





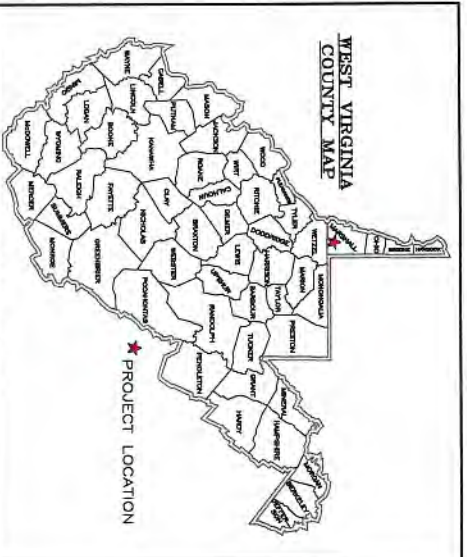




**APPROVED**  
**WVDEP OOG**  
*WJD*  
6/17/2019

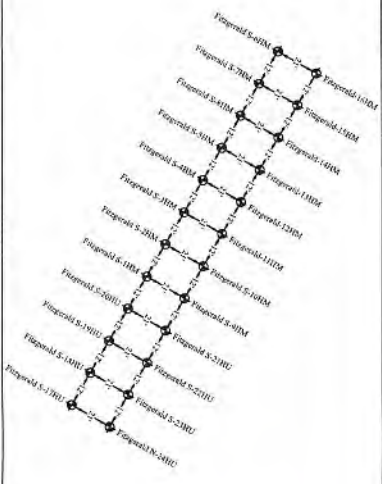
**Fitzger:**  
Site Design,  
Erosion and S  
Tug I  
Mar  
Lib  
Latitude  
Longitude  
Upper Fish

Exhibit A: Final De



**SITE DISTANCES**

WV-N-NAD 83 N: 478684.78	WV-N-NAD 83 E: 476663.34
WV-N-NAD 83 E: 476663.34	WV-N-NAD 83 E: 476663.34
WV-N-NAD 27 E: 1678117.88	WV-N-NAD 27 E: 1679248.27
Le. NAD 83: 39.8011809	Le. NAD 83: 39.8013284
Le. NAD 83: 38.6412844	Le. NAD 83: 38.6414191
Le. NAD 27: 38.6414191	Le. NAD 27: 38.6416350
UTM 17 NAD 83 N: 4405457619	UTM 17 NAD 83 N: 4405793142
UTM 17 NAD 83 E: 518055.48	UTM 17 NAD 83 E: 518091.15
EAD DATE: 12/28/08	



WV-N-NAD 83 N	WV-N-NAD 83 E	WV-N-NAD 27 E	WV-N-NAD 83 N	WV-N-NAD 83 E	WV-N-NAD 27 E
WV-N-NAD 83 N: 478684.78	WV-N-NAD 83 E: 476663.34	WV-N-NAD 27 E: 1678117.88	WV-N-NAD 83 N: 478684.78	WV-N-NAD 83 E: 476663.34	WV-N-NAD 27 E: 1678117.88
Le. NAD 83: 39.8011809	Le. NAD 83: 39.8013284	Le. NAD 27: 38.6414191	Le. NAD 83: 39.8011809	Le. NAD 83: 39.8013284	Le. NAD 27: 38.6414191
UTM 17 NAD 83 N: 4405457619	UTM 17 NAD 83 E: 518055.48	UTM 17 NAD 83 N: 4405793142	UTM 17 NAD 83 N: 4405457619	UTM 17 NAD 83 E: 518055.48	UTM 17 NAD 83 N: 4405793142



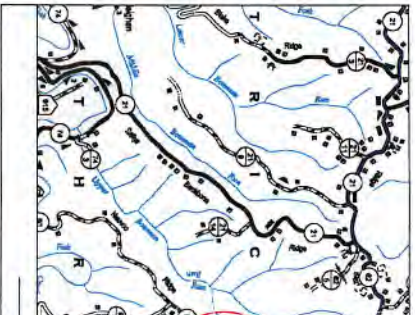
Structure	Latitude (DD)	Longitude (DD)
SITE ENTRANCE	39.80035544	-80.674176
Center of VAD Hole	39.80138414	-80.6741357

