

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

RECEIVED  
Office of Oil and Gas  
OCT 03 2022

API 47 - 051 - 02325 County Marshall District Liberty  
Quad Glen Easton 7.5' Pad Name Fitzgerald Field/Pool Name \_\_\_\_\_  
Farm name Danny and Frances Kerns Estate Well Number Fitzgerald S-18HU  
Operator (as registered with the OOG) Tug Hill Operating, LLC  
Address 380 Southpointe Boulevard, Plaza II, Suite 200 City Canonsburg State PA Zip 15317

WV Department of  
Environmental Protection

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,405,749.99 Easting 530,720.88  
Landing Point of Curve Northing 4,405,593.5 Easting 529,513.3  
Bottom Hole Northing 4,403,445.2 Easting 530,772.3

Elevation (ft) 1293' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

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

Mud Type(s) and Additive(s)  
SOBM; Base oil, osmotic inhibitor, weighting agent, viscosifier, emulsifier, hardness buffer, fluid loss additive, LCM, Shale inhibitor, de-foamer, soaping agent, coagulant, flocculant; specific additives per WSSP and Permit.

Date permit issued 6/22/2020 Date drilling commenced 2/15/2021 spud: 9/1/2020 big rig: 12/15/2020  
Date completion activities began 2/25/2022 Date completion activities ceased 4/5/2022  
Verbal plugging (Y/N) N Date permission granted n/a Granted by n/a

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

Freshwater depth(s) ft 1055' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1494' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 951-957', 1049-1055' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

APPROVED  
Reviewed by:  
SG 10-11-22  
10/14/2022

API 47- 051 - 02325 Farm name Danny and Frances Kerns Estate Well number Fitzgerald S-18HU

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	36"	30"	120'	NEW	94.5#	N/A	Y
Surface	26"	20"	1,162'	NEW	106.5#	N/A	Y
Coal							
Intermediate 1	17 1/2"	13 3/8"	2,905'	NEW	54.5#	N/A	Y
Intermediate 2	12 1/4"	9 5/8"	11,547'	NEW	47#	N/A	Y
Intermediate 3							
Production	8 1/2"	5 1/2"	21,443'	NEW	23#	N/A	Y
Tubing		2 7/8"	10,721'	NEW	4.7#	N/A	Y
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	A	1275	15.6	1.18	1504.5	0	8
Surface	A	2080	15.6	1.19	2475.2	0	8
Coal							
Intermediate 1	A	2320	15.6	1.18	2737.6	0	8
Intermediate 2	A	4375	14.5	1.35	5906.25	0	8
Intermediate 3							
Production	A	5600	16.6	1.02	5712	0	8
Tubing							

Drillers TD (ft) 21,505' Loggers TD (ft) n/a  
 Deepest formation penetrated Trenton Plug back to (ft) n/a  
 Plug back procedure n/a

Kick off depth (ft) 11,585'

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

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 3 centralizers on surface casing at equal distance.  
Intermediate - 1 centralizer every other joint.  
 Production - one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_





**FITZGERALD S-18HU**  
**STIMULATION INFORMATION PER STAGE**

Stage No.	Ave. Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/other (units)
1	84.93	11970	13173	7488	244420	6,638	0
2	86.70	12077	9411	7551	495310	8,288	0
3	86.20	12001	9179	7387	505900	10,374	0
4	87.13	12194	9486	7882	503260	8,044	0
5	87.94	12200	9186	8055	497540	7,969	0
6	87.55	12056	9301	8382	499920	7,920	0
7	88.02	12125	9593	8445	496100	7,902	0
8	88.97	11880	9139	8459	508080	7,971	0
9	86.83	11823	9143	8133	497820	7,952	0
10	89.12	11950	9188	8863	503320	7,939	0
11	87.17	12117	8695	8436	502120	7,975	0
12	88.44	11856	8923	8519	495940	7,853	0
13	87.62	11782	9017	8406	508640	7,946	0
14	88.00	11596	9258	8688	504880	8,017	0
15	88.83	11631	8893	7433	500220	7,887	0
16	86.75	11651	9098	8096	500600	9,309	0
17	87.74	11690	8994	7813	501680	7,810	0
18	88.52	11618	9293	8277	508020	11,959	0
19	87.94	11503	8946	7961	505760	7,807	0
20	88.21	11581	8758	8015	500300	7,716	0
21	88.45	11546	9586	7496	504300	7,838	0
22	89.01	11569	9514	8583	499380	7,756	0
23	87.86	11404	9276	7861	504100	7,752	0
24	89.50	11523	8974	7772	506660	7,805	0
25	87.75	11313	8611	7563	506540	7,779	0
26	87.56	11320	9432	7977	507860	7,830	0
27	89.05	11323	8893	8245	502100	8,642	0
28	88.31	11220	8270	7447	505780	7,838	0
29	89.97	11340	8556	7596	504680	7,700	0
30	89.50	11164	8821	7977	505340	7,753	0
31	87.51	11138	8843	7689	501760	7,723	0
32	87.81	10941	8175	7887	504320	7,745	0

