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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Tuesday, July 6, 2021  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BOULEVARD, PLAZA II  
SUITE 200  
CANONSBURG, PA 15317

Re: Permit approval for FITZGERALD S-10HM  
47-051-02386-00-00

This well work permit 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 any additional specific 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 of 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.

Per 35 CSR 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- 0450.

James A. Martin  
Chief

Operator's Well Number: FITZGERALD S-10HM  
Farm Name: DANNY AND FRANCES KER  
U.S. WELL NUMBER: 47-051-02386-00-00  
Horizontal 6A New Drill  
Date Issued: 7/6/2021

# 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 (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 one hundred (100) 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. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. 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.
10. 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.

API Number: \_\_\_\_\_

## PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto:DEPOOGNotify@wv.gov).

07/09/2021

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

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Liberty Glen Easton 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Fitzgerald S-10HM Well Pad Name: Fitzgerald

3) Farm Name/Surface Owner: Danny and Frances Kern Estate Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1,293' Elevation, proposed post-construction: 1,293'

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_

Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_

Horizontal

6) Existing Pad: Yes or No Yes

*Bay Stiller*  
*5-27-21*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s): \_\_\_\_\_

Marcellus is the target formation at a depth of 6,888' - 6,938', thickness of 50' and anticipated pressure of approx. 3800 psi.

8) Proposed Total Vertical Depth: 7,038'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 16,984'

11) Proposed Horizontal Leg Length: 8,392.03'

12) Approximate Fresh Water Strata Depths: 70; 1,029'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 1,468'

15) Approximate Coal Seam Depths: Sewickley Coal - 925' and Pittsburgh Coal - 1,023'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

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: Marshall County Coal Co./Marshall County Mine  
Depth: Pittsburgh coal 1,023' and 270' subsea level  
Seam: Pittsburgh #8  
Owner: Murray Energy / Consolidated Coal

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18) **CASING AND TUBING PROGRAM**

<b>TYPE</b>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	30"	NEW	BW	BW	120'	120' ✓	259FT ^3(CTS)
Fresh Water/Coal	13 3/8"	NEW	J55	54.5#	1,150'	1,150' ✓	1,149FT^3(CTS)
Intermediate 1	13 3/8"	NEW	J55	54.5#	2,935'	2,935' ✓	976FT^3(CTS)
Intermediate 2	9 5/8"	NEW	J55	36#			
Production	5 1/2"	NEW	P110	20#	16,984'	16,984' ✓	4,341FT^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,556' ✓	
Liners							

*B.S. 5-27-21*

<b>TYPE</b>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

**PACKERS**

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

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

Well to be completed with approximately 21,000,000 lb. proppant and 15,900,000 gallons of water. Max rate = 80 bpm; max psi = 9,000#.

*B.S. 5-27-21*

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 21.21 acres

22) Area to be disturbed for well pad only, less access road (acres): 7.44 acres

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

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

Sfc - Premium NE-1 + 2% CaCl; Int1 - Premium NE-1 + 1.5% CaCL + Flake; Int2 - Lead: Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170 Tail: Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + 2% ASA-301 + .6% Sodium Metasilicate; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - Lead: 50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L Tail: 25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L

25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

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\*Note: Attach additional sheets as needed.

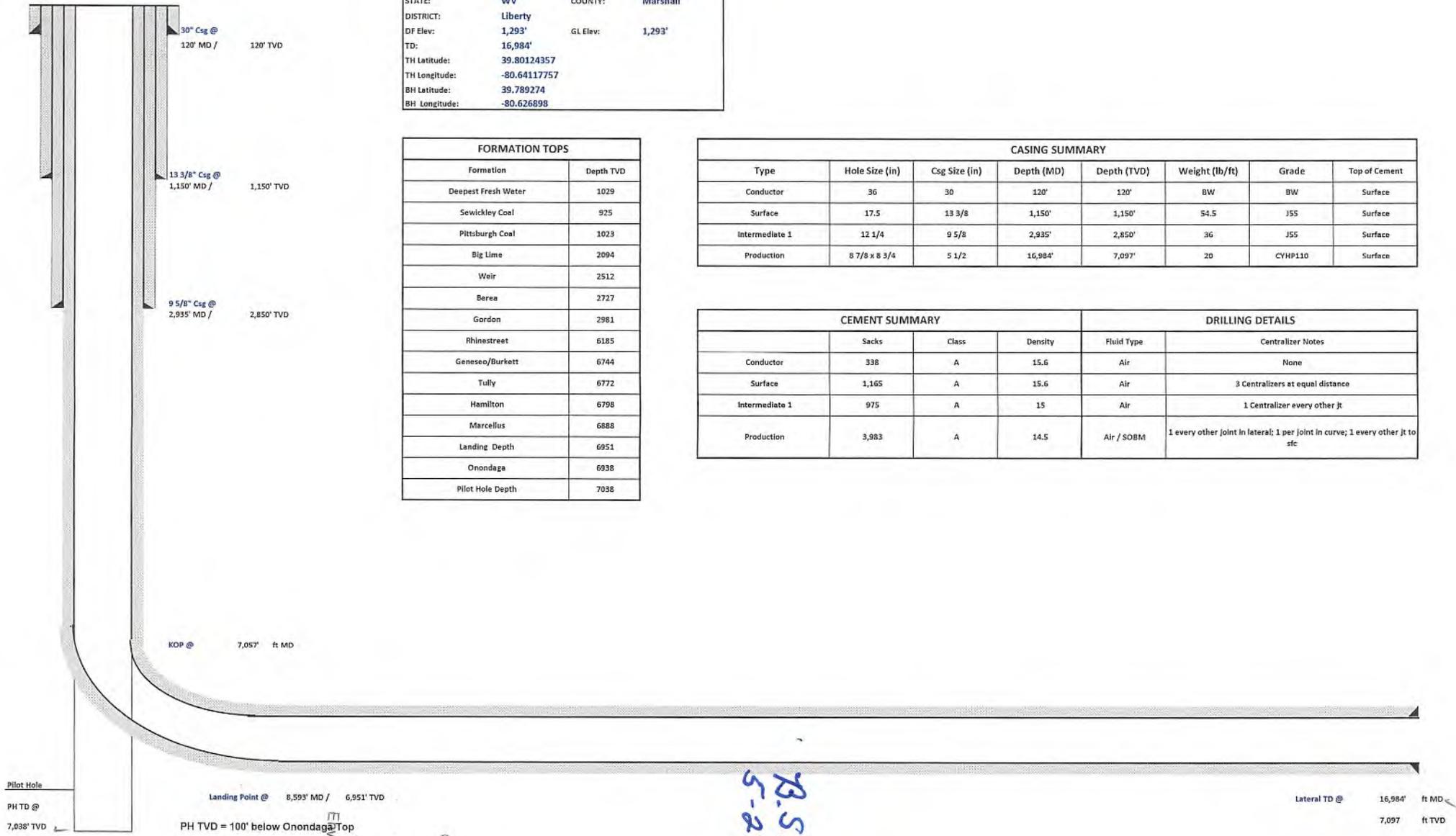


**WELL NAME:** Fitzgerald S-10HM  
**STATE:** WV **COUNTY:** Marshall  
**DISTRICT:** Liberty  
**DF Elev:** 1,293' **GL Elev:** 1,293'  
**TD:** 16,984'  
**TH Latitude:** 39.80124357  
**TH Longitude:** -80.64117757  
**BH Latitude:** 39.789274  
**BH Longitude:** -80.626898

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1029
Sewickley Coal	925
Pittsburgh Coal	1023
Big Lime	2094
Weir	2512
Berea	2727
Gordon	2981
Rhinestreet	6185
Genesee/Burkett	6744
Tully	6772
Hamilton	6798
Marcellus	6888
Landing Depth	6951
Onondaga	6938
Pilot Hole Depth	7038

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	1,150'	1,150'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,935'	2,850'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	16,984'	7,097'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,165	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	975	A	15	Air	1 Centralizer every other jt
Production	3,983	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Pilot Hole  
 PH TD @ 7,038' TVD  
 Landing Point @ 8,593' MD / 6,951' TVD  
 PH TVD = 100' below Onondaga Top  
 KOP @ 7,057' ft MD  
 Lateral TD @ 16,984' ft MD / 7,097' ft TVD

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R.S.  
 5-27-21



**Tug Hill Operating, LLC Casing and Cement Program**

**Fitzgerald S-10HM**

**Casing**

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	1,150'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,935'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	16,984'	CTS

**Cement**

- Conductor: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
- Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
- Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
- Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
- Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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**Well:** Fitzgerald 10 HM (slot I)  
**Site:** Fitzgerald  
**Project:** Marshall County, West Virginia  
**Design:** rev4  
**Rig:**



Azimuths to Grid North  
 True North: -0.23°  
 Magnetic North: -9.01°  
 Magnetic Field  
 Strength: 52006.2snT  
 Dip Angle: 66.84°  
 Date: 11/26/2018  
 Model: IGRF2015

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS 1980  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level  
 Depth Reference: GL @ 1292.91ft

Northing: 14454561.48    Easting: 1741196.09    Latitude: 39.80124357    Longitude: -80.64117757

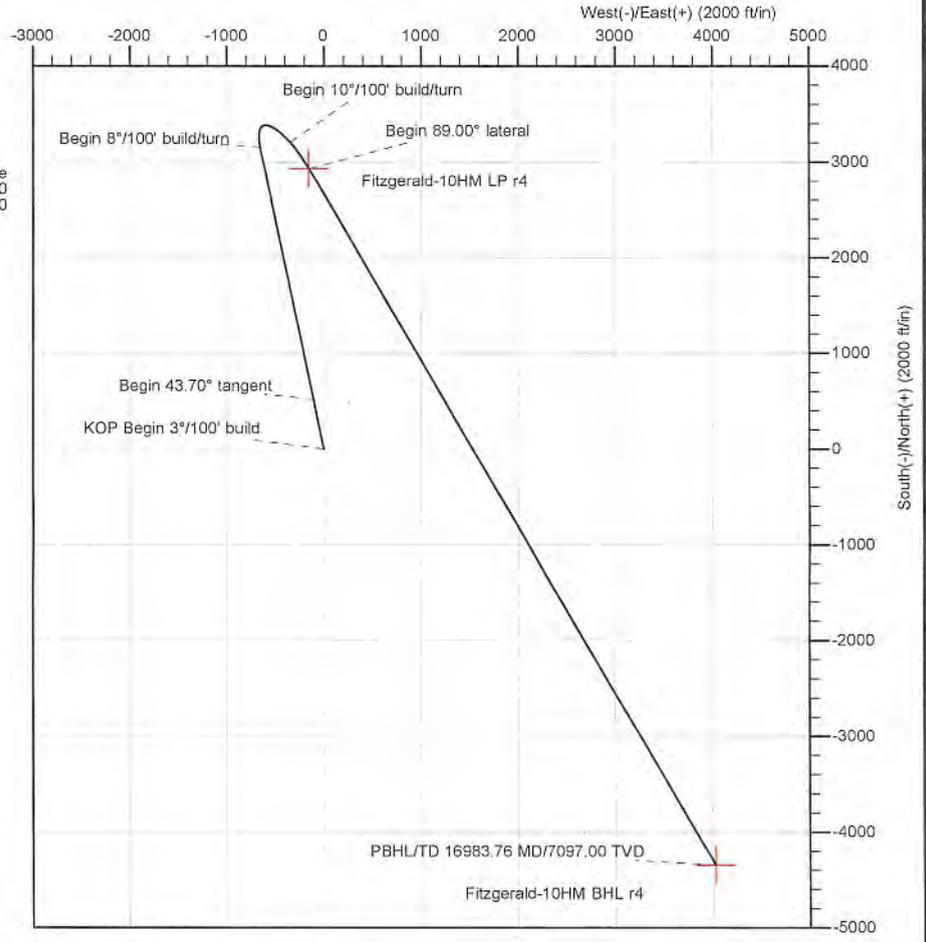
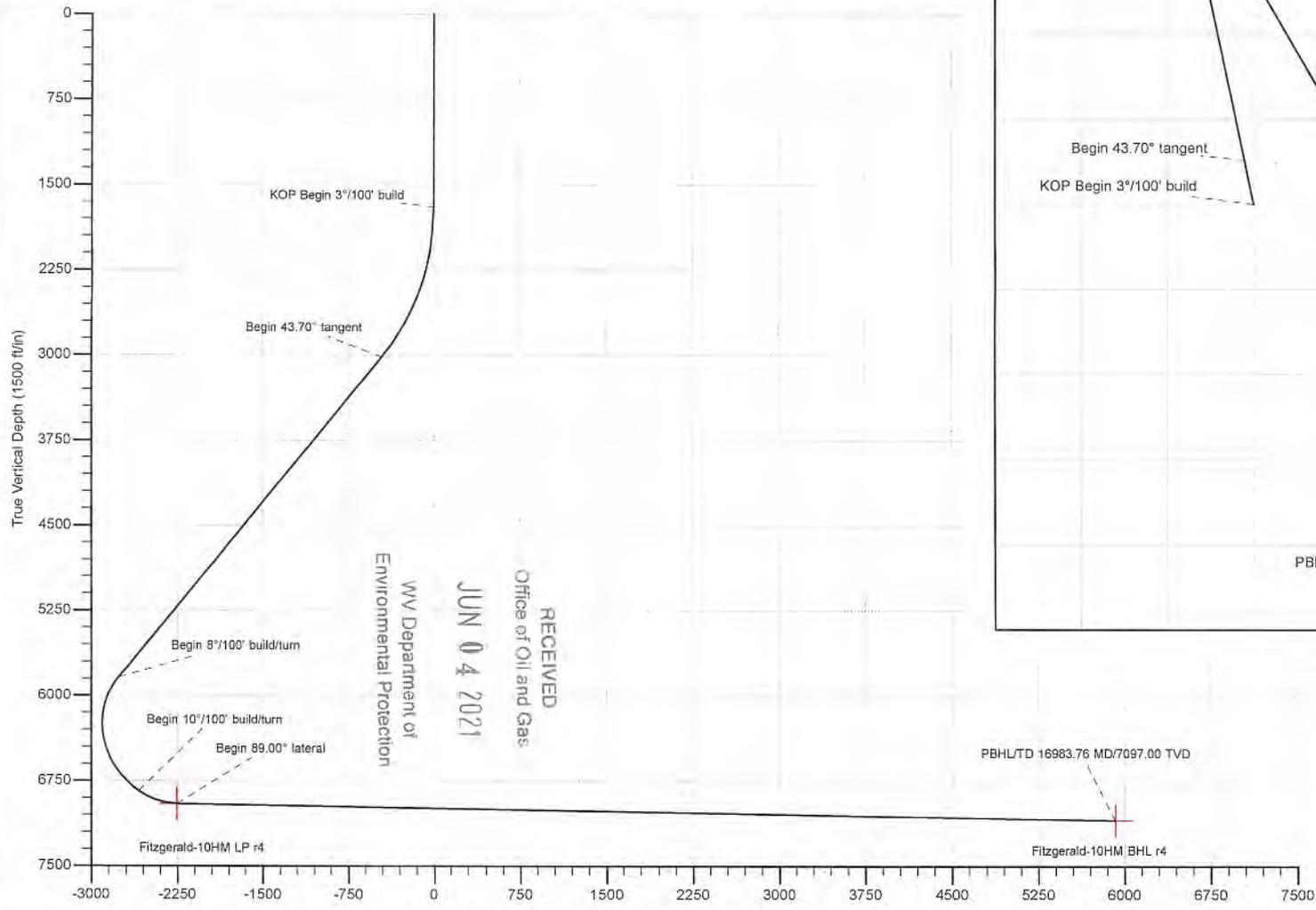
Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 9.009°

