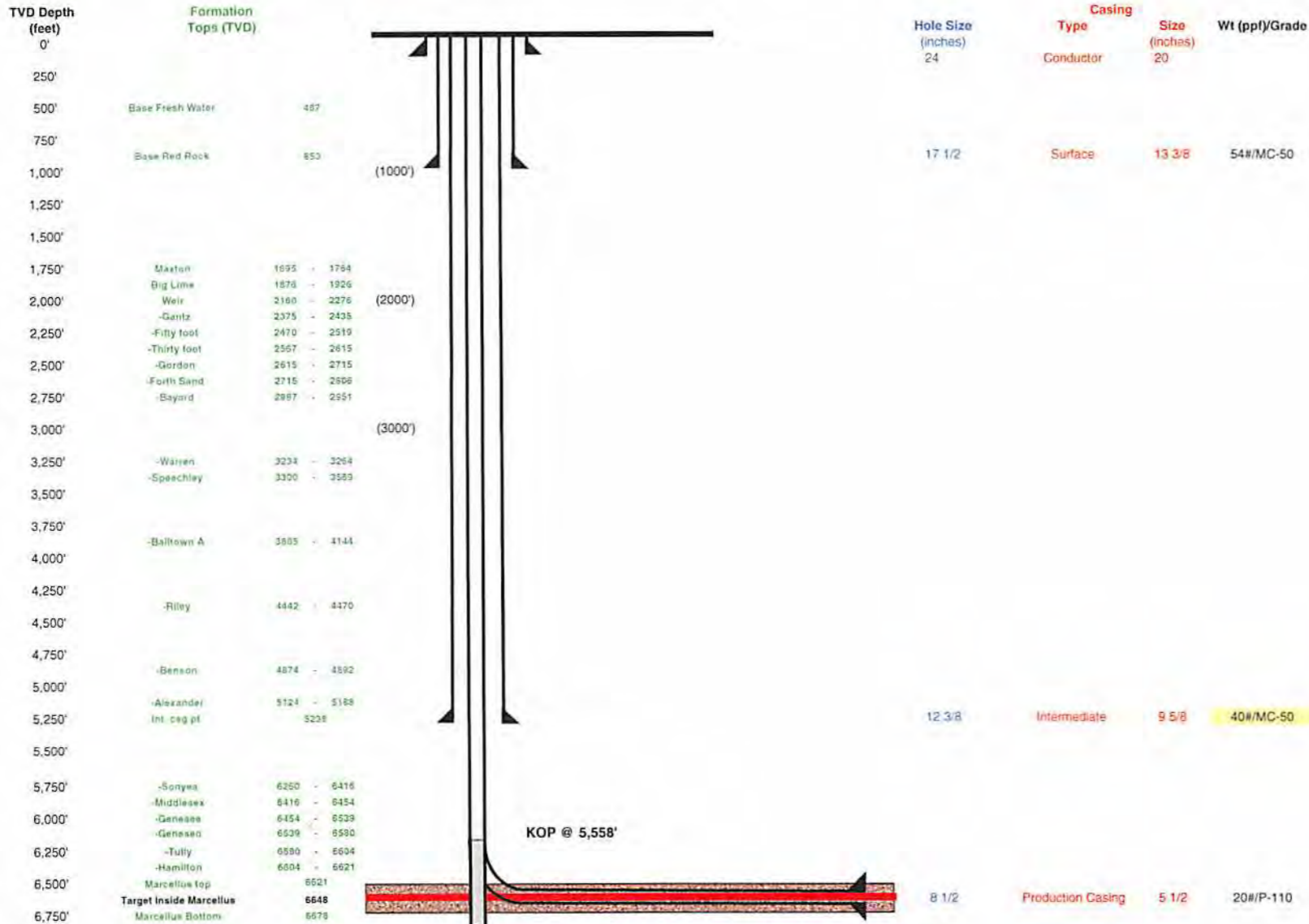
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017 06443

Well 514390 (WEU49H1)
 EQT Production
 West Union
 Doddridge West Virginia

Azimuth 155
 Vertical Section 4999



Land curve @ 6,648' ft TVD
 7,031' ft MD
 Est. TD @ 6,648' ft TVD
 11,551' ft MD

4,520' ft Lateral

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 6778'.
 Tag the Onondaga not more than 100', run logs, then plug back to approximately 5558'.