Stage No.	Ave. Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
33	87.82	10983	8330	7993	502720	7,674	0
34	88.51	11034	8293	7583	497220	7,521	0
35	89.12	10830	8674	7896	501680	8,113	0
36	89.46	10886	8629	7879	495400	7,695	0
37	88.99	10733	8788	7664	503480	7,758	0
38	88.36	10798	9078	7611	500200	7,678	0
39	88.08	10683	8467	8600	498520	7,687	0
40	88.48	10602	9083	7912	494160	7,652	0
41	88.42	10692	8705	7816	503080	8,901	0
42	89.71	11000	9554	7432	500940	8,882	0
43	88.90	11097	9554	7529	508620	8,938	0
44	89.16	11182	9093	7550	501220	8,810	0
45	88.65	11049	9005	7345	506220	8,840	0

**FITZGERALD S-18HU  
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	2/25/2022	21,248	21,295	48	Utica
2	2/26/2022	21,022	21,197	48	Utica
3	2/27/2022	20,823	20,998	48	Utica
4	2/28/2022	20,625	20,800	48	Utica
5	3/1/2022	20,426	20,601	48	Utica
6	3/2/2022	20,228	20,403	48	Utica
7	3/3/2022	20,029	20,204	48	Utica
8	3/4/2022	19,831	20,006	48	Utica
9	3/5/2022	19,632	19,807	48	Utica
10	3/6/2022	19,434	19,609	48	Utica
11	3/7/2022	19,235	19,410	48	Utica
12	3/8/2022	19,037	19,212	48	Utica
13	3/9/2022	18,838	19,013	48	Utica
14	3/10/2022	18,640	18,815	48	Utica
15	3/11/2022	18,441	18,616	48	Utica
16	3/12/2022	18,243	18,418	48	Utica
17	3/13/2022	18,044	18,219	48	Utica
18	3/15/2022	17,846	18,021	48	Utica
19	3/16/2022	17,647	17,822	48	Utica
20	3/17/2022	17,449	17,624	48	Utica
21	3/18/2022	17,250	17,425	48	Utica
22	3/19/2022	17,052	17,227	48	Utica
23	3/20/2022	16,853	17,028	48	Utica
24	3/21/2022	16,655	16,830	48	Utica
25	3/22/2022	16,456	16,631	48	Utica
26	3/23/2022	16,258	16,433	48	Utica
27	3/24/2022	16,059	16,234	48	Utica
28	3/25/2022	15,861	16,036	48	Utica
29	3/26/2022	15,662	15,837	48	Utica
30	3/27/2022	15,464	15,639	48	Utica
31	3/28/2022	15,265	15,440	48	Utica
32	3/28/2022	15,067	15,242	48	Utica
33	3/29/2022	14,868	15,043	48	Utica
34	3/31/2022	14,670	14,845	48	Utica
35	4/1/2022	14,471	14,646	48	Utica
36	4/2/2022	14,273	14,448	48	Utica
37	4/3/2022	14,074	14,249	48	Utica
38	4/4/2022	13,876	14,051	48	Utica
39	4/4/2022	13,677	13,852	48	Utica
40	4/5/2022	13,479	13,654	48	Utica
41	4/5/2022	13,280	13,455	48	Utica