**Approach Routes:**

From the intersection of WV Rt 2 and South 12th Street in Mandaville, WV, Travel South on WV Rt 2 for 3.5 mi. Turn Left onto WV Aft Rt 2 Round Bottom Hill Rd). Follow WV Aft Rt 2 for 1.3 mi. Turn Right onto Co Rt 4 (Jandy-Lab) Follow Co Rt 4 for 1.8 mi. Turn Right onto Co Rt 21 (Robert's Ridge Rd). Follow Co Rt 21 for 11.3 mi. Turn Right onto Co Rt 90 (Nauvoo Ridge). Follow Co Rt 90 for 1.3 mi. The site entrance will be on the Left (East) side of the road.

**Facility/Plant Conditions**

Do the construction activities take place in a facility?	NO
Facility needed from county, facility/condition:	NO
Facility/Plant/Zone	X
PER-ECS Study completed:	N/A
PER-ECS Study/Condition:	N/A
PER-ECS Study/Condition:	N/A
PER-ECS Study/Condition:	N/A
Language of construction in English:	N/A



**Project Contacts**

Task/Department	Survey and Design
<b>West Virginia - Regulatory Analysis</b> 724-485-5000 ORF 304-683-7676 CAD Date: April 10, 2019 <b>Technical Information:</b> Geoff Kader - VP - Production 874-263-5200 ORF <b>Task/Department</b> <b>Tug Hill Operating, LLC</b> 384 Scouppion Road Scouppion, WV 26030 Columbus, VA 1317	Kenneth Kelly 304-314-6943 ORF Tara E. Oak 304-494-9240 ORF Zachary Summerfield 304-338-6987 ORF

**Environmental:**  
West Virginia Department on provided by Ashlee Keadler  
Date: April 10, 2019  
**Technical Information:**  
This map/graphic information shown herein is based on aerial photographs by Blue Mountain Aerial Mapping, Inc. WV

**MISS UTILITY OF WEST VIRGINIA**  
1-800-2-45-4848  
position xiv - chapter 26c -regina  
that you call and business days  
you die in the state of West Virginia.  
**IT'S THE LAW**

**Know What's Below.**  
**811**  
Call before you dig.

**Tug Hill Operating will obtain an Encroachment Permit (Form MM-109) from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities. The WV Mines Website was consulted. Previous (Current) mining activities are within the AOI. WVDEN Website files show that there are no active and/or abandoned gas wells within the AOI.**



4705102232H

# Well Site

Construction Plan, &  
 Sediment Control Plans  
 for Operating  
 Marshall County  
 Liberty District  
 39.80128284°  
 -80.64143991°  
 Upper Fish Creek  
 Watershed

