

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

API 47-009-00226 County BROOKE District BUFFALO
Quad BETHANY Pad Name WORTHLEY BRK PAD Field/Pool Name PANHANDLE FIELD WET
Farm name KIMBERLY CARMAN WORTHLEY Well Number WORTHLEY BRK 201H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,451,759.14 Easting 537,847.04
Landing Point of Curve Northing 4,451,745.25 Easting 537,288.41
Bottom Hole Northing 4,453,297.92 Easting 536,833.55

Elevation (ft) 1156.51 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

Date permit issued 10/11/2017 Date drilling commenced 05/15/2018 Date drilling ceased 06/23/2018
Date completion activities began 08/27/2018 Date completion activities ceased 10/19/2018
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 183 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 800 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 329 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
C. Hill 1-17-19

Reviewed by:
SB 1-17-19

API 47-009 - 00226 Farm name KIMBERLY CARMAN WORTHLEY Well number WORTHLEY BRK 201H

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	126	NEW	PLS2/234.29#		Y
Surface	26	20	380	NEW	J-55/94#	249.8', 291.8'	Y, 28 BBLs
Coal	SEE SURFACE						
Intermediate 1	17.50	13.375	592	NEW	J-55/54.50#		Y, 25 BBLs
Intermediate 2	12.25	9.625	1739	NEW	J-55/36#		Y, 36 BBLs
Intermediate 3							
Production	8.75/8.50	5.5	12314	NEW	HCP-110/20#		Y, 32 BBLs
Tubing		2.375	6639	NEW	P-110/4.7#		N
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	792	15.60	1.19	942.48	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	586	15.60	1.20	703.2	SURFACE	8
Intermediate 2	CLASS A	705	15.60	1.19	838.95	SURFACE	8
Intermediate 3							
Production	CLASS A	2,274	15.60	1.19	2706.06	SURFACE	24
Tubing							

Drillers TD (ft) 12,314 Loggers TD (ft) 12,314
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,453

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 _____

SURFACE: 7 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 PRODUCTION: 181 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	8/27/2018
Job End Date:	9/18/2018
State:	West Virginia
County:	Brooke
API Number:	47-009-00226-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Worthley BRK 201H
Latitude:	40.21539402
Longitude:	-80.55521917
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,982
Total Base Water Volume (gal):	7,871,386
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	Southwestern Energy	Carrier/Base Fluid	Water	7732-18-5	100.00000	84.27545	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	14.24117	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	1.12646	
			Hydrogen Chloride	7647-01-0	17.50000	0.26190	
WFRA-2000	U.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	60.00000	0.03890	
			2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.01945	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01595	
BIOC11139A	Champion	Anti-Bacterial Agent	Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00711	
			Glutaraldehyde	111-30-8	10.00000	0.00237	
			Ethanol	64-17-5	5.00000	0.00093	

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FSTI-IC-001	FSTI	Iron Control Additive				
			Acetic acid	64-19-7	60.00000	0.00307
			Citric Acid	77-92-9	40.00000	0.00234
SCAL16486A	Nalco Champion	Scale Inhibitor				
			Ethylene Glycol	107-21-1	30.00000	0.00178
			Amine Triphosphate	Proprietary	30.00000	0.00159
Econo-CI200	Economy Polymers & Chemicals	Acid Corrosion Inhibitors				
			Methanol	67-56-1	80.00000	0.00125
			Fatty acid	Proprietary	10.00000	0.00021
LT FLUSH SYSTEM I	J.S. Well Services, LLC	Other				
			Mineral oil, petroleum distillates, hydrotreated light naphthenic	64742-53-6	100.00000	0.00010

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

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

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

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

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

WORTHLEY BRK 201H
ATTACHMENT 1
PERF REPORT

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	8/26/2018	12,228	12,130	36
2	8/27/2018	12,097	11,988	42
3	8/28/2018	11,955	11,848	42
4	8/29/2018	11,815	11,708	42
5	8/30/2018	11,675	11,568	42
6	8/31/2018	11,535	11,428	42
7	9/2/2018	11,395	11,288	42
8	9/2/2018	11,255	11,148	42
9	9/2/2018	11,115	11,008	42
10	9/3/2018	10,975	10,868	42
11	9/3/2018	10,835	10,728	42
12	9/4/2018	10,695	10,588	42
13	9/4/2018	10,555	10,448	42
14	9/6/2018	10,415	10,308	42
15	9/6/2018	10,275	10,168	42
16	9/8/2018	10,135	10,028	42
17	9/8/2018	9,995	9,888	42
18	9/9/2018	9,855	9,748	42
19	9/9/2018	9,715	9,608	42
20	9/9/2018	9,575	9,468	42
21	9/10/2018	9,435	9,328	42
22	9/10/2018	9,295	9,188	42
23	9/11/2018	9,155	9,048	42
24	9/11/2018	9,015	8,905	42
25	9/12/2018	8,875	8,768	42
26	9/12/2018	8,735	8,628	42
27	9/13/2018	8,595	8,488	42
28	9/13/2018	8,452	8,348	42
29	9/13/2018	8,315	8,213	42
30	9/14/2018	8,175	8,068	42
31	9/14/2018	8,035	7,928	42
32	9/16/2018	7,895	7,788	42
33	9/16/2018	7,755	7,648	42
34	9/16/2018	7,615	7,508	42
35	9/17/2018	7,475	7,368	42
36	9/17/2018	7,335	7,228	42
37	9/17/2018	7,195	7,088	42
38	9/18/2018	7,055	6,946	42
39	9/18/2018	6,915	6,808	42
40	9/18/2018	6,770	6,648	84