**SECTION DETAILS**

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	
2	1700.00	0.00	0.000	1700.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 3°/100' build
3	3156.65	43.70	348.296	3019.48	518.08	-107.33	3.00	348.296	-452.79	Begin 43.70° tangent
4	7056.51	43.70	348.296	5838.97	3156.39	-653.88	0.00	0.000	-2758.57	Begin 8°/100' build/turn
5	8236.79	55.00	138.637	6842.14	3204.14	-343.48	8.00	156.011	-2582.45	Begin 10°/100' build/turn
6	8593.24	89.00	150.109	6951.00	2931.21	-151.98	10.00	19.953	-2252.13	Begin 89.00° lateral
7	16983.76	89.00	150.109	7097.00	-4342.08	4028.77	0.00	0.000	5923.22	PBHL/TD 16983.76 MD/7097.00 TVD

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Fitzgerald-10HM LP r4	6951.00	2931.21	-152.01	14457492.68	1741044.08	39.80929500	-80.64167700
Fitzgerald-10HM BHL r4	7097.00	-4342.08	4028.77	14450219.41	1745224.85	39.78927400	-80.62689800





Planning Report - Geographic

4705102386

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Fitzgerald 10 HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1292.91ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1292.91ft
Site:	Fitzgerald	North Reference:	Grid
Well:	Fitzgerald 10 HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Project	Marshall County, West Virginia		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Fitzgerald				
Site Position:		Northing:	14,454,567.73 usft	Latitude:	39.80126184
From:	Lat/Long	Easting:	1,741,096.26 usft	Longitude:	-80.64153292
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.229 °

Well	Fitzgerald 10 HM (slot I)					
Well Position	+N/-S	0.00 ft	Northing:	14,454,561.48 usft	Latitude:	39.80124357
	+E/-W	0.00 ft	Easting:	1,741,196.09 usft	Longitude:	-80.64117757
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level:	1,292.91 ft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/28/2018	-8.780	66.837	52,006.17968113

Design	rev4			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	137.144

Plan Survey Tool Program	Date	4/23/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,983.76 rev4 (Original Hole)	MWD MWD - Standard	

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Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	WV Department of Environmental Protection TFO	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,700.00	0.00	0.000	1,700.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,156.65	43.70	348.296	3,019.48	518.08	-107.33	3.00	3.00	0.00	348.296	
7,056.51	43.70	348.296	5,838.97	3,156.39	-653.88	0.00	0.00	0.00	0.000	
8,236.79	55.00	138.637	6,842.14	3,204.14	-343.48	8.00	0.96	12.74	156.011	
8,593.24	89.00	150.109	6,951.00	2,931.21	-151.98	10.00	9.54	3.22	19.953	
16,983.76	89.00	150.109	7,097.00	-4,342.08	4,028.77	0.00	0.00	0.00	0.000	Fitzgerald-10HM BHL



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Fitzgerald 10 HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1292.91ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1292.91ft
Site:	Fitzgerald	North Reference:	Grid
Well:	Fitzgerald 10 HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.000	0.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
100.00	0.00	0.000	100.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
200.00	0.00	0.000	200.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
300.00	0.00	0.000	300.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
400.00	0.00	0.000	400.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
500.00	0.00	0.000	500.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
600.00	0.00	0.000	600.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
700.00	0.00	0.000	700.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
800.00	0.00	0.000	800.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
900.00	0.00	0.000	900.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,000.00	0.00	0.000	1,000.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,100.00	0.00	0.000	1,100.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,300.00	0.00	0.000	1,300.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,400.00	0.00	0.000	1,400.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,500.00	0.00	0.000	1,500.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,600.00	0.00	0.000	1,600.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
1,700.00	0.00	0.000	1,700.00	0.00	0.00	14,454,561.48	1,741,196.09	39.80124357	-80.64117757	
<b>KOP Begin 3°/100° build</b>										
1,800.00	3.00	348.296	1,799.95	2.56	-0.53	14,454,564.04	1,741,195.56	39.80125062	-80.64117942	
1,900.00	6.00	348.296	1,899.63	10.24	-2.12	14,454,571.73	1,741,193.97	39.80127173	-80.64118498	
2,000.00	9.00	348.296	1,998.77	23.02	-4.77	14,454,584.51	1,741,191.32	39.80130686	-80.64119422	
2,100.00	12.00	348.296	2,097.08	40.87	-8.47	14,454,602.35	1,741,187.62	39.80135590	-80.64120713	
2,200.00	15.00	348.296	2,194.31	63.72	-13.20	14,454,625.21	1,741,182.89	39.80141872	-80.64122366	
2,300.00	18.00	348.296	2,290.18	91.53	-18.96	14,454,653.01	1,741,177.13	39.80148515	-80.64124377	
2,400.00	21.00	348.296	2,384.43	124.21	-25.73	14,454,685.70	1,741,170.36	39.80158498	-80.64126741	
2,500.00	24.00	348.296	2,476.81	161.68	-33.49	14,454,723.16	1,741,162.60	39.80168796	-80.64129452	
2,600.00	27.00	348.296	2,567.06	203.83	-42.23	14,454,765.32	1,741,153.86	39.80180381	-80.64132500	
2,700.00	30.00	348.296	2,654.93	250.55	-51.90	14,454,812.03	1,741,144.18	39.80193222	-80.64135880	
2,800.00	33.00	348.296	2,740.18	301.71	-62.50	14,454,863.19	1,741,133.59	39.80207283	-80.64139580	
2,900.00	36.00	348.296	2,822.59	357.17	-73.99	14,454,918.65	1,741,122.10	39.80222525	-80.64143591	
3,000.00	39.00	348.296	2,901.91	416.77	-86.34	14,454,978.25	1,741,109.75	39.80238907	-80.64147902	
3,100.00	42.00	348.296	2,977.95	480.36	-99.51	14,455,041.84	1,741,096.58	39.80256384	-80.64152502	
3,156.65	43.70	348.296	3,019.48	518.08	-107.33	14,455,079.57	1,741,088.76	39.80266753	-80.64155231	
<b>Begin 43.70° tangent</b>										
3,200.00	43.70	348.296	3,050.82	547.41	-113.40	14,455,108.89	1,741,082.69	39.80274813	-80.64157352	
3,300.00	43.70	348.296	3,123.11	615.06	-127.42	14,455,176.54	1,741,068.67	39.80293407	-80.64162245	
3,400.00	43.70	348.296	3,195.41	682.71	-141.43	14,455,244.19	1,741,054.66	39.80312001	-80.64167139	
3,500.00	43.70	348.296	3,267.71	750.36	-155.44	14,455,311.84	1,741,040.64	39.80330595	-80.64172032	
3,600.00	43.70	348.296	3,340.01	818.01	-169.46	14,455,379.50	1,741,026.63	39.80349189	-80.64176926	
3,700.00	43.70	348.296	3,412.30	885.67	-183.47	14,455,447.15	1,741,012.62	39.80367783	-80.64181819	
3,800.00	43.70	348.296	3,484.60	953.32	-197.49	14,455,514.80	1,740,998.60	39.80386377	-80.64186713	
3,900.00	43.70	348.296	3,556.90	1,020.97	-211.50	14,455,582.45	1,740,984.59	39.80404971	-80.64191606	
4,000.00	43.70	348.296	3,629.19	1,088.62	-225.52	14,455,650.10	1,740,970.57	39.80423565	-80.64196500	
4,100.00	43.70	348.296	3,701.49	1,156.27	-239.53	14,455,717.75	1,740,956.56	39.80442159	-80.64201394	
4,200.00	43.70	348.296	3,773.79	1,223.92	-253.55	14,455,785.40	1,740,942.54	39.80460753	-80.64206287	
4,300.00	43.70	348.296	3,846.09	1,291.57	-267.56	14,455,853.05	1,740,928.53	39.80479347	-80.64211181	
4,400.00	43.70	348.296	3,918.38	1,359.23	-281.58	14,455,920.70	1,740,914.51	39.80497941	-80.64216075	
4,500.00	43.70	348.296	3,990.68	1,426.88	-295.59	14,455,988.36	1,740,900.50	39.80516535	-80.64220968	
4,600.00	43.70	348.296	4,062.98	1,494.53	-309.61	14,456,056.01	1,740,886.48	39.80535129	-80.64225862	
4,700.00	43.70	348.296	4,135.27	1,562.18	-323.62	14,456,123.66	1,740,872.47	39.80553723	-80.64230756	
4,800.00	43.70	348.296	4,207.57	1,629.83	-337.63	14,456,191.31	1,740,858.45	39.80572317	-80.64235650	
4,900.00	43.70	348.296	4,279.87	1,697.48	-351.65	14,456,258.96	1,740,844.44	39.80590911	-80.64240544	
5,000.00	43.70	348.296	4,352.17	1,765.13	-365.66	14,456,326.61	1,740,830.43	39.80609505	-80.64245437	

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Planning Report - Geographic

Database: DB\_Aug1919\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Fitzgerald  
 Well: Fitzgerald 10 HM (slot I)  
 Wellbore: Original Hole  
 Design: rev4