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Office of Oil and Gas
 WV Dept. of Environmental Protection

Well Number: 514390 (WEU49H1)

Casing and Cementing		Deepest Fresh Water: 487'			
Type	Conductor	Mine Protection	Surface	Intermediate	Production
Hole Size, In.	24		17 1/2	12 3/8	8 1/2
Casing Size, OD In.	20	-	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.375	-	0.380	0.395	0.361
Depth, MD	40'	-	903'	5,238'	12,051'
Depth, TVD	40'	-	903'	5,238'	6,648'
Centralizers Used	Yes	-	Yes	Yes	Yes
Weight/Grade	81#/MC-50	-	54#/MC-50	40#/MC-50	20#/P-110
New or Used	New	-	New	New	New
Pressure Testing	-	-	20% Greater than exp. Pressure	20% Greater than exp. Pressure	20% greater than exp. fracture pressure
After Fracture Pressure Testing	-	-	-	-	20% greater than exp. shut pressure
ID, in	19.25	-	12.615	8.835	4.778
Burst (psi)	-	-	2,480	3,590	12,640
Collapse (psi)	-	-	1,110	2,470	11,100
Tension (mlbs)	-	-	455	456	587
Cement Class	-	-	-	-	H
Cement Type	Construction	-	1	1	-
Cement Yield	1.18	-	1.21	1.21	1.27/1.86
Meets API Standards	-	-	Yes	Yes	Yes
WOC Time	-	-	Min. 8 hrs	Min. 8 hrs	Min. 8 hrs
Top of Cement (Planned)	Surface	-	Surface	Surface	5,438'
Fill (ft.)	40'	-	903'	5,238'	6,113'
Percent Excess	-	-	20	20	10
Est. Volume (cu ft)	38	-	787	2,061	1,543
Est. Volume (BBLs)	7	-	140	367	275

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WEST VIRGINIA GEOLOGICAL PROGNOSIS

Horizontal Well
514390 (WEU49H1)

017 06443

Drilling Objectives: Marcellus
County: Doddridge
Quad: West Union
Elevation: 1143 KB
Surface location
Landing Point
Toe location
Recommended Azimuth

Northing: 277495.1 **Easting:** 1635670.5
Northing: 276981.9 **Easting:** 1635616.1
Northing: 272885.4 **Easting:** 1637526.3
Recommended LP to TD:

TVD: 6648
TVD: 6648
-4520

Proposed Logging Suite:

@**Intermediate Casing Point:** The open hole logs need to consist of Gamma Ray, Neutron, Density, Induction and Dipole Sonic. **CONTACT LUKE SCHANKEN PRIOR TO LOGGING (412.580.8016)**
@ **Pilot Hole TD - Run OH logs for evaluation of uphole zones.**
An clog should be run for the first well on every horizontal well pad.
GR/LDT/DIL/CNL/Temp/Audio (Allegheny's Air Suite) - pull GR to surface.
Mudloggers to be on location at kickoff point to run samples and measure gas thru both the curve and lateral sections.

Recommended Gas Tests:

1800, 2050, 2600, Intm Csg. Pt., 3400, 4900, 5250, KOP. (Gas test at any mine void)
Gas test during any trip or significant downtime while drilling the lateral section.

Possible red rock at: 115,188,277,408,588,683,753,835,853,.....

ESTIMATED FORMATION TOPS

Formation	Top (TVD)	Base (TVD)	Lithology	Comments
Fresh Water Zone	1	487		FW @ 243,292,352,487,.....
Coal	340	343 Coal		
Pittsburgh Coal	483	485 Coal		Red Rock Possible @ 115,188,277,408,588,683,753,835,853,.....
Maxton	1695	1764 Sandstone		SW @ 1542, ,
Big Lime	1876	1926 Limestone		
Weir	2160	2276 Sandstone		
Top Devonian	2375			
-Gantz	2375	2435 Silty Sand		
-Fifty foot	2470	2519 Silty Sand		
-Thirty foot	2567	2615 Silty Sand		
-Gordon	2615	2715 Silty Sand		
-Forth Sand	2715	2806 Silty Sand		
-Bayard	2887	2951 Silty Sand		
-Warren	3234	3264 Silty Sand		
-Speechley	3300	3589 Silty Sand		
-Balltown A	3805	4144 Silty Sand		
-Riley	4442	4470 Silty Sand		
-Benson	4874	4892 Silty Sand		
-Alexander	5124	5188 Silty Sand		
Int. csg pt	5238			Have offsets within 2500ft radius producing from Alexander
-Sonyea	6260	6416 Gray shale		
-Middlesex	6416	6454 Shale		
-Genesee	6454	6539 with black shale		
-Genesee	6539	6580 Black Shale		
-Tully	6580	6604 Limestone		
-Hamilton	6604	6621 calcareous shales		
-Marcellus	6621	6678 Black Shale		
-Purcell	6631	6642 Limestone		
-Lateral Zone	6648	6648		Start Lateral at 6648 ft, drill to 6648 ft
-Cherry Valley	6658	6668 Limestone		
Onondaga	6678	Limestone		
Pilot Hole TD	6778			