APC 051-02232

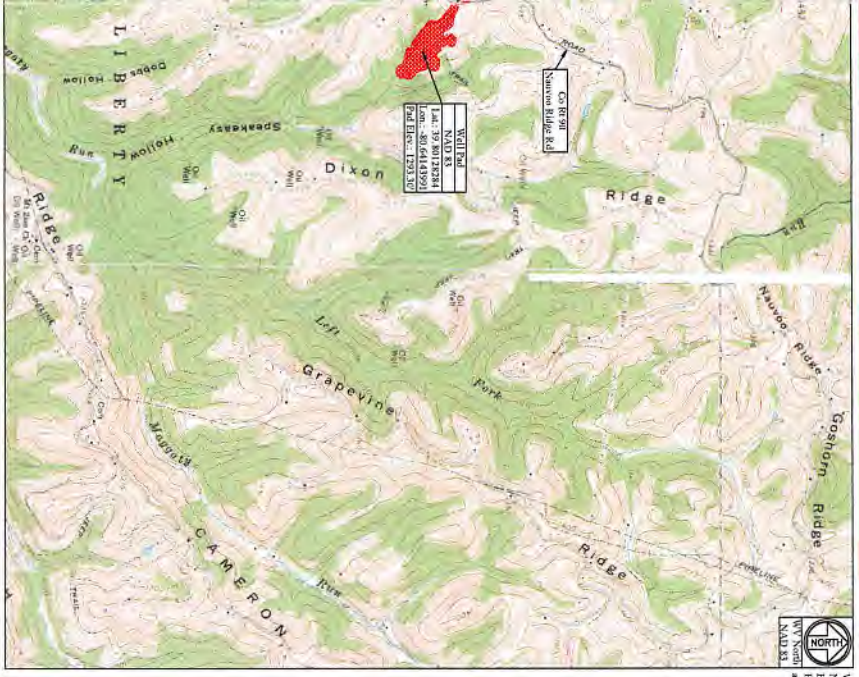
Sign: Issue for Permitting

**Pertinent Site Information**  
 Fitzgerald Well Site  
 Emergency Number: 304-845-1920  
 Liberty District, Marshall County, WV  
 Watershed: Upper Fish Creek Watershed  
 Tug Hill Contact Number: 1-817-632-3400

**Property Owner Information - Fitzgerald Well Site**

Owner	IN-1	IN-2	WV-1	WV-2	Access Road	Permit/Clear	Total Disturbance
Barry & Pamela Kern Estate	141	744	0.66	1.81	1.81	5.75	1.86
Barry & Pamela Kern Estate							
<b>Site Total (Ac)</b>	<b>744</b>	<b>1.90</b>	<b>2.76</b>	<b>9.11</b>	<b>21.21</b>		

WV State Plane Coordinate System  
 Established on NAD83  
 Established By Survey Grade GPS  
 and OPUS Post-Processing



**Access Road**

Surface Type	IN-1	IN-2	WV-1	WV-2	Other
Surface Type					
Barry & Pamela Kern Estate	\$1	645.0'			
Barry & Pamela Kern Estate					
<b>Total (Ac)</b>	<b>744</b>	<b>1.90</b>	<b>2.76</b>	<b>9.11</b>	<b>21.21</b>

**Disturbed Area**

Well Pad Construction	7.44 Ac
Access Road Construction	1.90 Ac
Topsoil Erosion Material	21.44 Ac
Total Disturbed Area	31.21 Ac

**Additional Information:**  
 Total Wooded Area Disturbed: 9.00 Ac  
 Total Linear Feet of Access Road: 1,446.60'

**Fitzgerald Well Site Quantities**

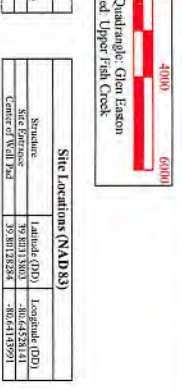
Description	Cur (CY)	Fill (CY)	Spill (CY)	Storm (CY)	Max. Stone	Length of Stone
Well Pad Foot	62,131.69	5,512.87	12,001.50	N/A	N/A	N/A
Landowner Access Road	3,973.52	2,311.01	106.51	N/A	N/A	N/A
Proposed Access Material Stockpile	21,124.15		21,672.15	N/A	N/A	N/A
<b>Total</b>	<b>87,229.34</b>	<b>79,493.21</b>	<b>33,780.16</b>	<b>23,048.39</b>		

**Ephemeral Stream Impact (Linear Feet)**

Stream and Impact Cause	Colored (LF)	Structures (LF)	Shore Fill (LF)	Shore Fill (LF)	Total Impact
Stream 01				34.81	34.81
<b>Total Stream Impact</b>				<b>34.81</b>	<b>34.81</b>

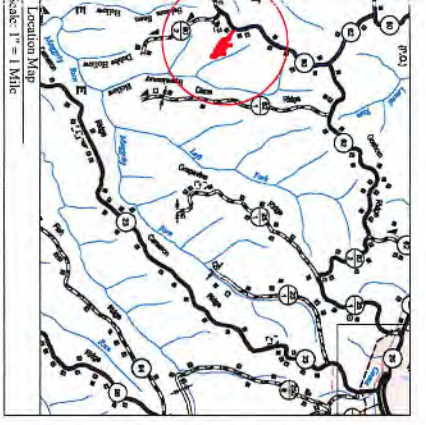
**Wetland Impact (Square Feet)**

Wetland (Impact Cause)	FILL/SF	Total Impact in LAD (SF)	Total Impact in LAD (SF)
Wetland 1 (Well Pad)	166.5	499.3	614.8
<b>Total Impact</b>		<b>499.3</b>	<b>614.8</b>