Local Co-ordinate Reference: Well Fitzgerald 10 HM (slot I)  
 TVD Reference: GL @ 1292.91ft  
 MD Reference: GL @ 1292.91ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,100.00	43.70	348.296	4,424.46	1,832.79	-379.68	14,456,394.26	1,740,816.41	39.80628099	-80.64250331
5,200.00	43.70	348.296	4,496.76	1,900.44	-393.69	14,456,461.91	1,740,802.40	39.80646693	-80.64255225
5,300.00	43.70	348.296	4,569.06	1,968.09	-407.71	14,456,529.57	1,740,788.38	39.80665287	-80.64260119
5,400.00	43.70	348.296	4,641.35	2,035.74	-421.72	14,456,597.22	1,740,774.37	39.80683881	-80.64265013
5,500.00	43.70	348.296	4,713.65	2,103.39	-435.74	14,456,664.87	1,740,760.35	39.80702475	-80.64269907
5,600.00	43.70	348.296	4,785.95	2,171.04	-449.75	14,456,732.52	1,740,746.34	39.80721069	-80.64274801
5,700.00	43.70	348.296	4,858.25	2,238.69	-463.77	14,456,800.17	1,740,732.32	39.80739663	-80.64279695
5,800.00	43.70	348.296	4,930.54	2,306.35	-477.78	14,456,867.82	1,740,718.31	39.80758257	-80.64284589
5,900.00	43.70	348.296	5,002.84	2,374.00	-491.80	14,456,935.47	1,740,704.29	39.80776851	-80.64289483
6,000.00	43.70	348.296	5,075.14	2,441.65	-505.81	14,457,003.12	1,740,690.28	39.80795445	-80.64294378
6,100.00	43.70	348.296	5,147.44	2,509.30	-519.82	14,457,070.78	1,740,676.27	39.80814039	-80.64299272
6,200.00	43.70	348.296	5,219.73	2,576.95	-533.84	14,457,138.43	1,740,662.25	39.80832633	-80.64304166
6,300.00	43.70	348.296	5,292.03	2,644.60	-547.85	14,457,206.08	1,740,648.24	39.80851226	-80.64309060
6,400.00	43.70	348.296	5,364.33	2,712.25	-561.87	14,457,273.73	1,740,634.22	39.80869820	-80.64313954
6,500.00	43.70	348.296	5,436.62	2,779.90	-575.88	14,457,341.38	1,740,620.21	39.80888414	-80.64318849
6,600.00	43.70	348.296	5,508.92	2,847.56	-589.90	14,457,409.03	1,740,606.19	39.80907008	-80.64323743
6,700.00	43.70	348.296	5,581.22	2,915.21	-603.91	14,457,476.68	1,740,592.18	39.80925602	-80.64328637
6,800.00	43.70	348.296	5,653.52	2,982.86	-617.93	14,457,544.33	1,740,578.16	39.80944196	-80.64333532
6,900.00	43.70	348.296	5,725.81	3,050.51	-631.94	14,457,611.99	1,740,564.15	39.80962790	-80.64338426
7,000.00	43.70	348.296	5,798.11	3,118.16	-645.96	14,457,679.64	1,740,550.13	39.80981384	-80.64343320
7,056.51	43.70	348.296	5,838.97	3,156.39	-653.88	14,457,717.87	1,740,542.21	39.80991892	-80.64346086
<b>Begin 8°/100' build/turn</b>									
7,100.00	40.54	350.471	5,871.22	3,185.05	-659.27	14,457,746.53	1,740,536.83	39.80999768	-80.64347964
7,200.00	33.48	356.731	5,951.05	3,244.73	-666.23	14,457,806.21	1,740,529.86	39.81016165	-80.64350360
7,300.00	26.87	5.754	6,037.50	3,294.83	-665.54	14,457,856.30	1,740,530.56	39.81029922	-80.64350041
7,400.00	21.15	19.628	6,128.89	3,334.36	-657.20	14,457,895.84	1,740,538.89	39.81040770	-80.64347016
7,500.00	17.24	41.077	6,223.43	3,362.57	-641.38	14,457,924.04	1,740,554.71	39.81048498	-80.64341343
7,600.00	16.48	68.795	6,319.29	3,378.89	-618.38	14,457,940.37	1,740,577.71	39.81052957	-80.64333132
7,700.00	19.25	93.509	6,414.59	3,383.02	-588.66	14,457,944.50	1,740,607.43	39.81054058	-80.64322543
7,800.00	24.37	110.213	6,507.50	3,374.87	-552.79	14,457,936.35	1,740,643.30	39.81051780	-80.64309782
7,900.00	30.69	120.912	6,596.18	3,354.60	-511.47	14,457,916.08	1,740,684.62	39.81046169	-80.64295097
8,000.00	37.60	128.124	6,678.93	3,322.61	-465.51	14,457,884.08	1,740,730.58	39.81037332	-80.64278775
8,100.00	44.83	133.339	6,754.13	3,279.51	-415.79	14,457,840.99	1,740,780.30	39.81025443	-80.64261134
8,200.00	52.24	137.361	6,820.32	3,226.15	-363.30	14,457,787.63	1,740,832.79	39.81010732	-80.64242515
8,236.79	55.00	138.637	6,842.14	3,204.14	-343.48	14,457,765.62	1,740,852.61	39.81004664	-80.64235491
<b>Begin 10°/100' build/turn</b>									
8,300.00	60.97	141.100	6,875.64	3,163.16	-308.99	14,457,724.64	1,740,887.10	39.80993374	-80.64223266
8,400.00	70.48	144.476	6,916.71	3,090.60	-254.01	14,457,652.08	1,740,942.08	39.80973386	-80.64203794
8,500.00	80.05	147.473	6,942.12	3,010.52	-200.01	14,457,572.00	1,740,996.08	39.80951334	-80.64184679
8,593.24	89.00	150.109	6,951.00	2,931.21	-151.98	14,457,492.69	1,741,044.11	39.80929502	-80.64167691
<b>Begin 89.00° lateral</b>									
8,600.00	89.00	150.109	6,951.12	2,925.36	-148.62	14,457,486.83	1,741,047.47	39.80927890	-80.64166500
8,700.00	89.00	150.109	6,952.86	2,838.67	-98.79	14,457,400.15	1,741,097.30	39.80904029	-80.64148881
8,800.00	89.00	150.109	6,954.60	2,751.99	-48.96	14,457,313.46	1,741,147.13	39.80880169	-80.64131263
8,900.00	89.00	150.109	6,956.34	2,665.30	0.86	14,457,226.78	1,741,196.95	39.80856309	-80.64113644
9,000.00	89.00	150.109	6,958.08	2,578.62	50.69	14,457,140.09	1,741,246.78	39.80832448	-80.64096026
9,100.00	89.00	150.109	6,959.82	2,491.93	100.52	14,457,053.41	1,741,296.61	39.80808588	-80.64078407
9,200.00	89.00	150.109	6,961.56	2,405.25	150.35	14,456,966.72	1,741,346.44	39.80784727	-80.64060789
9,300.00	89.00	150.109	6,963.30	2,318.56	200.17	14,456,880.04	1,741,396.26	39.80760867	-80.64043171
9,400.00	89.00	150.109	6,965.04	2,231.88	250.00	14,456,793.36	1,741,446.09	39.80737006	-80.64025553
9,500.00	89.00	150.109	6,966.78	2,145.19	299.83	14,456,706.67	1,741,495.92	39.80713145	-80.64007935
9,600.00	89.00	150.109	6,968.52	2,058.51	349.65	14,456,619.99	1,741,545.74	39.80689285	-80.63990317
9,700.00	89.00	150.109	6,970.26	1,971.82	399.48	14,456,533.30	1,741,595.57	39.80665424	-80.63972700
9,800.00	89.00	150.109	6,972.00	1,885.14	449.31	14,456,446.62	1,741,645.40	39.80641564	-80.63955082

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Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Fitzgerald 10 HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1292.91ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1292.91ft
Site:	Fitzgerald	North Reference:	Grid
Well:	Fitzgerald 10 HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,900.00	89.00	150.109	6,973.74	1,798.46	499.14	14,456,359.93	1,741,695.22	39.80617703	-80.63937465	
10,000.00	89.00	150.109	6,975.48	1,711.77	548.96	14,456,273.25	1,741,745.05	39.80593842	-80.63919847	
10,100.00	89.00	150.109	6,977.22	1,625.09	598.79	14,456,186.56	1,741,794.88	39.80569981	-80.63902230	
10,200.00	89.00	150.109	6,978.96	1,538.40	648.62	14,456,099.88	1,741,844.71	39.80546121	-80.63884613	
10,300.00	89.00	150.109	6,980.70	1,451.72	698.44	14,456,013.20	1,741,894.53	39.80522260	-80.63866996	
10,400.00	89.00	150.109	6,982.44	1,365.03	748.27	14,455,926.51	1,741,944.36	39.80498399	-80.63849380	
10,500.00	89.00	150.109	6,984.18	1,278.35	798.10	14,455,839.83	1,741,994.19	39.80474538	-80.63831763	
10,600.00	89.00	150.109	6,985.92	1,191.66	847.93	14,455,753.14	1,742,044.01	39.80450677	-80.63814146	
10,700.00	89.00	150.109	6,987.66	1,104.98	897.75	14,455,666.46	1,742,093.84	39.80426816	-80.63796530	
10,800.00	89.00	150.109	6,989.40	1,018.29	947.58	14,455,579.77	1,742,143.67	39.80402955	-80.63778914	
10,900.00	89.00	150.109	6,991.14	931.61	997.41	14,455,493.09	1,742,193.49	39.80379094	-80.63761297	
11,000.00	89.00	150.109	6,992.88	844.92	1,047.23	14,455,406.40	1,742,243.32	39.80355233	-80.63743681	
11,100.00	89.00	150.109	6,994.62	758.24	1,097.06	14,455,319.72	1,742,293.15	39.80331372	-80.63726065	
11,200.00	89.00	150.109	6,996.36	671.55	1,146.89	14,455,233.03	1,742,342.97	39.80307511	-80.63708450	
11,300.00	89.00	150.109	6,998.10	584.87	1,196.72	14,455,146.35	1,742,392.80	39.80283650	-80.63690834	
11,400.00	89.00	150.109	6,999.84	498.18	1,246.54	14,455,059.67	1,742,442.63	39.80259789	-80.63673218	
11,500.00	89.00	150.109	7,001.58	411.50	1,296.37	14,454,972.98	1,742,492.46	39.80235928	-80.63655603	
11,600.00	89.00	150.109	7,003.32	324.82	1,346.20	14,454,886.30	1,742,542.28	39.80212067	-80.63637988	
11,700.00	89.00	150.109	7,005.06	238.13	1,396.02	14,454,799.61	1,742,592.11	39.80188206	-80.63620372	
11,800.00	89.00	150.109	7,006.80	151.45	1,445.85	14,454,712.93	1,742,641.94	39.80164345	-80.63602757	
11,900.00	89.00	150.109	7,008.54	64.76	1,495.68	14,454,626.24	1,742,691.76	39.80140483	-80.63585142	
12,000.00	89.00	150.109	7,010.28	-21.92	1,545.50	14,454,539.56	1,742,741.59	39.80116622	-80.63567527	
12,100.00	89.00	150.109	7,012.02	-108.61	1,595.33	14,454,452.87	1,742,791.42	39.80092761	-80.63549913	
12,200.00	89.00	150.109	7,013.76	-195.29	1,645.16	14,454,366.19	1,742,841.24	39.80068899	-80.63532298	
12,300.00	89.00	150.109	7,015.50	-281.98	1,694.99	14,454,279.51	1,742,891.07	39.80045038	-80.63514684	
12,400.00	89.00	150.109	7,017.24	-368.66	1,744.81	14,454,192.82	1,742,940.90	39.80021177	-80.63497069	
12,500.00	89.00	150.109	7,018.98	-455.35	1,794.64	14,454,106.14	1,742,990.73	39.79997315	-80.63479455	
12,600.00	89.00	150.109	7,020.72	-542.03	1,844.47	14,454,019.45	1,743,040.55	39.79973454	-80.63461841	
12,700.00	89.00	150.109	7,022.46	-628.72	1,894.29	14,453,932.77	1,743,090.38	39.79949592	-80.63444227	
12,800.00	89.00	150.109	7,024.20	-715.40	1,944.12	14,453,846.08	1,743,140.21	39.79925731	-80.63426613	
12,900.00	89.00	150.109	7,025.94	-802.09	1,993.95	14,453,759.40	1,743,190.03	39.79901869	-80.63408999	
13,000.00	89.00	150.109	7,027.68	-888.77	2,043.78	14,453,672.71	1,743,239.86	39.79878008	-80.63391386	
13,100.00	89.00	150.109	7,029.42	-975.45	2,093.60	14,453,586.03	1,743,289.69	39.79854146	-80.63373772	
13,200.00	89.00	150.109	7,031.16	-1,062.14	2,143.43	14,453,499.34	1,743,339.51	39.79830285	-80.63356159	
13,300.00	89.00	150.109	7,032.90	-1,148.82	2,193.26	14,453,412.66	1,743,389.34	39.79806423	-80.63338546	
13,400.00	89.00	150.109	7,034.64	-1,235.51	2,243.08	14,453,325.98	1,743,439.17	39.79782562	-80.63320932	
13,500.00	89.00	150.109	7,036.38	-1,322.19	2,292.91	14,453,239.29	1,743,489.00	39.79758700	-80.63303319	
13,600.00	89.00	150.109	7,038.12	-1,408.88	2,342.74	14,453,152.61	1,743,538.82	39.79734838	-80.63285706	
13,700.00	89.00	150.109	7,039.86	-1,495.56	2,392.57	14,453,065.92	1,743,588.65	39.79710976	-80.63268094	
13,800.00	89.00	150.109	7,041.60	-1,582.25	2,442.39	14,452,979.24	1,743,638.48	39.79687115	-80.63250481	
13,900.00	89.00	150.109	7,043.34	-1,668.93	2,492.22	14,452,892.55	1,743,688.30	39.79663253	-80.63232868	
14,000.00	89.00	150.109	7,045.08	-1,755.62	2,542.05	14,452,805.87	1,743,738.13	39.79639391	-80.63215256	
14,100.00	89.00	150.109	7,046.82	-1,842.30	2,591.87	14,452,719.18	1,743,787.96	39.79615529	-80.63197644	
14,200.00	89.00	150.109	7,048.56	-1,928.99	2,641.70	14,452,632.50	1,743,837.78	39.79591667	-80.63180032	
14,300.00	89.00	150.109	7,050.30	-2,015.67	2,691.53	14,452,545.82	1,743,887.61	39.79567806	-80.63162420	
14,400.00	89.00	150.109	7,052.04	-2,102.36	2,741.36	14,452,459.13	1,743,937.44	39.79543944	-80.63144808	
14,500.00	89.00	150.109	7,053.78	-2,189.04	2,791.18	14,452,372.45	1,743,987.27	39.79520082	-80.63127196	
14,600.00	89.00	150.109	7,055.52	-2,275.72	2,841.01	14,452,285.76	1,744,037.09	39.79496220	-80.63109584	
14,700.00	89.00	150.109	7,057.26	-2,362.41	2,890.84	14,452,199.08	1,744,086.92	39.79472358	-80.63091973	
14,800.00	89.00	150.109	7,059.00	-2,449.09	2,940.66	14,452,112.39	1,744,136.75	39.79448496	-80.63074361	
14,900.00	89.00	150.109	7,060.74	-2,535.78	2,990.49	14,452,025.71	1,744,186.57	39.79424634	-80.63056750	
15,000.00	89.00	150.109	7,062.48	-2,622.46	3,040.32	14,451,939.02	1,744,236.40	39.79400772	-80.63039139	
15,100.00	89.00	150.109	7,064.22	-2,709.15	3,090.14	14,451,852.34	1,744,286.23	39.79376909	-80.63021527	
15,200.00	89.00	150.109	7,065.96	-2,795.83	3,139.97	14,451,765.65	1,744,336.05	39.79353047	-80.63003916	
15,300.00	89.00	150.109	7,067.70	-2,882.52	3,189.80	14,451,678.97	1,744,385.88	39.79329185	-80.62986306	



