

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

API 47-069-00192 County OHIO District LIBERTY  
Quad VALLEY GROVE Pad Name WILLIAM RODGERS OHI PAD Field/Pool Name PANHANDLE FIELD WET  
Farm name WILLIAM I. RODGERS & DOUGLAS W. RODGERS Well Number WILLIAM RODGERS OHI 205H  
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 4,439,730.707 Easting 539,870.606  
Landing Point of Curve Northing 4,440,124.484 Easting 540,338,972  
Bottom Hole Northing 4,442,150.097 Easting 539,465.749

Elevation (ft) 1280 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 09/29/2015 Date drilling commenced 12/11/2015 Date drilling ceased 08/08/2017  
Date completion activities began 10/20/2017 Date completion activities ceased 12/08/2017  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

RECEIVED  
Office of Oil and Gas  
FEB 28 2018  
WV Department of  
Environmental Protection

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

Freshwater depth(s) ft 334 Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 794 Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 665 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:

Reviewed

*[Handwritten signature]* 5.10.18

API 47-069 - 00192 Farm name WILLIAM I. RODGERS & DOUGLAS W. RODGERS Well number WILLIAM RODGERS OHI 205H

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	28	20	126	NEW	J-55/94#		Y
Surface	17.5	13.375	411	NEW	J-55/54.50#		Y
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	2082	NEW	J-55/40#		Y
Intermediate 2							
Intermediate 3							
Production	8.75	5.5	14627	NEW	HCP-110/20#		Y
Tubing		2.375	7163	NEW	P-100/4.7#		N
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	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	420	15.60	1.20	504	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	796	15.60	1.19	947.24	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	1,107/1,588	15.60/15.60	1.22/1.19	1350.54/1889.72	SURFACE	24
Tubing							

Drillers TD (ft) 14627 Loggers TD (ft) 14627

Deepest formation penetrated MARCELLUS Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5850

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 \_\_\_\_\_





William Rodgers OHI 205H

Perf Summary

Attachment 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	9/27/2017	14,441	14,513	40
2	10/20/2017	14,336	14,408	66
3	10/20/2017	14,231	14,303	66
4	10/20/2017	14,126	14,198	66
5	10/21/2017	14,021	14,093	66
6	10/21/2017	13,916	13,988	66
7	10/21/2017	13,811	13,883	66
8	10/21/2017	13,706	13,778	66
9	10/22/2017	13,601	13,673	66
10	10/23/2017	13,496	13,568	66
11	10/23/2017	13,391	13,463	66
12	10/23/2017	13,286	13,358	66
13	10/24/2017	13,181	13,253	66
14	10/24/2017	13,076	13,148	66
15	10/24/2017	12,971	13,043	66
16	10/24/2017	12,866	12,938	66
17	10/25/2017	12,761	12,833	66
18	10/25/2017	12,656	12,728	66
19	10/25/2017	12,551	12,623	66
20	10/26/2017	12,446	12,518	66
21	10/27/2017	12,341	12,413	66
22	10/27/2017	12,236	12,308	66
23	10/27/2017	12,131	12,203	66
24	10/27/2017	12,026	12,098	66
25	10/28/2017	11,921	11,993	66
26	10/28/2017	11,816	11,888	66
27	10/28/2017	11,711	11,783	66
28	10/29/2017	11,606	11,678	66
29	10/29/2017	11,501	11,573	66
30	10/29/2017	11,396	11,486	66
31	10/29/2017	11,291	11,363	66
32	10/30/2017	11,186	11,258	66
33	10/30/2017	11,081	11,153	66
34	10/30/2017	10,976	11,048	66
35	10/30/2017	10,871	10,943	66
36	10/31/2017	10,766	10,838	66
37	10/31/2017	10,661	10,733	66
38	10/31/2017	10,556	10,628	66
39	11/1/2017	10,451	10,523	66
40	11/1/2017	10,346	10,418	66
41	11/1/2017	10,241	10,313	66
42	11/1/2017	10,136	10,208	66
43	11/2/2017	10,031	10,101	42

RECEIVED  
 Office of Oil and Gas  
 FEB 28 2018  
 MW Department of  
 Environmental Protection