**Site Locations (NAD 83)**

Standard	Latitude (DD)	Longitude (DD)
Site Entrance	39.80119003	-80.64558141
Center of Well Pad	39.80112824	-80.64143991



**Well Location Restrictions:**  
 All Pad construction complies with the following restrictions:  
 -250' from an existing well or developed spring used for human or domestic animals.  
 -625' from an occupied dwelling or farm greater than 2,500 SF used for poultry or dairy measured from the center of the pad.  
 -300' from the edge of disturbances to a naturally reproducing forest stream.  
 -1,000' of a surface or ground water intake in a public water supply.  
 (Well Location Restrictions of WV Code 22-6-4-13)



The drawings, specifications and conditions of contract herein have been prepared by me or under my direct supervision and I am a duly Licensed Professional Engineer in the State of West Virginia. I am not providing any warranty or representation other than that of the Professional Engineer. I am not responsible for any errors or omissions in the drawings, specifications or conditions of contract herein. I am not responsible for any construction or other work not shown on the drawings, specifications or conditions of contract herein. I am not responsible for any construction or other work not shown on the drawings, specifications or conditions of contract herein. I am not responsible for any construction or other work not shown on the drawings, specifications or conditions of contract herein.

Zackary C. Samardak  
 Registered Professional Engineer  
 No. 22214  
 State of West Virginia  
 Date: 04/03/2019

Sheet	Description
1	Cover Sheet Quantities
V1	Site Notes
N1-N4	Pre-Construction Site Conditions
2	Clearing Exhibit
3	Site Soil Map
4	Overall Plan View
5	Edds Plan View
6-7	Top Key Exhibit
8	Plan View
9-10	Cross Sections - Well Pad
11-12	Cross Sections - Well Pad Access Road
13	Cross Sections - Well Pad Access Road
G1-G2	Geotechnical Exhibit
L1	Landowner Disturbed Area Exhibit
S1	Site Reclamation
M1-M3	Production Exhibit
D1-D2	Erosion and Sediment Control Details
P1	Access Road Details

Date	Revision
04-03-2019	Design
05-14-2019	Design: Revised Well Layout



THIS DOCUMENT  
 PREPARED FOR  
 TUG HILL  
 OPERATING



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

Date: 04/03/2019  
 Scale: As Shown  
 Designed By: ZS  
 File No:  
 Sheet 1 of 14



ISSUED ON 7/16/2019

4,618' T.H. 2,844' B.H.

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

FITZGERALD S LEASE
WELL 8HM
TUG HILL OPERATING

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
LEASE # (SEE WW-6A1)