Base RR
85'

Target Thickness	57 feet
Anticipated Target Pressure	4474 PSI

Comments: Note that this is a TVD prog for a horizontal well. **All measurements taken from estimated KB elevation.** Water and coal information estimated from surrounding well data. Intermediate casing point is recommended 50' beneath the Alexander to shut off any production from offset wells. Intermediate casing should be cemented into the surface string, per WV regulations. The estimated TD is the TVD landing point for the horizontal section of well, with the plan to then drill to a final TVD of 6648' at the toe of the lateral. The geologic structure is unknown at this time.

****Will cross a fault in the early portion of the lateral****

LATERAL DRILLING TOLERANCES

Mapview - Left of borehole: Deviate as little as possible left to avoid planned lateral 514395
Mapview - Right of borehole: Deviate as little as possible right to avoid planned lateral 514393
Mapview - TD: **DO NOT EXTEND** beyond recommended wellbore to avoid lease line.

RECOMMENDED CASING POINTS

Fresh Water/Coal CSG OD 13 3/8 CSG DEPTH: 903 50' below red rock
Intermediate 1: CSG OD 9 5/8 CSG DEPTH: 5238
Production: CSG OD 5 1/2 CSG DEPTH: @ TD

T. Vactor/J. Dereume Author Date Created Plat Date
Prog created: SLH 12/10/2013 12/3/2013
Surface casing deepened JMD 1/16/2014

03/14/2014

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FEB 5 2014

WW-9
(5/13)

Page _____ of _____
API No. 47 - 017 - 0
Operator's Well No. 514390

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

Fluids/Cuttings Disposal & Reclamation Plan

Operator Name WEU49 OP Code _____

Watershed (HUC10) Left Fork Arnold Creek Quadrangle West Union 7.5'

Elevation 1130.0 County Doddridge District West Union

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 _____)

*DCW
1-10-2014
MDG*

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, 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.

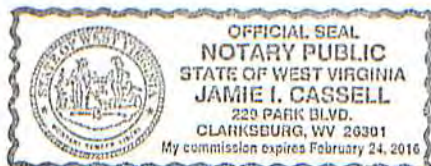
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is 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 *Victoria J. Roark*
Company Official (Typed Name) Victoria J. Roark
Company Official Title Permitting Supervisor

Subscribed and sworn before me this 30th day of December, 2013

Jamie I. Casell
My commission expires 2/24/2016

Notary Public
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Office of Oil and Gas
03/14/2014
JAN 14 2014
WV Department of
Environmental Protection



Proposed Revegetation Treatment: Acres Disturbed 37.4 Prevegetation pH 6.1

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		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: Douglas Newton Michael Goff

Comments: Preseed Mulch install E+S to WJ Dep regulations

Title: Oil & Gas inspector Date: 1-10-2014

Field Reviewed? () Yes () No

RECEIVED Office of Oil and Gas 03/14/2014 JAN 14 2014 WV Department of Environmental Protection

EQT Production Water plan
Offsite disposals for Marcellus wells

017 06443

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

03/14/2014



Where energy meets innovation.™

Site Specific
Safety and Environmental Plan
For

EQT WEU 49 Pad
West Union
Doddridge County, WV

For Wells: 514390 514391 514392 514393 514394 514395 515273

[Signature]
EQT Production
Permitting Supr.
Title
12-30-13
Date

Date Prepared:

December 10, 2013

[Signature] [Signature]
WV Oil and Gas Inspector
Title
1-10-2014
Date

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03/14/2014
JAN 14 2014
WV Department of
Environmental Protection

