

PM

JL

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 095 - 02064 County Tyler District Centerville
Quad Shirley Pad Name Graff Field/Pool Name _____
Farm name John H. Graff and Frances J. Graff Well Number Graff Unit 1H
Operator (as registered with the OOG) Trans Energy, Inc.
Address P.O. Box 393 City St. Marys State WV Zip 26170

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4364646.70 Easting 512966.93
Landing Point of Curve Northing 4363087.23 Easting 512756.86
Bottom Hole Northing 4364999.83 Easting 512874.30

Elevation (ft) 1030 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)

Synthetic Base Drilling Mud: additives = Calcium Carbonate, Calcium Chloride, Synvert LEM, Synvert Synthetic WA-L, Barte, Hydrated Lime, Cedar Fiber, Rubber Crumb, Cottonseed Hulls,
Synvert Synthetic 11-L, Bentonite, Soda Ash, Lignite, Aluminum Sterate, Citric Acid, Sodium Bicarbonate, Glycerine, Caustic Soda Beads, Drispac Low Vis, Desco, Bioclear

Date permit issued 12/11/12 Date drilling commenced 6/10/13 Date drilling ceased 7/5/13
Date completion activities began _____ Date completion activities ceased 2/7/14
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 60', 150' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1525' Void(s) encountered (Y/N) depths RECEIVED
Coal depth(s) ft 900' Cavern(s) encountered (Y/N) depths Office of Oil and Gas
Is coal being mined in area (Y/N) N

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API 47-095 - 02064 Farm name John H. Graff and Frances J. Graff Well number Graff Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor		20"	50'	New	J-55 / 94	N/A	Y
Surface		13-3/8"	971'	New	J-55 / 54.5	160'	Y
Coal							
Intermediate 1		9-5/8"	3,168'	New	J-55 / 36	200'	Y
Intermediate 2							
Intermediate 3							
Production		5-1/2"	11,560'	New	P110 / 20	N/A	Y
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Type 1	903	14.8	1.25	948	CTS	8
Coal							
Intermediate 1	Premium NE-1	999	15.6	1.26	1053	CTS	8
Intermediate 2							
Intermediate 3							
Production	Class H	1288	13.5	1.18	2809	CTS	8
Tubing							

Drillers TD (ft) 11,855.90' Loggers TD (ft) 11,855.90'
 Deepest formation penetrated Marcellus Shale Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 6,118'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
 Fresh Water String - 1 Centralizer every 160'
 Intermediate String - 1 Centralizer every 100' from 3000' to 900'
 Production String - 1 Centralizer every 80' from TD to above ROP 7,000'

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
			*Please see Exhibit 1		

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
				*Please see Exhibit 2				

Please insert additional pages as applicable.

API 47-095-02064 Farm Name John H. & Frances J. Graff Well Number Graff Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	15-Jan-14	11,259	11,423	60	Marcellus
2	15-Jan-14	11,064	11,228	60	Marcellus
3	16-Jan-14	10,869	11,033	60	Marcellus
4	16-Jan-14	10,673	10,838	60	Marcellus
5	16-Jan-14	10,478	10,643	60	Marcellus
6	16-Jan-14	10,283	10,448	60	Marcellus
7	17-Jan-14	10,088	10,253	60	Marcellus
8	17-Jan-14	9,893	10,058	60	Marcellus
9	18-Jan-14	9,698	9,862	60	Marcellus
10	18-Jan-14	9,503	9,667	60	Marcellus
11	18-Jan-14	9,308	9,472	60	Marcellus
12	18-Jan-14	9,112	9,277	60	Marcellus
13	18-Jan-14	8,917	9,082	60	Marcellus
14	19-Jan-14	8,722	8,887	60	Marcellus
15	19-Jan-14	8,527	8,692	60	Marcellus
16	19-Jan-14	8,332	8,497	60	Marcellus
17	20-Jan-14	8,137	8,301	60	Marcellus
18	20-Jan-14	7,942	8,106	60	Marcellus
19	20-Jan-14	7,747	7,911	60	Marcellus
20	20-Jan-14	7,552	7,716	60	Marcellus
21	21-Jan-14	7,356	7,521	60	Marcellus
22	21-Jan-14	7,161	7,326	60	Marcellus