**WORTHLEY BRK 201H
ATTACHMENT 2
STIM REPORT**

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment	Max Breakdown	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/other
1	8/27/2018	88.8	7,282	7,387	3,566	259,140	5,790	0
2	8/28/2018	86.9	7,369	6,265	3,416	279,560	6,523	0
3	8/28/2018	90.1	7,431	5,540	4,554	279,750	5,108	0
4	8/30/2018	90.3	7,514	6,543	4,353	280,890	5,177	0
5	8/31/2018	90.2	7,139	5,987	4,468	261,360	4,946	0
6	8/31/2018	85.6	7,327	5,250	4,998	282,640	5,208	0
7	9/2/2018	90.2	7,365	5,511	4,935	282,720	5,388	0
8	9/2/2018	90.4	7,350	5,264	4,344	274,920	5,470	0
9	9/3/2018	88.7	7,337	5,320	4,612	276,520	5,124	0
10	9/3/2018	90.3	7,203	5,373	4,268	280,180	5,790	0
11	9/4/2018	90.2	7,384	5,368	4,647	279,040	4,847	0
12	9/4/2018	87.3	7,167	5,356	4,749	283,720	4,823	0
13	9/5/2018	89.9	7,196	5,452	4,398	276,370	4,655	0
14	9/6/2018	89.6	7,340	5,440	4,646	276,320	4,455	0
15	9/7/2018	90.4	6,987	5,363	4,564	280,700	4,635	0
16	9/8/2018	90.5	7,420	4,689	4,722	279,340	4,888	0
17	9/8/2018	89.2	7,242	5,723	4,588	288,460	4,722	0
18	9/9/2018	90.7	7,417	5,476	4,534	280,380	4,420	0
19	9/9/2018	87.5	7,467	5,498	4,941	273,430	4,192	0
20	9/10/2018	86.2	7,403	5,365	4,456	280,070	5,011	0
21	9/10/2018	85.6	7,297	5,364	4,509	271,360	3,907	0
22	9/11/2018	85.8	7,084	5,718	4,727	276,800	4,347	0
23	9/11/2018	86.1	7,405	5,608	4,367	261,640	4,176	0
24	9/12/2018	84.9	7,120	5,727	4,518	285,560	4,141	0
25	9/12/2018	86	6,749	5,269	5,269	273,800	4,590	0
26	9/12/2018	86.8	7,312	5,677	4,472	278,900	4,082	0
27	9/13/2018	89.6	6,690	5,869	4,559	279,520	4,262	0
28	9/13/2018	88	7,155	5,499	4,300	286,840	4,260	0
29	9/14/2018	86.7	7,158	4,608	4,404	281,360	4,079	0
30	9/14/2018	90.4	6,944	4,658	4,318	278,540	4,670	0
31	9/15/2018	86.3	7,159	5,223	4,264	287,800	4,191	0
32	9/16/2018	87.9	6,822	5,667	4,413	282,540	4,138	0
33	9/16/2018	88.5	6,957	5,785	4,565	280,900	5,535	0
34	9/17/2018	88.4	7,051	5,956	4,191	278,440	3,926	0
35	9/17/2018	89.2	7,023	5,531	4,345	282,000	4,425	0
36	9/17/2018	86.6	6,766	5,884	4,409	253,700	3,846	0
37	9/18/2018	88.1	7,400	5,782	6,896	254,480	4,552	0
38	9/18/2018	88	6,423	5,570	4,875	287,000	3,936	0
39	9/18/2018	90.1	6,690	5,352	4,266	279,020	4,025	0
40	9/18/2018	76.8	7,417	5,829	3,699	277,620	8,023	0