7.0 BOP Equipment and Casing Heads

4701706443

BOP Equipment						
Size (in)	Operation	Hole Section	Type	Pressure Class	Test Pressure (psi)	Testing Frequency
13-5/8"	Drilling	Intermediate	Annular	3M	2100	Initial
13-5/8"	Drilling	Pilot	Annular	3M	2100	Initial, Weekly, Trip
13-5/8"	Drilling	Pilot	Annular	5M	4000	Initial, Weekly, Trip
13-5/8"	Drilling	Production	Annular	5M	3500	Initial, Weekly, Trip
13-5/8"	Drilling	Production	Blind	5M	4000	Initial, Weekly, Trip
13-5/8"	Drilling	Production	Pipe	5M	4000	Initial, Weekly, Trip

Wellhead Detail

Size (in)	Type	M.A.W.P. (psi)
13-3/8" SOW x 13-5/8" 5M	Multi-ball Well Head	5,000
13-5/8" 5M x 7-1/16 10M	Tubing Head	10,000
2-1/16" 5M	Christmas Tree	5,000

Well Control Trained Personnel

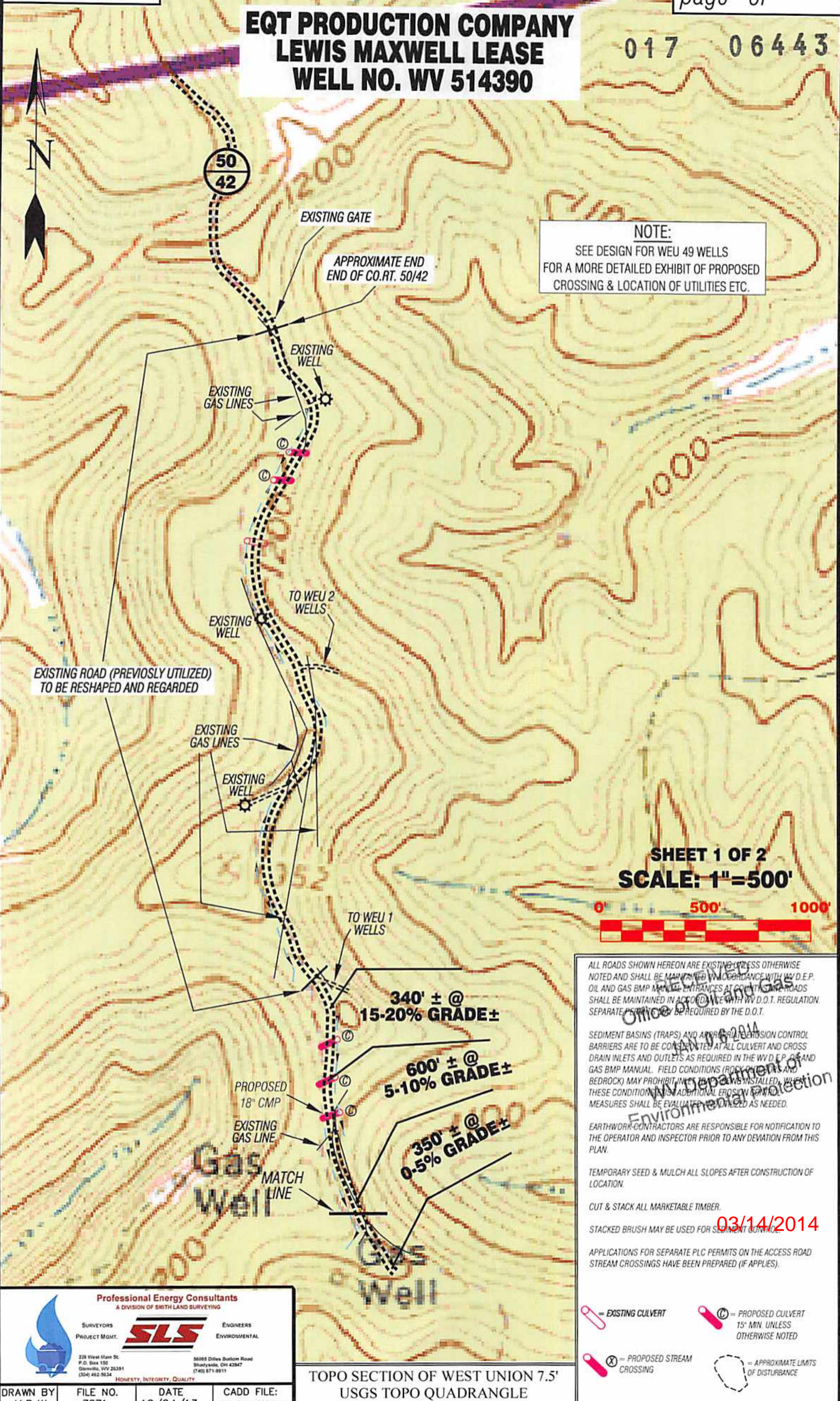
- Drilling
 - EQT On-Site Specialist – 2 on rotating hitches.
 - Contract Group's – Tool Pusher & Drillers
- Completions & Production
 - EQT On-Site Specialist

