



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

June 12, 2014

WELL WORK PERMIT

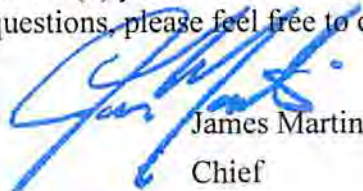
Horizontal 6A Well

This permit, API Well Number: 47-4902287, issued to TRANS ENERGY, INC., 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: MCDONNELL 1H
Farm Name: YOUNG, MAX K. & JAQUELINE
API Well Number: 47-4902287
Permit Type: Horizontal 6A Well
Date Issued: 06/12/2014

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 (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.

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

1) Well Operator: Trans Energy Inc 494481575 Marion Mannington Glover Gap
Operator ID County District Quadrangle

49 04 374

2) Operator's Well Number: McDonnell 1H Well Pad Name: McDonnell

3) Farm Name/Surface Owner: Max K Young & Jaqueline K Young Public Road Access: Co Rd 3

4) Elevation, current ground: 1432' Elevation, proposed post-construction: 1410'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Marcellus Shale 7200' 60' thick 4000 psi

8) Proposed Total Vertical Depth: 7200'

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 12,180'

11) Proposed Horizontal Leg Length: 4,980'

12) Approximate Fresh Water Strata Depths: 60, 150

13) Method to Determine Fresh Water Depths: Water Wells drilled in the County, information provided by Health Dept.

14) Approximate Saltwater Depths: 1525'

15) Approximate Coal Seam Depths: 1220'

16) Approximate Depth to Possible Void (coal mine, karst, other): N/A

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: Mason Dixon Proposed Mine
Depth: _____
Seam: _____
Owner: _____

WRH
1-24-14

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(9/13)

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CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20	new	J-55	94	110'	110'	CTS
Fresh Water	13-3/8	new	J-55	54.5	1270'	1270'	CTS
Coal							
Intermediate	9-5/8	new	J-55	36	3000'	3000'	CTS
Production	5-1/2	new	P-110	20	12180'	12180'	to 3000'
Tubing							
Liners							

*WRN
1-24-14*

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	26	0.538	1530	Type 1	13 cu ft/sk
Fresh Water	13-3/8	17-1/2	.38	2730	Type 1	1.25 cu ft/sk
Coal						
Intermediate	9-5/8	12-1/2	.352	3520	Type 1	1.26 cu ft/sk
Production	5-1/2	8/3/4	.361	12360	Poz H Class H	1.18 cu ft/sk
Tubing						
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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Office of Oil and Gas
WV Dept. of Environmental Protection
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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and complete horizontal well in the Marcellus Shale. Lateral to be approximately 4980' in length

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

A water fracture treatment is proposed a mixture of sand and water will be used to stimulate the Marcellus Shale.
Max Pressure 10,000
Max Rate 10 bbl/min

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 21.11 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.37 acres

23) Describe centralizer placement for each casing string:

Fresh Water String - 1 centralizer every 160'
Intermediate String - 1 centralizer every 100' from 3300' to 900'
Production String - 1 centralizer every 80' from TD to above ROP (7000')

24) Describe all cement additives associated with each cement type:

Standard Type 1 cement
Type 1 = 2% CaCl₂ + Y4# Flake - Surface Cement mixed @ 15.6 ppg CaCl₂, Flake (cellophane flake)
Type 1 = 2% CaCl₂ + Y4# Flake - Intermediate Cement mix @ 15.6 ppg
Class H in lateral - retarder and fluid loss and free water additive

25) Proposed borehole conditioning procedures:

Before cement casing mud will be thinned and all gas will be circulated out of the mud before cementing