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Fitzgerald 10 HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1292.91ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1292.91ft
Site:	Fitzgerald	North Reference:	Grid
Well:	Fitzgerald 10 HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,400.00	89.00	150.109	7,069.44	-2,969.20	3,239.63	14,451,592.29	1,744,435.71	39.79305323	-80.62968695
15,500.00	89.00	150.109	7,071.18	-3,055.89	3,289.45	14,451,505.60	1,744,485.54	39.79281461	-80.62951084
15,600.00	89.00	150.109	7,072.92	-3,142.57	3,339.28	14,451,418.92	1,744,535.36	39.79257599	-80.62933474
15,700.00	89.00	150.109	7,074.66	-3,229.26	3,389.11	14,451,332.23	1,744,585.19	39.79233736	-80.62915863
15,800.00	89.00	150.109	7,076.40	-3,315.94	3,438.93	14,451,245.55	1,744,635.02	39.79209874	-80.62898253
15,900.00	89.00	150.109	7,078.14	-3,402.63	3,488.76	14,451,158.86	1,744,684.84	39.79186012	-80.62880643
16,000.00	89.00	150.109	7,079.88	-3,489.31	3,538.59	14,451,072.18	1,744,734.67	39.79162149	-80.62863033
16,100.00	89.00	150.109	7,081.62	-3,575.99	3,588.42	14,450,985.49	1,744,784.50	39.79138287	-80.62845423
16,200.00	89.00	150.109	7,083.36	-3,662.68	3,638.24	14,450,898.81	1,744,834.32	39.79114424	-80.62827814
16,300.00	89.00	150.109	7,085.10	-3,749.36	3,688.07	14,450,812.13	1,744,884.15	39.79090562	-80.62810204
16,400.00	89.00	150.109	7,086.84	-3,836.05	3,737.90	14,450,725.44	1,744,933.98	39.79066700	-80.62792594
16,500.00	89.00	150.109	7,088.58	-3,922.73	3,787.72	14,450,638.76	1,744,983.81	39.79042837	-80.62774985
16,600.00	89.00	150.109	7,090.32	-4,009.42	3,837.55	14,450,552.07	1,745,033.63	39.79018975	-80.62757376
16,700.00	89.00	150.109	7,092.06	-4,096.10	3,887.38	14,450,465.39	1,745,083.46	39.78995112	-80.62739767
16,800.00	89.00	150.109	7,093.80	-4,182.79	3,937.21	14,450,378.70	1,745,133.29	39.78971250	-80.62722158
16,900.00	89.00	150.109	7,095.54	-4,269.47	3,987.03	14,450,292.02	1,745,183.11	39.78947387	-80.62704549
16,983.76	89.00	150.109	7,097.00	-4,342.08	4,028.77	14,450,219.41	1,745,224.85	39.78927400	-80.62689800
PBHL/TD 16983.76 MD/7097.00 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Fitzgerald-10HM LP r4	0.00	0.000	6,951.00	2,931.21	-152.01	14,457,492.68	1,741,044.08	39.80929500	-80.64167700
- hit/miss target									
- Shape									
- plan misses target center by 0.03ft at 8593.24ft MD (6951.00 TVD, 2931.22 N, -151.99 E)									
- Point									
Fitzgerald-10HM BHL r4	0.00	0.005	7,097.00	-4,342.08	4,028.77	14,450,219.41	1,745,224.85	39.78927400	-80.62689800
- plan hits target center									
- Point									

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,700.00	1,700.00	0.00	0.00	KOP Begin 3°/100' build
3,156.65	3,019.48	518.08	-107.33	Begin 43.70° tangent
7,056.51	5,838.97	3,156.39	-653.88	Begin 8°/100' build/turn
8,236.79	6,842.14	3,204.14	-343.48	Begin 10°/100' build/turn
8,593.24	6,951.00	2,931.21	-151.98	Begin 89.00° lateral
16,983.76	7,097.00	-4,342.08	4,028.77	PBHL/TD 16983.76 MD/7097.00 TVD

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**Area of Review****Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

## Data Sources Reviewed:

1. Enverus and RS Energy Group Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Adam Picard 724-485-9331, [apicard@dpslandservices.com](mailto:apicard@dpslandservices.com), DPS GIS (4/23/2021) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it is the best publicly available. See attached map he provided.

## Request maps for:

1. Wellbore with IHS All Wells Layer
2. Map with Farm lines overlain and any well spots identified on Farm Maps
3. More recent (1970s vintage) topos and older topos

## Discussion with Phil Dinterman WVGES GIS Department (7/15/2016)

- WVGES has plotted every well spot they have access to and are aware of with that contains a coordinate. 30000, 70000, and 90000 series wells are available via the WVGES online map. Some locations aren't great due to vintage and manipulation of maps through time
- 30000 series – any well drilled prior to 1929 – APIs were not assigned to original wells
- 70000 series – Well spots pulled from old Farm line maps that the WVGES has access to
- 90000 series – Any sources that the WVGES has access that shows a well spot but has no additional supporting information. DEP does not have 90000 series on their maps.
- There can be duplication between wells in the 3 series
- Phil indicated that other Operators are providing a screenshot of the WVGES map with their planned well and using that for permits

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**Wells within 500' Buffer**

Note: Well spots depicted on Area of Review map are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots.

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705102232	Tug Hill Operating, LLC	7070' TVD (proposed)	None	None	No, this well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit by Tug Hill Operating, LLC.
4705102324	Tug Hill Operating, LLC	12064' TVD	Point Pleasant	None	No, this is a Point Pleasant well. Once completed this well will be too deep to be within the expected fracture propagation from a Marcellus stimulation.	A Point Pleasant well drilled by Tug Hill Operating, LLC on the Fitzgerald pad. Well is currently drilled but uncompleted.
4705102325	Tug Hill Operating, LLC	12080' TVD	Point Pleasant	None	No, this is a Point Pleasant well. Once completed this well will be too deep to be within the expected fracture propagation from a Marcellus stimulation.	A Point Pleasant well drilled by Tug Hill Operating, LLC on the Fitzgerald pad. Well is currently drilled but uncompleted.
4705102326	Tug Hill Operating, LLC	12076' TVD	Point Pleasant	None	No, this is a Point Pleasant well. Once completed this well will be too deep to be within the expected fracture propagation from a Marcellus stimulation.	A Point Pleasant well drilled by Tug Hill Operating, LLC on the Fitzgerald pad. Well is currently drilled but uncompleted.

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API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705100630	CNX Gas Co. LLC (North)	2913' TVD	Gordon	unknown	No, this well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 4/23/2004.
4705100867	Consolidation Coal Co.	3061' TVD	Gordon	unknown	No, this well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 5/20/2002.
4705100914	Consolidation Coal Co.	unknown	unknown	unknown	Unknown but unlikely. This well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Marcellus well. Well is plugged.	Well was plugged 5/12/2004.
4705170627	unknown	unknown	unknown	unknown	Unknown but unlikely. This well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Marcellus well.	State records are incomplete.
4705130130	South Penn Oil (S. Penn Nat. Gas)	3050' TVD	Gordon	unknown	No, this well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged in 1940.

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API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705130195	unknown	unknown	unknown	unknown	Unknown but unlikely. This well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Marcellus well.	State records are incomplete.
4705170620	unknown	unknown	unknown	unknown	Unknown but unlikely. This well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Marcellus well.	State records are incomplete.
4705100959	Consolidation Coal Co.	unknown	unknown	unknown	Unknown but unlikely. This well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Marcellus well. Well is plugged.	Well was plugged 5/10/2005.
4705130008	South Penn Oil (S. Penn Nat. Gas)	3096' TVD	Gordon	unknown	No, this well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 6/15/1931.

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WV Geological & Economic Survey

**Well: County = 51 Permit = 02232**

Report Time: Wednesday, April 28, 2021 9:00:17 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102232	Marshall	2232	Liberty	Glen Easton	Cameron	39.801291	-80.641437	530695.4	4405764.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102232	1 As Proposed	531240.4	4404738.7	-80.63512	39.79203

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102232	--	Dvtd Orgnl Loc	Cancelled	Danny R Kerns		S-8HM	Fitzgerald		Danny S Kerns et al	Tug Hill Operating, LLC	7070	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	
4705102232	--	--	1317	Ground Level																		

WV Geological & Economic Survey

**Well: County = 51 Permit = 02324**

Report Time: Wednesday, April 28, 2021 9:02:15 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102324	Marshall	2324	Liberty	Glen Easton	Cameron	39.801145	-80.641103	530724.1	4405748.2

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102324	1 As Proposed	530498.3	4403163.5	-80.64386	39.777865

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102324	--	Dvtd Orgnl Loc	Permitted	Danny and Frances Kerns Estate		S-17HU	Fitzgerald		Danny S Kerns et al	Tug Hill Operating, LLC	12064	Pt Pleasant Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	
4705102324	--	--	1318	Ground Level																		

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WV Geological & Economic Survey:

**Well: County = 51 Permit = 02325**

Report Time: Wednesday, April 28, 2021 9:02:33 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102325	Marshall	2325	Liberty	Glen Easton	Cameron	39.801161	-80.64114	530720.9	4405750

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102325	1 As Proposed	530776.1	4403445	-80.640603	39.780391

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102325	--	Dvtd Orgnl Loc	Permitted	Danny and Frances Kerns Estate		S-18HU	Fitzgerald		Danny S Kerns et al	Tug Hill Operating, LLC	12080	Pt Pleasant Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF
4705102325	--	--	1319	Ground Level																

WV Geological & Economic Survey:

**Well: County = 51 Permit = 02326**

Report Time: Wednesday, April 28, 2021 9:02:52 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102326	Marshall	2326	Liberty	Glen Easton	Cameron	39.801177	-80.641177	530717.7	4405751.8

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102326	1 As Proposed	531067.9	4403702.4	-80.637183	39.7827

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102326	--	Dvtd Orgnl Loc	Permitted	Danny and Frances Kerns Estate		S-19HU	Fitzgerald		Danny S Kerns et al	Tug Hill Operating, LLC	12076	Pt Pleasant Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF
4705102326	--	--	1320	Ground Level																

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WV Geological & Economic Survey

Well: County = 51 Permit = 00630

Report Time: Wednesday, April 28, 2021 10:10:31 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705100630	Marshall	630	Liberty	Glen Easton	Cameron	39.803541	-80.639092	530895.1	4408014.8

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT	COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705100630	9/15/1900	Original Loc	Completed	S R Lydick						South Penn Oil (S. Penn Nat. Gas)				
4705100630	9/16/1904	Worked Over	Completed	S R Lydick	1					South Penn Oil (S. Penn Nat. Gas)				
4705100630	11/20/1907	Worked Over	Completed	S R Lydick	1					South Penn Oil (S. Penn Nat. Gas)				
4705100630	4/23/2004	Plugging	Completed	Ila Kerns	M-113		Ila Kerns/S R Lydick			Consolidation Coal Co.				

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT
4705100630	9/15/1900	7/11/1900	1230	Topo Estimation	Cameron-Garner	Gordon	Gordon	unclassified	unclassified	Oil w/ Gas Show	unknown	Nat/Open H	2913		2913		0	0
4705100630	9/16/1904	-/-	1220	Topo Estimation	Cameron-Garner	Gordon	Gordon	unclassified	unclassified	Oil w/ Gas Show	unknown	Shot	2913		0		0	0
4705100630	11/20/1907	-/-	1220	Topo Estimation	Cameron-Garner	Gordon	Gordon	unclassified	unclassified	Oil w/ Gas Show	unknown	Shot	2913		0		0	0
4705100630	4/23/2004	4/7/2004	1192	Ground Level														

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100630	9/15/1900	Show	Gas	Vertical	2900	Gordon	2908	Gordon	0	0			
4705100630	9/15/1900	Pay	Oil	Vertical	2900	Gordon	2908	Gordon	55	0			

Production Gas Information: (Volumes in Mcf) \* 2020 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705100630	Pennzoil Company	1981	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Company	1982	3	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Products Company	1988	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2011	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) \*\* some operators may have reported NGL under Oil \* 2020 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705100630	Pennzoil Company	1981	73	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Company	1982	12	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Products Company	1988	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100630	CHX Gas Co. LLC (North)	2011	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100630	4/23/2004	0

There is no Sample data for this well

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WV Geological & Economic Survey

Well: County = 51 Permit = 00867

Report Time: Wednesday, April 28, 2021 10:14:16 AM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	30263	51	867

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LO_N_DD	UTME	UTMN
4705100867	Marshall	867	Meade	Glen Easton	Cameron	39.805716	-80.639845	530829.7	4406256

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST
4705100867	1/23/1905	Original Loc	Completed	Raymond Dobbs	1		John Chapman		Grave Creek Fuel Co/ A M Cotton	Randall-Zogg Supply Co.			
4705100867	8/16/1907	Worked Over	Completed	Raymond Dobbs	1		John Chapman		Grave Creek Fuel Co/ A M Cotton	Randall-Zogg Supply Co.			
4705100867	8-/1910	Worked Over	Completed	Raymond Dobbs	1		John Chapman		Grave Creek Fuel Co/ A M Cotton	Randall-Zogg Supply Co.			
4705100867	5/20/2002	Plugging	Completed	Gary & Valerie Morris		M-321			Consolidation Coal Co	Consolidation Coal Co.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BE_F	G_AFT	O_
4705100867	1/23/1905	-/-	1343 Ground Level	Cameron-Garner	Gordon	Gordon	Development Well	Development Well	Oil	Cable Tool	unknown	3061		3061	0	0	0	0
4705100867	8/16/1907	-/-	1342 Ground Level	Cameron-Garner	Gordon	Gordon	Development Well	Development Well	Oil	Cable Tool	Shot	3061		0	0	0	0	0
4705100867	8-/1910	-/-	1342 Ground Level	Cameron-Garner	Gordon	Gordon	Development Well	Development Well	Oil	Cable Tool	Shot	3061		0	0	0	0	0
4705100867	5/20/2002	5/1/2002	1338 Ground Level						not available	unknown	unknown							

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BE_F	G_AFT	O_BE_F	O_AFT	WATER_QNTY
4705100867	1/23/1905	Pay	Oil	Vertical		Gordon	3048	Gordon	0	0			
4705100867	1/23/1905	Pay	Oil	Vertical		Gordon	3054	Gordon	0	0			

There is no Production Gas data for this well

There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100867	-/-1947	0
4705100867	5/20/2002	0

There is no Sample data for this well

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WV Geological & Economic Survey

Well: County = 51 Permit = 00914

Report Time: Wednesday, April 28, 2021 10:15:15 AM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70627	51	914

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100914	Marshall	914	Meade	Glen Easton	Cameron	39.803541	-80.640408	530782.5	4406014.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705100914	5/12/2004	Plugging	Completed	Ila Kerns (life est)		M-341	Wayt		Consolidation Coal Co	Consolidation Coal Co.			
4705100914	-/-	Original Loc	Prpty Map	W H Dobb		1				----- unknown -----			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT
4705100914	5/12/2004	4/26/2004	1154	Ground Level				unclassified	unclassified	not available	unknown	unknown								
4705100914	-/-	-/-	1154	Ground Level				unclassified	unclassified	not available	unknown	unknown								

