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**west virginia** department of environmental protection

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

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

September 23, 2013

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-4902261, 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: RYAN 2H

Farm Name: RYAN, THOMAS E. & ANDREA G

**API Well Number: 47-4902261**

**Permit Type: Horizontal 6A Well**

Date Issued: 09/23/2013

**Promoting a healthy environment.**

**09/27/2013**

# PERMIT CONDITIONS

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

## CONDITIONS

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1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (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 fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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.

09/27/2013

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

49 04 374

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

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

3 Elevation, current ground: 1328' Elevation, proposed post-construction: 1303.99

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):  
Marcellus Shale - 7200' 60' thick 3000 psi

7) Proposed Total Vertical Depth: 7200'

8) Formation at Total Vertical Depth: Marcellus Shale

9) Proposed Total Measured Depth: 11,700'

10) Approximate Fresh Water Strata Depths: 50', 150'

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

12) Approximate Saltwater Depths: 1525

13) Approximate Coal Seam Depths: 900'

14) Approximate Depth to Possible Void (coal mine, karst, other): Mason Dixon

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

16) Describe proposed well work: Drill and Complete horizontal well in the Marcellus Shale. Lateral to be approximately 4,500' in length.  
If Mine void is encounter, please see attached letter

17) Describe fracturing/stimulating methods in detail:  
A water fracture treatment is proposed a mixture of sand and water will be used to stimulate the Marcellus Shale

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 6.28

19) Area to be disturbed for well pad only, less access road (acres): 5.10

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5.10 MAY 13 2013  
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5-9-13  
Office of Oil and Gas  
WV Dept. of Environmental Protection

20)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft.</b>	<b>FOOTAGE: For Drilling</b>	<b>INTERVALS: Left in Well</b>	<b>CEMENT: Fill -up (Cu. Ft.)</b>
Conductor	20	new	J-55	94	100'	100'	CTS
Fresh Water	13 3/8	new	J-55	54.5	1000'	1000'	CTS
Coal							
Intermediate	9 5/8	new	J-55	36	3000'	3000'	CTS
Production	5 1/2	new	P-110	20		11,700'	CTS
Tubing							
Liners							

WRH  
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<b>TYPE</b>	<b>Size</b>	<b>Wellbore Diameter</b>	<b>Wall Thickness</b>	<b>Burst Pressure</b>	<b>Cement Type</b>	<b>Cement Yield</b>
Conductor	20	26	0.438	1530	Type 1	13 cu ft/sk
Fresh Water	13 3/8	17 1/2	0.38	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	12630	Pos H Class H	1.18 cu ft/sk
Tubing						
Liners						

**PACKERS**

Kind:				<b>Received</b>
Sizes:				
Depths Set:				

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21) 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')

22) Describe all cement additives associated with each cement type. \_\_\_\_\_

Standard Type 1 cement - retarder and fluid loss (surface and intern)

Type 1 + 2% CaC12 + Y4# Flake - Surface Cement mixed @ 15.6 ppg CaC12, Flake (cellohane flake)

Type 1 + 1% CaC12 + Y4# Flake - Intermediate Cement mixed @ 15.6 ppg

Class H in lateral - retarder and fluid loss and dree water additive

23) 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.

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WV Dept. of Environmental Protection

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## Attachment V - Planned Additives to be used in Fracturing or Stimulations