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API 47-095-02064 Farm Name John H. & Frances J. Graff Well Number Graff Unit 1H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	15-Jan-14	72.0	7,492	5,315	4,421	126,220	6,055	N/A
2	15-Jan-14	43.0	8,571	5,877	4,565	35,125	6,406	N/A
3	16-Jan-14	74.0	7,766	6,334	4,068	150,030	6,092	N/A
4	16-Jan-14	65.0	6,582	5,981	4,976	126,020	6,525	N/A
5	16-Jan-14	76.7	7,340	5,679	4,915	226,200	5,844	N/A
6	16-Jan-14	76.8	6,939	5,426	1,933	225,720	5,900	N/A
7	17-Jan-14	76.0	7,214	5,336	5,106	176,580	6,382	N/A
8	17-Jan-14	62.0	6,776	5,430	5,149	81,700	6,382	N/A
9	18-Jan-14	76.5	7,266	5,470	4,698	225,230	5,822	N/A
10	18-Jan-14	77.0	6,835	5,052	5,405	223,200	5,802	N/A
11	18-Jan-14	79.0	7,162	5,311	4,961	225,460	5,782	N/A
12	18-Jan-14	79.0	7,175	5,405	5,134	230,480	5,758	N/A
13	18-Jan-14	75.8	6,922	5,178	5,052	228,810	5,771	N/A
14	19-Jan-14	77.0	7,148	5,361	5,336	226,580	5,753	N/A
15	19-Jan-14	79.6	7,213	5,192	5,120	224,900	5,768	N/A
16	19-Jan-14	75.7	7,315	5,271	4,111	199,460	6,256	N/A
17	20-Jan-14	77.0	6,727	5,336	4,594	226,480	5,680	N/A
18	20-Jan-14	79.5	7,153	5,833	3,182	225,100	5,745	N/A
19	20-Jan-14	76.0	6,931	5,369	4,518	227,590	5,669	N/A
20	20-Jan-14	74.0	6,529	5,048	5,379	175,510	5,968	N/A
21	21-Jan-14	78.0	7,046	5,214	5,124	207,500	6,104	N/A
22	21-Jan-14	78.0	6,561	4,929	4,302	169,865	5,764	N/A

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API 47- 095 - 02064 Farm name John H. Graff and Frances J. Graff Well number Graff Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6,524'</u> TVD	<u>11,885'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 37,358 mcfpd Oil 455 bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>		<u>BOTTOM</u>		<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	
	<u>0</u>		<u>0</u>		
		<u>SEE</u>	<u>ATTACHED</u>	<u>EXHIBIT 3</u>	

Please insert additional pages as applicable.

Drilling Contractor H & P International Drilling Co.
Address P.O. Box 650823 City Dallas State TX Zip 75265

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company Baker Hughes
Address P.O. Box 506 City Clarksville State WV Zip 26301

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Leslie A. Gearhart Telephone 304-684-7053
Signature [Signature] Title VP Operations Date 007-23-2014

Submittal of Hydraulic Fracturing Chemical Disclosure Information

Attach copy of FRACDIS Registry

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/15/2014
Job End Date:	1/21/2014
State:	West Virginia
County:	Tyler
API Number:	47-095-02064-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Graff Unit 1H
Longitude:	-80.84950600
Latitude:	39.43118100
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,567
Total Base Water Volume (gal):	5,511,576
Total Base Non Water Volume:	211,433



790205b

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	91.40227	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	8.27944	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.10510	
			Hydrogen Chloride	7641-01-1	18.00000	0.02510	
CG-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.04349	
			Petroleum Distillates	64742-47-8	60.00000	0.04119	
			Suspending agent (solid)	14808-60-7	3.00000	0.00665	
			Surfactant	68439-51-0	3.00000	0.00261	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	Anionic Polyacrylamide	Proprietary		0.02421	
			Water	7732-18-5	40.00000	0.02421	
			Petroleum Distillates	64742-47-8	22.00000	0.01949	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00303	

