



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

May 07, 2014

WELL WORK PERMIT

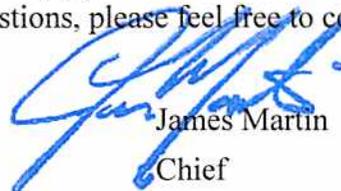
Horizontal 6A Well

This permit, API Well Number: 47-4902282, 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: WRIGHT 2H
Farm Name: RADCLIFF, JACKIE & SHEILA
API Well Number: 47-4902282
Permit Type: Horizontal 6A Well
Date Issued: 05/07/2014

Promoting a healthy environment.

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.

WW-6B
(9/13)

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

49 4 374

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

2) Operator's Well Number: Wright 2H Well Pad Name: Wright

3) Farm Name/Surface Owner: Jackie & Sheila Radcliff Public Road Access: Rt 4/4

4) Elevation, current ground: 1527' Elevation, proposed post-construction: 1490'

5) Well Type (a) Gas Oil Underground Storage
Other

(b) If Gas Shallow Deep
Horizontal

DMH
11-4-17
SK
11-4-18

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: 12,200

11) Proposed Horizontal Leg Length: 5,000

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: 1200'

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 is a proposed Mine
Depth: _____
Seam: _____
Owner: Consol

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Revised 4-30-14

WW-6B
(9/13)

18)

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	100'	110'	CTS
Fresh Water	13-3/8	new	J-55	54.5	1250'	1250'	CTS
Coal							
Intermediate	9-5/8	new	J-55	36	3000'	3000'	CTS
Production	5-1/2	new	P-110	20		12,200	CTS
Tubing							
Liners							

WRH
5-6-14

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	26	0.438	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	1360	Poz H Class H	1.18 cu ft/sk
Tubing						
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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WW-6B
(9/13)

Revised 4-30-14

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 5000' in length. Any rat hole will be cemented to surface

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

Fracture 17-21 stages with Proppant: 150,000 of 100 mesh sand 80,000 of 20/40 white sand, 169,998 of 40/70 white sand. Fluid summary: 1,500 of 15% HCL, 412,665 of Slickwater I, 11,000 Slickwater II.

Max Pressure = 10,000 psi
Max Rate = 100 bbl./min.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.36 acres

22) Area to be disturbed for well pad only, less access road (acres): 2.43 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 - (surface and interm)
Type 1 = 2% CaCl₂ + Y4# Flake - Surface Cement mixed @ 15.6 ppg CaCl₂, Flake (cellophane flake)
Type 1 = 2% CaCl₂ + Y4# Flake - Intermediate Cement mixed @ 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.

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*Note: Attach additional sheets as needed.
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Added 4-30-14 4704902282

Listed below – components of Retarders and fluid loss additive:

Retarders			
D008	S	Moderate temperature; also controls fluid loss; used mostly with high-salinity systems	54–104°C [130–220°F]
D013	S	Low temperatures	Maximum 85°C [185°F]
D028	S	High temperatures	104–149°C [220–300°F] 204°C [400°F] (with aid D121)
D081	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	UNISER additive for high temperatures	85–232°C [185–450°F]
D177	L	UNISER 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

