



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

PERMIT MODIFICATION APPROVAL

December 10, 2012

EQT PRODUCTION COMPANY
POST OFFICE BOX 280
BRIDGEPORT, WV 26330

Re: Permit Modification Approval for API Number 8509953 , Well #: 513045 - BROADWATER
Bottom Hole, Casing, TD, FW and Coal Depth Changed , Stockpile Added

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith

Regulatory/Compliance Manager
Office of Oil and Gas

Modification
85-9953

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

1) Well Operator: EQT Production Company

Operator ID	County	District	Quadrangle
	085	1	539

2) Operator's Well Number: 513045 Well Pad Name PEN16

3 Elevation, current ground: 788.0 Elevation, proposed post-construction: 795.0

4) Well Type: (a) Gas Oil
Other _____

(b) If Gas: Shallow Deep
 Horizontal

5) Existing Pad? Yes or No: no

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation is Marcellus at a depth of 6064 with the anticipated thickness to be 51 feet and anticipated target pressure of 3651 PSI

7) Proposed Total Vertical Depth: 6,185

8) Formation at Total Vertical Depth: Onondaga

9) Proposed Total Measured Depth: 9,870

10) Approximate Fresh Water Strata Depths: 21, 94, 144, 367

11) Method to Determine Fresh Water Depth: By offset wells

12) Approximate Saltwater Depths: n/a

13) Approximate Coal Seam Depths: 816

14) Approximate Depth to Possible Void (coal mine, karst, other): n/a

15) Does land contain coal seams tributary or adjacent to, active mine? no

16) Describe proposed well work: Drill and complete a new horizontal well. The vertical drill to go down to approximately depth of 6185
Tagging the Onondaga not more than 100' then plug back to approximately 4255' and kick off the horizontal leg into the marcellus using a
slick water frac.

17) Describe fracturing/stimulating methods in detail: _____
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). Stage lengths vary from 150 to 450 feet. Average approximately
400,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 400,000 pounds of sand per stage.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 37.01

19) Area to be disturbed for well pad only, less access road (acres): 14.4

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9-18-12
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Environmental Protection

85-9953
Mod.

CASING AND TUBING PROGRAM

20)

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: for Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu.Ft.)
Conductor	26	New	Varies	Varies	71	71	87 CTS
Fresh Water	20	New	MC-50	81#	467	467	589 CTS
Coal	13 3/8	New	MC-50	54#	1,000	1,000	868 CTS
Intermediate	9 5/8	New	MC-50	40#	3,116	3,116	1,218 CTS
Production	5 1/2	New	P-110	20#	10,370	10,370	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
Conductor	26	30	0.5	—	Construction	1.18
Fresh Water	20	24	0.635	1640	1	1.2
Coal	13 3/8	17 1/2	0.38	2480	1	1.21
Intermediate	9 5/8	12 3/8	0.395	3590	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 so that the intermediate casing shoe can be monitored during stimulation and the well can be safely plugged and abandoned in the future.

JML
9-18-12

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name PEN16 OP Code _____

Watershed North Fork Hughes River Quadrangle Pennsboro 7.5

Elevation 795.0 County Ritchie District Clay

Description of anticipated Pit Waste: Drill water and various formation cuttings

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

Will a synthetic liner be used in the pit? Yes If so, what mil.? 40 Mil.

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 _____)

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air and water based mud

If oil based, what type? Synthetic, petroleum, etc _____

Additives to be used? MILBAR, Viscosifer, Alkalinity Control, Lime, Chloride Salts, Filtration Control, Deflocculant, Lubricant, Detergent, Defoaming, Walnut Shell, X-Cide, SOLTEX Terra Rate

Will closed loop system be used? No

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, 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 14 day of SEPTEMBER, 20 12

[Signature] Notary Public

My commission expires 6/27/2018

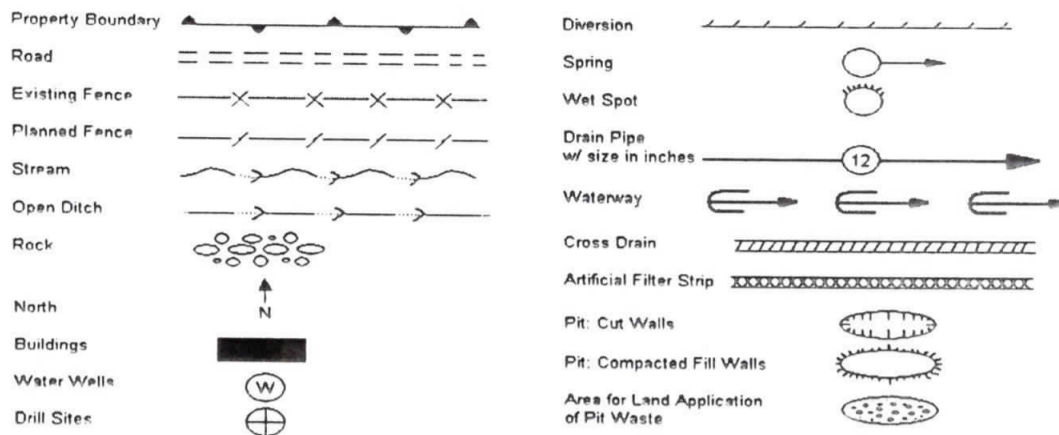


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OFFICIAL SEAL
DEPARTMENT OF THE ARMY
WASHINGTON, D. C.



Proposed Revegetation Treatment: Acres Disturbed 37.01 Prevegetation pH 6.6

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 1/3 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

Area I		Area II	
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: *David W. Cunniff*

Comments: *prescribed mulch all cut areas no less than 2 tons per acre*

Title: *airlogas inspector* Date: *9-18-12*

Field Reviewed? (*✓*) Yes () No

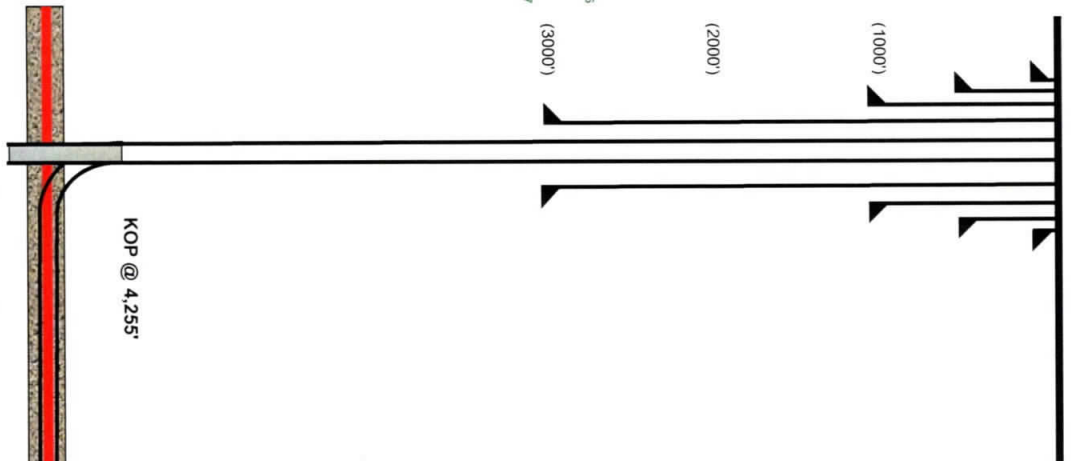
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Office of *Regulation*
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Environmental Protection