Product Name	Product Use	Chemical Name	CAS Number
ALPHA 1427	Biocide	Didecyl Dimethyl Ammonium Chloride	007173-51-1
		Ethanol	000064-17-5
		Glutaraldehyde (Pentanediol)	000111-30-8
		Quaternary Ammonium Compound	068424-85-1
		Water	007732-18-5
BF-7L	Buffer	Potassium Carbonate	000584-08-7
ClayCare	Clay Stabilizer	Choline Chloride	000067-48-1
		Water	007732-18-5
Enzyme G-1	Breaker	No Hazardous Components	NONE
ENZYME G-NE	Breaker	No Hazardous Components	NONE
FRW-18	Friction Reducer	Petroleum Distillate Hydrotreated Light	064742-47-8
GW-3LDF	Gel	Petroleum Distillate Blend	N/A-014
		Polysaccharide Blend	N/A-021
SCALETROL 720	Scale Inhibitor	Diethylene Glycol	000111-46-6
		Ethylene Glycol	000107-21-1
XLW-32	Crosslinker	Boric Acid	010043-35-3
		Methanol (Methyl Alcohol)	000067-56-1
APB01 (AMMONIUM PERSUFATE BREAKER)	Breaker	Ammonium Persulfate	007727-54-0
B05 (LOW PH BUFFER)	Buffer	Acetic acid	000064-19-7
BXL03 Borate XL Delayed High Temp	Crosslinker	No Hazardous Components	NONE
FRW-200	Friction Reducer	No Hazardous Components	NONE
HVG01 (TURQUOISE-1 BULK)	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8
KCLS-4	Clay Stabilizer	No Hazardous Components	NONE
LTB-1	Breaker	Ammonium Persulfate	N/A
		Ethanol	000064-17-5

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EC6110A	Biocide	Glutaraldehyde (Pentanediol)	000111-30-8
		Quaternary Ammonium Compounds	N/A-063
EC6629A	Biocide	No Hazardous Components	NONE
WBK-133 OXIDIZER	Breaker	Ammonium Persulfate	007727-54-0
WBK-134	Breaker	Ammonium Persulfate	007727-54-0
		Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7
WCS-631LC	Clay Stabilizer	Proprietary Non Hazardous Salt	N/A-229
		Water	007732-18-5
WFR-55LA	Friction Reducer	No Hazardous Components	NONE
WGA-15L	Gel	Petroleum Distillate Hydrotreated Light	064742-47-8
WPB-584-L	Buffer	Potassium Carbonate	000584-08-7
		Potassium Hydroxide	001310-58-3
WXL-101LE	Crosslinker	No Hazardous Components	NONE
WXL-101LM	Crosslinker	Petroleum Distillate Hydrotreated Light	064742-47-8
WXL-105L	Crosslinker	Water	007732-18-5
		Ethylene Glycol	000107-21-1
		Boric Acid	010043-35-3
		Ethanolamine	000141-43-5
B244 Green-Cide 25G	Biocide	Glutaraldehyde	111-30-8
L071 Temporary Clay Stabilizer	Clay Stabilizer	Cholinium Chloride	67-48-1
Breaker J218	Breaker	Diammonium Peroxodisulphate	7727-54-0
EB-Clean* J475 Breaker		Diammonium Peroxodisulphate	7727-54-0
Friction Reducer B315	Friction Reducer	Distillates (petroleum), Hydrotreated light Aliphatic Alcohol Glycol Ether	64742-47-8 Proprietary
Friction Reducer J609		Ammonium Sulfate	7783-20-2
Water Gelling Agent J580	Gel	Carbohydrate Polymer	Proprietary
Scale Inhibitor B317	Scale Inhibitor	Trisodium ortho phosphate Ethane-1, 2-diol	7801-54-9 Office of Oil and Gas 107-21-1
Borate Crosslinker J532	Crosslinker	Aliphatic polyol Sodium tetraborate decahydrate	Proprietary 1303-96-4
Crosslinker J610		Aliphatic polyol Potassium hydroxide	Proprietary 1310-58-3

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**WELLBORE SCHEMATIC**

Well Name: **Ryan 2H**

County: **Marion County**

Latitude: **39.55731** Longitude: **-80.434561**

TVD: **11,700**

TD: **7,200**

<u>Type Casing</u>	<u>Size</u>	<u>Footage left</u>
Conductor	20"	100
Fresh Water	13 3/8"	1,000
Intermediate	9 5/8"	3,000
Production	5 1/2	11,700

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49-02261



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 Trans Energy Inc. OP Code 494481575

Watershed Bartholomew Fork Quadrangle Glover Gap

Elevation 1326' County Marion District Mannington

Description of anticipated Pit Waste: N/A

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

Will a synthetic liner be used in the pit?  No Pit  If so, what mil.? N/A

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)