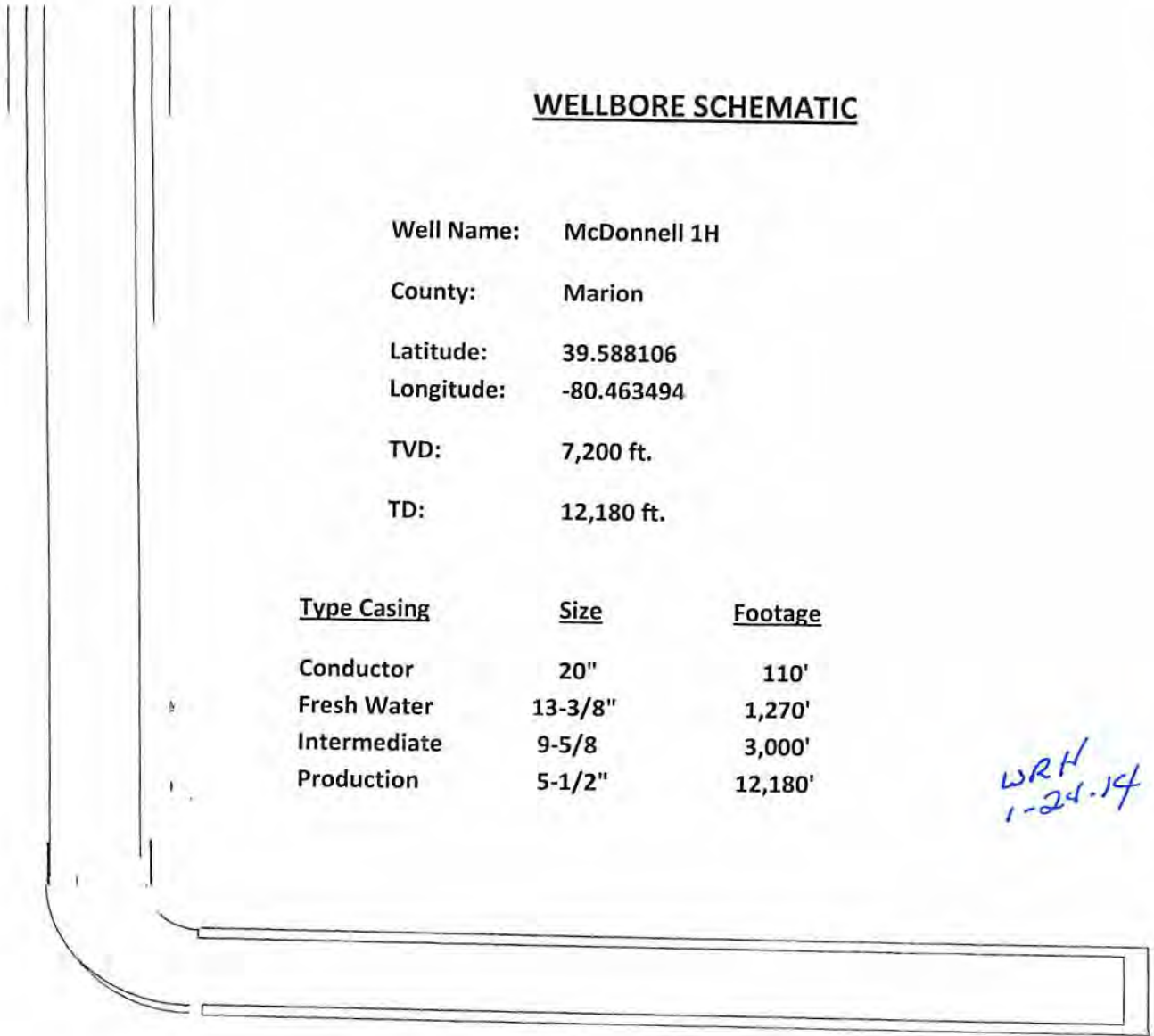
*Note: Attach additional sheets as needed.