85-0953
 Mod

Well 513045 (PEN16H5)
 EQT Production
 West Virginia

Azimuth 150
 Vertical Section 4228

TVD Depth (feet)	Formation Tops (TVD)	Formation	Vertical Section	Azimuth
0				150
250'		Base Fresh Water	367	
500'		Fresh Water Csg. pt.	467	
750'				
1,000'		Coal Csg. pt.	1000	
1,250'				
1,500'				
1,750'		Big Lime	1630 - 1742	
		Big Injun	1742 - 2037	
2,000'		Weir	2037 - 2242 (2000')	
		Gantz	2242 - 2382	
2,250'				
2,500'				
2,750'		-Bayard	2777 - 3066	
3,000'		Int. csg. pt	3116	
		-Warren	3123 - 3207	
3,250'		-Speechley	3207 - 3592	
3,500'		-Balltown A	3592 - 4243	
3,750'				
4,000'				
4,250'				
4,500'		-Benson	4871 - 4901	
4,750'		-Alexander	4901 - 5788	
5,000'		-Songea	5788 - 5889	
		-Middlesex	5889 - 5934	
5,250'		-Genesee	5934 - 5992	
		-Genesee	5992 - 6019	
5,500'		-Tully	6019 - 6023	
		-Hamilton	6023 - 6034	
5,750'		Marcellus top	6034	
		Marcellus Bottom	6064	
6,000'		Target Inside Marcellus	6085	



TD Pilot Hole @ 6185
 100' below top of Onondaga
 Run Logs. Plug back to KOP at 4255
 Kick off for horizontal well in Marcellus

Hole Size (inches)	Casing Type	Casing Size (inches)	WT (ppf)/Grade
30	Conductor	26	
24	Surface	20	81#/MC-50
17 1/2	Coal	13 3/8	54#/MC-50
12 3/8	Intermediate	9 5/8	40#/MC-50
8 1/2	Production Casing	5 1/2	20#/P-110

Land curve @ 6,064' ft TVD
 6,870' ft MD

Est. TD @ 6,064' ft TVD
 9,870' ft MD

3,000' ft Lateral

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 WV Department of
 Environmental Protection

RECEIVED DATE: _____

API 47-085-09953

OPERATOR: EQT Production Co.

WELL: 513045 MOD

PAD NAME: PEN16

END COMMENT PERIOD: _____

PAD BUILT: _____ YES NO

DATE REVIEWED: _____ INT _____

REVIEWED BY (APPLICANT): Vicki Roach

APPLICANT SIGNATURE: [Signature]

CHECKLIST FOR FILING A PERMIT HORIZONTAL 6A WELL

Please include these required elements in the Horizontal Well 6A applications, in order listed below.
Do not use staples.

N/A Fees

First Well		Subsequent Well	
10,250.00 with pit	<input type="checkbox"/>	5,250.00 with pit	<input type="checkbox"/>
10,150.00 no pit	<input type="checkbox"/>	5,150.00 no pit	<input type="checkbox"/>

Checklist / Cover letter

WW-6B _____ Field Approved

Well Bore Schematic

N/A WW-6A notarized w/ any attachments (no chgs)

WW-6A1

NA Road Crossing Letter (NO change)

_____ Road Bonding Agreement / DOH Certification

WW-9 _____ Field Approved

Site Construction Plan _____ Field Approved

NA Reclamation Plan no change _____ Field Approved

Erosion and Sediment Control Plan _____ Field Approved

_____ Topographic Map w/ water purveyors showing access road

Mylar Plat (Signed and sealed) (Surface Owner matches WW-6A)

Revised 5/30/12

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WW-6A7
(6-12)

Paper Plat

WW-6AC Notice Certifications

N/A WW-2B1 Names, Addresses and Spotted on Topographical Map

N/A WW-6A3 Notice of Entry for Plat Survey

WW-6A4 Notice of Intent to Drill

WW-6A5 Notice of Planned Operation

N/A Registered Mail receipts, Affidavits of Personal Service or Waivers

Waiver for Surface Owner at Wellhead

Waiver for Surface Owner for Roads or other Disturbances

Waiver for Coal Owner, Operator or Lessee

Waiver for surface owner for Impoundment or Pit

Waiver for Surface Owner or Water Purveyor within 1500 feet of Center of Pad

Waiver for Natural gas Storage Field Operator

N/A WW-PN Public Notice (Dated copy of advertisement or Affidavit of Publication)

N/A Within a Municipality (Emergency Rule)

Class 1 Legal Advertisement for first permit on pad

Well Site Safety Plan

Field Approved

Water Management Plan

DWWM Approval

List of Chemical Names & CAS #s for Frac additives

Copy of To Scale Plans

Inspector packet mailed to inspector (Plat, Topographic Map, WW-6B, WW-9, All Plans)

Bond (\$250,000)

Revised 5/30/12

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Operator is registered with the SOS

Workers Compensation / Unemployment Insurance account is OK

Professional Engineer/Company has COA

Mine Data Check

Floodplain Check

Well Restrictions

~~NO~~ At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland

_____ DEP Waiver and Permit Conditions

EXEMPT

At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream

_____ DEP Waiver and Permit Conditions

At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply

_____ DEP Waiver and Permit Conditions

At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled

_____ Surface Owner Waiver and Recorded with County Clerk, OR

_____ DEP Variance and Permit Conditions

At Least 625 Feet from an Occupied Dwelling Structure to the Center of the Pad

_____ Surface Owner Waiver and Recorded with County Clerk, OR

_____ DEP Variance and Permit Conditions

At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad

_____ Surface Owner Waiver and Recorded with County Clerk, OR

_____ DEP Variance and Permit Conditions

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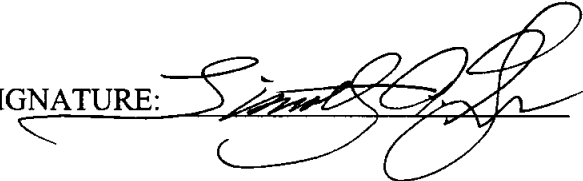
WV Department of
Environmental Protection

OPERATOR: EQT Production Company

WELL NO: 513045

PAD NAME: PEN16

REVIEWED BY: Timothy A. Groves

SIGNATURE: 