Drilling medium anticipated for this well? 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? See attached

Will closed loop system be used? Yes

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, No Pit  
-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

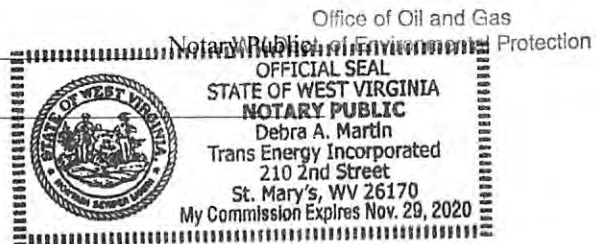
Company Official Title VP- Operations

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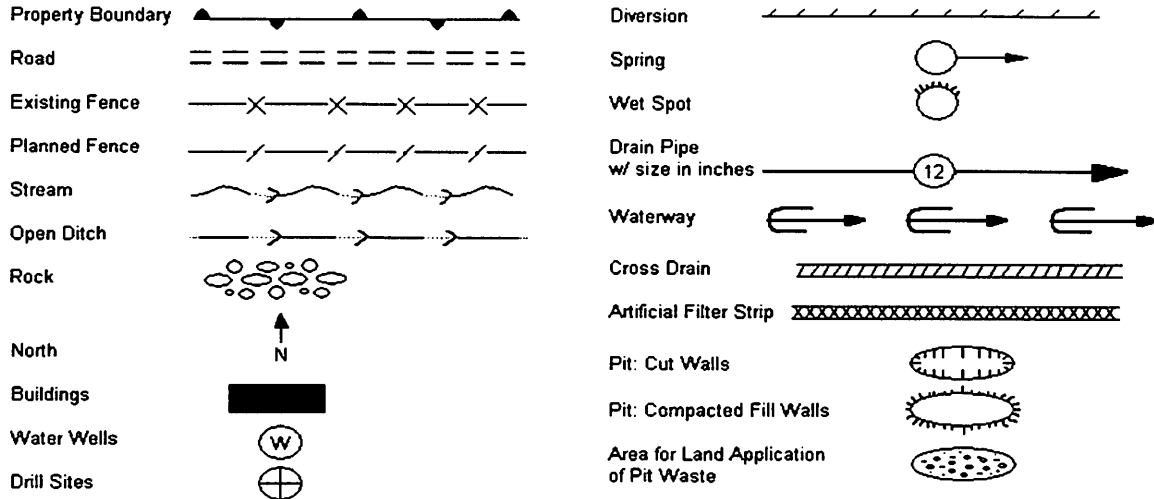
Subscribed and sworn before me this 12th day of April, 2013 MAY 13 2013

Debra A Martin *Debra A Martin*

My commission expires 11/29/2020



09/27/2013



Proposed Revegetation Treatment: Acres Disturbed 16.28 Prevegetation pH \_\_\_\_\_

Lime 2 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 600 lbs/acre (500 lbs minimum)

Mulch 90 Bales Tons/acre

Seed Mixtures

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

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: \_\_\_\_\_

Title: Environmental Inspector

Date: 5-9-13

Field Reviewed?  Yes  No

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WV Dept. of Environmental Protection



## Water Management Plan: Primary Water Sources



WMP- 01380

API/ID Number: 047-049-02261

Operator:

Trans Energy Inc.

Ryan 2H

### Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

**DEP is aware that some intake points will be used for multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.**

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at [DEP.water.use@wv.gov](mailto:DEP.water.use@wv.gov).

APPROVED AUG 21 2013

09/27/2013

## Source Summary

WMP-01380

API Number:

047-049-02261

Operator:

Trans Energy Inc.

Ryan 2H

## Stream/River

● Source **Ohio River @ J&R Excavating** Marshall Owner: **J&R Excavating**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2014	6/1/2015	6,300,000		39.998509	-80.737336

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): **2,940** Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

● Source **Big Run @ Postlethwait Withdrawal Site** Marion Owner: **Carl & Charlotte Postlethwait**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2014	6/1/2015	6,300,000		39.615524	-80.395503

Regulated Stream? Ref. Gauge ID: 3061500 BUFFALO CREEK AT BARRACKVILLE, WV

Max. Pump rate (gpm): **1,000** Min. Gauge Reading (cfs): **24.73** Min. Passby (cfs) **0.21**

DEP Comments:

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## Source Detail

WMP- 01380

API/ID Number: 047-049-02261

Operator: Trans Energy Inc.