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100914	5/12/2004	0

There is no Sample data for this well

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WV Geological & Economic Survey:

Well: County = 51 Permit = 70627

Report Time: Wednesday, April 28, 2021 10:15:32 AM

Well Reassignment Information: Reassigned To

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70627	51	914

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170627	Marshall	70627	Liberty	Glen Easton	Cameron	39.804121	-80.640032	530814.4	4406078.9

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170627	-/-		unknown	Reassign						----- unknown -----			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AI
4705170627	-/-	-/-																				

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WV Geological & Economic Survey

Well: County = 51 Permit = 30130

Report Time: Wednesday, April 28, 2021 10:15:55 AM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70206	51	30130

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705130130	Marshall	30130	Liberty	Glen Easton	Cameron	39.796871	-80.631948	531509.8	4405277.1

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_
4705130130	9/18/1903	Original Loc	Completed	Harrison Chambers	2		Lewis Chambers	30291	Harrison Chambers/Glen Easton	South Penn Oil (S. Penn Nat. Gas)			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_
4705130130	9/18/1903	1/12/1903	1311	Ground Level	Cameron-Garner	UDev undf:Ber/LoHURN	Gordon	Development Well	unclassified	Oil	Cable Tool	Shol	3050		3050		0		0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705130130	9/18/1903	Pay	Oil	Vertical	3033	Gordon	3037	Gordon	0	60			

There is no Production Gas data for this well

There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705130130	Original Loc	unidentified coal	Well Record	765	Reasonable	3	Reasonable	1311	Ground Level
4705130130	Original Loc	Sevickley coal	Well Record	950	Reasonable	3	Reasonable	1311	Ground Level
4705130130	Original Loc	Pittsburgh coal	Well Record	1040	Reasonable	5	Reasonable	1311	Ground Level
4705130130	Original Loc	Salt Sands (undiff)	Well Record	1800	Reasonable	150	Reasonable	1311	Ground Level
4705130130	Original Loc	Big Lime	Well Record	2120	Reasonable	45	Reasonable	1311	Ground Level
4705130130	Original Loc	Big Injun (undiff)	Well Record	2165	Reasonable	235	Reasonable	1311	Ground Level
4705130130	Original Loc	Gordon Stray	Well Record	2900	Reasonable	5	Reasonable	1311	Ground Level
4705130130	Original Loc	Gordon	Well Record	3022	Reasonable	25	Reasonable	1311	Ground Level

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705130130	-/-1940	0

There is no Sample data for this well

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WV Geological & Economic Survey

Well: County = 51 Permit = 30195

Report Time: Wednesday, April 28, 2021 10:16:14 AM

Well Reassignment Information: Reassigned To

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	30195	51	622

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705130195	Marshall	30195	Liberty	Glen Easton	Cameron	39.798176	-80.63314	531407.1	4405421.5

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705130195	-/-	unknown	Reassign							South Penn Oil (S. Penn Nat. Gas)			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	
4705130195	-/-	-/-																					

WV Geological & Economic Survey

Well: County = 51 Permit = 70620

Report Time: Wednesday, April 28, 2021 10:16:30 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170620	Marshall	70620	Liberty	Glen Easton	Cameron	39.799304	-80.633265	531395.9	4405546.7

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170620	-/-	unknown	Prpty Map	W H Dobbs	2					unknown			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BI	NGL_BO
4705170620	-/-	-/-						unclassified	unclassified	not available	unknown	unknown										

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WV Geological & Economic Survey:

Well: County = 51 Permit = 00959

Report Time: Wednesday, April 28, 2021 10:16:52 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100959	Marshall	959	Liberty	Glen Easton	Cameron	39.790876	-80.629504	531721.8	4404612.5

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705100959	5/10/2005	Plugging	Completed	Blaine E Stern		M-402			Consolidation Coal Co	Consolidation Coal Co.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	N	
4705100959	5/10/2005	4/27/2005	1186	Ground Level				unclassified	unclassified	not available	unknown	unknown										

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100959	5/10/2005	0

There is no Sample data for this well

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WV Geological & Economic Survey

Well: County = 51 Permit = 30008

Report Time: Wednesday, April 28, 2021 10:17:11 AM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70138	51	30008

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705130008	Marshall	30008	Liberty	Glen Easton	Cameron	39.791311	-80.629504	531721.6	4404660.8

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705130008	-/-		Original Loc	Completed	J W Logsdon/G Richter	1				South Penn Oil (S. Penn Nat. Gas)			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_B	
4705130008	-/-	-/-				Gordon		unclassified	unclassified	not available	unknown	unknown	3096									

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

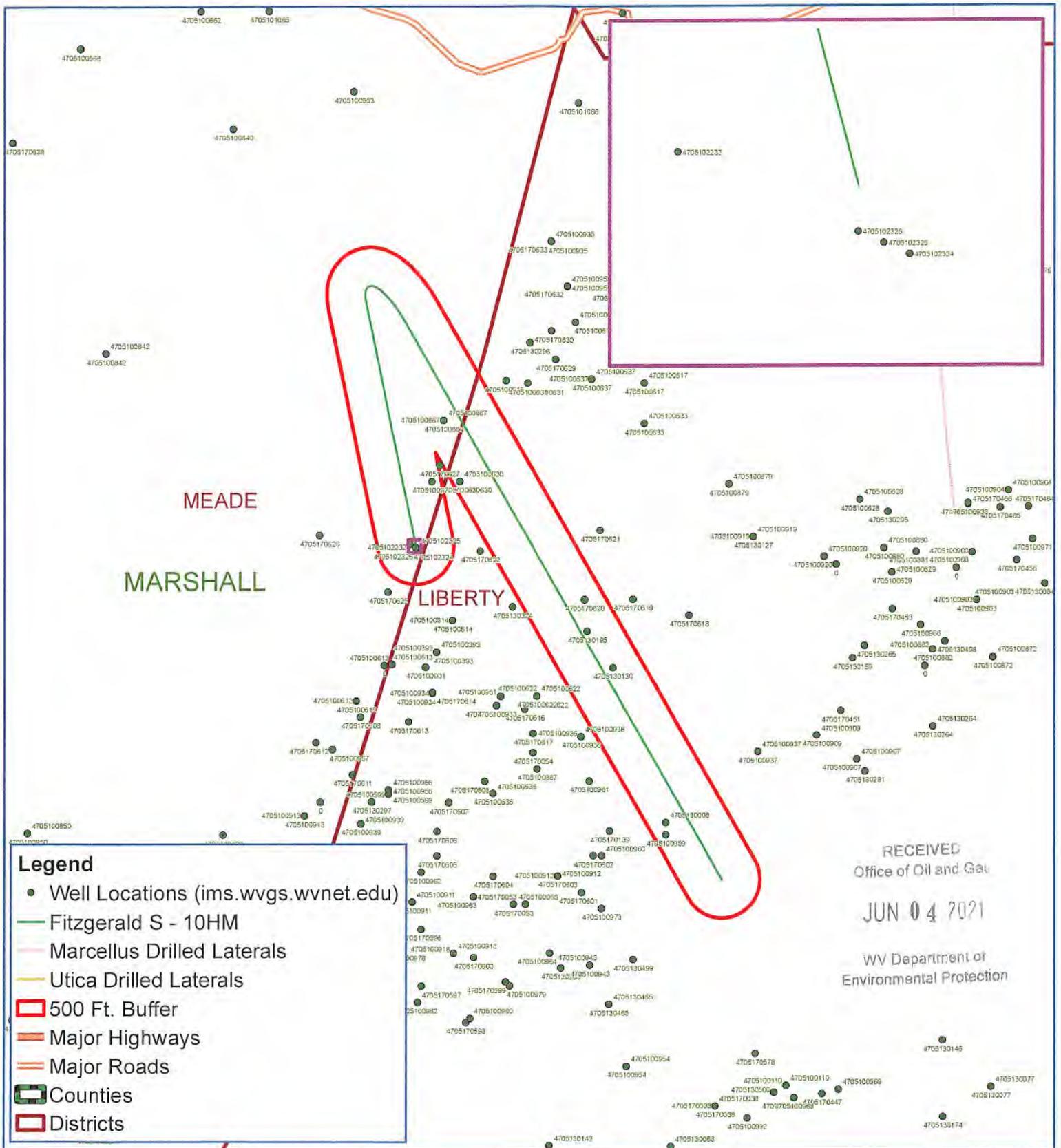
There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705130008	6/15/1931	0

There is no Sample data for this well

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# Fitzgerald S - 10HM Meade District Marshall County, WV



Notes:  
All locations are approximate and are for visualization purposes only.



Map Prepared by:  
**EPS**  
LAND SERVICES  
07/09/2021

WW-9  
(4/16)

API Number 47 - 051 4705102386  
Operator's Well No. Fitzgerald S-10HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Upper Fish Creek Quadrangle Glen Easton 7.5'

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: AST Tanks with proper containment will be used for staging fresh water for frac and flow back water

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? AST Tanks will be used with proper contain

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number UIC 2459, UIC 965, UIC 359, UIC 2D0732540, UIC 2D0732523 )
- 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 - For Vertical and Horizontal Drilling

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air for vertical / Oil for Horizontal

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

Additives to be used in drilling medium? Barite for weight

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All drill cuttings to be disposed of in a Landfill

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

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 Jim A. Pancake  
Company Official (Typed Name) Jim Pancake  
Company Official Title Vice President - Geosciences

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WV Department of Environmental Protection

Subscribed and sworn before me this 25<sup>th</sup> day of May, 2021

Susanne Deliere Notary Public

My commission expires 1/15/2025

Commonwealth of Pennsylvania - Notary Seal  
Susanne Deliere, Notary Public  
Washington County  
My commission expires on January 15, 2025  
Commission number 1382532  
07/09/2021  
Member, Pennsylvania Association of Notaries

**Tug Hill Operating, LLC**

Proposed Revegetation Treatment: Acres Disturbed 7.44 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

**Seed Mixtures**

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Orchard Grass	12
Spring Oats	96	Ladino	3
		White Clover	2

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Bang Stullip*

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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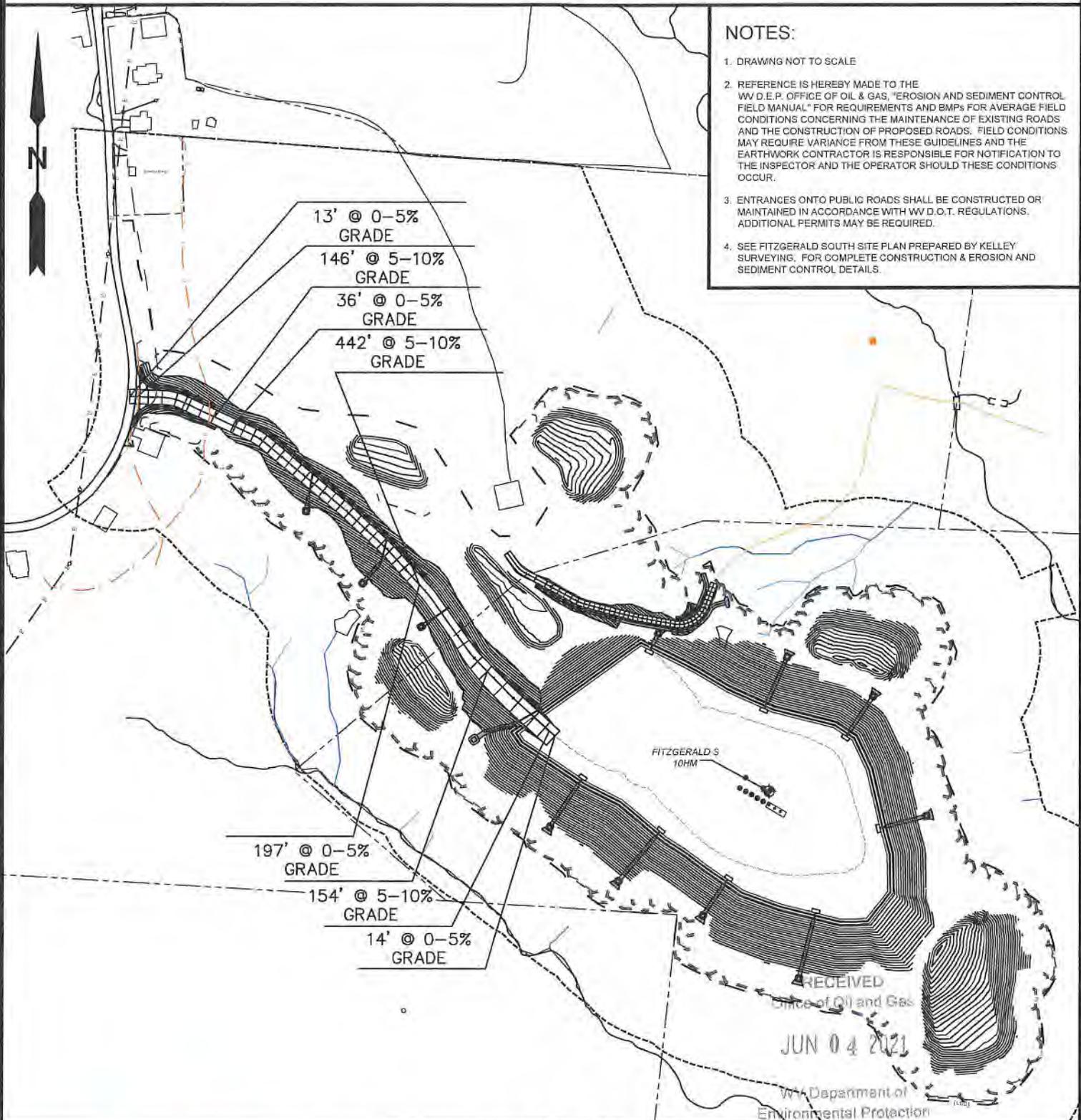
Title: Oil and Gas Inspector

Date: 5-27-21

WV Department of  
Environmental Protection

Field Reviewed? (  ) Yes (  ) No

# PROPOSED FITZGERALD S - 10HM



**NOTES:**

1. DRAWING NOT TO SCALE
2. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
3. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
4. SEE FITZGERALD SOUTH SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.