WELL RESTRICTIONS CHECKLIST

HORIZONTAL 6A WELL

Well Restrictions

At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland; OR *Exempt*

DEP Waiver and Permit Conditions

At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream; OR

DEP Waiver and Permit Conditions

At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply; OR

DEP Waiver and Permit Conditions

At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled; OR

Surface Owner Waiver and Recorded with County Clerk, OR

DEP Variance and Permit Conditions

At Least 625 Feet from an Occupied Dwelling Structure to Center of the Pad; OR

Surface Owner Waiver and Recorded with County Clerk, OR

DEP Variance and Permit Conditions

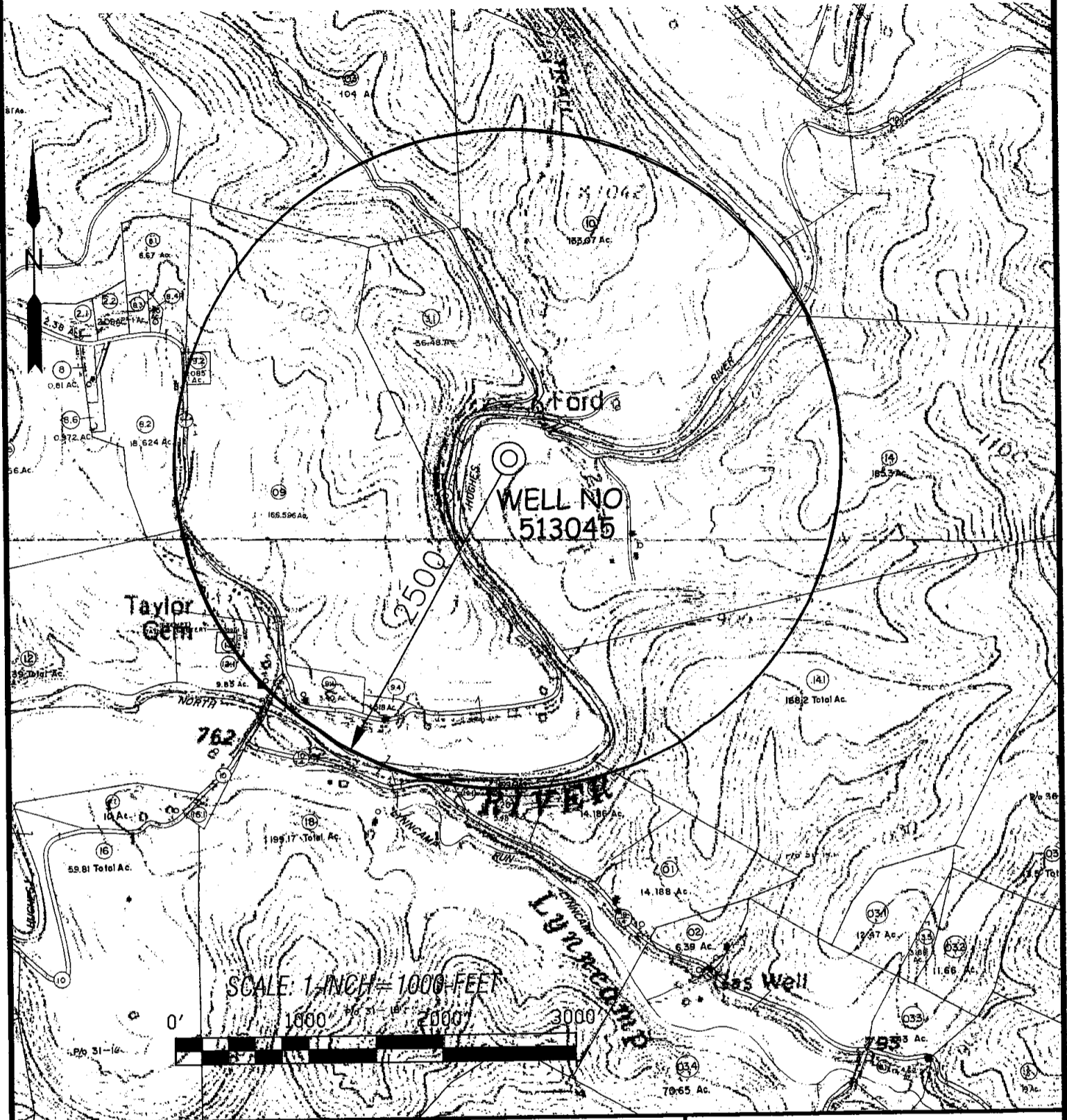
At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad; OR

Surface Owner Waiver and Recorded with County Clerk, OR

DEP Variance and Permit Conditions

SEP 17 2012
Department of
Environmental Protection

BROADWATER LEASE WELL NO. 513045



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 J.L.B.	FILE NO. 7566	DATE 10-03-11	CADD FILE: 7566WSH5.DWG
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TOPO SECTION OF:
 PENNSBORO, WV 7.5' QUAD.

DISTRICT	COUNTY	TAX MAP-PARCEL NO.
CLAY	RITCHIE	31-14

OPERATOR:
 EQT PRODUCTION COMPANY
 1710 PENNSYLVANIA AVE
 CHARLESTON, WV 25302

WELL NO. WV 513045
STATE PLANE COORDINATES
NORTH ZONE (NAD '27)

N. 277,040.2
E. 1,592,387.7

LAT=(N) 39.251674
LONG=(W) 80.939402

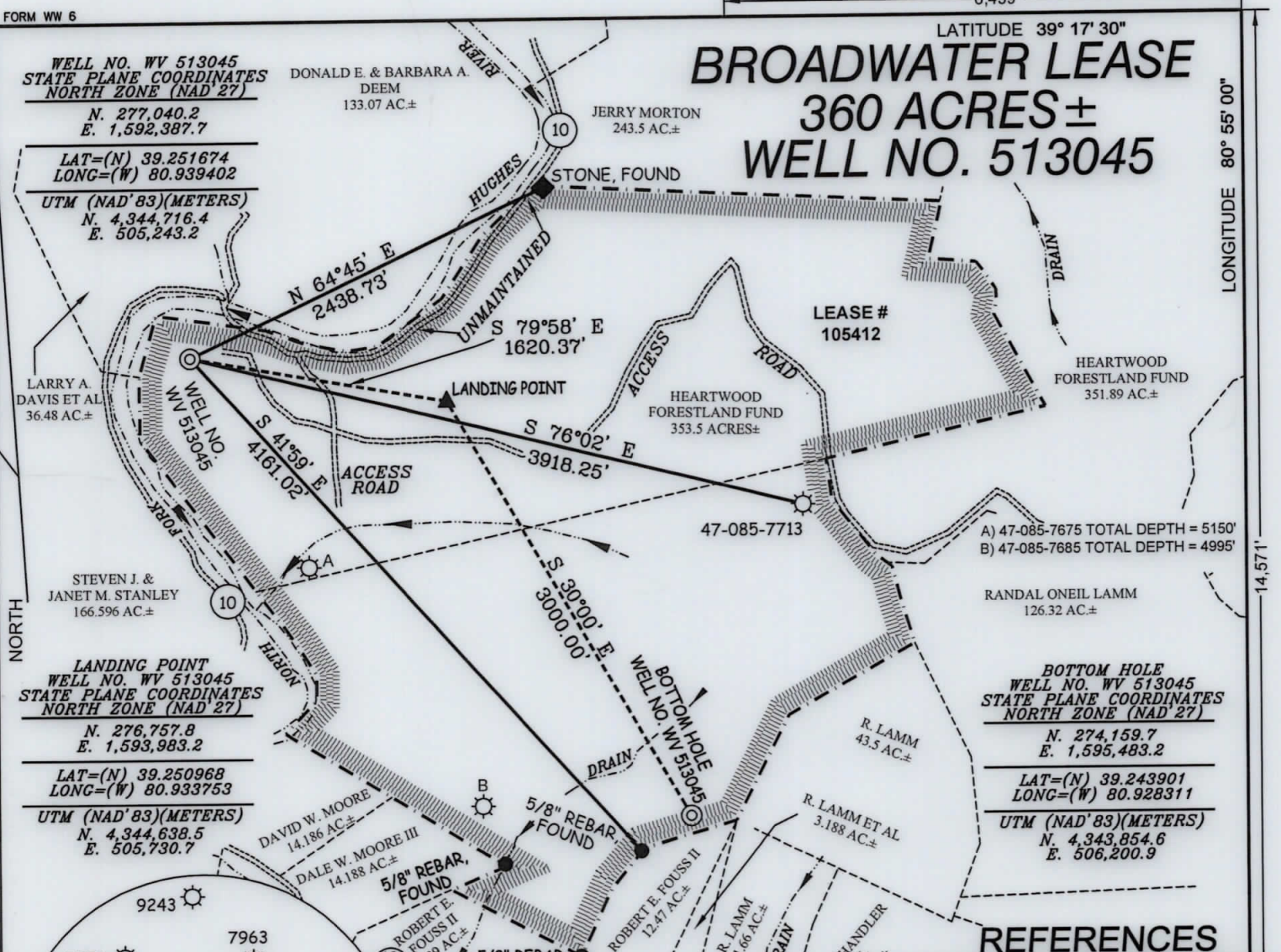
UTM (NAD'83)(METERS)
N. 4,344,716.4
E. 505,243.2