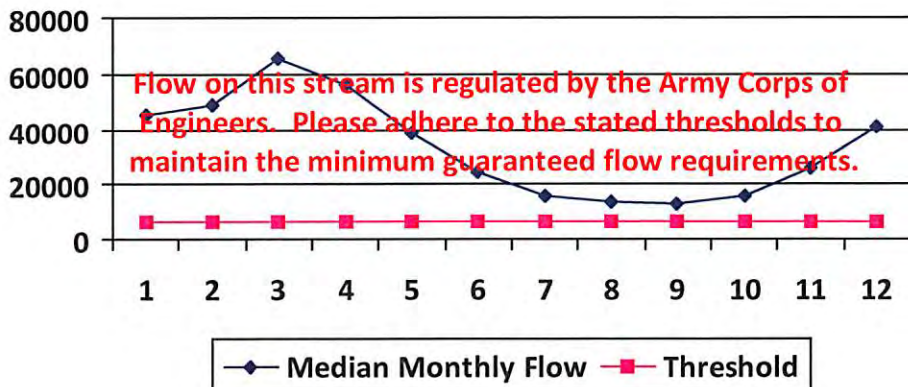
Ryan 2H

Source ID: 22432	Source Name: Ohio River @ J&R Excavating J&R Excavating	Source Latitude: 39.998509	Source Longitude: -80.737336
HUC-8 Code: 5030106	Drainage Area (sq. mi.): 25000	County: Marshall	Anticipated withdrawal start date: 6/1/2014
<input type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?		Anticipated withdrawal end date: 6/1/2015
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?		Total Volume from Source (gal): 6,300,000
<input checked="" type="checkbox"/> Regulated Stream?	Ohio River Min. Flow		Max. Pump rate (gpm): 2,940
<input type="checkbox"/> Proximate PSD?			Max. Simultaneous Trucks: 0
<input checked="" type="checkbox"/> Gauged Stream?			Max. Truck pump rate (gpm):

Reference Gaug: 9999999	Ohio River Station: Willow Island Lock & Dam
Drainage Area (sq. mi.): 25,000.00	Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	6.55
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

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## Source Detail

WMP- 01380

API/ID Number: 047-049-02261

Operator: Trans Energy Inc.

Ryan 2H

Source ID: 22433    Source Name: Big Run @ Postlethwait Withdrawal Site  
 Carl & Charlotte Postlethwait

Source Latitude: 39.615524  
 Source Longitude: -80.395503

HUC-8 Code: 5020003

Drainage Area (sq. mi.): 1.05    County: Marion

Anticipated withdrawal start date: 6/1/2014

Anticipated withdrawal end date: 6/1/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 6,300,000

Trout Stream?     Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm)

Gauged Stream?

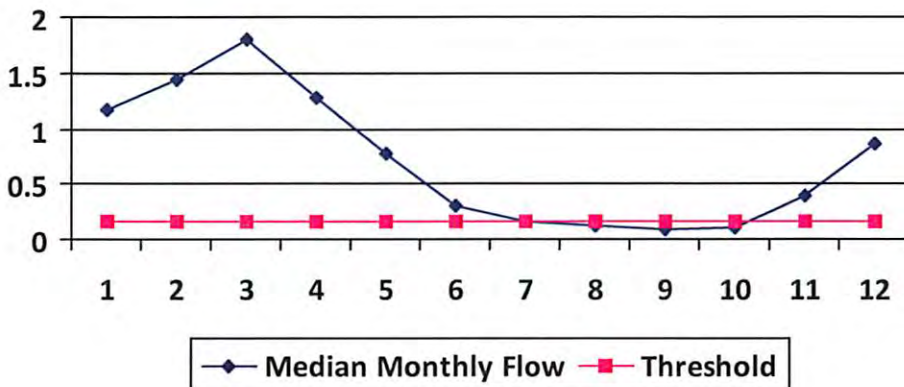
Reference Gaug: 3061500    BUFFALO CREEK AT BARRACKVILLE, WV