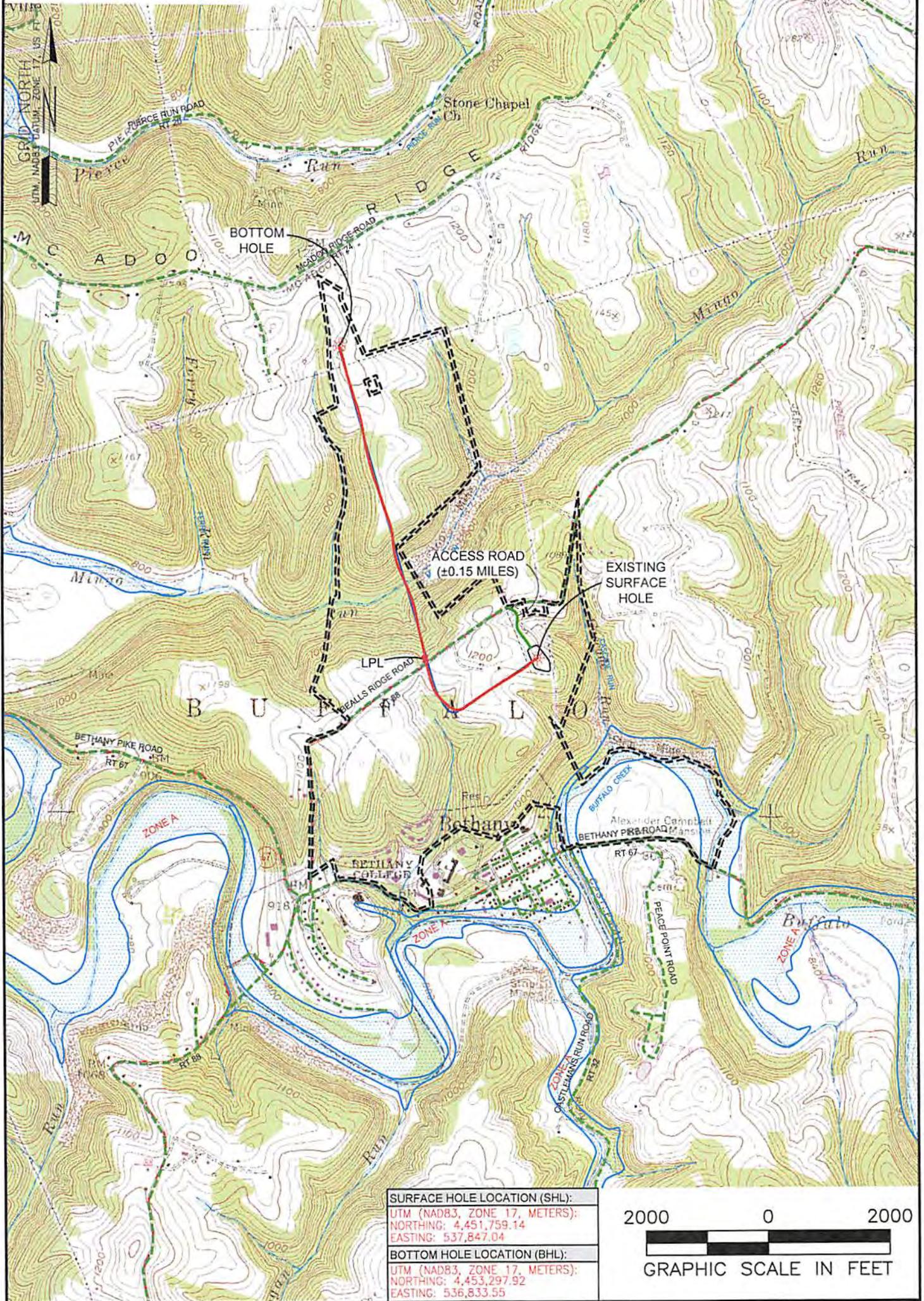
Well Name: Worthley BRK 201H

LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	0.00	0.00	183.00	183.00	
Top of Salt Water	800.00	800.00	NA	NA	
Pittsburgh Coal	329.00	329.00	482.00	482.00	
Pottsville (ss)	482.00	482.00	784.00	784.00	
Raven Cliff (ss)	784.00	784.00	1182.00	1182.00	
Maxton (ss)	1182.00	1182.00	1510.00	1510.00	
Big Injun (ss)	1510.00	1510.00	5431.00	5430.00	
Rhinestreet (shale)	5431.00	5430.00	5698.00	5682.00	
Cashaqua (shale)	5698.00	5682.00	5762.00	5737.00	
Middlesex (shale)	5762.00	5737.00	6177.00	5805.00	
Burket (shale)	6177.00	5805.00	6198.00	5819.00	
Tully (ls)	6198.00	5819.00	6287.00	5871.00	
Mahantango (shale)	6287.00	5871.00	6653.00	5988.00	
Marcellus (shale)	6653.00	5988.00	NA	NA	Gas

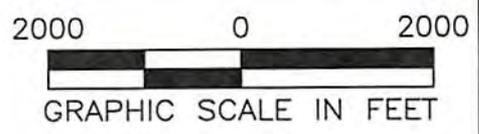
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ELK LAKE SERVICES, LLC

280 Indian Springs Road,
Suite 123 Indiana, PA 15701
Phone: (724) 463-7303



SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,451,759.14
EASTING: 537,847.04
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,453,297.92
EASTING: 536,833.55



NOTES ON SURVEY

1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- * EXISTING / PRODUCING WELLHEAD
- * LPL
- * LANDING POINT LOCATION
- * FLOOD PLAN
- ACCESS ROAD
- - - PUBLIC ROAD
- - - ACCESS ROAD TO PREV. SITE
- - - LEASE BOUNDARY
- EXISTING PATH
- PROPOSED PATH

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC
ADDRESS: 1300 FORT PIERPONT DR STE 201, MORGANTOWN, WV 26508
SURFACE OWNER: KIMBERLY CARMAN WORTHLEY