10/14/2022

## Fitzgerald S-18HU

### Lithology Information

LITHOLOGY/FORMATION	TOP DEPTH IN FT/ Name TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID
Maxton	1909	2121	1910	2122	Sandstone
Big Lime	2121	2259	2122	2260	Limestone
Big Injun	2259	2538	2260	2539	Sandstone
Weir	2538	2754	2539	2756	Sandstone
Berea	2754	3008	2756	3011	Sandstone
Gordon	3008	3164	3011	3167	Sandstone
Fifty Foot	3164	3676	3167	3685	Sandstone
Speechley	3676	5137	3685	5310	Sandstone
Benson	5137	5558	5310	5795	Sandstone
Alexander	5558	6212	5795	6538	Siltstone
Rhinestreet	6212	6695	6538	7086	Black Shale
Middlesex	6695	6770	7086	7168	Black Shale
Geneseo/Burkett	6770	6799	7168	7199	Black Shale
Tully	6799	6825	7199	7227	Limestone
Hamilton	6825	6914	7227	7324	Gray Shale
Marcellus	6914	6964	7324	7377	Black Shale
Onondaga	6964	7191	7377	7619	Limestone
Oriskany	7191	7327	7619	7771	Sandstone
Helderberg	7327	7705	7771	8201	Limestone
Salina	7705	8699	8201	9345	Salt/Anhydrite/LS
Lockport	8699	9072	9345	9758	Dolomite
Rose Hill	9072	9373	9758	10102	Shale
Packer Shell	9373	9587	10102	10343	Limestone
Clinton/Tuscarora	9587	9686	10343	10456	Sandstone
Juniata/Queenston	9686	10523	10456	11396	Red Shale
Reedsville	10523	11582	11396	12644	Gray Shale
Utica	11582	11832	12644	13086	Black Shale
Point Pleasant	11832	-	13086	-	Shale/Limestone



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/25/2022
Job End Date:	4/5/2022
State:	West Virginia
County:	Marshall
API Number:	47-051-02325-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Fitzgerald S-18HU
Latitude:	39.80116100
Longitude:	-80.64114000
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	11,947
Total Base Water Volume (gal):	13,864,872
Total Base Non Water Volume:	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Tug Hill Operating	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	84.71641	None
Sand (40/70 White Proppant)	Tug Hill Operating	Proppant					
			Silica Substrate	14808-60-7	100.00000	11.69000	None
Sand (100 Mesh Proppant)	Tug Hill Operating	Proppant					
			Silica Substrate	14808-60-7	100.00000	3.19482	None
Hydrochloric Acid (7.5%)	CNR	Acidizing					
			Water	7732-18-5	85.00000	0.23781	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.10352	None
StimStream FR 9800	Chemstream	Friction Reducer					
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01821	None
			Butene, homopolymer	9003-29-6	25.00000	0.01821	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00219	None
MC MX 9-4743	Multi-Chem	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.02155	None
LD-7750W	Multi-Chem	Scale Inhibitor					

			Methanol	67-56-1	60.00000	0.00493	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00055	None
			Proprietary material	Proprietary	30.00000	0.00027	None
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00018	None
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00009	None
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00009	None
ProFE 105	CNR	Iron Control					
			Citric Acid	77-92-9	20.00000	0.00022	None
			Acetic Acid	64-19-7	5.00000	0.00005	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	85.00000	0.23781	
			Butene, homopolymer	9003-29-6	25.00000	0.01821	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00219	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	
			Proprietary material	Proprietary	30.00000	0.00027	
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00018	
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00009	
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00009	
			Acetic Acid	64-19-7	5.00000	0.00005	

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

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

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.  
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

**FITZGERALD S LEASE  
UTICA UNIT - 369.20 AC±  
WELL 18HU  
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"

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

NAD'83 S.P.C.(FT)	N. 475,959.90	E. 1,647,895.53
NAD'83 GEO.	LAT-(N) 39.801161	LONG-(W) 80.641140
NAD'83 UTM (M)	N. 4,405,750.00	E. 530,720.88

**LANDING POINT**

NAD'83 S.P.C.(FT)	N. 475,644.0	E. 1,643,872.3
NAD'83 GEO.	LAT-(N) 39.800153	LONG-(W) 80.655444
NAD'83 UTM (M)	N. 4,405,633.3	E. 529,496.8

**BOTTOM HOLE**

NAD'83 S.P.C.(FT)	N. 468,393.1	E. 1,647,950.3
NAD'83 GEO.	LAT-(N) 39.780391	LONG-(W) 80.640603
NAD'83 UTM (M)	N. 4,403,445.0	E. 530,776.1