Listed below – components of Retarders and fluid loss additive:

Retarders			
D006	S	Moderate temperature; also controls fluid loss; used mostly with high-salinity systems	54–104°C [130–220°F]
D013	S	Low temperatures	Maximum 86°C [185°F]
D028	S	High temperatures	104–149°C [220–300°F] 204°C [400°F] (with aid D121)
D061	L	Low temperatures	Maximum 85°C [185°F]
D093	S	Retarder aid; high temperatures	149–204°C [300–400°F]
D110	L	High temperatures	79–149°C [175–300°F] 191°C [375°F] (with aid D121)
D121	S	Retarder aid; high temperatures	110–177°C [230–350°F]
D150	L	High temperatures	104–149°C [220–300°F] 204°C [400°F] (with aid D121)
D161	L	UNISET additive for high temperatures	85–232°C [185–450°F]
D177	L	UNISET additive for moderate temperatures	60–121°C [140–250°F]
D800	S	Moderate temperatures	52–121°C [125–250°F] 154°C [310°F] (with aid D121)
D801	L	Moderate temperatures	52–121°C [125–250°F] 154°C [310°F] (with aid D121)

Fluid-Loss Additives			
D006	S	Fluid loss control	85–232°C [185–450°F]
D069	S	High-salinity systems	38–83°C [100–200°F]
D065A	S	SALTBOND additive for high-salinity systems	About 121°C [250°F]
D068A	L	SALTBOND additive for high-salinity systems	About 121°C [250°F]
D112	S	Low-density systems	4–93°C [40–200°F]
D167	S	UNIFLAC additive	0–204°C [32–400°F]
D168	L	UNIFLAC additive	0–204°C [32–400°F]
D300	L	Low to moderate temperatures, nonretarding	Maximum 121°C [250°F]
D804AM	L	SALTBOND additive for high-salinity systems	About 121°C [250°F]

4704902287



WELLBORE SCHEMATIC

Well Name: McDonnell 1H
County: Marion
Latitude: 39.588106
Longitude: -80.463494
TVD: 7,200 ft.
TD: 12,180 ft.

<u>Type Casing</u>	<u>Size</u>	<u>Footage</u>
Conductor	20"	110'
Fresh Water	13-3/8"	1,270'
Intermediate	9-5/8"	3,000'
Production	5-1/2"	12,180'

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WW-9
(9/13)

API Number 47 - 4704902287
Operator's Well No. McDonnell 1H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Trans Energy Inc OP Code 494481575

Watershed (HUC 10) Bartholomew Fork Quadrangle Glover Gap

Elevation 1432' County Marion District Mannington

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

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Freshwater mud until reaching Marcellus then synthetic

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

Additives to be used in drilling medium? None

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All cuttings will be hauled to approved landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) Sawdust

-Landfill or offsite name/permit number? Short Creek Landfill SWF - 1034

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.

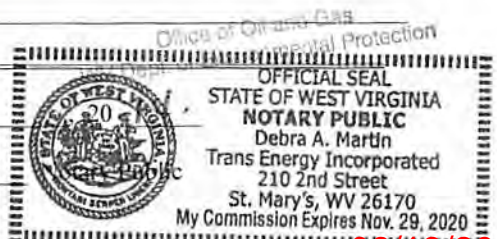
Company Official Signature Leslie A. Gearhart

Company Official (Typed Name) Leslie Gearhart

Company Official Title VP - Operations

Subscribed and sworn before me this 20 day of January
Debra A Martin Debra A Martin

My commission expires 11/29/2010



06/13/2014

4704902287

Form WW-9

Operator's Well No. McDonnell 1H

Trans Energy Inc

Proposed Revegetation Treatment: Acres Disturbed Total 2111 well 5370ca. Prevegetation pH _____

Lime 2 Tons/acre or to correct to pH 65

Fertilizer type _____

Fertilizer amount 600 lbs/acre

Mulch 90 Bales Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Meadow Mix	100
Oats or Rye	50

Seed Type	lbs/acre
Meadow Mix	100
Oats or Rye	50

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: _____

Title: Environmental Inspector

Date: 1-24-14

JAN 30 2014

Field Reviewed? () Yes () No

Office of Oil and Gas
WV Dept. of Environmental Protection

06/13/2014

4704902287

WPH
1-24-14

MCDONNELL 1H



TRANS ENERGY INC.