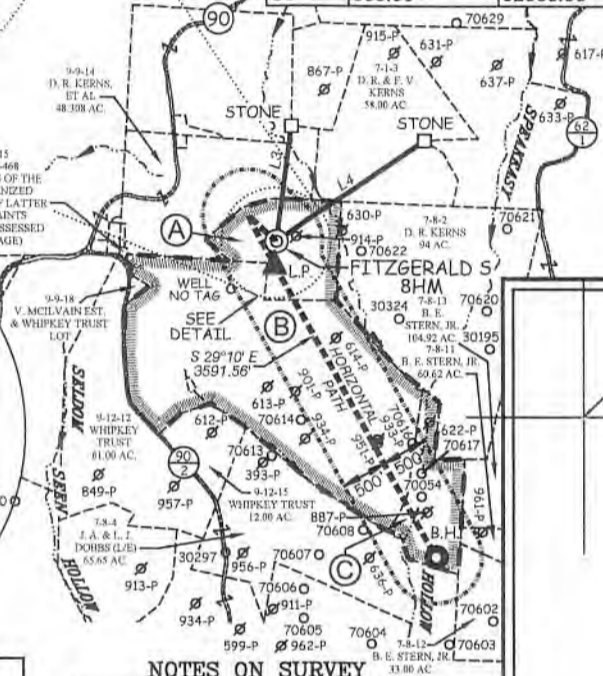
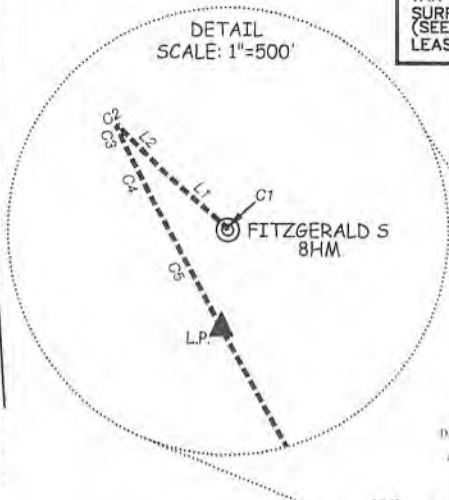
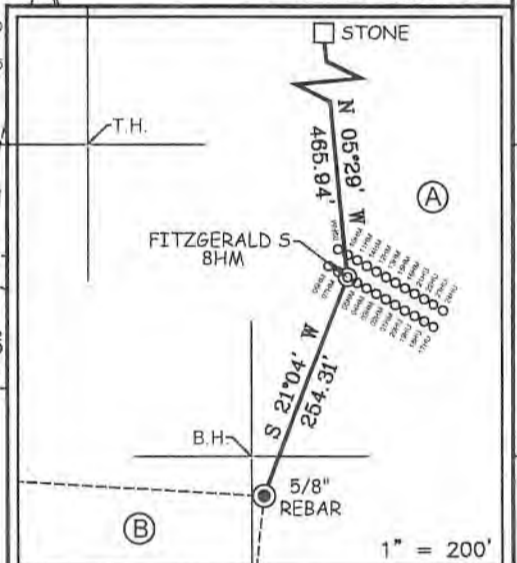
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
NAD'83 S.P.C.(FT) N. 476,008.22 E. 1,647,812.58
NAD'83 GEO. LAT-(N) 39.801291 LONG-(W) 80.641437
NAD'83 UTM (M) N. 4,405,764.30 E. 530,695.37
LANDING POINT
NAD'83 S.P.C.(FT) N. 475,748.9 E. 1,647,794.4
NAD'83 GEO. LAT-(N) 39.800578 LONG-(W) 80.641490
NAD'83 UTM (M) N. 4,405,685.2 E. 530,691.2
BOTTOM HOLE
NAD'83 S.P.C.(FT) N. 472,612.7 E. 1,649,544.7
NAD'83 GEO. LAT-(N) 39.792030 LONG-(W) 80.635120
NAD'83 UTM (M) N. 4,404,738.7 E. 531,240.4

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. KERNS 9-9-13 25 AC. 47 POLES

CURVE ARC LENGTH RADIUS CHORD BEARING CHORD LENGTH
C1 12.72' 25.51' N 31°33' W 12.59'
C2 3.72' 1.55' S 57°16' W 2.89'
C3 64.47' 585.71' S 24°13' E 64.43'
C4 189.03' 7039.26' S 27°31' E 189.03'
C5 358.56' 32666.95' S 28°44' E 358.55'

LINE BEARING DISTANCE
L1 N 49°03' W 226.89'
L2 N 45°06' W 175.06'
L3 N 07°28' E 1264.89'
L4 N 55°45' E 1949.79'

REFERENCES



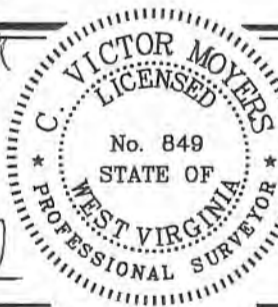
NOTES ON SURVEY

- 1. 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.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.

SLS Land & Energy Development Solutions from the ground up. P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634 www.slsenv.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 30, 20 19
REVISED MAY 13, 20 19
OPERATORS WELL NO. FITZGERALD S-8HM
API WELL NO. 47-051-02232
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 8910P8HMREV3.dwg FITZGERALD S-8HM REV3
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 INJECTION WASTE DISPOSAL "GAS" PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: GROUND = 1,316.70' ELEVATION PROPOSED = 1,293.30' WATERSHED SPEAKEASY HOLLOW, A TRIBUTARY OF MAGGOTY RUN
DISTRICT LIBERTY COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'
SURFACE OWNER DANNY R. KERNS 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: 7,070' / TMD: 10,894'

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