13' @ 0-5%  
GRADE  
146' @ 5-10%  
GRADE  
36' @ 0-5%  
GRADE  
442' @ 5-10%  
GRADE

197' @ 0-5%  
GRADE  
154' @ 5-10%  
GRADE  
14' @ 0-5%  
GRADE

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1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	LIBERTY	380 SOUTHPOINTE BLDV SUITE 200 CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8910	05/12/21	NONE



**TUG HILL  
OPERATING**

07/09/2021



# Well Site Safety Plan

## Tug Hill Operating, LLC

*B.S. 5-27-21*

Well Name: Fitzgerald S-10HM

Pad Location: Fitzgerald Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,405,759.15

Easting: 530,717.63

May 2021

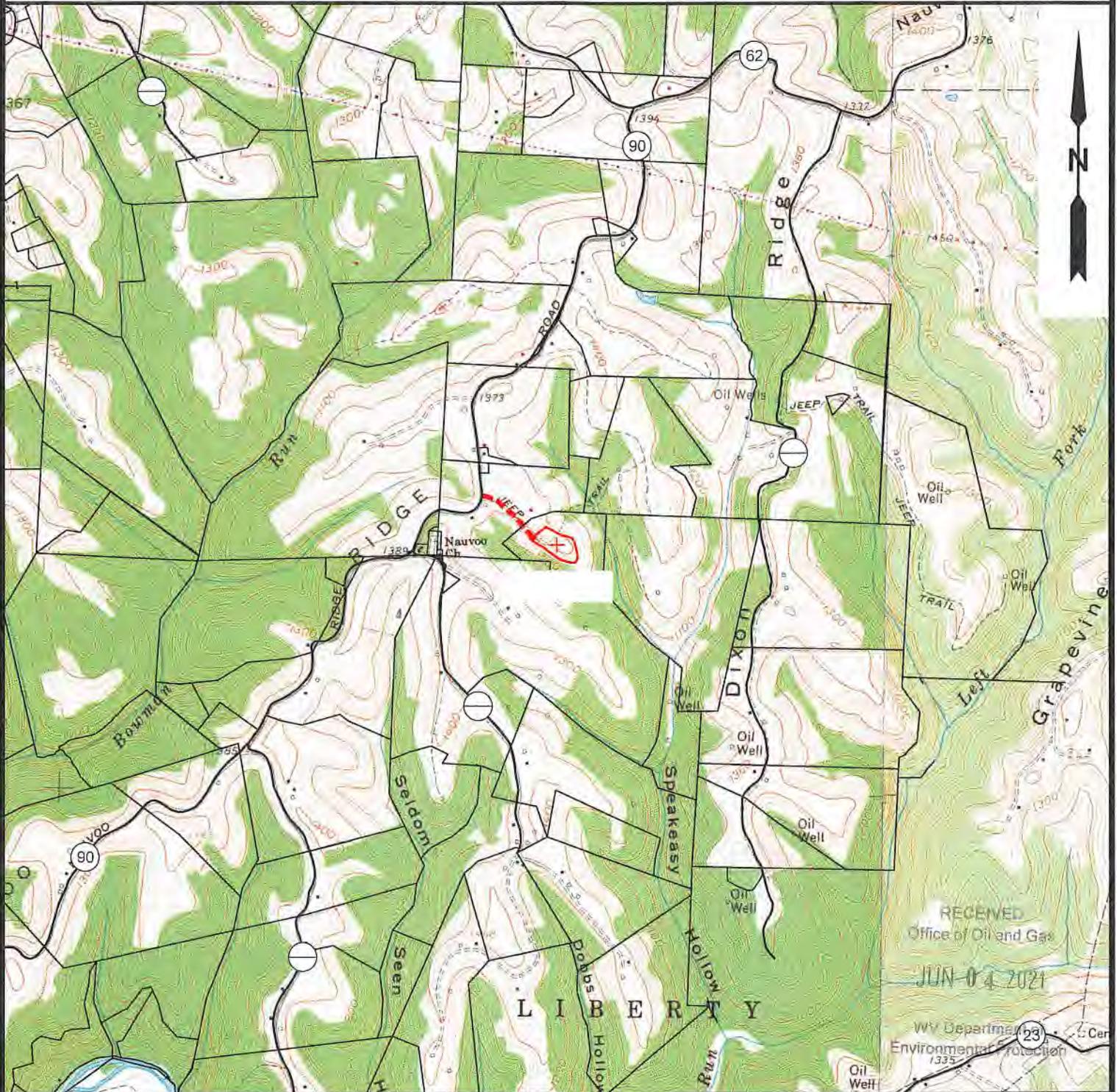
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Office of Oil and Gas

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WV Department of  
Environmental Protection

07/09/2021

# PROPOSED FITZGERALD S - 10HM



NOTE: CLOSEST WATER PURVEYOR  
CITY OF CAMERON - FRANK WALKER RESERVOIR  
CAMDEN, WV

LAT: 39.829865  
LON: -80.573724  
LOCATED: N 62°00'46" E AT 21,684.26' FROM THE CENTER OF FITZGERALD S WELL PAD LOCATION.

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WV Department of Environmental Protection



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5934  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3962  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5' & CAMERON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	LIBERTY & MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8910	03/03/2020	1" = 2000'



07/09/2021

**FITZGERALD S LEASE  
WELL 10HM  
TUG HILL OPERATING**

4,545' T.H. 533' B.H.  
T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"

T.H. LONGITUDE 80°37'30"  
B.H. LONGITUDE 80°37'30"  
872' B.H.  
11,690' T.H.

TAG	SURFACE OWNER	PARCEL	ACRES
A	DANNY R. & FRANCES V. KERNS ESTATE	7-8-1	27.00
B	DANNY R. & FRANCES V. KERNS ESTATE	9-9-14	48.308
C	GARY W. MORRIS & CYNTHIA PATRELLO	9-9-12	54.69
D	MARVIN D. & ADA C. DOBBS (L/E)	9-9-5	76.25
E	MARTIN DAVIS	9-9-10	6.00
F	GARY W. MORRIS & CYNTHIA PATRELLO	9-9-11	14.00
G	DANNY R. & FRANCES V. KERNS ESTATE	7-1-3	58.00
H	DANNY R. & FRANCES V. KERNS ESTATE	7-8-2	94.00
I	BLAINE E. STERN, JR.	7-8-13	104.92
J	BLAINE E. STERN, JR.	7-8-11	60.62

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'83 S.P.C.(FT)	N. 475,990.10	E. 1,647,885.35
NAD'83 GEO.	LAT-(N) 39.801244	LONG-(W) 80.641178
NAD'83 UTM (M)	N. 4,405,759.15	E. 530,717.63
<u>LANDING POINT</u>		
NAD'83 S.P.C.(FT)	N. 478,924.4	E. 1,647,782.3
NAD'83 GEO.	LAT-(N) 39.809295	LONG-(W) 80.641677
NAD'83 UTM (M)	N. 4,406,652.6	E. 530,671.3
<u>BOTTOM HOLE</u>		
NAD'83 S.P.C.(FT)	N. 471,579.8	E. 1,651,842.3
NAD'83 GEO.	LAT-(N) 39.789274	LONG-(W) 80.626898
NAD'83 UTM (M)	N. 4,404,435.7	E. 531,945.6

**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS OR DWELLINGS > 2500 SQ. FT. WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.



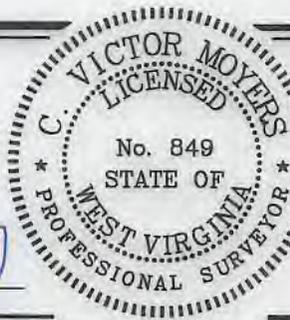
12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.546.3952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
slswv.com

**REFERENCES**



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 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE FEBRUARY 20, 2020  
REVISED MAY 12, 2021  
OPERATORS WELL NO. FITZGERALD S 10HM  
API WELL NO. 47 - 051 - 02386  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8910P10HMR.dwg  
FITZGERALD S 10HM REV4  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

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

LOCATION: ELEVATION 1,293.00' WATERSHED SPEAKEASY HOLLOW OF MAGGOTY RUN DISTRICT LIBERTY COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER DANNY AND FRANCES KERNS ESTATE ACREAGE 27.00±  
ROYALTY OWNER DANNY S. KERNS, ET AL ACREAGE 27.00±

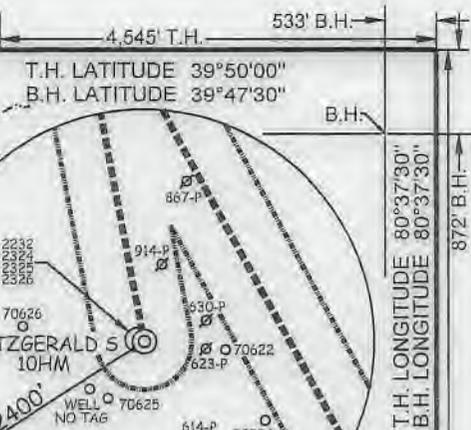
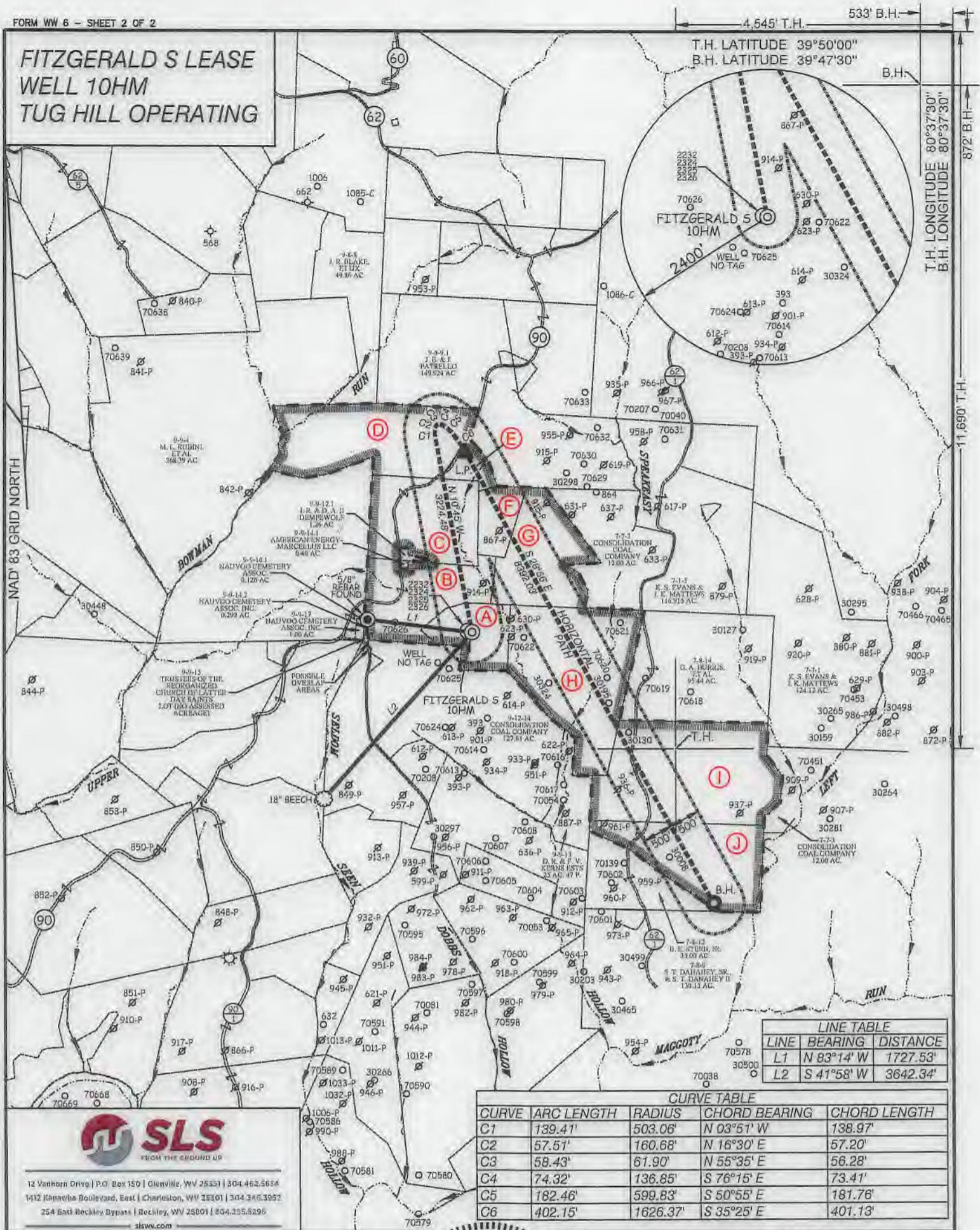
PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_ OTHER \_\_\_  
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH, TVD: 7,038' / TMD: 16,984'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD  
FORT WORTH, TX 76107 CHARLESTON, WV 25313

07/09/2021

COUNTY NAME PERMIT

**FITZGERALD S LEASE  
WELL 10HM  
TUG HILL OPERATING**



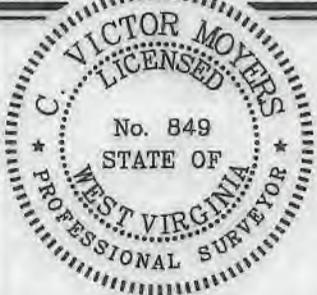
LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 83°14' W	1727.53'
L2	S 41°58' W	3642.34'