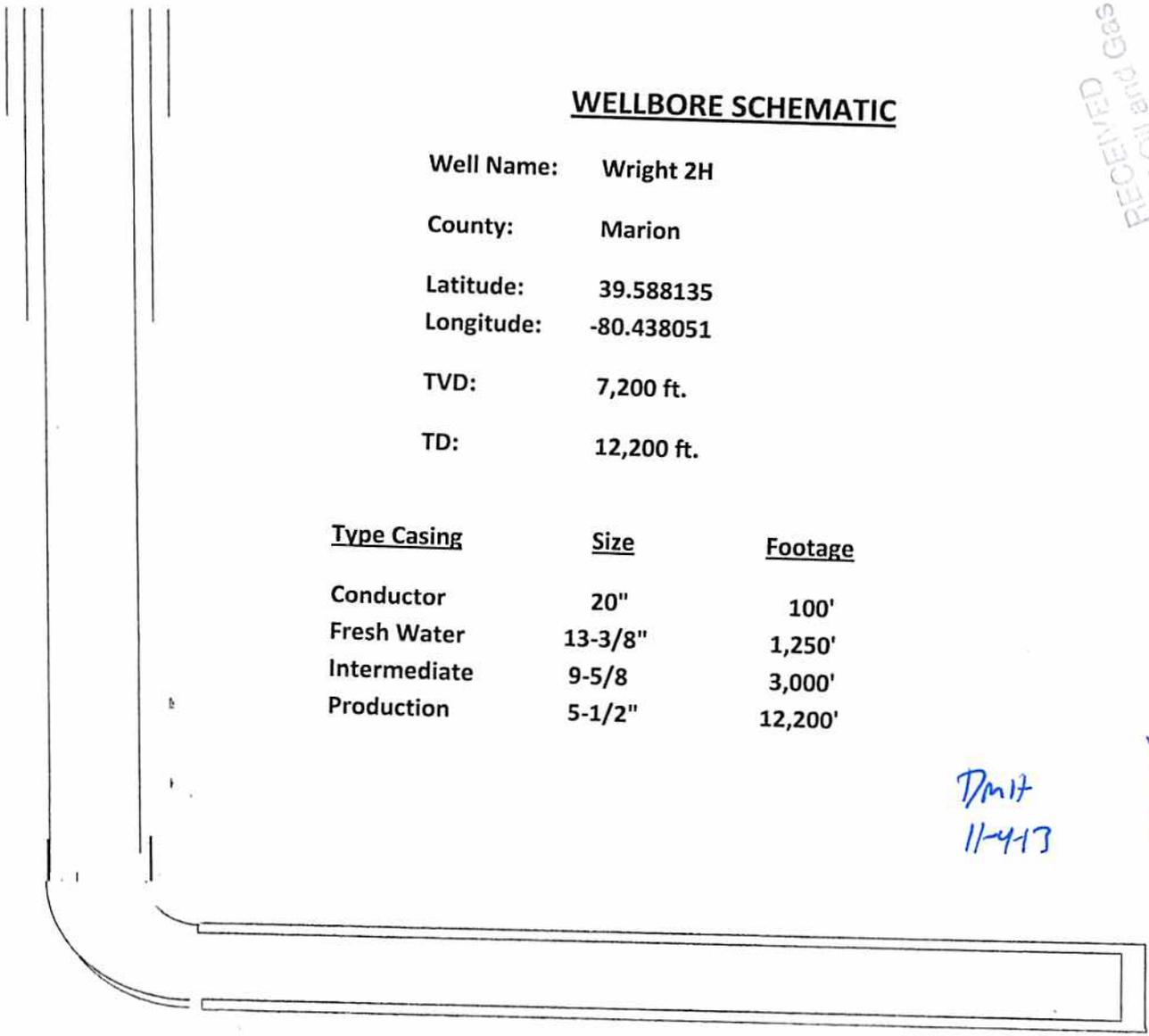
D008	S	Fluid loss control	85–232°C [185–450°F]
D059	S	High-salinity systems	38–93°C [100–200°F]
D085A	S	SALTBOND additive for high-salinity systems	About 121°C [250°F]
D080A	L	SALTBOND additive for high-salinity systems	About 121°C [250°F]
D112	S	Low-density systems	4–93°C [40–200°F]
D167	S	UNIFLAC additive	0–204°C [32–400°F]
D188	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]

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49-02282



WELLBORE SCHEMATIC

Well Name: Wright 2H
 County: Marion
 Latitude: 39.588135
 Longitude: -80.438051
 TVD: 7,200 ft.
 TD: 12,200 ft.

<u>Type Casing</u>	<u>Size</u>	<u>Footage</u>
Conductor	20"	100'
Fresh Water	13-3/8"	1,250'
Intermediate	9-5/8"	3,000'
Production	5-1/2"	12,200'

DMIT
11-4-13

[Signature]
11-4-13

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WW-9
(9/13)

API Number 47 - 49 - 02282
Operator's Well No. Wright 2H

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 1527' 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 All frac fluids will be flowed back into storage containers and Buckeye Water Service Company will haul to an approved water disposal facilities) _____

*DMJ
11-24-17
AK
11-4-17*

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

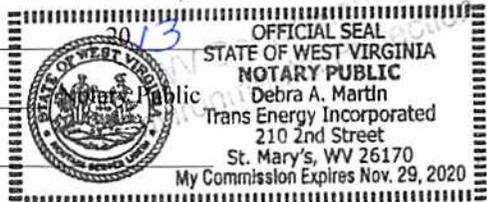
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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 Gearhart*
Company Official (Typed Name) Leslie Gearhart
Company Official Title VP Operations

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NOV 08 2013

Subscribed and sworn before me this 28th day of October
Debra A Martin *Debra A Martin*
My commission expires November 29, 2020



Form WW-9

Operator's Well No. Wright 2H

Trans Energy Inc

Proposed Revegetation Treatment: Acres Disturbed _____ Prevegetation pH _____

Lime 2 Tons/acre or to correct to pH 6.5

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: 

Comments: _____

Title: Oil + Gas Inspector

Date: 11-4-17

Field Reviewed? () Yes () No

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 Environmental Protection

10/25/2013

Trans Energy, Inc.