Drainage Area (sq. mi.): 116.00

Gauge Threshold (cfs): 15

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	1.18	2.43	-1.12
2	1.45	2.43	-0.85
3	1.79	2.43	-0.50
4	1.27	2.43	-1.02
5	0.77	2.43	-1.53
6	0.30	2.43	-1.99
7	0.17	2.43	-2.13
8	0.12	2.43	-2.18
9	0.09	2.43	-2.21
10	0.11	2.43	-2.18
11	0.39	2.43	-1.91
12	0.87	2.43	-1.43

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	0.14
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.23
Headwater Safety (cfs):	0.03
Ungauged Stream Safety (cfs):	0.03
<b>Min. Gauge Reading (cfs):</b>	<b>24.73</b>
<b>Passby at Location (cfs):</b>	<b>0.20</b>

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

09/27/2013



## Water Management Plan: Secondary Water Sources



WMP- 01380	API/ID Number	047-049-02261	Operator:	Trans Energy Inc.
		Ryan 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:	22434	Source Name	Mannington Water Supply Dam (WV04921) City of Mannington	Source start date:	6/1/2014
				Source end date:	6/1/2015
Source Lat:	39.532404	Source Long:	-80.36676	County	Marion
Max. Daily Purchase (gal)		Total Volume from Source (gal):			6,300,000

DEP Comments:

**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:

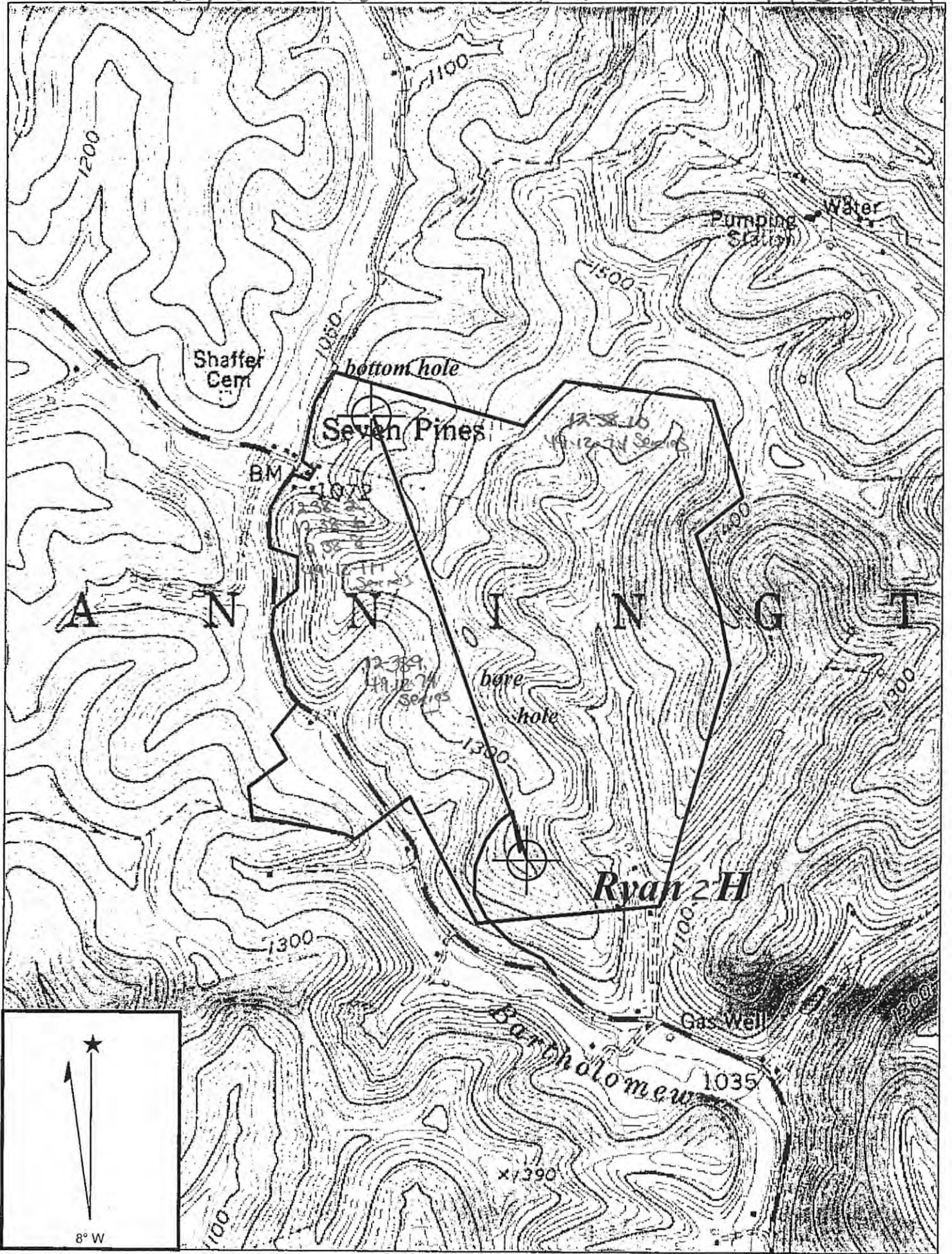
- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the 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.