DCW
1-10-2014
MAG

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JAN 14 2014
WV Department of
Environmental Protection
03/14/2014

EQT PRODUCTION COMPANY LEWIS MAXWELL LEASE WELL NO. WV 514390

017 06443



NOTE:
SEE DESIGN FOR WEU 49 WELLS
FOR A MORE DETAILED EXHIBIT OF PROPOSED
CROSSING & LOCATION OF UTILITIES ETC.

EXISTING ROAD (PREVIOUSLY UTILIZED)
TO BE RESHAPED AND REGARDED

SHEET 1 OF 2
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 ENTRIES AT CULVERT AND CROSS 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 INSTALLATION OF BARRIERS. WHEN THESE CONDITIONS ADDITIONAL EROSION CONTROL MEASURES SHALL BE EVALUATED AND INSTALLED 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 (IF APPLIES).

03/14/2014

Legend:

- = EXISTING CULVERT
- = PROPOSED CULVERT 15" MIN. UNLESS OTHERWISE NOTED
- = PROPOSED STREAM CROSSING
- = APPROXIMATE LIMITS OF DISTURBANCE

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING

SURVEYORS PROJECT MGMT. **SLS** ENGINEERS ENVIRONMENTAL

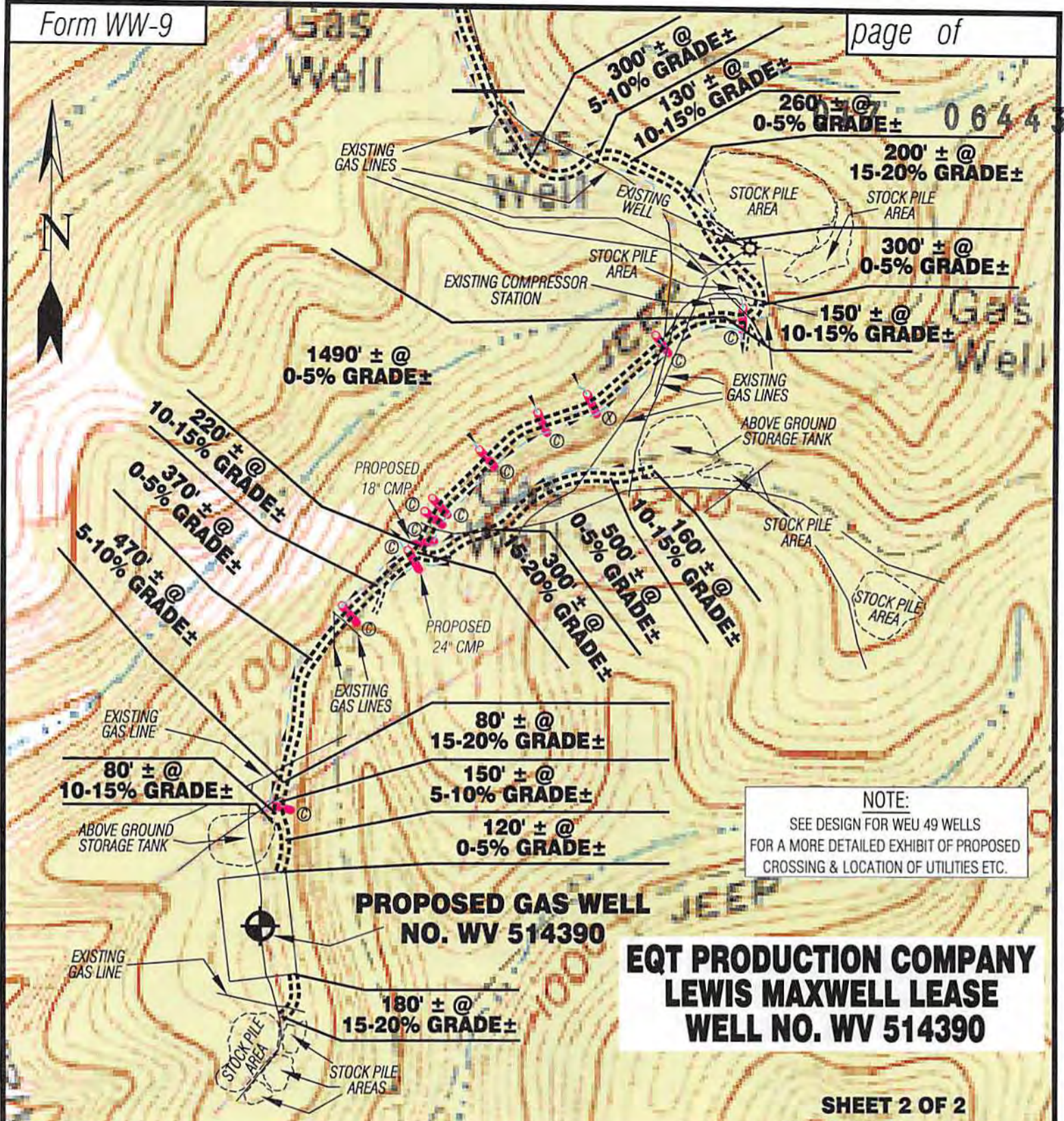
228 West Main St. P.O. Box 150 Glenville, WV 26035 (204) 462-9634