WELL SITE SAFETY PLAN

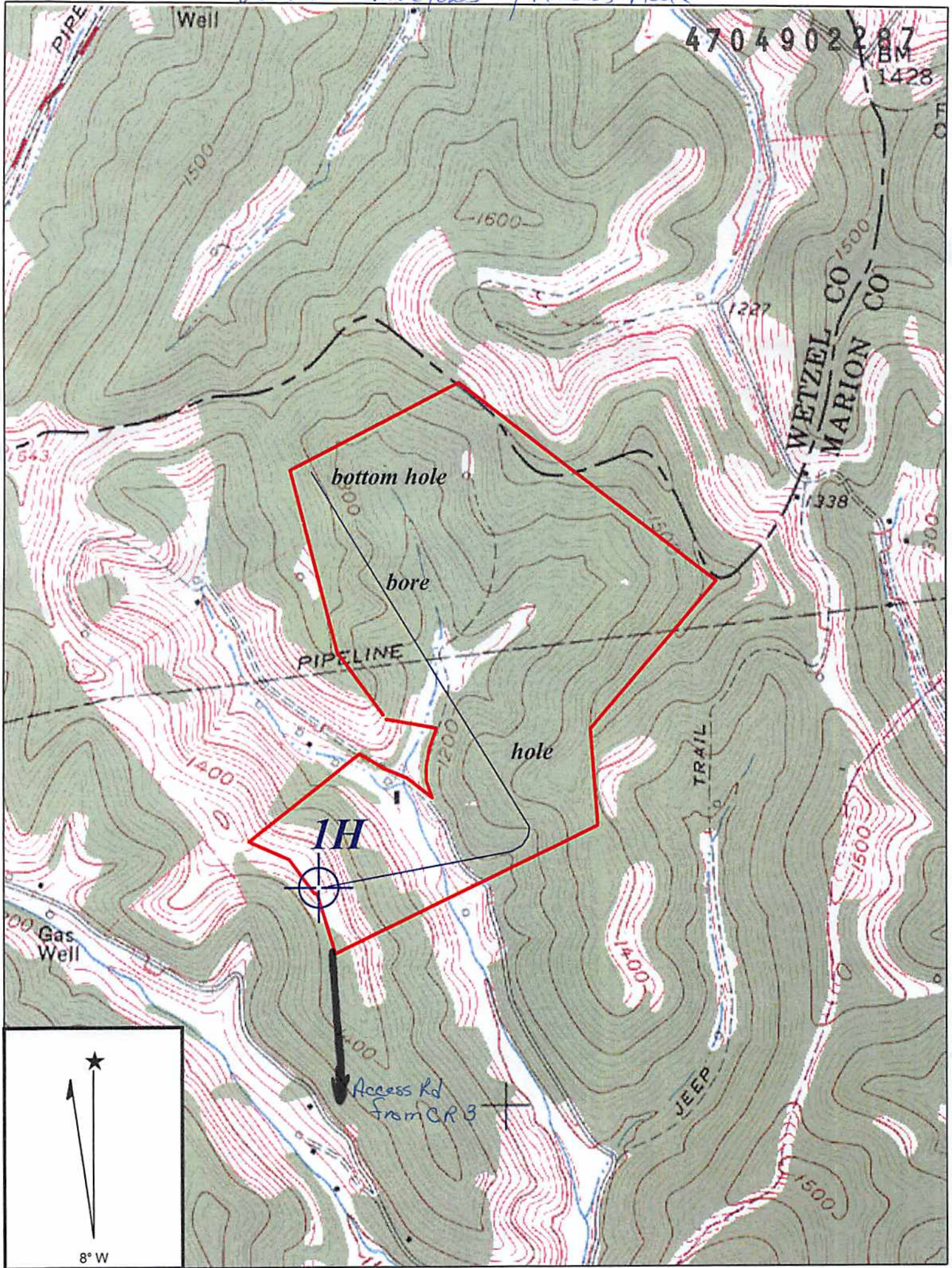
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Water Purveyors / Access Road



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GLOVER GAP QUADRANGLE

SCALE 1" = 1000'

TRANS ENERGY, INC.