CURVE TABLE				
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	139.41'	503.06'	N 03°51' W	138.97'
C2	57.51'	160.68'	N 16°30' E	57.20'
C3	58.43'	61.90'	N 55°35' E	56.28'
C4	74.32'	136.85'	S 76°15' E	73.41'
C5	182.46'	599.83'	S 50°55' E	181.76'
C6	402.15'	1626.37'	S 35°25' E	401.13'



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 25331 | 304.462.5654  
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.345.3952  
 254 East Beckley Bypass | Beckley, WV 25001 | 804.255.8296  
 slsw.com

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 475,990.10	E. 1,647,885.35	
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BOTTOM HOLE			
NAD'83 S.P.C.(FT)	N. 471,579.8	E. 1,651,642.3	
NAD'83 GEO.	LAT-(N) 39.789274	LONG-(W) 80.626898	
NAD'83 UTM (M)	N. 4,404,435.7	E. 531,945.6	



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

P.S. *C. Victor Moyers*  
 849

LEGEND	
LEASE LINE	
SURFACE LINE	
WELL LATERAL	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
TAX MAP-PARCEL	
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE WW-6A1)	

SCALE 1" = 2000' FILE NO. 8910P10HMR.dwg  
 FITZGERALD S 10HM REV4  
 DATE FEBRUARY 20, 2020  
 REVISED MAY 12, 2021  
 OPERATORS WELL NO. FITZGERALD S 10HM  
 API WELL NO. 47-051-02380 #44  
 STATE COUNTY PERMIT

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

WELL OPERATOR TUG HILL OPERATING, LLC	DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500	ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76107	CHARLESTON, WV 25313

COUNTY NAME PERMIT

07/09/2024

**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:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
----------------------	-----------------------	-----------------------	---------	-----------

\*See attached pages

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Office of Oil and Gas

JUN 04 2021

WV Department of  
Environmental Protection

**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: Tug Hill Operating, LLC  
 By: Amy L. Morris *Amy Morris*  
 Its: Permitting Specialist - Appalachia Region

WW-6A1 Supplement

Operator's Well No. Fitzgerald S-10HM

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment
10*25518	7-8-1	A	DANNY S KERNS	AMERICAN PETROLEUM PARTNERS LLC	1/8+	1010	532	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*25520	7-8-1	A	DEENA J PALOMO	AMERICAN PETROLEUM PARTNERS LLC	1/8+	1009	357	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*25522	7-8-1	A	REGINA D FIGUEROA	AMERICAN PETROLEUM PARTNERS LLC	1/8+	1010	535	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*28697	9-9-14	B	DANNY S KERNS	TH EXPLORATION LLC	1/8+	1075	134	N/A	N/A
10*28698	9-9-14	B	DEENA JANINE PALOMO	TH EXPLORATION LLC	1/8+	1075	140	N/A	N/A
10*28699	9-9-14	B	REGINA D FIGUEROA	TH EXPLORATION LLC	1/8+	1075	137	N/A	N/A
10*21859	9-9-12	C	GARY WAYNE MORRIS	TH EXPLORATION LLC	1/8+	960	192	N/A	N/A
10*28244	9-9-5	D	MICHAEL D DOBBS AND STEPHANIE J DOBBS	TH EXPLORATION LLC	1/8+	1068	569	N/A	N/A
10*28340	9-9-5	D	PAMELA POSTLETHWAIT AND SCOTT POSTLETHWAIT	TH EXPLORATION LLC	1/8+	1071	427	N/A	N/A
10*27304	9-9-10	E	H3 LLC MICHAEL E HOEFT MANAGING MEMBER	TH EXPLORATION LLC	1/8+	1058	559	N/A	N/A
10*21859	9-9-11	F	GARY WAYNE MORRIS	TH EXPLORATION LLC	1/8+	960	192	N/A	N/A
10*17969	7-1-3	G	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8+	928	424	N/A	N/A
10*26562	7-1-3	G	MARTHA SUE FORBES	TH EXPLORATION LLC	1/8+	1038	510	N/A	N/A
10*26563	7-1-3	G	SCOTT SHOTT AIF JOY A SHOTT	TH EXPLORATION LLC	1/8+	1038	513	N/A	N/A
10*26632	7-1-3	G	MORGAN GIBSON	TH EXPLORATION LLC	1/8+	1039	319	N/A	N/A
10*26636	7-1-3	G	THOMAS SHOTT	TH EXPLORATION LLC	1/8+	1039	316	N/A	N/A
10*26691	7-1-3	G	DANIEL C SHOTT	TH EXPLORATION LLC	1/8+	1041	218	N/A	N/A
10*26970	7-1-3	G	THE ESTATE OF JOHN C SHOTT	TH EXPLORATION LLC	1/8+	1046	190	N/A	N/A
10*26971	7-1-3	G	GRACE R SHOTT-CLARDY	TH EXPLORATION LLC	1/8+	1046	194	N/A	N/A
10*27090	7-1-3	G	HUGH I SHOTT II AIF BETTY SHOTT	TH EXPLORATION LLC	1/8+	1053	9	N/A	N/A
10*27091	7-1-3	G	BRIDGITTE BLAYKE JONES	TH EXPLORATION LLC	1/8+	1050	204	N/A	N/A
10*27092	7-1-3	G	JAMES H SHOTT III	TH EXPLORATION LLC	1/8+	1050	201	N/A	N/A
10*28172	7-1-3	G	BETTY BROWN GORDON	TH EXPLORATION LLC	1/8+	1067	394	N/A	N/A

WW-6A1 Supplement

Operator's Well No. Fitzgerald S-10HM

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment
10*29562	7-1-3	G	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1097	513	N/A	N/A
10*30160	7-1-3	G	WVSTO UNCLAIMED PROPERTY	TH EXPLORATION LLC	1/8+	1102	313	N/A	N/A
10*31478	7-1-3	G	EQT PRODUCTION COMPANY	TH EXPLORATION LLC	1/8+	1100	528	N/A	N/A
10*25518	7-8-2	H	DANNY S KERNS	AMERICAN PETROLEUM PARTNERS LLC	1/8+	1010	532	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*25520	7-8-2	H	DEENA J PALOMO	AMERICAN PETROLEUM PARTNERS LLC	1/8+	1009	357	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*25522	7-8-2	H	REGINA D FIGUEROA	AMERICAN PETROLEUM PARTNERS LLC	1/8+	1010	535	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*25501	7-8-13	I	AMP FUND III LP	AMERICAN PETROLEUM PARTNERS LLC	1/8+	925	459	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*25514	7-8-13	I	FREDERICK S MARCO & REBECCA J MARCO	BLUE ROAN RESOURCES LLC	1/8+	911	244	Blue Roan Resources LLC to American Petroleum Partners Operating LLC: 38/174	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*25528	7-8-13	I	KAREN JEAN CHAMBERS	BLUE ROAN RESOURCES LLC	1/8+	911	246	Blue Roan Resources LLC to American Petroleum Partners Operating LLC: 38/174	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*25556	7-8-13	I	RIDGETOP ROYALTIES LLC	AMERICAN PETROLEUM PARTNERS LLC	1/8+	910	11	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*23026	7-8-11	J	BLAINE E STERN JR AND CONNIE J STERN	TH EXPLORATION LLC	1/8+	977	339	N/A	N/A

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 Office of Oil and Gas  
 JUN 4 2021  
 WV Department of  
 Environmental Protection



COPY

STATE OF WEST VIRGINIA §  
 COUNTY OF MARSHALL §

Marshall County  
 Jan Pest, Clerk  
 Instrument 1453305  
 04/24/2019 @ 11:51:22 AM  
 ASSIGNMENTS  
 Book 43 @ Page 505  
 Pages Recorded 10  
 Recording Cost \$ 17.00

**ASSIGNMENT AND CONVEYANCE**

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 23<sup>rd</sup> day of April, 2019 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated November 15, 2018 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

**WITNESSETH:**

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit A-2, attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the Leases since the time that Assignor obtained its interests in the Leases. Assignor does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

Assignor represents and warrants that Assignor has paid any and all bonuses, rentals, royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period, free and clear of all Encumbrances, except for and subject only to Permitted Encumbrances.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors

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 Office of Oil and Gas

JUN 04 2021

WV Department of  
 Environmental Protection

07/09/2021

4705102386



May 28, 2021

WV Department of Environmental Protection  
Office of Oil & Gas  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
Attention: Charles Brewer

RE: Fitzgerald S-10HM

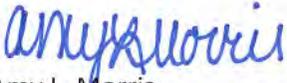
Subject: Marshall County Route 90 and 62/1 Road Crossing Letter

Dear Taylor:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 90 and 62/1 in the area reflected on the Fitzgerald S-9HM well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 304-376-0111, or by email at [amorris@tug-hillop.com](mailto:amorris@tug-hillop.com).

Sincerely,

  
Amy L. Morris  
Permitting Specialist  
Appalachia Region

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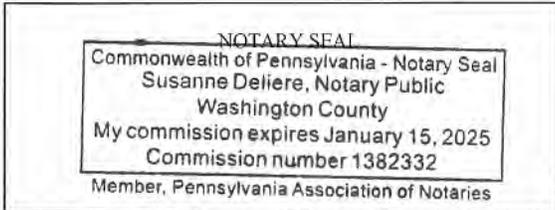


WW-6AC  
(1/12)

**Certification of Notice is hereby given:**

THEREFORE, I Amy L. Morris, 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:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Morris <i>Amy L. Morris</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia Region</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amorris@tug-hillop.com</u>



Subscribed and sworn before me this 28<sup>th</sup> day of May, 2021.

*Susanne Deliere* Notary Public

My Commission Expires 1/15/2025

**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](mailto:depprivacyofficer@wv.gov).

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

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

**Date of Notice:** 5/28/2021 **Date Permit Application Filed:** 5/28/2021

**Notice of:**

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Regina D. Figueroa  
 Address: 94 E. 700 N  
Valparaiso, IN 46383

Name: Danny S. Kerns \*See attached list  
 Address: 3500 West 80th Place  
Merrillville, IN 46410

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: Regina D. Figueroa  
 Address: 94 E. 700 N  
Valparaiso, IN 46383

Name: Danny S. Kerns \*See attached list  
 Address: 3500 West 80th Place  
Merrillville, IN 46410

SURFACE OWNER(s) (Impoundments or Pits)

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: Consol Energy  
 Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

COAL OPERATOR

Name: Marshall County Coal Resources, Inc. attn: Steve Blair  
 Address: 46226 National Road  
St. Clairsville, OH 43905

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: Danny R. Kerns \*See attached list  
 Address: 3500 West 80th Place  
Merrillville, IN 64610

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

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 WV Department of  
 Environmental Protection

\*Please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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WV Department of  
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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

07/09/2021

**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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WW-6A  
(8-13)

4705102380  
API NO. 47-051 -  
OPERATOR WELL NO. Fitzgerald S-10HM  
Well Pad Name: Fitzgerald

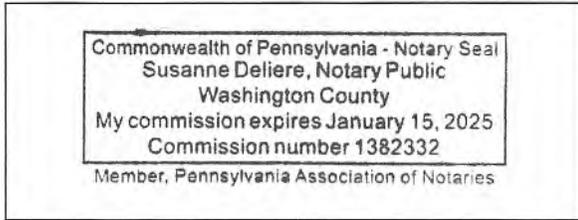
**Notice is hereby given by:**

Well Operator: Tug Hill Operating, LLC  
Telephone: 724-749-8388  
Email: amorris@tug-hilop.com *amy Morris*

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030

**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](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this *27th* day of *May, 2021*.  
*Susanne Deliere* Notary Public  
My Commission Expires *1/15/2025*

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Environmental Protection

07/09/2021

## Exhibit WW-6A

## Supplement Pg. 1A

Tug Hill Operating, LLC  
380 Southpointe Blvd, Suite 200  
Cannonsburg, PA 15137

**Residences within Two-Thousand Feet (2,000')**

Well: Fitzgerald S – 10HM  
District: Liberty  
State: WV

There are four (4) residences, one (1) business or commercial site, one (1) church, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<p><b>Residence (#1)</b> TM 9 Pcl. 14 Danny R. Kerns, Et Al Phone: 219-887-6761 (Reverse Address – David A. &amp; Regina D. Figueroa) <b>Physical Address:</b> 1352 Nauvoo Ridge Rd. Cameron, WV 26033 ✓ <b>Tax Address:</b> 3500 West 80<sup>th</sup> Place Merrillville, IN 46410</p>	<p><b>Residence (#2)</b> TM 9 Pcl. 12.1 Jessica R. &amp; David A. II Dempewolf Phone: 304-810-0500 (Reverse Address – Jolene Morris) <b>Physical Address:</b> 1180 Nauvoo Ridge Rd. Cameron, WV 26033 ✓ <b>Tax Address:</b> Same</p>	<p><b>Residence (#3)</b> TM 9 Pcl. 12 Gary W. Morris c/o Gary Morris &amp; Cynthia Patrello Phone: None Found <b>Physical Address:</b> 1156 Nauvoo Ridge Rd. Cameron, WV 26033 ✓ <b>Tax Address:</b> Same</p>
<p><b>Business/Commercial Site (#4)</b> TM 12 Pcl. 14 Consol Mining Co. LLC Consolidation Coal Company c/o Marshall County Coal Resources, Inc. attn: Steve Blair <b>Physical Address:</b> 90 The Corner Ln. Glen Easton, WV 26039 (Appears to be an underground mine vent or fan site or other related infrastructure) <b>Tax Address:</b> 46226 National Rd. Saint Clairsville, OH 43950</p>	<p><b>Church (#5)</b> TM 9 Pcl. 15 Trustees of the Reorganized Church of Latter Day Saints Phone: None ✓ <b>Physical Address:</b> 88 The Corner Ln. Glen Easton, WV 26039 <b>Tax Address:</b> Exempt/None</p>	<p><b>Residence (#6)</b> TM 9 Pcl. 22 Gary W. Morris Phone: None Found ✓ <b>Physical Address:</b> 1556 Nauvoo Ridge Rd. Cameron, WV 26033 <b>Tax Address:</b> 1156 Nauvoo RDG Glen Easton, WV 26039</p>