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			Crystalline Salt	12125-02-9	5.00000	0.00303
SI-1000	U.S. Well Services, LLC	Scale Inhibitor				
			Anionic Copolymer	Proprietary		0.00415
			Ethylene Glycol	107-21-1	20.00000	0.00375
			Water	7732-18-5	30.00000	0.00312
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent				
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00441
			Deionized Water	7732-18-5	28.00000	0.00252
AP One	U.S. Well Services, LLC	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00163
AI-300	U.S. Well Services, LLC	Acid Corrosion Inhibitors				
			Ethylene Glycol	107-21-1	31.00000	0.00028
			N,N-Dimethylformamide	68-12-2	15.00000	0.00009
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00007
			Cinnamaldehyde	104-55-2	5.00000	0.00007
			2-Butoxyethanol	111-76-2	7.00000	0.00006
			Water	7732-18-5	20.00000	0.00003
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002
			Triethyl Phosphate	78-40-0	3.00000	0.00001
			Isopropyl Alcohol	67-63-0	3.00000	0.00001
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.						

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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API 47- 095 - 02064 Farm name John H. Graff and Frances J. Graff Well number Graff Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6,524'</u> TVD	<u>11,885'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas Oil NGL Water GAS MEASURED BY
37,358 mcfpd 455 bpd _____ bpd _____ bpd Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	
	<u>0</u>		<u>0</u>		
<u>Middlesex</u>	<u>6362'</u>	<u>6453'</u>			
<u>Burkett</u>	<u>6454'</u>	<u>6490'</u>			
<u>Limestone</u>	<u>6491'</u>	<u>6523'</u>			
<u>Marcellus</u>	<u>6524'</u>	<u>6573'</u>			

Please insert additional pages as applicable.

Drilling Contractor H & P International Drilling Co.
Address P.O. Box 650823 City Dallas State TX Zip 75265

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company Baker Hughes
Address P.O. Box 506 City Clarksville State WV Zip 26301

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by _____ Telephone _____
Signature _____ Title _____ Date OCT 28 2014

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Reg. # _____
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API: 47-095-02064	Farm Name: John H. & Frances J. Graff	
EXHIBIT 3		
	Top	Bottom
Lithology/ <u>Formation</u>	Depth in Ft <u>Name TVD</u>	Depth in Ft <u>TVD</u>
Sand	0	795'
Dunkard	1279'	1300'
1st Salt	1498'	1562'
2nd Salt	1593'	1712'
3rd Salt	1762'	1810'
Maxton	1905	1921'
Big Lime	1970	2040'
Big Injun	2046	2136'
Berea	2494	2498'
30 Foot	2733	2780'
Gordon	2920	2933'
5th	3022	3028'
Warren	3223	3297'
Riley	4582	4614'
Benson	4980	4984'
Alexander	4922	4962'
Elk	5188	5248'
Middlesex	6362	6453'
Burket	6454	6490'
Limeston	6491	6523'
Marcellus	6524	6573'

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bottom hole 80°51' 01.45" (80.850403)

4810'

top hole 80°50' 57.60" (80.849333)

4560'

LATITUDE 39°27' 30"

UTM NAD 83
N: 4364650
E: 512985

80°50' 00"