WELL: MCDONNELL 1H
MCDONNELL, ET AL 248.477 ACRE UNIT

MANNINGTON DISTRICT MARION COUNTY WEST VIRGINIA

WRH
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bottom hole 80°27' 50.6" (80.464056) 1670'
 top hole 80°27' 48.58" (80.463494) 1520'

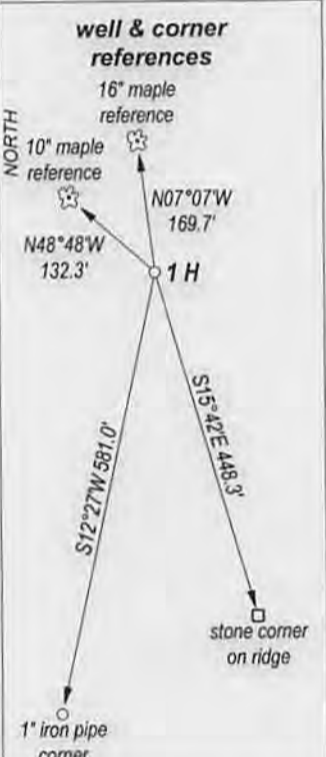
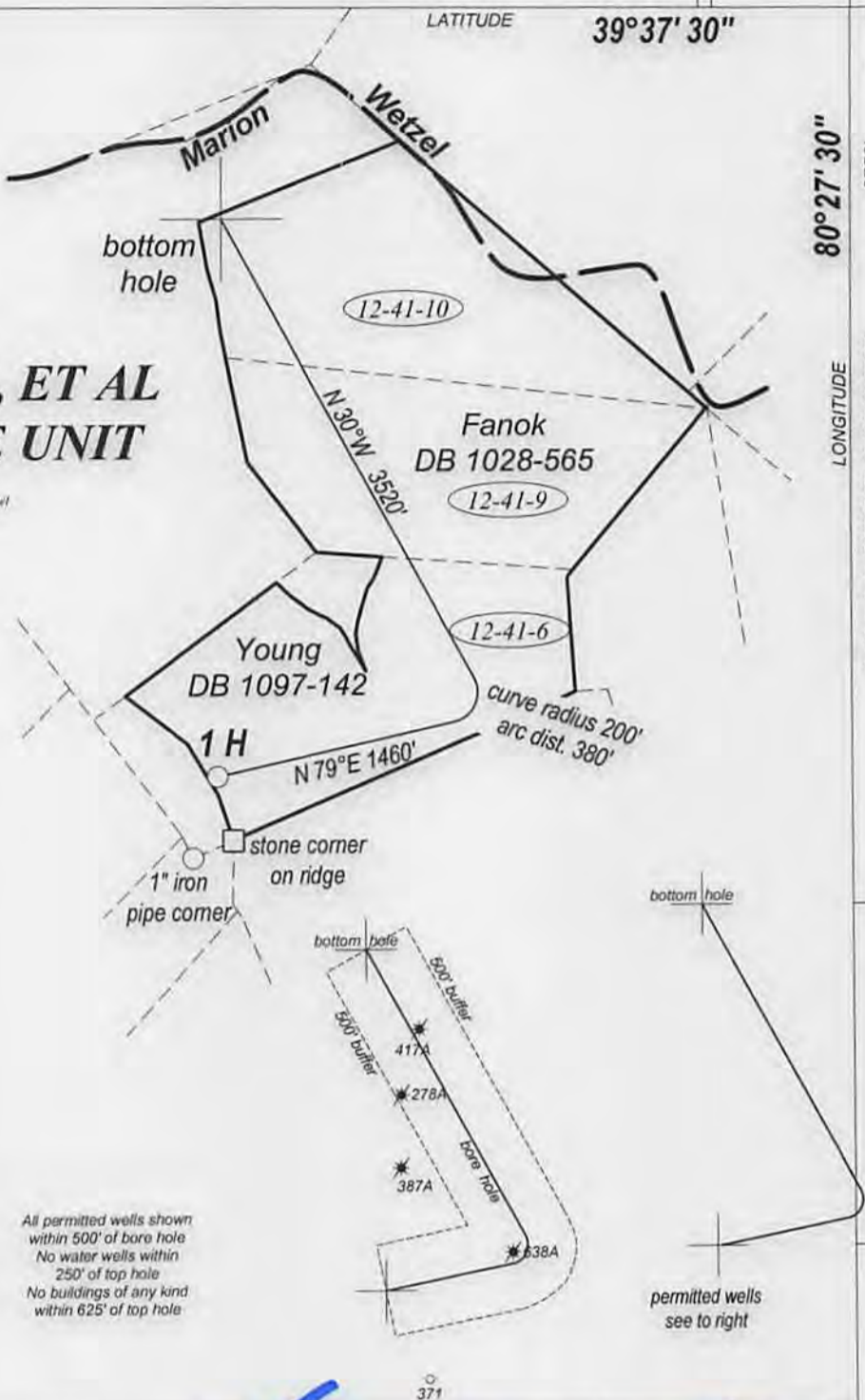
UTM NAD 83
 top hole
 N: 4382179.922
 E: 546070.164
 bottom hole
 N: 4383287
 E: 546015