WELL (FARM) NAME: WORTHLEY BRK	WELL # 201H	SERIAL # XXXX
COUNTY BROOKE COUNTY - 9	DISTRICT: BUFFALO	
USGS 7 1/2 QUADRANGLE MAP NAME BETHANY, WV		

Latitude: 40°15'00" SURFACE HOLE 3785'

Latitude: 40°15'00"

BOTTOM HOLE 7085'

ELK LAKE SERVICES, LLC

280 Indian Springs Road,
Suite 123 Indiana, PA 15701
Phone: (724) 463-7303

SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,451,759.14
EASTING: 537,847.04

LANDING POINT (LPL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,451,745.25
EASTING: 537,288.41

BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,453,297.92
EASTING: 536,833.55

SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,451,759.14
EASTING: 537,846.86

LANDING POINT (LPL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,451,629.59
EASTING: 537,330.24

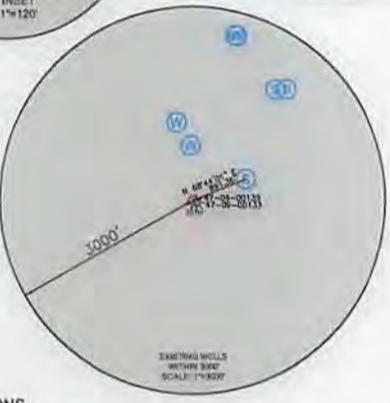
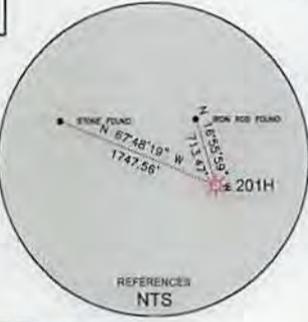
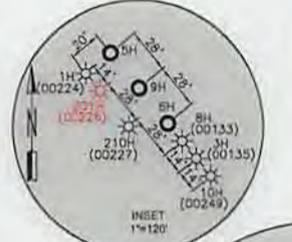
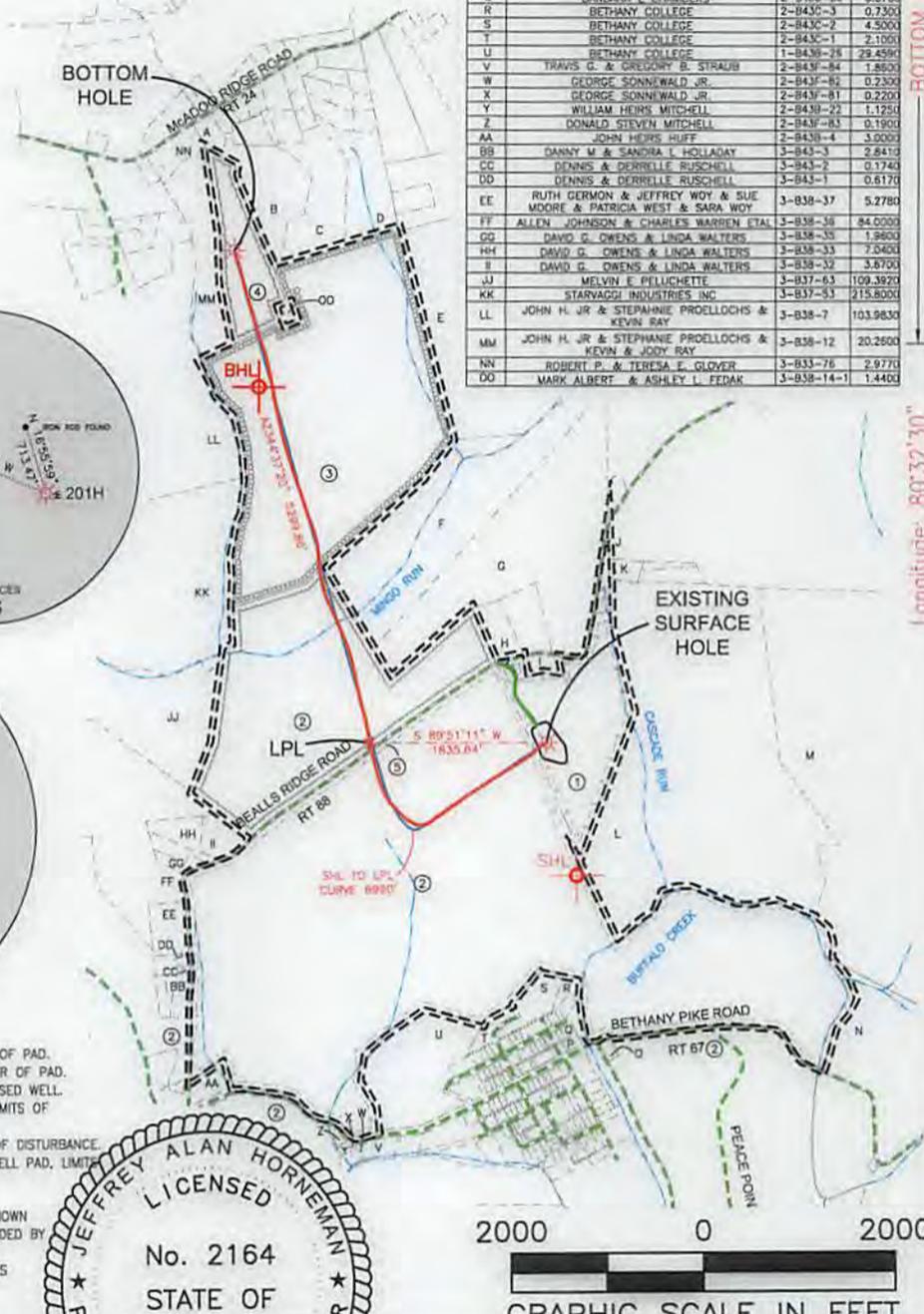
BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,453,300.64
EASTING: 536,830.19