Source ID:	22435	Source Name	Upper Buffalo No. 22 Dam (WV04919)		Source start date:	6/1/2014	
					Source end date:	6/1/2015	
		Source Lat:	39.603126	Source Long:	-80.383809	County	Marion
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		6,300,000	
DEP Comments:	Permission to withdrawal must be granted by West Virginia Conservation Agency. If no agreement is reached, withdrawal is not allowable.						

Source ID:	22436	Source Name	Upper Buffalo No. 16 Dam (WV04928)		Source start date:	6/1/2014	
					Source end date:	6/1/2015	
		Source Lat:	39.545545	Source Long:	-80.387961	County	Marion
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		6,300,000	
DEP Comments:							



Topo No Water found plat spotted 49-02261



**GLOVER GAP QUADRANGLE**

SCALE 1" = 1000'

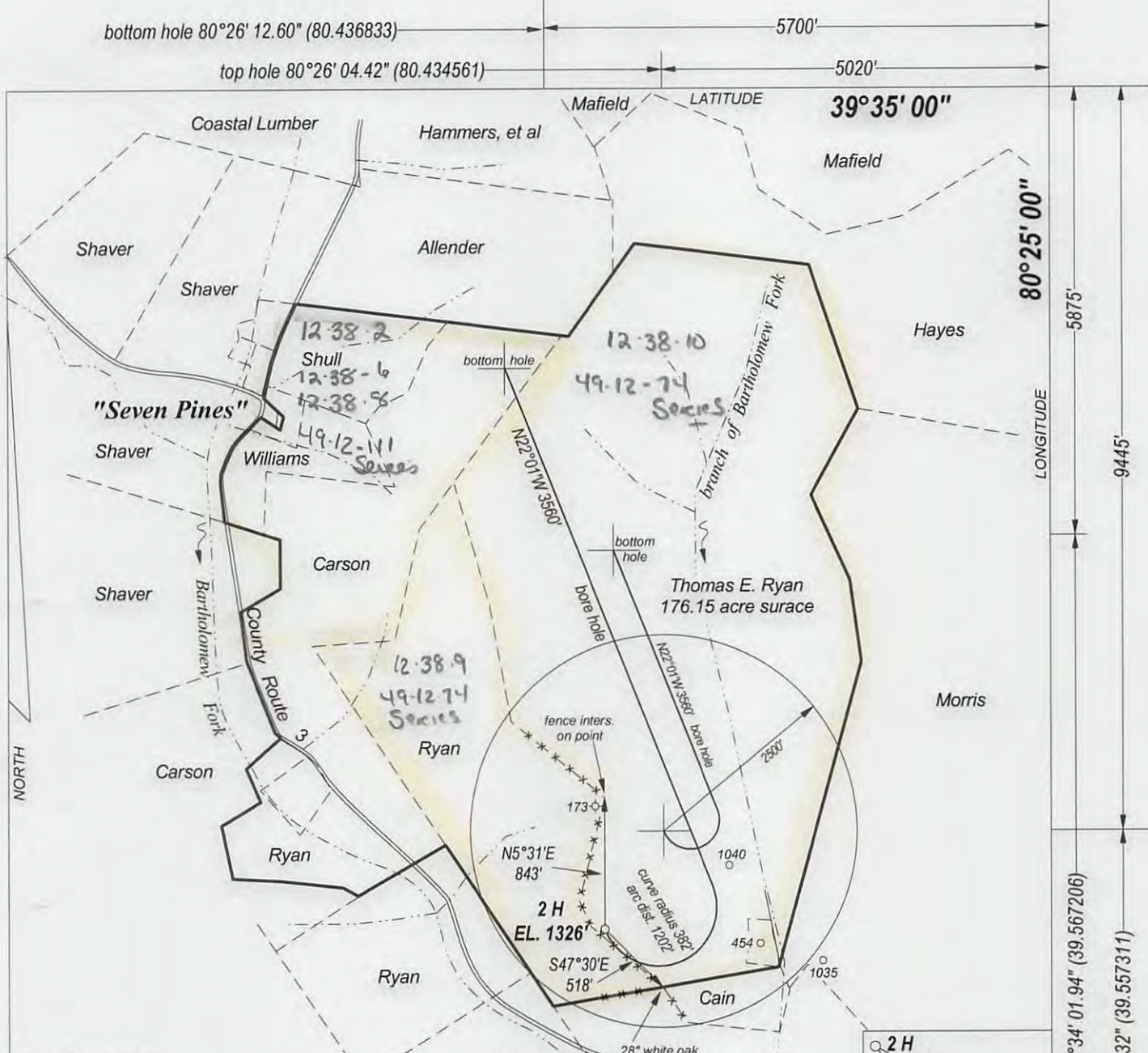
**TRANS ENERGY, INC.**

WRH  
5-9-13

09/27/2013

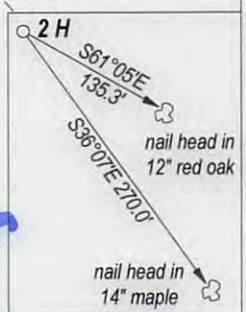
WELL: RYAN  
RYAN, ET AL +/- 330.65 ACRE LEASE

MANNINGTON DISTRICT    MARION COUNTY    WEST VIRGINIA