Safety Plan

Wright Location

PMH
11-4-13

[Signature]
11-4-13

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NY Department of
Environmental Protection



Water Management Plan: Secondary Water Sources



WMP-01697 API/ID Number 047-049-02282 Operator: Trans Energy Inc.
Wright 2H

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

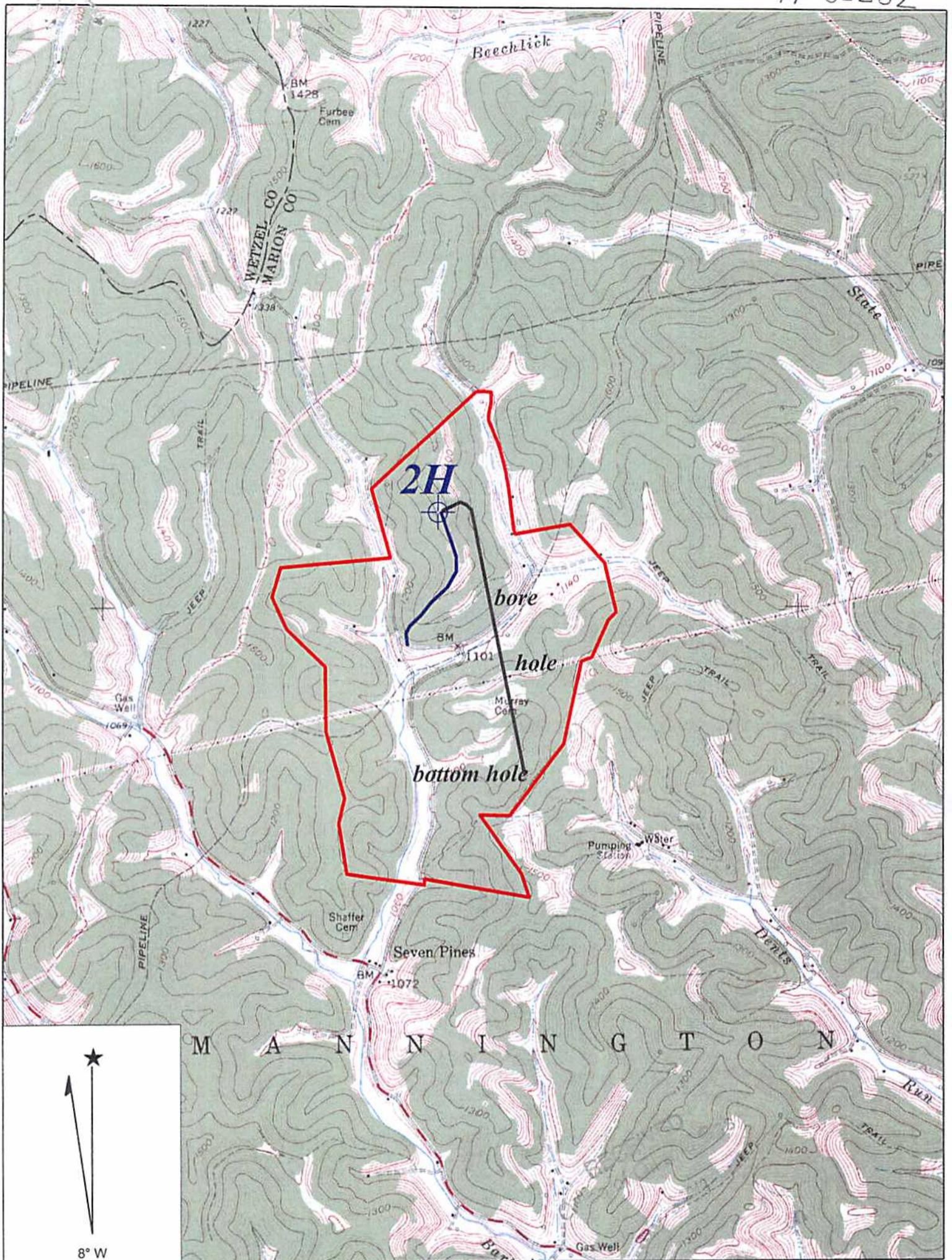
- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Lake/Reservoir

Source ID:	31586	Source Name	Mannington Water Supply Dam (WV04921)		Source start date:	5/20/2014
			City of Mannington		Source end date:	5/20/2015
Source Lat:	39.532404	Source Long:	-80.36676	County	Marion	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	6,300,000	

DEP Comments:

APPROVED DEC 12 2013



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DMH
 11-4-13
 RC
 11-4-13

FOLSOM QUADRANGLE

SCALE 1" = 2000'

TRANS ENERGY, INC.