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT

TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	KIMBERLY CARMAN WORTHLEY (S) COLONAL CORP, A NEVADA CORP, & KIMBERLY J. CARMAN AKA KIMBERLY J. WORTHLEY, A MARRIED WOMAN DEALING IN HER SASP (R)	3-838-27	40.00
2	BETHANY COLLEGE	3-838-31	822.28
3	MARK A. & GEORGIA M. FEDAK	3-838-14	142.57
4	MARK A. & GEORGIA M. FEDAK	3-838-13	18.74
5	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS	BEALLS RIDGE ROAD	3.39

TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	ROBERT P. & TERESA E. GLOVER	3-833-77-3	1.5400
B	MARK A. & GEORGIA M. FEDAK	3-833-77	12.2300
C	MARK A. & GEORGIA M. FEDAK	3-833-77-2	14.1800
D	DALE C. JR. & DELVIRA HUKILL	3-833-80	12.6100
E	SPORTSMAN FARMERS ASSN	3-838-17	101.0000
F	JEFFREY W. HENSLER	3-838-28	63.1000
G	JEFFREY W. HENSLER	3-838-27-1	60.4400
H	CHARLES F. & JONNA BROWN	3-838-30	4.1800
I	CARRINGTON MORTGAGE SERVICES, LLC	3-838-26	1.9500
J	MARK WEAVER OWEN & VIRGINIA BEALL KREUTZ	3-838-19	249.0000
K	LANCE M. ELSON	3-838-21	1.6180
L	KIMBERLY CARMAN WORTHLEY	3-838-25	136.0000
M	MARK WEAVER OWEN & VIRGINIA BEALL KREUTZ	3-838-24	188.0000
N	TRUST OF GENE CHARLES VALENTINE	3-843-28	478.4400
O	RICHARD FRANCIS GORBY	3-843-27	0.8600
P	JAMES & KATHLEEN KEEDAN	2-843-37	0.5000
Q	BARBARA L. CHAMBERS	2-843-36	0.3700
R	BETHANY COLLEGE	2-843-3	0.7300
S	BETHANY COLLEGE	2-843-2	4.5000
T	BETHANY COLLEGE	2-843-1	2.1000
U	BETHANY COLLEGE	1-8438-28	29.4990
V	TRAVIS G. & GREGORY E. STRAUB	2-843-34	1.8600
W	GEORGE SONNHWALD JR.	2-843-82	0.2300
X	GEORGE SONNHWALD JR.	2-843-81	0.2200
Y	WILLIAM HEIRS MITCHELL	2-8438-22	1.1250
Z	DONALD STEVEN MITCHELL	2-843-83	0.1900
AA	JOHN HEIRS HUFF	2-8438-4	3.0000
BB	DANNY M. & SANDRA L. HOLLADAY	3-843-3	2.8410
CC	DENNIS & DERRELLE RUSCHELL	3-843-2	0.1740
DD	DENNIS & DERRELLE RUSCHELL	3-843-1	0.6170
EE	RUTH GERMON & JEFFREY WOY & SUE MOORE & PATRICIA WEST & SARA WOY	3-838-37	5.2780
FF	ALLEN JOHNSON & CHARLES WARREN ETAL	3-838-38	84.0200
GG	DAVID G. OWENS & LINDA WALTERS	3-838-35	1.9800
HH	DAVID G. OWENS & LINDA WALTERS	3-838-33	7.0400
II	DAVID G. OWENS & LINDA WALTERS	3-838-32	3.8700
JJ	MELVIN E. PELUCHE	3-837-63	109.3820
KK	STARVAGGI INDUSTRIES INC	3-837-53	215.8000
LL	JOHN H. JR. & STEPHANIE PRODELLOCHS & KEVIN RAY	3-838-7	103.9830
MM	JOHN H. JR. & STEPHANIE PRODELLOCHS & KEVIN & JODY RAY	3-838-12	20.2600
NN	ROBERT P. & TERESA E. GLOVER	3-833-76	2.9770
OO	MARK ALBERT & ASHLEY L. FEDAK	3-838-14-1	1.4400

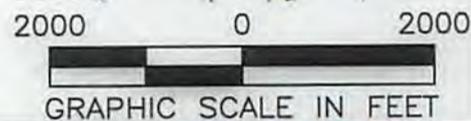
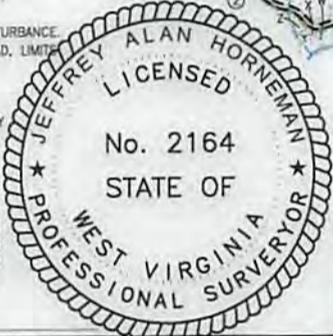