DONALD E. & BARBARA A.
DEEM
133.07 AC±

JERRY MORTON
243.5 AC±

BROADWATER LEASE 360 ACRES± WELL NO. 513045

LEASE #
105412



LANDING POINT
WELL NO. WV 513045
STATE PLANE COORDINATES
NORTH ZONE (NAD '27)

N. 276,757.8
E. 1,593,983.2

LAT=(N) 39.250968
LONG=(W) 80.933753

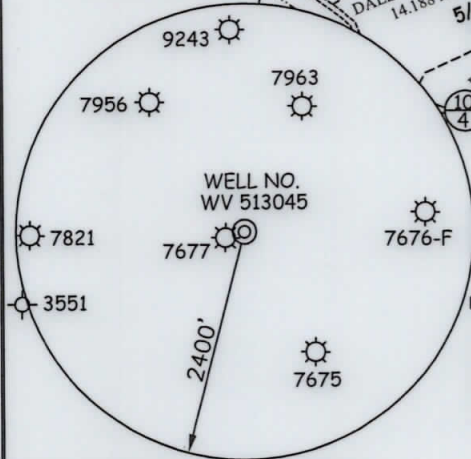
UTM (NAD'83)(METERS)
N. 4,344,638.5
E. 505,730.7

BOTTOM HOLE
WELL NO. WV 513045
STATE PLANE COORDINATES
NORTH ZONE (NAD '27)

N. 274,159.7
E. 1,595,483.2

LAT=(N) 39.243901
LONG=(W) 80.928311

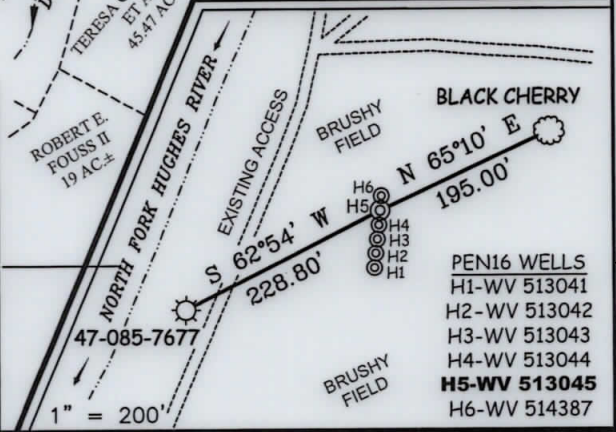
UTM (NAD'83)(METERS)
N. 4,343,854.6
E. 506,200.9



NOTES ON SURVEY

1. TIES TO WELLS, CORNERS & REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN DEED BOOK 197 PAGE 568.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF RITCHIE COUNTY IN JULY, 2011.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT DATED 10/13/11 REVISED 7/06/12 TO SHOW NEW LANDING POINT & BOTTOM HOLE COORDINATES ETC.

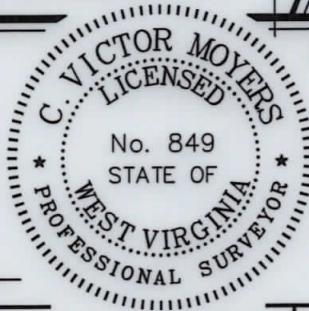
REFERENCES



- PEN16 WELLS
 H1-WV 513041
 H2-WV 513042
 H3-WV 513043
 H4-WV 513044
H5-WV 513045
 H6-WV 514387

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. C. Victor Moyers
849



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

DATE JULY 6, 20 12

OPERATORS WELL NO. WV 513045

API WELL NO. 47-085-09953
STATE COUNTY PERMIT
Mad

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7566P513045AR3 (329-36)

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 LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 788' (GROUND) 795' (PROPOSED) WATERSHED NORTH FORK HUGHES RIVER

DISTRICT CLAY COUNTY RITCHIE QUADRANGLE PENNSBORO 7.5'

SURFACE OWNER HEARTWOOD FORESTLAND FUND ACREAGE 353.5±

ROYALTY OWNER JEFFERSON BROADWATER HEIRS ET AL LEASE ACREAGE 360±

PROPOSED WORK: LEASE NO. 105412

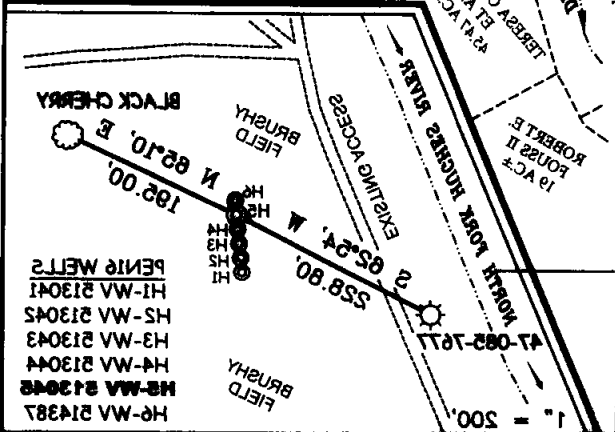
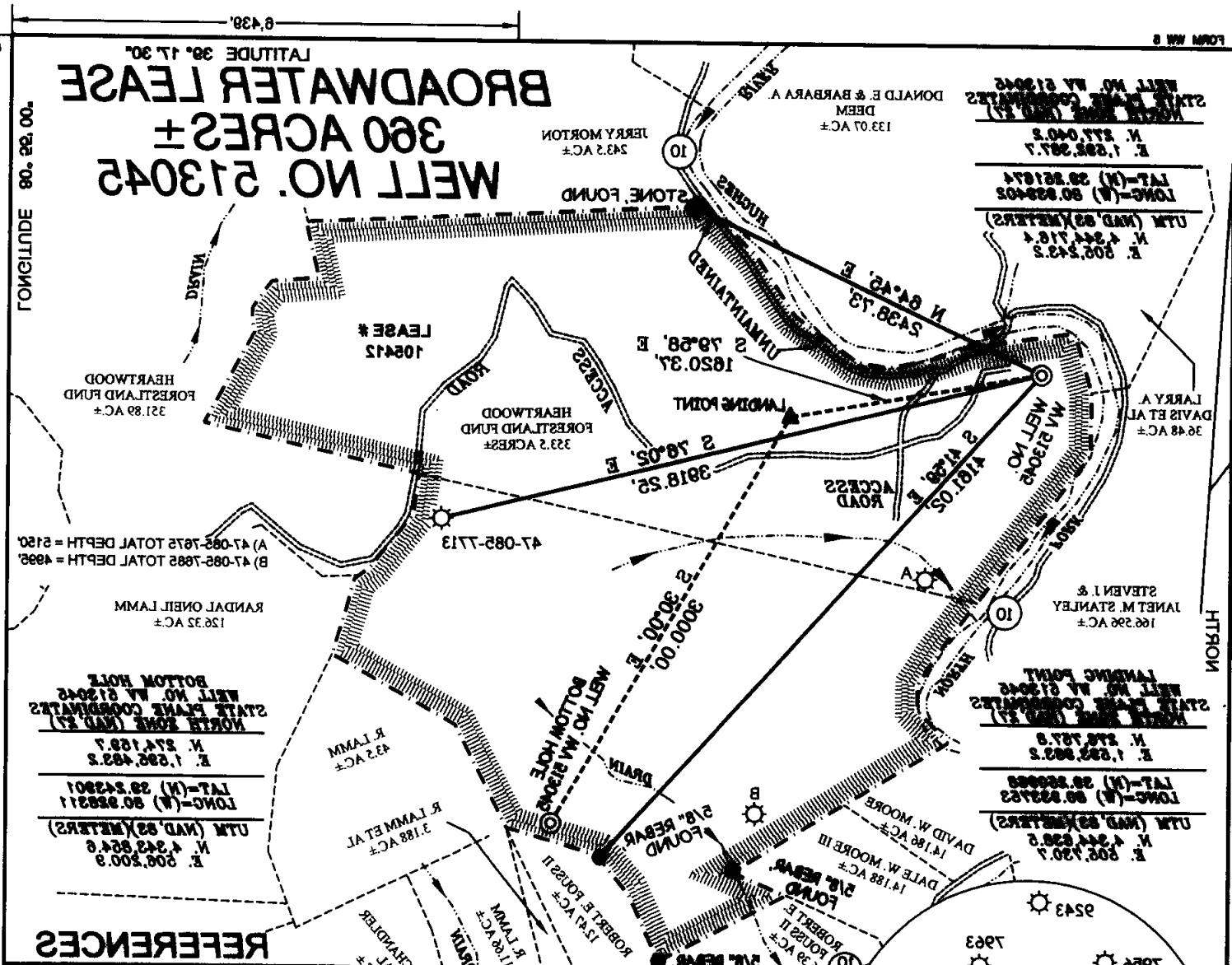
DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD

FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH _____

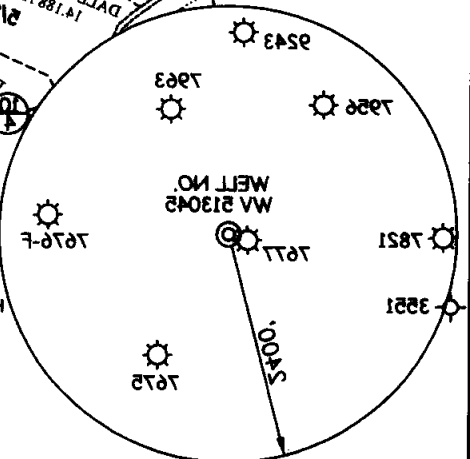
WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

COUNTY NAME
PERMIT

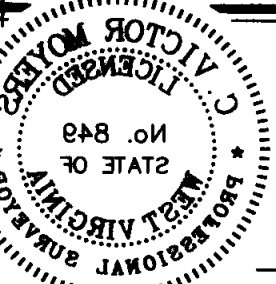


NOTES ON SURVEY

1. TIES TO WELLS, CORNERS & REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE AND '27' LEASE BOUNDARY SHOWN HEREON TAKEN DEED BOOK 187 PAGE 388 SURFACE OWNER AND ADJONER
2. SURFACE OWNER AND ADJONER INFORMATION TAKEN FROM THE ASSessor AND COUNTY CLERK RECORDS OF RITCHIE COUNTY IN JULY, 2011.
3. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS (SURVEY GRADE TIE TO CORRS NETWORK).
4. PLAT DATED 10/13/11 REVISED 7/08/12 TO SHOW NEW LANDING POINT & BOTTOM HOLE COORDINATES ETC.



DATE JULY 8 2012
 OPERATORS WELL NO. WV 513045
 STATE 47 COUNTY 082 PERMIT 00023



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. 849
Victor Moyers

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

FILE NO. 7588213045A3 (328-38)
 SCALE 1" = 1000'
 PROVEN SOURCE
 OF ELEVATION
 DGPS (SURVEY GRADE TIE TO CORRS NETWORK)

WELL TYPE: OIL GAS LIQUID WASTE IF STORAGE DEEP SHALLOW

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 MARCELLUS
 ESTIMATED DEPTH _____

ROYALTY OWNER JEFFERSON BROADWATER HEIRS ET AL LEASE ACREAGE 360±
 SURFACE OWNER HEARTWOOD FORESTLAND FUND ACREAGE 353.5±
 DISTRICT CLAY COUNTY RITCHIE WATERSHED NORTH FORK RICHES RIVER
 ELEVATION 785 (PROPOSED) WATERSHED NORTH FORK RICHES RIVER

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

CONCULD NAME

PERMIT

WELL NO. 513045
 360 ACRES ±
 BROADWATER LEASE

CONCULD 80.28.00

HTRON

172.41

8.438

LATITUDE 39.17.30"

Anticipated Frac Additives

Chemical Names and CAS numbers

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

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NY Department of
Environmental Conservation

85-9953 Mod

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

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

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

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Lease 105412		1/8 Min Pd	
Creed Collins & Susan H. Collins	W.A. Flanagan		24/315
W.A. Flanagan	J.L. Newman		58/362
J.L. Newman	The Philadelphia Company of West Virginia		58/363
The Philadelphia Company of West Virginia	Pittsburgh & WV Gas Company		55/362
Pittsburgh & WV Gas Company	Equitable Gas Company		126/473
Equitable Gas Company	Equitrans Inc.		197/283
Equitrans Inc.	Equitrans L.P.		201/217
Equitrans L.P.	Equitable Production-Eastern States		234/830
Equitable Production-Eastern States	EQT Production Company		Cert 6/443

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

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

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

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

Well Operator: EQT Production Company
 By: 
 Its: Permitting Supervisor

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WV Department of
Environmental Protection