WELL: WRIGHT 2 H
 WRIGHT, ET AL +/- 527 ACRE LEASE

MANNINGTON DISTRICT MARION COUNTY WEST VIRGINIA

top hole 80°26' 16.98" (80.438051)

6065'

bottom hole 80°26' 03.8" (80.434389)

4600'

UNIT IS 49-12-163 SERIES

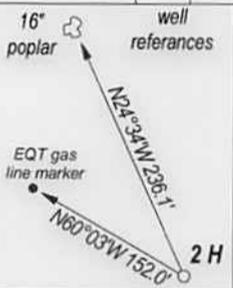
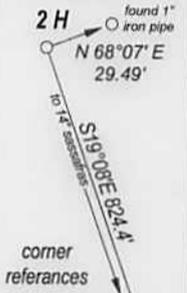
ALL THE DISTRICT MAPS & PARCELS ARE INCLUDED IN THE 49-12-163 SERIES SEE WW 6A1 FOR COMPLETE BREAKDOWN

Permitted wells shown within 500' of bore hole All water wells within 2000' of top hole shown All buildings of any kind shown within 625' of top hole

NORTH

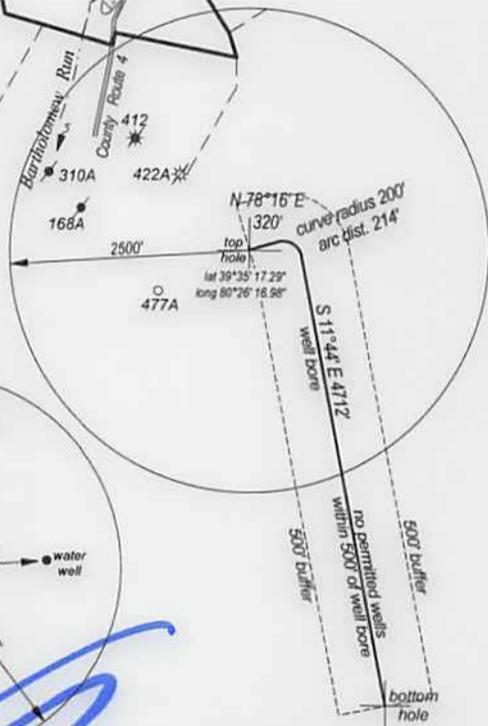
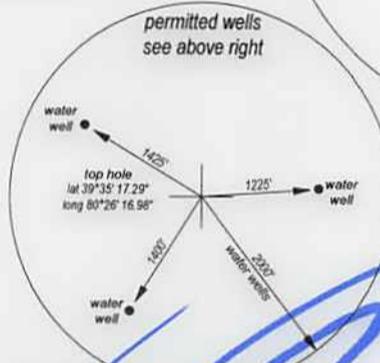
UTM NAD 83 meters top hole N: 4382197 E: 548255

bottom hole N: 4380719 E: 548719



WRIGHT ET AL, +/- 527 ACRE UNIT

D-M-P = District-Map-Parcel



FILE NO. DRAWING NO. SCALE 1" = 2500' 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 MARCH 28TH, 2014 OPERATORS WELL NO. WRIGHT 2H

API 47 - 049 - 02282 H6A STATE COUNTY PERMIT

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

LOCATION: ELEVATION 1527' WATER SHED BARTHOLOMEW FORK DISTRICT MANNINGTON COUNTY MARION QUADRANGLE GLOVER GAP

SURFACE OWNER JACKIE & SHEILA RADCLIFF ACREAGE 48.08 OIL & GAS ROYALTY WRIGHT, ET AL LEASE AC +/- 527

PROPOSED WORK: DRILL XX 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. ADDRESS P. O. BOX 393 ST. MARYS, WV 26170 DESIGNATED AGENT LOREN BAGLEY ADDRESS P. O. BOX 393 ST. MARYS, WV 26170

80°25'00"

LONGITUDE

13405'

top hole 39°35' 17.29" (39.588135)

18110'

bottom hole 39°34' 30.7" (39.575194)

COUNTY NAME:

PERMIT

FORM WW - 6

WRA 4-3-14