56065 Dixie Bottom Road Shayside, OH 42847 (740) 671-9911

HONESTY. INTEGRITY. QUALITY

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TOPO SECTION OF WEST UNION 7.5' USGS TOPO QUADRANGLE



NOTE:
SEE DESIGN FOR WEU 49 WELLS FOR A MORE DETAILED EXHIBIT OF PROPOSED CROSSING & LOCATION OF UTILITIES ETC.

**EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
WELL NO. WV 514390**

**SHEET 2 OF 2
SCALE: 1"=500'**

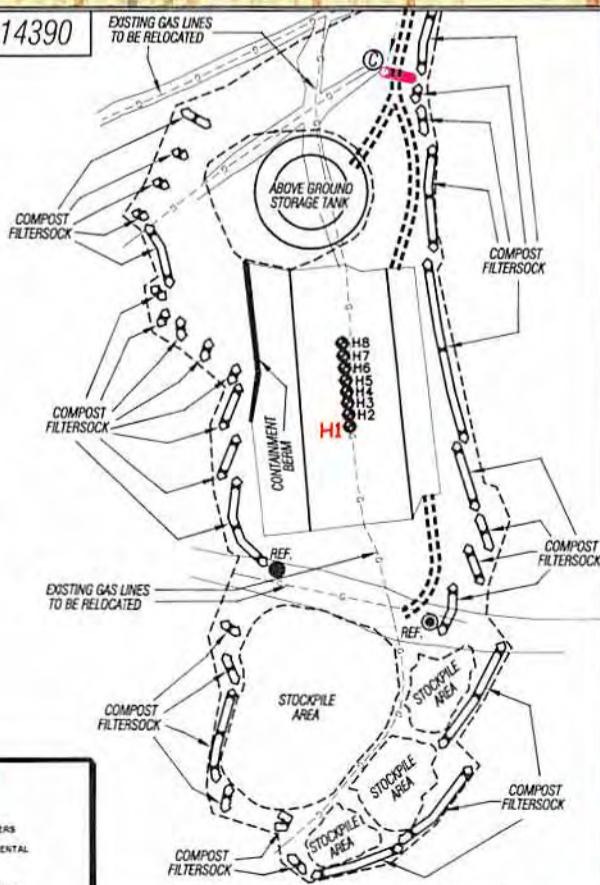


Detail Sketch for Proposed Well WV 514390

- WEU49 WELLS
H1-WV 514390
 H2-WV 514391
 H3-WV 514392
 H4-WV 514393
 H5-WV 514394
 H6-WV 514395
 H7-WV 515273
 H8- NOT YET DETERMINED

NOTE:
SEE DESIGN FOR WEU 49 WELLS FOR A MORE DETAILED EXHIBIT OF PROPOSED CROSSING & LOCATION OF UTILITIES ETC.