TAG	SURFACE OWNER	PARCEL	ACRES
A	DANNY R. & FRANCES V. KERNS ESTATE	7-8-1	27.00
B	CONSOL MINING CO., LLC	9-12-14	127.61
C	DANNY R. & FRANCES V. KERNS ESTATE	9-9-14	48.308
D	NAUVOO CEMETERY ASSOC. INC.	9-9-14.2	0.292
E	TRUSTEES OF THE REORGANIZED CHURCH OF LATTER DAY SAINTS	9-9-15	LOT
F	WHIPKEY TRUST	9-12-12	61.00
G	NAUVOO CEMETERY ASSOC. INC.	9-9-16.1	0.126
H	NAUVOO CEMETERY ASSOC. INC.	9-9-17	1.09
I	GARY W. MORRIS	9-9-22	0.15
J	WARREN BERYLE & ELEANOR LOU CHAMBERS - LIFE	9-12-11	91.00
K	TODD L. SCHERICH, ET AL	9-9-16	168.204
L	ROBERT W. KNIGHT	9-12-10	3.00
M	CHARLES WILLIAM DOBBS, ET AL	9-12-9	82.26
N	RONALD EUGENE & MARY LEE DOBBS	9-12-20	91.00
O	VIRGINIA MCLVAIN ESTATE & THE WHIPKEY TRUST	9-12-16	30.00
P	RAYMOND D. DOBBS, ET UX	9-12-19	30.00
Q	ROY ROGERS WOODS, SR.	9-12-18	30.00
R	VIRGINIA MCLVAIN ESTATE & THE WHIPKEY TRUST	9-12-17	37.27
S	CONSOL MINING CO., LLC	7-9-1	59.00
T	CONSOL MINING CO., LLC	7-8-7	31.99
U	CONSOL MINING CO., LLC	7-9-22	101.36
V	JOHN ALFRED & LEORA JEAN DOBBS - LIFE	7-9-23	60.25

**AS DRILLED COORDINATES  
FOR WELL NO. 18HU**

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

NAD'83 S.P.C.(FT)	N. 475,959.87	E. 1,647,895.51
NAD'83 GEO.	LAT-(N) 39.801161	LONG-(W) 80.641140
NAD'83 UTM (M)	N. 4,405,749.99	E. 530,720.88

**LANDING POINT**

NAD'83 S.P.C.(FT)	N. 475,512.6	E. 1,643,924.4
NAD'83 GEO.	LAT-(N) 39.799794	LONG-(W) 80.655252
NAD'83 UTM (M)	N. 4,405,593.5	E. 529,513.3

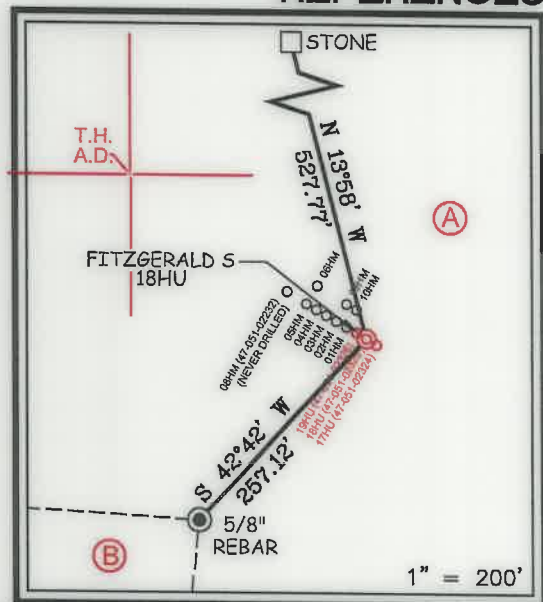
**BOTTOM HOLE**

NAD'83 S.P.C.(FT)	N. 468,393.8	E. 1,647,937.7
NAD'83 GEO.	LAT-(N) 39.780393	LONG-(W) 80.640648
NAD'83 UTM (M)	N. 4,403,445.2	E. 530,772.3

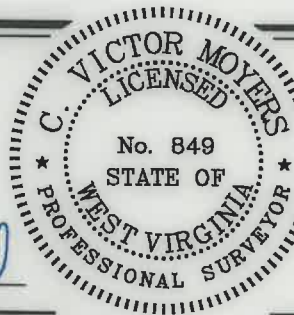
**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF FITZGERALD S-18HU (47-051-02325) IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF FITZGERALD S-17HU (47-051-02324), FITZGERALD S-19HU (47-051-02326), HUDSON S-11HU (47-051-02296), HUDSON S-12HU (47-051-02292), HUDSON S-13HU (47-051-02293), HUDSON S-14HU (47-051-02327), HUDSON S-15HU (47-051-02328), HUDSON S-16HU (47-051-02329) & TEN HIGH 1S-17HU (47-051-02033).
- AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.