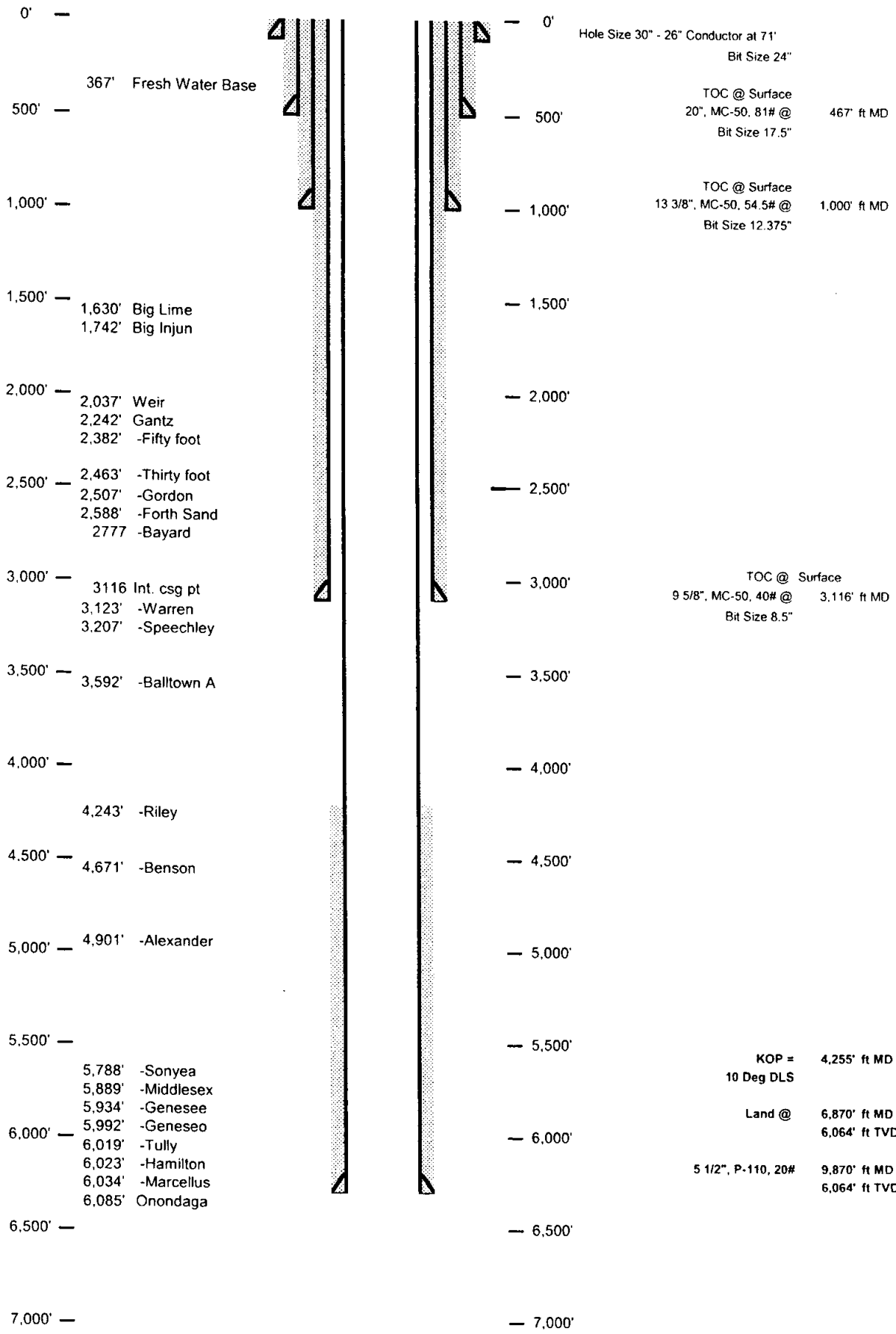
Well Schematic
EQT Production

85-04425

Well Name 513045 (PEN16H5)
County Ritchie
State West Virginia

Elevation KB:
Target
Prospect
Azimuth
Vertical Section

805
Marcellus
150
4228



SLP 2 2 2009
MVA
Environmental

85-9953
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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION**

Date of Notice Certification: _____

API No. 47 - 085 - 09953
Operator's Well No. 513045
Well Pad Name: PEN16

Notice has been given:

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

State: <u>WV</u>	UTM NAD 83 Easting: <u>505,243.2</u>
County: <u>Ritchie</u>	UTM NAD 83 Northing: <u>4,344,716.4</u>
District: <u>Clay</u>	Public Road Access: <u>Rt. 10</u>
Quadrangle: <u>Pennsboro 7.5</u>	Generally used farm name: <u>Broadwater</u>
Watershed: <u>North Fork Hughes River</u>	

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

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

*PLEASE CHECK ALL THAT APPLY

- NOTICE OF SEISMIC ACTIVITY or NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED
- NOTICE OF ENTRY FOR PLAT SURVEY or NO PLAT SURVEY WAS CONDUCTED
- NOTICE OF INTENT TO DRILL or NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED OR
- WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)
- NOTICE OF PLANNED OPERATION
- PUBLIC NOTICE
- NOTICE OF APPLICATION

OOG OFFICE USE ONLY

- RECEIVED/NOT REQUIRED
- RECEIVED
- RECEIVED/NOT REQUIRED
- RECEIVED
- RECEIVED
- RECEIVED

Required Attachments:

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

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WV Department of
Environmental Protection

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Certification of Notice is hereby given:

THEREFORE, I [Signature], have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator: EQT Production Company
By: Victoria J. Roark
Its: Permitting Supervisor
Telephone: 304-848-0076

Address: P.O. Box 280
Bridgeport, WV 26330
Facsimile: 304-848-0040
Email: vroark@eqt.com



Subscribed and sworn before me this 14 day of SEPTEMBER, 2012
[Signature] Notary Public
My Commission Expires 6/27/2018

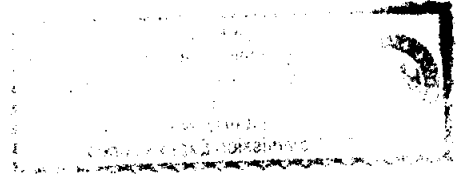
Oil and Gas Privacy Notice:

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

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WV Department of
Environmental Protection



EQT
EQT Production
115 Professional Place
P. O. Box 280
Bridgeport, WV 26330

David Cowen
Rt. 1 Box 202
Harrsville, WV 26362

RECEIVED
Office of
SEP 17 2013
WV Department of
Environmental Protection
10/14/2013
MEMPHIS
\$0.12 249



85-09953

well : 513045

October 1, 2012

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

Re: 513041, 513042, 513045

Dear Mr. Smith,

Attached are new plats, mylars, and rec plans for the above submitted permits. The only thing that changed is the reference boxes. The H4 well was deleted and the H6 was put in its place. No other changes were made to the plats. The maps were updated to also show the positioning of the H6 well. Please replace these pages in the permit applications you currently have on file.

If you have any questions, please feel free to call me at (304) 848-0076.

Sincerely

Vicki Roark
Permitting Supervisor

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OCT 1 2012
OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Adkins, Laura L

From: Adkins, Laura L
Sent: Tuesday, September 18, 2012 4:49 PM
To: Roark, Vicki (VRoark@eqt.com)
Subject: Modifications

Vicki,

The modifications you sent in for 85-09953 and 09951 do not have a modification request detailing what changes EQT would like to make...I do see that the surface location has changed and therefore would not be a modification, this would need to be submitted as a new permit application including the fees.

The question on the well work and site prep notice is still being discussed, I hope to have an answer for you tomorrow.

Best,
Laura

PLEASE INCLUDE THE INFORMATION IN THE SUBJECT LINE OF THIS EMAIL FOR ALL CORRESPONDENCE CONCERNING THIS PERMIT APPLICATION WHETHER IT BE BY EMAIL OR MAIL. THE ITEMS REQUESTED IN THIS EMAIL WILL NEED TO BE RECEIVED BY THE OFFICE OF OIL AND GAS WITHIN 10 DAYS TO AVOID THE PERMIT APPLICATION/APPLICATIONS BEING RETURNED.

Thank you

As it turns out the surface coordinates did not change. The Lat/Long west and south distances changed from original application but the GPS'd coordinate stayed the same.