William Rodgers OHI 205H

Perf Summary

Attachment 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
44	11/2/2017	9,924	9,996	42
45	11/3/2017	9,821	9,895	66
46	11/3/2017	9,716	9,788	66
47	11/3/2017	9,611	9,683	66
48	11/4/2017	9,506	9,578	66
49	11/4/2017	9,401	9,473	66
50	11/4/2017	9,296	9,368	66
51	11/4/2017	9,191	9,263	66
52	11/5/2017	9,086	9,158	66
53	11/5/2017	8,981	9,053	66
54	11/5/2017	8,876	8,948	66
55	11/6/2017	8,771	8,844	42
56	11/6/2017	8,666	8,738	66
57	11/6/2017	8,561	8,633	66
58	11/6/2017	8,456	8,528	66
59	11/6/2017	8,351	8,423	46
60	11/7/2017	8,246	8,318	66
61	11/7/2017	8,141	8,213	66
62	11/7/2017	8,036	8,108	66
63	11/8/2017	7,931	8,003	66
64	11/7/2017	7,826	7,898	66
65	11/9/2017	7,721	7,793	66
66	11/9/2017	7,616	7,688	66
67	11/9/2017	7,511	7,583	66
68	11/9/2017	7,406	7,478	66
69	11/9/2017	7,301	7,373	66
70	11/10/2017	7,196	7,268	66

RECEIVED  
Office of Oil and Gas  
FEB 28 2018  
WV Department of  
Environmental Protection



**William Rodgers OHI 205H**  
**Stim Summary**  
**Attachment 2**

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/o ther
1	9/27/2017	89	7,430	7,581	4,553	441,520	11,194	
2	10/20/2017	88	7,648	7,817	4,955	439,200	9,200	
3	10/20/2017	88	7,470	7,698	4,951	426,480	9,274	
4	10/20/2017	90	7,816	8,092	4,644	440,320	9,872	
5	10/21/2017	89	7,724	8,204	5,151	424,640	9,144	
6	10/21/2017	88	8,025	8,280	4,953	436,380	8,940	
7	10/21/2017	90	8,166	8,404	4,694	442,080	9,328	
8	10/21/2017	89	8,141	8,424	4,936	438,000	9,340	
9	10/22/2017	79	8,422	9,561	5,011	254,440	11,844	
10	10/23/2017	74	8,249	8,681	5,426	433,560	9,394	
11	10/23/2017	88	7,884	8,123	4,784	432,700	9,208	
12	10/23/2017	81	8,079	8,875	4,891	436,140	9,452	
13	10/24/2017	87	8,056	8,258	5,038	437,520	9,136	
14	10/24/2017	76	8,426	8,750	5,404	435,200	9,046	
15	10/24/2017	83	8,122	8,782	5,036	435,930	9,360	
16	10/24/2017	80	8,232	8,847	4,972	443,540	8,914	
17	10/25/2017	0	0	0	0		9,244	
18	10/25/2017	0	0	0	0		9,078	
19	10/25/2017	70	8,652	9,230	8,216	413,560	8,356	
20	10/26/2017	77	7,749	8,148	5,047	435,800	9,432	
21	10/27/2017	79	8,199	8,358	5,160	433,520	9,106	
22	10/27/2017	83	8,124	8,357	5,644	437,240	8,976	
23	10/27/2017	73	7,967	8,904	4,995	438,860	9,270	
24	10/27/2017	72	7,174	7,984	4,944	436,250	9,184	
25	10/28/2017	84	7,763	8,197	5,370		8,702	
26	10/28/2017	87	7,940	8,378	5,142	433,400	8,910	
27	10/28/2017	81	7,650	8,279	5,183	438,080	9,124	
28	10/29/2017	90	8,017	8,243	5,568	437,980	8,904	
29	10/29/2017	0	0	0	0		8,566	
30	10/29/2017	84	7,775	8,245	5,219	437,070	8,876	
31	10/29/2017	84	7,683	8,160	5,195	438,000	8,982	
32	10/30/2017	88	7,841	8,200	5,725	432,400	8,766	
33	10/30/2017	88	7,845	8,161	5,494	434,120	8,500	
34	10/30/2017	81	7,635	8,261	5,293	435,100	8,342	
35	10/30/2017	82	7,926	8,380	5,358	436,400	8,412	
36	10/31/2017	72	7,996	8,618	5,067	433,800	9,338	
37	10/31/2017	80	7,968	8,394	5,201	433,160	8,378	
38	10/31/2017	68	8,395	8,931	5,168	435,740	8,528	
39	11/1/2017	80	8,003	8,555	4,833	429,520	8,964	

RECEIVED  
 State of Oil and Gas  
 FEB 28 2018  
 WV Department of  
 Environmental Protection