**REFERENCES**



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.345.2952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.855.5295  
slswv.com



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 APRIL 9, 20 21  
REVISED MAY 17, 20 21  
OPERATORS WELL NO. FITZGERALD S-18HU  
API WELL NO. 47 - 051 - 02325  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8910P18HUADR.dwg  
FITZGERALD S-18HU REV10  
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  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

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  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER   
PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION POINT PLEASANT  
ESTIMATED DEPTH TVD: 12,080' / TMD: 21,657'

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

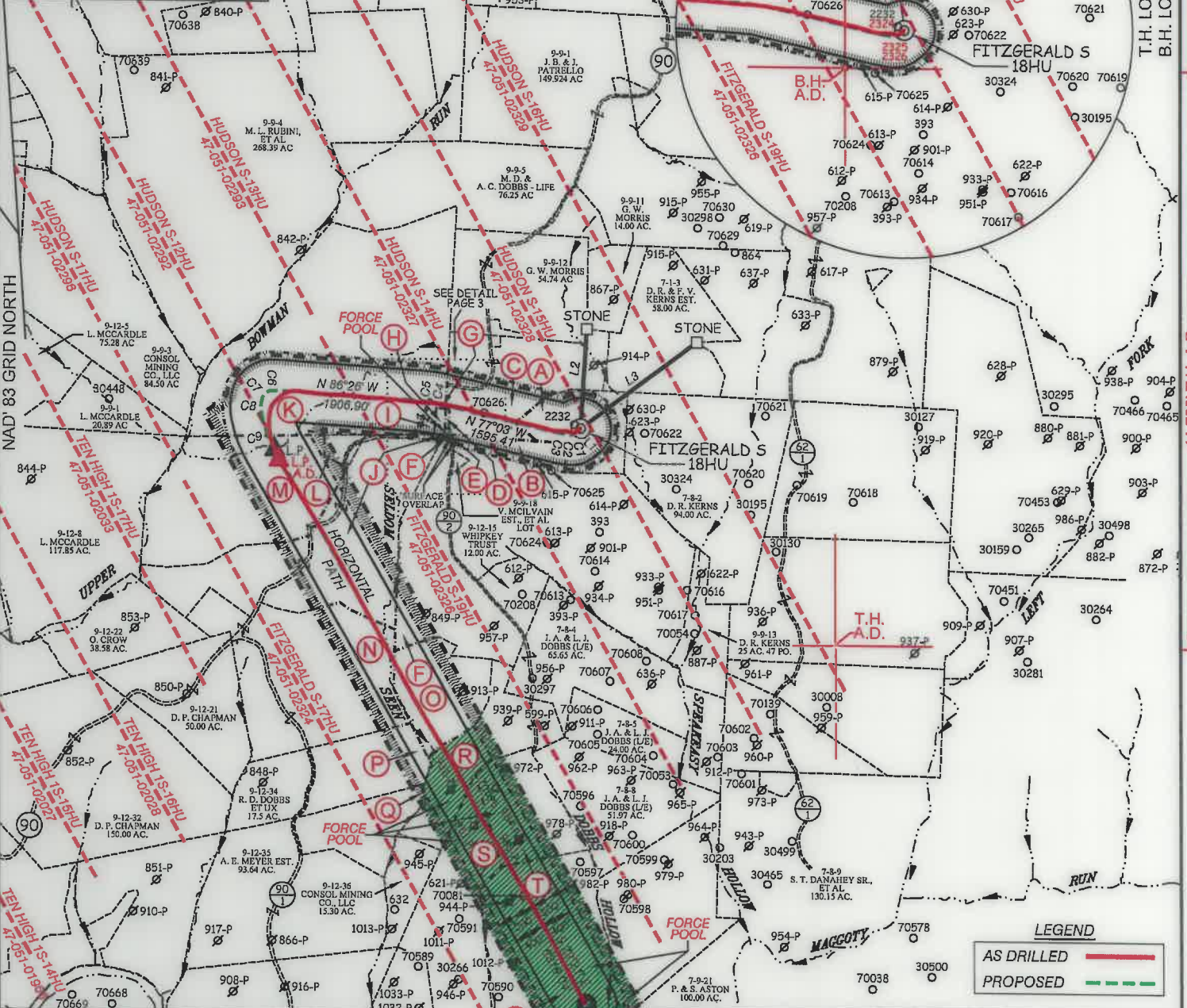
T.H. LONGITUDE 80°37'30"  
B.H. LONGITUDE 80°37'30"  
4,107' B.H. A.D.  
11,720' T.H. A.D.