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Environmental Protection

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**WW-6A NOTICE OF APPLICATION**

**FITZGERALD S-10HM**

ADDITIONAL PARTIES TO NOTICE

Surface Owner (Pad and Access Road)

Deena J. Palomo  
20 Maxwell St.  
Apt. 4  
Hebron, IN 46341



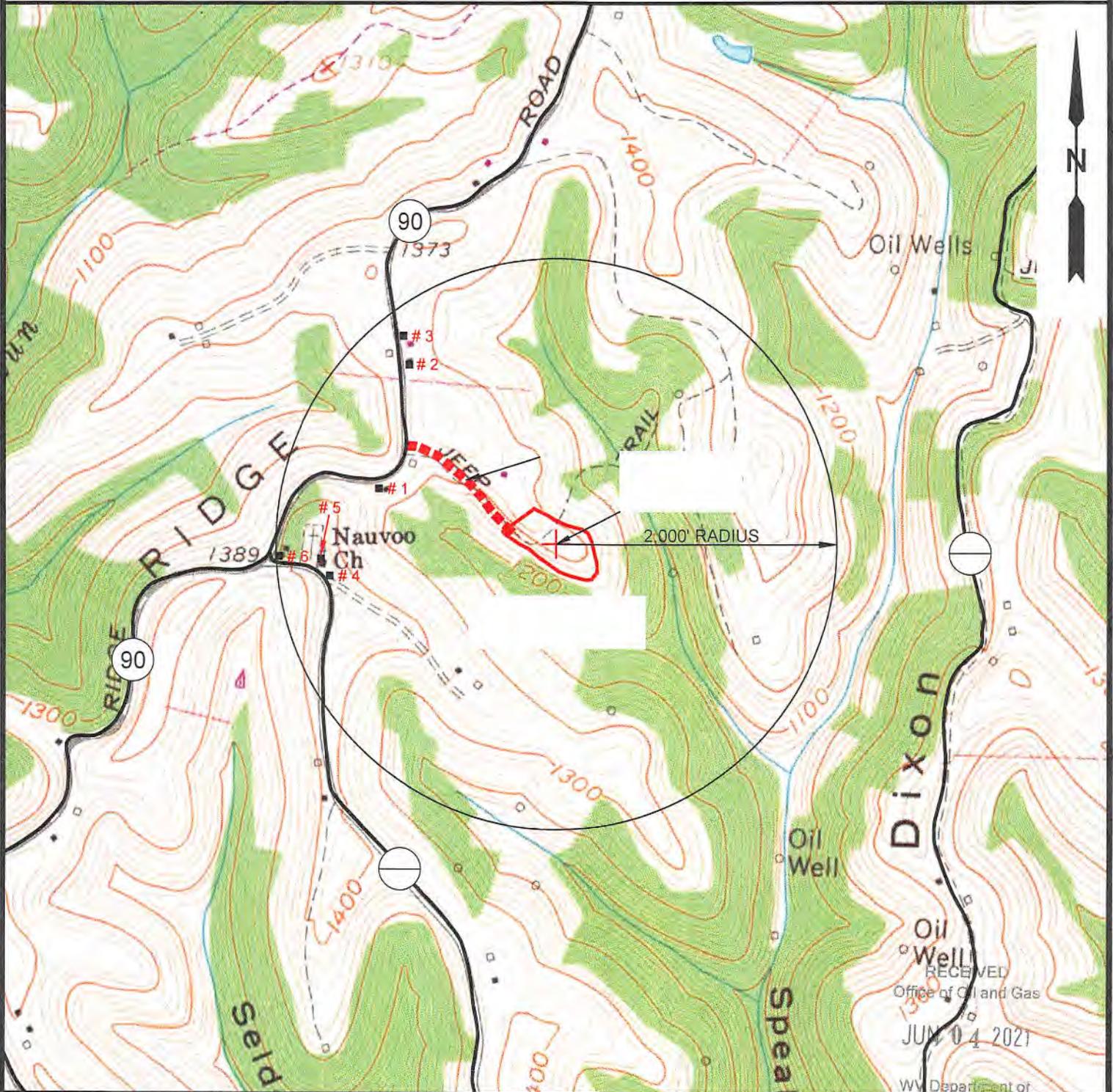
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# PROPOSED FITZGERALD S - 10HM



NOTE: THERE APPEARS TO BE FIVE (5) POSSIBLE WATER SOURCES WITHIN 2,000'.

WV Department of Environmental Protection



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296

slsw.com

**TOPO SECTION:**

GLEN EASTON 7.5'  
& CAMERON 7.5'

COUNTY DISTRICT

MARSHALL LIBERTY & MEADE

DRAWN BY JOB NO.

K.G.M. 8910

**OPERATOR:**

PREPARED FOR:  
TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD  
SUITE 200  
CANONSBURG, PA 15317

DATE SCALE

03/03/2020 1" = 1000'



**TUG HILL  
OPERATING**

07/09/2021

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF ENTRY FOR PLAT SURVEY

**Notice Time Requirement:** Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

**Date of Notice:** 4/24/2019 **Date of Planned Entry:** 5/3/2019

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)

Name: Regina D. Figueroa /  
Address: 94 E 700 N  
Valparaiso, IN 46383

Name: Danny S. Kerns ✓  
Address: 3500 West 80th Pl.  
Merrillville, IN 46410

Name: Deena J. Palomo ✓  
Address: 20 Maxwell St., Apt. 4  
Hebron, IN 46341

COAL OWNER OR LESSEE

Name: Consol Energy Attn: Casey Saunders  
Address: 1000 Consol Energy Drive ✓  
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: Regina D. Figueroa ✓  
Address: 94 E 700 N  
Valparaiso, IN 46383 \*See attached list  
\*please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State:	West Virginia	Approx. Latitude & Longitude:	39.80128284; -80.64143991
County:	Marshall	Public Road Access:	County Route 90
District:	Liberty	Watershed:	Upper Fish Creek
Quadrangle:	Glen Easton 7.5'	Generally used farm name:	Danny & Frances Kerns Estate

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

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**Notice is hereby given by:**

Well Operator: Tug Hill Operating, LLC  
Telephone: 724-749-8388  
Email: amiller@tug-hill-op.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030

JUN 04 2021

WV Department of  
Environmental Protection

**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](mailto:depprivacyofficer@wv.gov).

07/09/2021

**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:** 05/28/2021      **Date Permit Application Filed:** 05/28/2021

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

- CERTIFIED MAIL                                       HAND
- RETURN RECEIPT REQUESTED                                      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: Regina D. Figueroa  
Address: 94 E 700 N  
Valparaiso, IN 46383

Name: Danny S. Kerns  
Address: 3500 West 80th Pl  
Merrillville, IN 46410

**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:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>530,717.63</u>
County:	<u>Marshall</u>		Northing:	<u>4,405,759.15</u>
District:	<u>Liberty</u>	Public Road Access:	<u>Rines Ridge Road (County Route 76)</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Danny R. Kerns, et al</u>	
Watershed:	<u>Upper Fish Creek (HUC 10)</u>			

**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: Tug Hill Operating, LLC  
Telephone: 724-749-8388  
Email: amorris@tug-hillop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030

**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](mailto:depprivacyofficer@wv.gov).

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**Additional Party to Notice**  
**WW-6A5**  
**Fitzgerald Pad**

Deana J. Palomo  
20 Maxwell Street, Apt. 4  
Hebron, IN 46341

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## WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

1900 Kanawha Boulevard East • Building Five • Room 110  
 Charleston, West Virginia 25305-0430 • (304) 558-3505

Byrd E. White, III  
 Secretary of Transportation/  
 Commissioner of Highways

Jimmy Wriston, P. E.  
 Deputy Secretary/  
 Deputy Commissioner

June 2, 2021

James A. Martin, Chief  
 Office of Oil and Gas  
 Department of Environmental Protection  
 601 57<sup>th</sup> Street, SE  
 Charleston, WV 25304

Subject: DOH Permit for the Fitzgerald Pad, Marshall County  
 Fitzgerald S-10HM Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2019-0351 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off Marshall County Route 90 SLS at MP 4.42.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018. This letter is valid for permitting purposes for one year from the date of this letter.

Very Truly Yours,

Gary K. Clayton, P.E.  
 Regional Maintenance Engineer  
 Central Office O&G Coordinator

Cc: Amy Morris  
 Tug Hill Operating  
 CH, OM, D-6  
 File

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**PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION**

**Fitzgerald Wells**

<b>PRODUCT NAME:</b>	<b>CHEMICAL DESCRIPTION:</b>	<b>PRODUCT USE:</b>	<b>HAZARDOUS COMPONENT:</b>
GBW-20C	Hemicellulase Breaker	Breaker - Water	None
ALPHA 1427		Biocide	Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride CAS# 007173-51-5 Alky dimethyl benzyl ammonium Chloride (C12-16) – CAS#068424-85-1 Ethanol – CAS# 000064-17-5 Water – CAS# 007732-18-5
FRAC SAND	Silica Sand (various Mesh sizes)	Proppant	Crystalline silica (quartz) CAS# 14808-60-7
S-8C, Sand	Silica Sand (100 mesh)	Sand	Silica – CAS# 14808-60-7
GW-3LDF		Gellant - Water	Petroleum Distillate Blend – Proprietary, (Not Associated with Diesel Fuel) Guar gum – CAS# 009000-30-0
FRW-18		Friction Reducer	Hydrotreated light distillate CAS# 064742-47-8
Scaletrol		Scale Inhibitor	Ethylene glycol – CAS# 000107-21-1 Diethylene glycol – CAS# 000111-46-6

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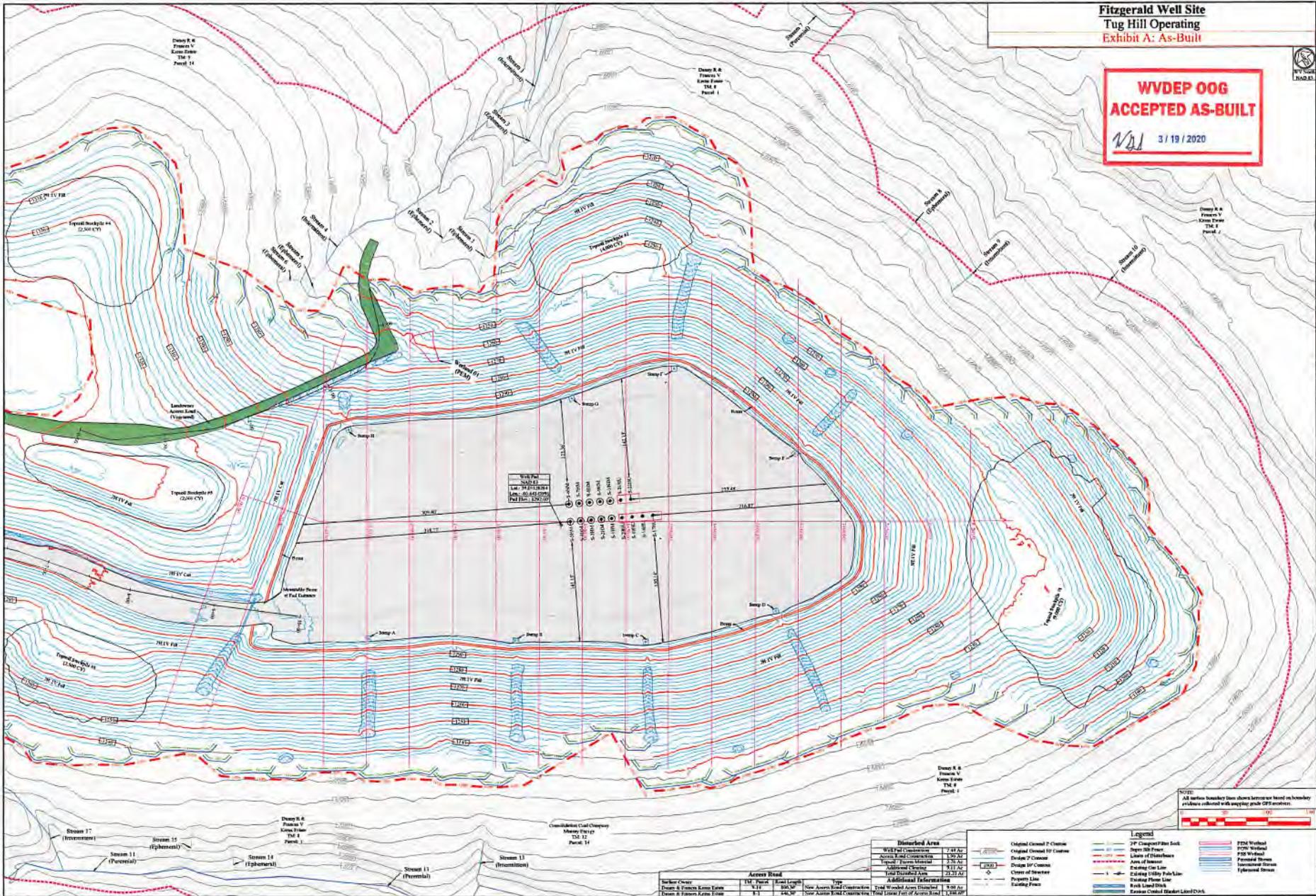
WV Department of  
Environmental Protection



**Fitzgerald Well Site**  
**Tug Hill Operating**  
**Exhibit A: As-Built**

**WVDEP OOG**  
**ACCEPTED AS-BUILT**

3/19/2020



DATE: 03/19/2020  
 TIME: 08:00 AM  
 DRAWN BY: J. L. HARRIS  
 CHECKED BY: J. L. HARRIS  
 APPROVED BY: J. L. HARRIS

**TUG HILL OPERATING**

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

**K&S**

**Fitzgerald Well Site**  
 Liberty District  
 Marshall County, WV

Date: 03/19/2020  
 Scale: As Shown  
 Drawn By: J.L.H.  
 File No:  
 Sheet 6 of 10