Not To Scale



ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS PERMITS. 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 OIL AND GAS BMP MANUAL. FIELD CONDITIONS (SOIL TYPES, CROPS AND BEDROCK) MAY PROHIBIT 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 (IF APPLIES).

- EXISTING CULVERT
- PROPOSED CULVERT 15' MIN UNLESS OTHERWISE NOTED
- PROPOSED STREAM CROSSING
- APPROXIMATE LIMITS OF DISTURBANCE

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING

SLS

228 West Main St.
P.O. Box 150
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Shady Side, OH 43047
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HOONERS. INTEGRITY. QUALITY

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TOPO SECTION OF WEST UNION 7.5' USGS TOPO QUADRANGLE

03/14/2014

EQT PRODUCTION COMPANY LEWIS MAXWELL LEASE 2,654 ACRES± WELL NO. WV 514390

WELL NO. WV 514390
STATE PLANE COORDINATES
(NORTH ZONE) NAD '27
N. 277,495.1
E. 1,635,670.5
LAT=(N) 39.254725
LONG=(W) 80.786603
UTM (NAD83)(METERS)
N. 4,345,075.4
E. 518,428.9

LANDING POINT
WELL NO. WV 514390
STATE PLANE COORDINATES
(NORTH ZONE) NAD '27
N. 276,981.9
E. 1,635,616.1

LAT=(N) 39.253314
LONG=(W) 80.786769
UTM (NAD83)(METERS)
N. 4,344,918.7
E. 518,412.9

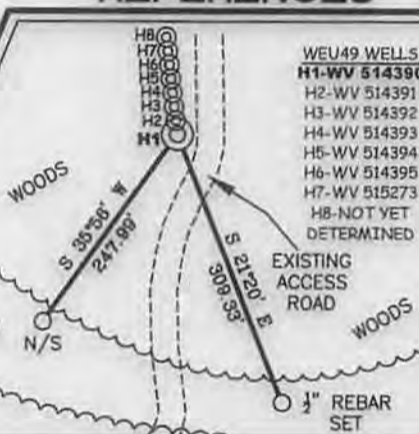
BOTTOM HOLE
WELL NO. WV 514390
STATE PLANE COORDINATES
(NORTH ZONE) NAD '27
N. 272,885.4
E. 1,637,526.3

LAT=(N) 39.242143
LONG=(W) 80.779818
UTM (NAD83)(METERS)
N. 4,343,680.5
E. 519,015.7

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 '27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DB 28 PG 177.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT DATED 09/19/13 REVISED 12/02/13 TO CONCUR WITH DEP REGULATIONS.
6. NO WATER WELLS WERE FOUND WITHIN 250 FEET OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS (GREATER THAN 2500 SQUARE FEET) OR DWELLINGS WERE FOUND WITHIN 625 FEET OF CENTER OF PROPOSED WELL PAD.

REFERENCES



NORTH



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. *Gregory A. Smith*
677

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE DECEMBER 03, 20 13
OPERATORS WELL NO. WV 514390
API WELL NO. 47-17-06443 H6A
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7871P514390R
PROVEN SOURCE OF ELEVATION 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 <u>X</u>	LIQUID INJECTION	WASTE DISPOSAL	IF "GAS" PRODUCTION <u>X</u>	STORAGE	DEEP	SHALLOW <u>X</u>
LOCATION:							
ELEVATION	<u>1,166'(GROUND)</u>	<u>1,130'(PROPOSED)</u>	WATERSHED	<u>LEFT FORK OF ARNOLD CREEK</u>			
DISTRICT	<u>WEST UNION</u>		COUNTY	<u>DODDRIDGE</u>	QUADRANGLE	<u>WEST UNION 7.5'</u>	
SURFACE OWNER	<u>MARY FARR SECRIST</u>			ACREAGE	<u>829.75±</u>		
ROYALTY OWNER	<u>LEWIS MAXWELL HRS</u>			ACREAGE	<u>2654±</u>		
				LEASE NO.	<u>080616</u>		
DRILL <u>X</u>	CONVERT	DRILL DEEPER	REDRILL	FRACTURE OR STIMULATE <u>X</u>	PLUG OFF OLD FORMATION	PERFORATE NEW FORMATION	PLUG AND ABANDON
PHYSICAL CHANGE IN WELL (SPECIFY)				TARGET FORMATION	<u>MARCELLUS</u>		
				ESTIMATED DEPTH	<u>TVD 6648 THD 12,051</u>		

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