**FITZGERALD S LEASE  
UTICA UNIT - 369.20 AC ±  
WELL 18HU  
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"

**LINE TABLE**

LINE	BEARING	DISTANCE
L1	S 50°57' W	122.41'
L2	N 03°35' E	1305.04'
L3	N 53°09' E	1910.37'



T.H. LONGITUDE 80°37'30"  
B.H. LONGITUDE 80°37'30"

11,720' T.H. A.D.  
4,107' B.H. A.D.

**LEGEND**

AS DRILLED	
PROPOSED	

**CURVE TABLE**

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	14.13'	24.83'	S 70°46'11" W	13.94'
C2	59.91'	288.66'	N 88°04'29" W	59.80'
C3	148.08'	1748.15'	N 79°41'21" W	148.03'
C4	101.52'	761.41'	N 79°01'31" W	101.44'
C5	149.39'	2804.46'	N 84°54'23" W	149.37'
C6	70.83'	216.47'	S 86°21'38" W	70.51'
C7	158.82'	151.98'	S 42°07'01" W	151.70'
C8	194.57'	447.27'	S 01°10'45" W	193.04'
C9	494.87'	1479.27'	S 20°33'24" E	492.56'

**SLS**  
FROM THE GROUND UP

12 Veinhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.345.5962  
254 East Bockley Bypass | Beckley, WV 26801 | 304.255.5296  
sllsv.com

P.S. 849 *C. Victor Moyers*

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

NAD'83 S.P.C.(FT)	N. 475,959.90	E. 1,647,895.53
NAD'83 GEO.	LAT-(N) 39.801161	LONG-(W) 80.641140
NAD'83 UTM (M)	N. 4,405,750.00	E. 530,720.88

**LANDING POINT**

NAD'83 S.P.C.(FT)	N. 475,644.0	E. 1,643,872.3
NAD'83 GEO.	LAT-(N) 39.800153	LONG-(W) 80.655444
NAD'83 UTM (M)	N. 4,405,633.3	E. 529,496.8

**BOTTOM HOLE**

NAD'83 S.P.C.(FT)	N. 468,393.1	E. 1,647,950.3
NAD'83 GEO.	LAT-(N) 39.780391	LONG-(W) 80.640603
NAD'83 UTM (M)	N. 4,403,445.0	E. 530,776.1



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

**LEGEND**

UNIT BOUNDARY	
LEASED TRACTS INSIDE	
UNIT BOUNDARY	
SURFACE LINE	
PROPOSED UTICA	
WELL LATERAL	
400' OFFSET LINE	
500' OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
FORCE POOL TRACT	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE ADDITIONAL SHEETS)	

SCALE 1" = 2000' FILE NO. 8910P18HUADR.dwg  
FITZGERALD S-18HU REV10

DATE APRIL 9, 20 21  
REVISED MAY 17, 20 21

OPERATORS WELL NO. FITZGERALD S-18HU  
API WELL NO. 47 - 051 - 02325

NO.	STATE	COUNTY	PERMIT
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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 FORT WORTH, TX 76107	ADDRESS	5400 D BIG TYLER ROAD CHARLESTON, WV 25313