LATITUDE 39°37' 30"

LONGITUDE 80°27' 30"
 9750'
 bottom hole 39°35' 53.1" (39.598083)
 13440'
 top hole 39°35' 17.18" (39.588106)

MCDONNELL, ET AL
248.477 ACRE UNIT

D.M.P. District Map-Parcel



All permitted wells shown within 500' of bore hole
 No water wells within 250' of top hole
 No buildings of any kind within 625' of top hole

permitted wells see to right

FILE NO. _____
 DRAWING NO. _____
 SCALE 1" = 1250'
 MINIMUM DEGREE OF ACCURACY 1 : 200
 PROVEN SOURCE OF ELEVATION GPS
 OBSERVATION

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 DEPARTMENT OF ENERGY.

(SIGNED) _____
 PROFESSIONAL SURVEYOR: 551



STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS

DATE APRIL 25TH, 2014
 OPERATORS WELL NO. MCDONNELL 1H

API 47 - 049 - 02287H6A
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION _____ WASTE DISPOSAL _____
 (IF GAS) PRODUCTION STORAGE _____ DEEP _____ SHALLOW

LOATION: ELEVATION 1432' WATER SHED BARTHOLOMEW FORK
 DISTRICT MANNINGTON COUNTY MARION QUADRANGLE GLOVER GAP

SURFACE OWNER MAX K. YOUNG & JAQUELINE K. YOUNG ACREAGE 74.827
 OIL & GAS ROYALTY MCDONNELL, ET AL LEASE AC. 248.477

PROPOSED WORK: DRILL CONVERT _____ DRILL DEEPER _____ REDRILL _____
 FRACTURE OR STIMULATE _____ PLUG OFF OLD FORMATION _____
 PERFORATE NEW FORMATION _____
 OTHER PHYSICAL CHANGE IN WELL _____
 PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____

TARGET FORMATION MARCELLUS SHALE ESTIMATED DEPTH 7200'

WELL OPERATOR TRANS ENERGY, INC. DESIGNATED AGENT LOREN BAGLEY
 ADDRESS P. O. BOX 393 ADDRESS P. O. BOX 393
 ST. MARYS, WV 26170 ST. MARYS, WV 26170

06/13/2014

FORM WW - 6

COUNTY NAME
 PERMIT