WELL RESTRICTIONS

- NO OCCUPIED DWELLINGS > 2500 SQ. FT. WITHIN 625 FEET OF CENTER OF PAD.
- NO AGRICULTURE BUILDINGS > 2500 SQ. FT. WITHIN 625 FEET OF CENTER OF PAD.
- WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 891 FEET OF PROPOSED WELL.
- PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS ARE WITHIN THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
- NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

NOTES ON SURVEY

- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
 - THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
 - ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.
 - WELLBORE PARCELS ARE DESIGNATED WITH UNIQUE LINE TYPES.
- 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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



COMPANY: **SWN** Production Company, LLC

WORTHLEY BRK

OPERATOR'S WELL #: 201H

API WELL #: 47 009 00226

STATE COUNTY PERMIT

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

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SURVEY SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

WORTHLEY BRK

OPERATOR'S WELL #: 201H

API WELL #: 47 009 00226

STATE COUNTY PERMIT

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1156.51'

DISTRICT: BUFFALO COUNTY: BROOKE COUNTY QUADRANGLE: BETHANY

SURFACE OWNER: KIMBERLY CARMAN WORTHLEY ACREAGE: ±40.00

OIL & GAS ROYALTY OWNER: COLONAL CORP, A NEVADA CORP, & KIMBERLY J. CARMAN AKA KIMBERLY J. WORTHLEY, A MARRIED WOMAN DEALING IN HER SASP ACREAGE: ±40.00

DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,013' TVD 12314' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITTANY WOODY

ADDRESS: 1300 FORT PIERPONT DR STE 201 ADDRESS: 1300 FORT PIERPONT DR STE 201

CITY: MORGANTOWN STATE: WV ZIP CODE: 26508 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:	REVISIONS:	DATE:
○ PROPOSED SURFACE HOLE / BOTTOM HOLE	— SURVEYED BOUNDARY	01-09-2019
⊙ EXISTING / PRODUCING WELLHEAD	— DRILLING UNIT	FILE NO: 17-02
LPL* LANDING POINT LOCATION	----- LEASE BOUNDARY	DRAWN BY: JMB
⊙ EXISTING WATER WELL	— EXISTING PATH	SCALE: 1" = 2000'
⊙ EXISTING SPRING	— PROPOSED PATH	DRAWING NO: 1
		WELL LOCATION PLAT 1

WELL LOCATION PLAT 1	DRAWING NO: 1	SCALE: 1" = 200'	DRAWN BY: JMB	FILE NO: 17-02	DATE: 01-09-2019
WELL NO: 47	STATE: WV	CITY: MORGANTOWN	ADDRESS: 1300 FORT PIERPONT DR STE 201	DESIGNATED AGENT: BRITANNY WOODY	REVISIONS:
PERMIT COUNTY STATE	APL WELL #:	OPERATOR'S WELL #:	WORTHLEY BRK 201H	WELL TYPE:	LEGEND:
PERMIT COUNTY STATE	47	1200	WORTHLEY BRK 201H	<input type="checkbox"/> OIL	<input type="checkbox"/> SURVEYED BOUNDARY
PERMIT COUNTY STATE	009 00526	DEGREE OF ACCURACY: 1/200	WORTHLEY BRK 201H	<input type="checkbox"/> WASTE DISPOSAL	<input type="checkbox"/> DRILLING UNIT
PERMIT COUNTY STATE	009 00526	PROVEN SURVEY	WORTHLEY BRK 201H	<input type="checkbox"/> PRODUCTION	<input type="checkbox"/> LEASE BOUNDARY
PERMIT COUNTY STATE	009 00526	ELEVATION: (NAD 88, US FT)	WORTHLEY BRK 201H	<input type="checkbox"/> DEEP	<input type="checkbox"/> EXISTING \ PRODUCING WELLS
PERMIT COUNTY STATE	009 00526	SOURCE OF GRADE GPS	WORTHLEY BRK 201H	<input type="checkbox"/> GAS	<input type="checkbox"/> L.P.L.
PERMIT COUNTY STATE	009 00526	MINIMUM DEGREE OF ACCURACY: 1/200	WORTHLEY BRK 201H	<input type="checkbox"/> LIQUID INJECTION	<input type="checkbox"/> EXISTING WATER WELL
PERMIT COUNTY STATE	009 00526	WELL TYPE: OIL	WORTHLEY BRK 201H	<input type="checkbox"/> STORAGE	<input type="checkbox"/> EXISTING SPRING
PERMIT COUNTY STATE	009 00526	WATERSHED: UPPER OHIO SOUTH	WORTHLEY BRK 201H	<input type="checkbox"/> SHALLOW	<input type="checkbox"/> LANDING POINT LOCATION
PERMIT COUNTY STATE	009 00526	DISTRICT: BUFFALO	WORTHLEY BRK 201H	<input type="checkbox"/> OTHER CHANGE (SPECIFY AS-DRILLED)	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	COUNTY: BROOKE COUNTY	WORTHLEY BRK 201H	<input type="checkbox"/> CLEAN OUT & REPLUG	<input type="checkbox"/> BOTTOM HOLE LOCATION (BHL)
PERMIT COUNTY STATE	009 00526	SURFACE OWNER: KIMBERLY CARMAN WORTHLEY	WORTHLEY BRK 201H	<input type="checkbox"/> REDRILL	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	OIL & GAS ROYALTY OWNER: CORDALE CORP, A NEWCO CORP, & KIMBERLY CARMAN WA KIMBERLY CARMAN WA KIMBERLY CARMAN WA KIMBERLY CARMAN WA	WORTHLEY BRK 201H	<input type="checkbox"/> DRILL DEEPER	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	ACRAGE: ±40.00	WORTHLEY BRK 201H	<input type="checkbox"/> PLUG & ABANDON	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	ACRAGE: ±40.00	WORTHLEY BRK 201H	<input type="checkbox"/> CONVERT	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	ESTIMATED DEPTH: 8032, TVD 12514, TMD	WORTHLEY BRK 201H	<input type="checkbox"/> PLUG OFF OLD FORMATION	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	PERFORM NEW FORMATION	WORTHLEY BRK 201H	<input type="checkbox"/> PERFORM NEW FORMATION	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)