GCS
12/10/12

85-9953 Mod

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

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

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

Date of Notice: _____ **Date Permit Application Filed:** _____

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

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

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

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

Name: Heartwood Forestland Fund IV (Greg Wilhelm) Name: _____
Address: 3001 Emerson Ave. Address: _____
Parkersburg, WV 26104

Notice is hereby given:

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

State:	<u>WV</u>	UTM NAD 83	Easting	<u>505,243.2</u>
County:	<u>Ritchie</u>		Northing	<u>4,344,716.4</u>
District:	<u>Clay</u>	Public Road Access:		<u>Rt. 10</u>
Quadrangle:	<u>Pennsboro 7.5</u>	Generally used farm name:		<u>Broadwater</u>
Watershed:	<u>North Fork Hughes River</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx

Notice is hereby given by:

Well Operator:	<u>EQT Production Company</u>	Authorized Representative:	<u>Victoria Roark</u>
Address:	<u>115 Professional Place, P.O Box 280</u>	Address:	<u>115 Professional Place, P.O Box 280</u>
	<u>Bridegeport, WV 26330</u>		<u>Bridegeport, WV 26330</u>
Telephone:	<u>304-848-0076</u>	Telephone:	<u>304-848-0076</u>
Email:	<u>vroark@eqt.com</u>	Email:	<u>vroark@eqt.com</u>
Facsimile:	<u>304-848-0041</u>	Facsimile:	<u>304-848-0041</u>

Oil and Gas Privacy Notice:

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

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Office of Oil & Gas

SEP 17 2012

WV Department of
Environmental Protection

85-9953

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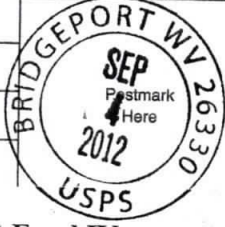
7011 0470 0003 0568 4875

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Total Postage

Heartwood Forest Fund IV

Greg Wilhelm

3001 Emerson Ave.

Parkersburg, WV 26104

DENIG - Intent to drill

Sent To

Street, Apt. No.
or PO Box No.

City, State, ZIP

PS Form 3800, August 2006

See Reverse for Instructions

85-9853
Mod

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

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

Date of Notice: _____ Date Permit Application Filed: _____

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

CERTIFIED MAIL RETURN RECEIPT REQUESTED HAND DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)

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

Name: Hearwood Forrest Fund IV (Greg Wilhelm) Name: _____ 0
Address: 3001 Emerson Ave. Address: _____ 0
Parkersburg, WV 26104 _____ 0

Notice is hereby given:

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

State: WV UTM NAD 83 Easting: 505,243.2
County: Ritchie Northing: 4,344,716.4
District: Clay Public Road Access: Rt. 10
Quadrangle: Pennsboro 7.5 Generally used farm name: Broadwater
Watershed: North Fork Hughes River

This Notice Shall Include:

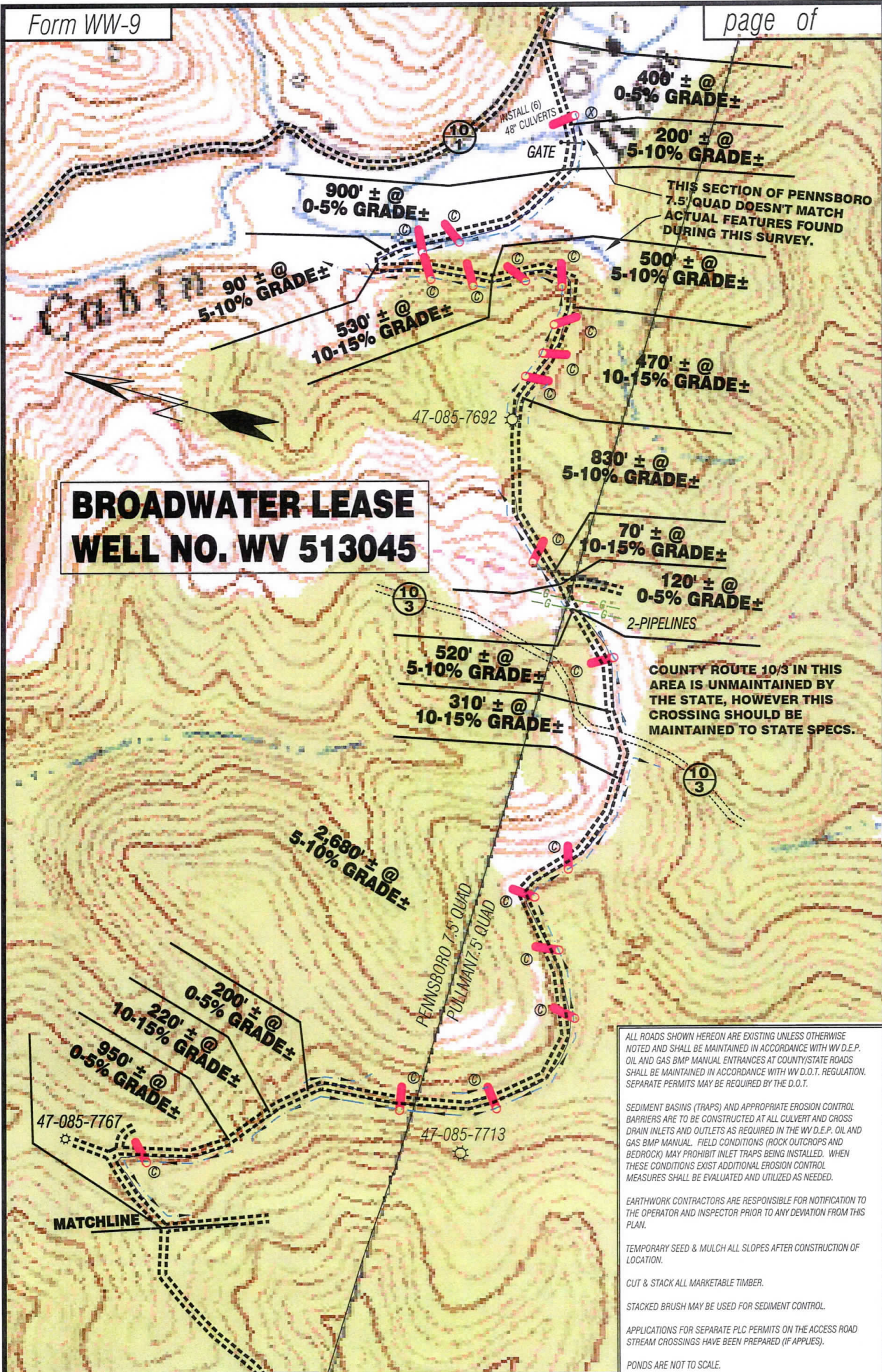
Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface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

Well Operator: EQT Production Company Address: 115 Professional Place, P.O. Box 280
Telephone: 304-848-0082 Bridgeport, WV 26330
Email: vroark@eqt.com Facsimile: 304-848-0040

Oil and Gas Privacy Notice:

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

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SEP 17 2012
WV Department of
Environmental Protection



**BROADWATER LEASE
WELL NO. WV 513045**

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 (IF APPLIES).

PONDS ARE NOT TO SCALE.