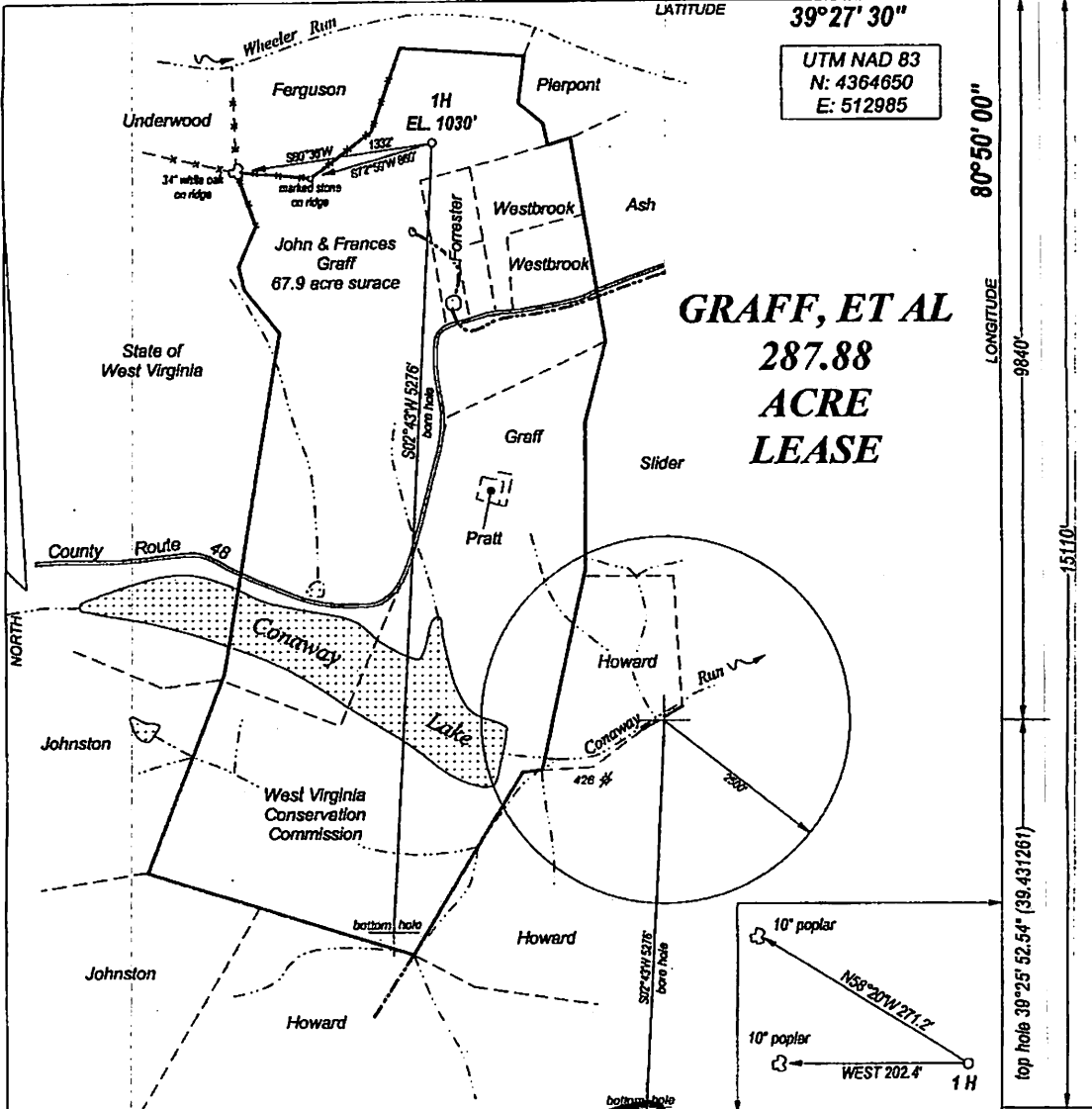
LONGITUDE

9840'

15110'

top hole 39°25' 52.54" (39.431261)

bottom hole 39°25' 00.64" (39.416844)

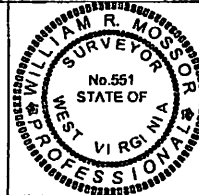


GRAFF, ET AL
287.88
ACRE
LEASE

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 APRIL 9TH, 2012
OPERATORS WELL NO. GRAFF 1H

API 47 - 095 -
STATE COUNTY PERMIT

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

LOCATION: ELEVATION 1030' WATER SHED CONWAY RUN
DISTRICT CENTERVILLE COUNTY TYLER QUADRANGLE SHIRLEY

SURFACE OWNER JOHN H. GRAFF & FRANCES J. GRAFF ACREAGE _____
OIL & GAS ROYALTY GRAFF, ET AL LEASE AC. 287.88

PROPOSED WORK: DRILL CONVERT _____ DRILL DEEPER _____ REDRILL _____
FRACTURE OR STIMULATE _____ PLUG OFF OLD FORMATION _____
PERFORATE NEW FORMATION _____ LOG & SIDEWALL CORE UTICA _____
OTHER PHYSICAL CHANGE IN WELL _____ PLUG BACK TO MARCELLUS _____
PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____

TARGET FORMATION UTICA (MARCELLUS SHALE) ESTIMATED DEPTH 1100' (7201)

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

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