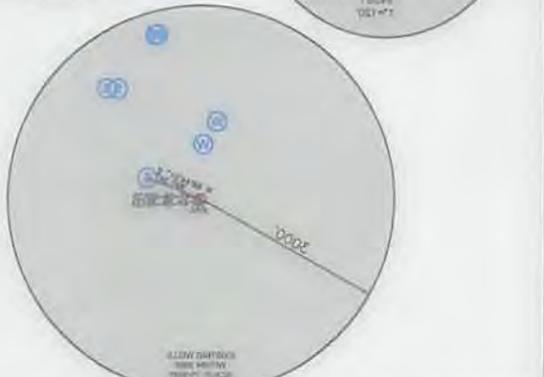


CHARLESTON, WV 25034
 601 27TH STREET
 OFFICE OF OIL & GAS
 WVDEP
 UNITED STATES TOPOGRAPHIC MAPS
 (+) DENOTES LOCATION OF WELL ON DEGREE OF ACCURACY: 1/200



NOTES ON SURVEY
 1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATION.
 2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
 3. ALL METERS ARE GRID NORTH UNLESS OTHERWISE DESIGNATED.
 4. WELLS ARE DESIGNATED WITH UNIQUE LINE TYPES.
 5. THE UNDERIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

WELL RESTRICTIONS
 1. NO OCCURRED DWELLINGS > 2500 SQ FT WITHIN 625 FEET OF CENTER OF PAD.
 2. NO AGRICULTURE BUILDINGS > 2500 SQ FT WITHIN 825 FEET OF CENTER OF PAD.
 3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 801 FEET OF PROPOSED WELL.
 4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS ARE WITHIN THE LIMITS OF DISTURBANCE.
 5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 200 FEET OF LIMITS OF DISTURBANCE.
 6. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD LIMITS.
 7. DISTURBANCE E & S CONTROLS ON PUBLIC WATER SUPPLY.



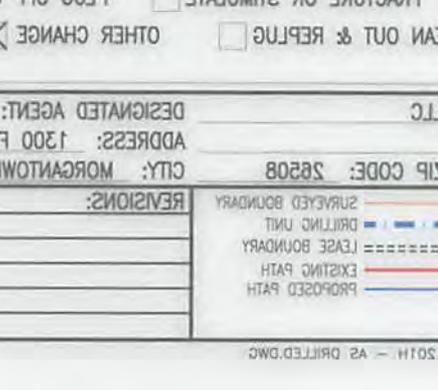
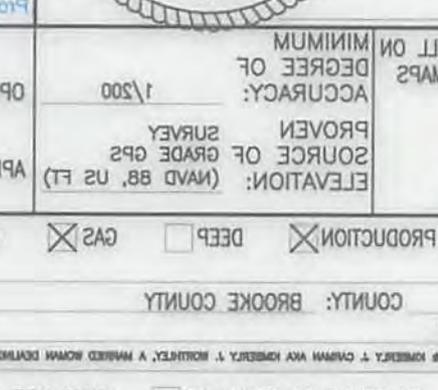
LANDING POINT (L.P.L.)	UTM (NAD83, ZONE 17, METERS): EASTING: 527,828.41 NORTHING: 4,451,745.25
BOTTOM HOLE LOCATION (BHL)	UTM (NAD83, ZONE 17, METERS): EASTING: 528,830.19 NORTHING: 4,453,300.84
SURFACE HOLE LOCATION (SHL)	UTM (NAD83, ZONE 17, METERS): EASTING: 527,848.88 NORTHING: 4,451,750.14
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ELK LAKE SERVICES, LLC
 280 Indian Springs Road,
 Suite 123 Indian, PA 15701
 Phone: (724) 463-7303