10/14/2022

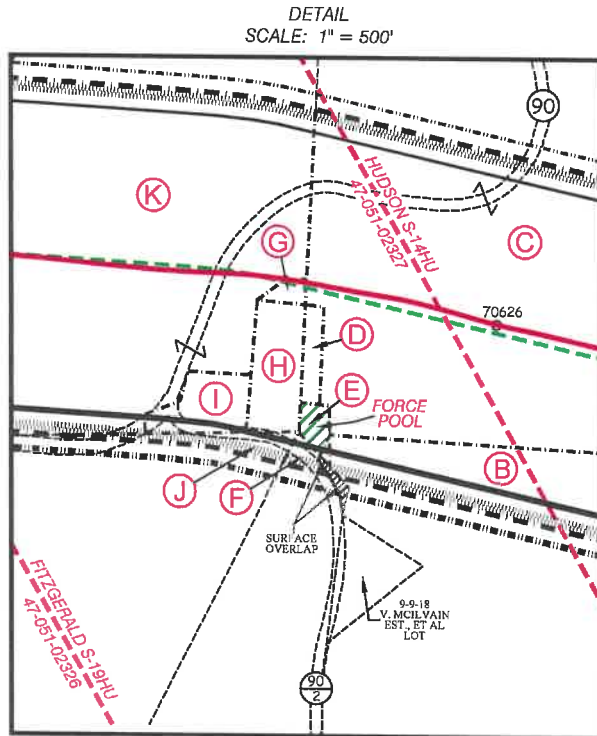
COUNTY NAME  
PERMIT

**FITZGERALD S LEASE  
UTICA UNIT - 369.20 AC±  
WELL 18HU  
TUG HILL OPERATING**



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  
slew.com

NO.	Lease ID	Tags	Parcel	Grantor, Lessor, Etc.	Deed Book/Page	
1	10*25518	A	7-8-1	DANNY S KERNS, MARRIED MAN DEALING WITH HIS SOLE AND SEPARATE PROPERTY	1010	532
2	10*18339	B	9-12-14	RESOURCE MINERALS HEADWATER I LP	940	448
3	PENDING	C	9-9-14	REGINA DANETTE FIGUEROA	1075	137
4	10*27299	D	9-9-14.2	NAUVOO CEMETERY ASSOCIATION	1057	357
5	**	E	9-9-15	REORGANIZED CHURCH OF LATER DAY SAINTS	UNLEASED	
6	10*19557	F	9-12-12	TERRY L BLAKE	944	649
7	10*19987	G	9-9-16.1	LESLEY D BALLA	955	103
8	10*27299	H	9-9-17	NAUVOO CEMETERY ASSOCIATION	1057	357
9	10*24535	I	9-9-22	BOARD OF EDUCATION OF MARSHALL COUNTY	1026	64
10	10*15494	J	9-12-11	CHRISTOPHER SINGER AND SHEREA SINGER	898	433
11	10*19987	K	9-9-16	LESLEY D BALLA	955	103
12	10*23656	L	9-12-10	ROBERT W KNIGHT AND BARBARA J KNIGHT	1011	504
13	10*15999	M	9-12-9	CHARLES W DOBBS AND JUDITH M DOBBS	702	171
14	10*24679	N	9-12-20	PIKEWOOD ENERGY CORPORATION AN OHIO CORPORATION	1026	149
15	10*21512	O	9-12-16	THE WHIPKEY TRUST, ACTING TRUSTEES DAVID L WHIPKEY AND CAROL J WHIPKEY	949	266
16	10*19748	P	9-12-19	ELIZABETH JANE KELLEY	957	335
17	10*18073	Q	9-12-18	ROY R WOODS	927	22
18	10*21532	R	9-12-17	CHARLES E RICHARDSON AND SHIRLEY S RICHARDSON	957	327
19	10*22631	S	7-9-1	FREDA ELIZABETH BLAKE	966	632
20	10*21532	T	7-8-7	CHARLES E RICHARDSON AND SHIRLEY S RICHARDSON	1017	620
21	10*17930	U	7-9-22	BOUNTY MINERALS LLC	928	396
22	**	V	7-9-23	O E BURGE AND SARAH L BURGE ET AL	395	586



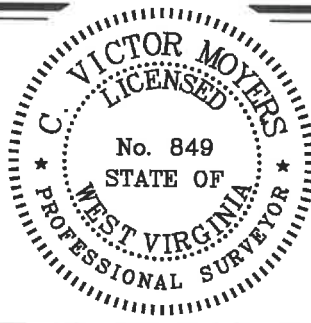
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