UTM NAD 83  
meters  
top hole  
N: 4378777.73  
E: 548576.10  
  
bottom hole  
N: 4379971  
E: 548389

## RYAN, ET AL +/- 330.65 ACRE LEASE



FILE NO. \_\_\_\_\_  
DRAWING NO. \_\_\_\_\_  
SCALE 1" = 1000'  
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 29TH, 2013  
OPERATORS WELL NO. RYAN 2H

**H6A**

**API 47 - 049 - 02261**

STATE COUNTY PERMIT

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

LOCATION: ELEVATION 1326' WATER SHED BARTHOLOMEW FORK  
DISTRICT MANNINGTON COUNTY MARION QUADRANGLE GLOVER GAP

SURFACE OWNER THOMAS E. RYAN & ANDREA G. RYAN ACREAGE 176.15  
OIL & GAS ROYALTY RYAN, ET AL LEASE AC. +/- 330.65

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

FORM WW - 6

COUNTY NAME  
PREMIT

09/27/2013

*WSR  
5/2/13*

bottom hole 80°26' 12.60" (80.436833) 5700'  
top hole 80°26' 04.42" (80.434561) 5020'

LATITUDE 39°35' 00"

LONGITUDE 80°25' 00"

bottom hole 39°34' 01.94" (39.567206)  
top hole 39°33' 26.32" (39.557311)