TRACT	SURFACE OWNER (BOTH ROYALTY OWNER & SURFACE OWNER)	TAX PARCEL ACRES
1	KIMBERLY CARMAN WORTHLEY (S) CORDALE CORP, A NEWCO CORP, & KIMBERLY CARMAN WA KIMBERLY CARMAN WA KIMBERLY CARMAN WA KIMBERLY CARMAN WA	40.00
2	WEST VIRGINIA DEPARTMENT OF HIGHWAYS ROAD ROAD	2.28
3	BETHANY COLLEGE	823.38
4	MARK A & GEORGIA M FEAK	143.83
5	MARK A & GEORGIA M FEAK	18.14



TRACT	SURFACE OWNER (BOTH ROYALTY OWNER & SURFACE OWNER)	TAX PARCEL ACRES
1	MARK A & GEORGIA M FEAK	143.83
2	MARK A & GEORGIA M FEAK	18.14
3	MARK A & GEORGIA M FEAK	143.83
4	MARK A & GEORGIA M FEAK	18.14
5	MARK A & GEORGIA M FEAK	143.83
6	MARK A & GEORGIA M FEAK	18.14
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95	MARK A & GEORGIA M FEAK	143.83
96	MARK A & GEORGIA M FEAK	18.14
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98	MARK A & GEORGIA M FEAK	18.14
99	MARK A & GEORGIA M FEAK	143.83
100	MARK A & GEORGIA M FEAK	18.14



WELL LOCATION PLAT 1	DRAWING NO: 1	SCALE: 1" = 200'	DRAWN BY: JMB	FILE NO: 17-02	DATE: 01-09-2019
WELL NO: 47	STATE: WV	CITY: MORGANTOWN	ADDRESS: 1300 FORT PIERPONT DR STE 201	DESIGNATED AGENT: BRITANNY WOODY	REVISIONS:
PERMIT COUNTY STATE	APL WELL #:	OPERATOR'S WELL #:	WORTHLEY BRK 201H	WELL TYPE:	LEGEND:
PERMIT COUNTY STATE	47	1200	WORTHLEY BRK 201H	<input type="checkbox"/> OIL	<input type="checkbox"/> SURVEYED BOUNDARY
PERMIT COUNTY STATE	009 00526	DEGREE OF ACCURACY: 1/200	WORTHLEY BRK 201H	<input type="checkbox"/> WASTE DISPOSAL	<input type="checkbox"/> DRILLING UNIT
PERMIT COUNTY STATE	009 00526	PROVEN SURVEY	WORTHLEY BRK 201H	<input type="checkbox"/> PRODUCTION	<input type="checkbox"/> LEASE BOUNDARY
PERMIT COUNTY STATE	009 00526	ELEVATION: (NAD 88, US FT)	WORTHLEY BRK 201H	<input type="checkbox"/> DEEP	<input type="checkbox"/> EXISTING \ PRODUCING WELLS
PERMIT COUNTY STATE	009 00526	SOURCE OF GRADE GPS	WORTHLEY BRK 201H	<input type="checkbox"/> GAS	<input type="checkbox"/> L.P.L.
PERMIT COUNTY STATE	009 00526	MINIMUM DEGREE OF ACCURACY: 1/200	WORTHLEY BRK 201H	<input type="checkbox"/> LIQUID INJECTION	<input type="checkbox"/> EXISTING WATER WELL
PERMIT COUNTY STATE	009 00526	WELL TYPE: OIL	WORTHLEY BRK 201H	<input type="checkbox"/> STORAGE	<input type="checkbox"/> EXISTING SPRING
PERMIT COUNTY STATE	009 00526	WATERSHED: UPPER OHIO SOUTH	WORTHLEY BRK 201H	<input type="checkbox"/> SHALLOW	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	DISTRICT: BUFFALO	WORTHLEY BRK 201H	<input type="checkbox"/> CLEAN OUT & REPLUG	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	COUNTY: BROOKE COUNTY	WORTHLEY BRK 201H	<input type="checkbox"/> REDRILL	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	SURFACE OWNER: KIMBERLY CARMAN WORTHLEY	WORTHLEY BRK 201H	<input type="checkbox"/> DRILL DEEPER	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	OIL & GAS ROYALTY OWNER: CORDALE CORP, A NEWCO CORP, & KIMBERLY CARMAN WA KIMBERLY CARMAN WA KIMBERLY CARMAN WA KIMBERLY CARMAN WA	WORTHLEY BRK 201H	<input type="checkbox"/> PLUG & ABANDON	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	ACRAGE: ±40.00	WORTHLEY BRK 201H	<input type="checkbox"/> CONVERT	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	ACRAGE: ±40.00	WORTHLEY BRK 201H	<input type="checkbox"/> PLUG OFF OLD FORMATION	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	ESTIMATED DEPTH: 8032, TVD 12514, TMD	WORTHLEY BRK 201H	<input type="checkbox"/> PERFORM NEW FORMATION	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)
PERMIT COUNTY STATE	009 00526	PERFORM NEW FORMATION	WORTHLEY BRK 201H	<input type="checkbox"/> PERFORM NEW FORMATION	<input type="checkbox"/> SURFACE HOLE LOCATION (SHL)

Bottom Hole 40'15"00"
 Surface Hole 37'82"