SCALE: 1"=500'



- = EXISTING CULVERT
- = PROPOSED CULVERT 12" MIN. UNLESS OTHERWISE NOTED
- = PROPOSED STREAM CROSSING (IF APPLIES) *SEE TABLE FOR CULVERT DETAIL

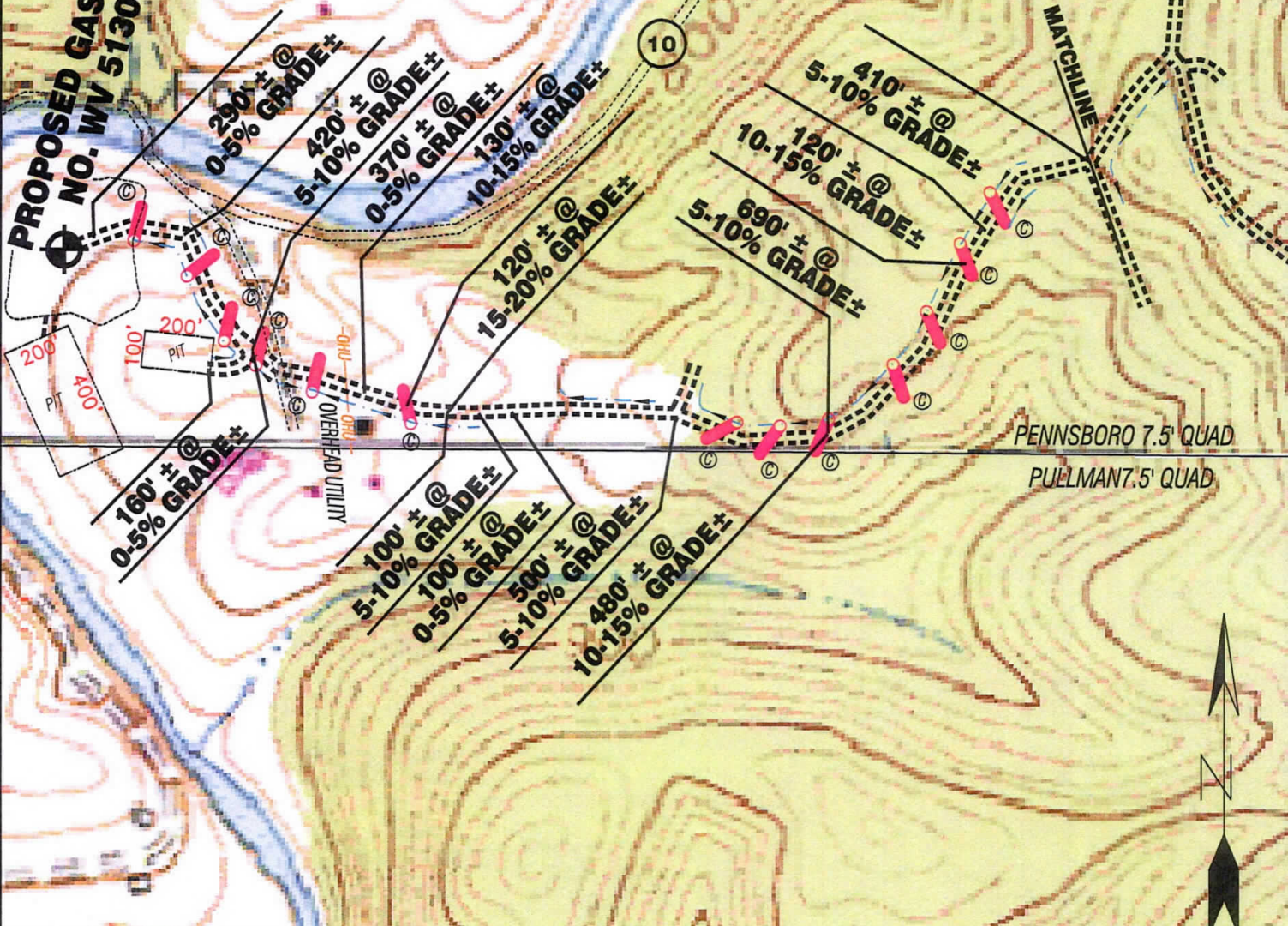
TOPO SECTION OF USGS PENNSBORO & PULLMAN 7.5' QUADRANGLES

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

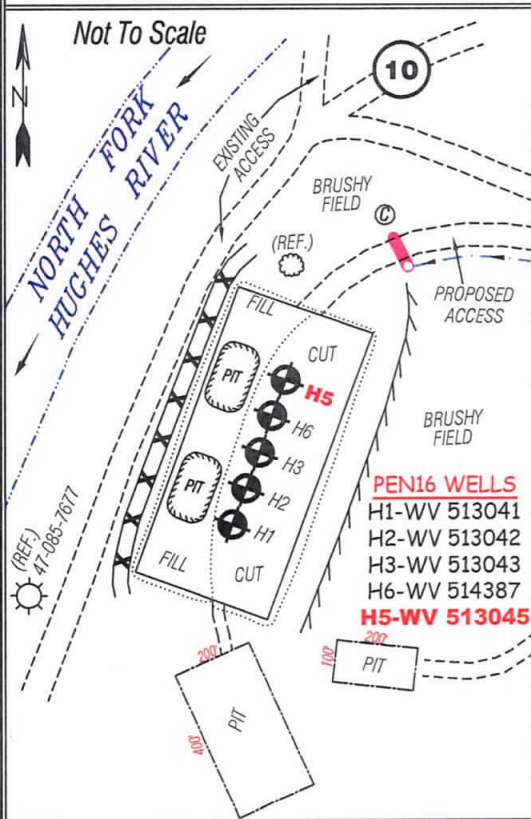
DRAWN BY K.D.W.	FILE NO. 7566	DATE 09/20/12	CADD FILE: 7566REC\WV513045R2.dwg
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BROADWATER LEASE WELL NO. WV 513045

**PROPOSED GAS WELL
NO. WV 513045**



Detail Sketch for Proposed Well WV 513045



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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CUT & STACK ALL MARKETABLE TIMBER.

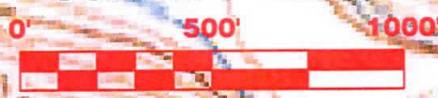
STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

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

PONDS ARE NOT TO SCALE.

- = EXISTING CULVERT
- = PROPOSED CULVERT 12" MIN. UNLESS OTHERWISE NOTED
- = PROPOSED STREAM CROSSING (IF APPLIES) *SEE TABLE FOR CULVERT DETAIL

SCALE: 1"=500'



TOPO SECTION OF USGS PENNSBORO & PULLMAN 7.5' QUADRANGLES



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. 7566	DATE 09/20/12	CADD FILE: 7566RECWW513045R2.dwg
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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

PERMIT MODIFICATION APPROVAL

August 03, 2012

EQT PRODUCTION COMPANY
POST OFFICE BOX 280
BRIDGEPORT, WV 26330

Re: Permit Modification Approval for API Number 8509953 , Well #: 513045 - BROADWATER
shorten cement on production string

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas

Smith, Gene C

From: Maddox, Bradley D. [BDMaddox@eqt.com]
Sent: Thursday, August 02, 2012 4:59 PM
To: Smith, Gene C
Subject: List of Wells for Production CMT Variance
Attachments: WV Production CMT Mods.xlsx

Gene,

Attached is a list of the wells we have permits for and would like a modification from you in regards to the cement top on the production string. All of the wells on the list currently have the top of cement inside the intermediate casing and we are requesting a modification from you on these wells to allow us to cement 1000' above KOP. The modification on this will allow us to monitor the intermediate casing shoe during stimulation and will allow us to safely plug and abandon the well in the future.

Please let me know if you have any questions or need any additional information. We will submit a modification request on all future well permits.

Thank you,

Brad Maddox
Manager – Drilling Operations
EQT Production Company
625 Liberty Avenue
Pittsburgh, PA 15222-3111
412-395-7053 - Office
412-208-5790 - Cell
BDMaddox@eqt.com

EQT Where energy meets innovation.

www.eqt.com