**William Rodgers OHI 205H**  
**Stim Summary**  
**Attachment 2**

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/o ther
40	11/1/2017	83	8,161	8,447	5,251	430,360	8,802	
41	11/1/2017	76	7,734	8,189	5,019	438,160	8,784	
42	11/1/2017	56	8,414	8,934	4,856	253,140	9,244	
43	11/2/2017	76	7,570	8,496	5,570	435,560	9,066	
44	11/2/2017	85	7,968	8,374	5,520	430,960	8,422	
45	11/3/2017	89	8,018	8,404	5,388	440,920	8,360	
46	11/3/2017	88	7,990	8,293	5,160	438,920	8,298	
47	11/3/2017	76	7,474	8,197	5,388	442,710	8,102	
48	11/4/2017	78	7,448	8,060	5,320	440,800	7,988	
49	11/4/2017	89	7,810	8,098	5,312	434,200	8,658	
50	11/4/2017	78	7,381	8,021	5,318	438,770	7,970	
51	11/4/2017	75	7,305	7,943	5,218	437,200	8,006	
52	11/5/2017	90	7,700	7,938	5,255	434,960	8,094	
53	11/5/2017	90	7,737	7,944	5,237	439,080	8,190	
54	11/5/2017	77	7,251	7,931	5,199	440,310	8,580	
55	11/6/2017	80	7,403	7,899	4,729	434,980	7,770	
56	11/6/2017	90	7,810	8,114	5,476	431,880	8,068	
57	11/6/2017	89	7,767	8,211	5,374	440,200	8,018	
58	11/6/2017	88	7,667	7,904	5,128	437,880	7,870	
59	11/6/2017	88	7,608	7,864	5,110	437,120	7,888	
60	11/7/2017	83	7,508	7,884	5,265	439,560	7,934	
61	11/7/2017	89	7,481	7,792	5,165	436,420	7,710	
62	11/7/2017	89	7,725	8,368	5,367	435,200	7,726	
63	11/8/2017	89	7,693	8,060	5,259	439,960	8,010	
64	11/7/2017	89	7,553	7,887	5,372	434,160	7,952	
65	11/9/2017	88	7,360	7,815	5,115	436,200	7,598	
66	11/9/2017	89	7,425	7,728	5,079	433,240	7,894	
67	11/9/2017	90	7,627	8,162	5,125	433,880	7,848	
68	11/9/2017	87	7,244	7,687	4,921	435,200	7,606	
69	11/9/2017	84	7,229	7,571	4,170	433,420	7,584	
70	11/10/2017	83	7,352	8,034	4,705	432,960	7,800	

RECEIVED  
Office of Oil and Gas  
**FEB 28 2018**  
WV Department of  
Environmental Protection





Attachment 3

Well Name: William Rodgers OHI 205H

47069001920000

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	334.00	334.00	
Top of Salt Water	794.00	794.00	NA	NA	
Pittsburgh Coal	665.00	665.00	670.00	670.00	
Pottsville (ss)	794.00	794.00	927.00	927.00	
Mauch Chunk (shale)	927.00	927.00	1707.00	1707.00	
Raven Cliff (ss)	1164.00	1164.00	1403.00	1403.00	
Maxton (ss)	1566.00	1566.00	1620.00	1620.00	
Greenbriar (ls)	1707.00	1707.00	1813.00	1813.00	
Big Injun (ss)	1813.00	1813.00	2038.00	2038.00	
Berea (siltstone)	2373.00	2373.00	2417.00	2417.00	
Rhinestreet (shale)	6234.00	6101.00	6339.00	6186.00	
Cashaqua (shale)	6339.00	6186.00	6433.00	6252.00	
Middlesex (shale)	6433.00	6252.00	6575.00	6334.00	
Burket (shale)	6575.00	6334.00	6617.00	6354.00	
Tully (ls)	6617.00	6354.00	6698.00	6387.00	
Mahantango (shale)	6698.00	6387.00	7212.00	6522.00	
Marcellus (shale)	7212.00	6522.00	NA	NA	GAS

RECEIVED  
Office of Oil and Gas  
FEB 28 2018  
WV Department of  
Environmental Protection

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/20/2017
Job End Date:	11/10/2017
State:	West Virginia
County:	Ohio
API Number:	47-069-00192-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	William Rodgers OHI 205H
Latitude:	40.10693200
Longitude:	-80.53218200
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,512
Total Base Water Volume (gal):	12,560,838
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	86.00567	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	11.88111	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	1.25547	
			Hydrogen Chloride	7647-01-0	17.50000	0.29189	
CPS 500	U.S. Well Services, LLC	Fluid Loss Additive	Ceramic Microspheres	66402-68-4	65.00000	0.43407	
			Glutaraldehyde	111-30-8	1.00000	0.00466	
WFRA-2000	U.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	60.00000	0.05903	
			2-Propenoic acid, polymer with 2-propenamide	9003-06-9	30.00000	0.02952	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.02420	
BIOC11139A	Nalco Champion	Anti-Bacterial Agent					

			Benzyl-(C12-C16 Alkyl)- Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00578
			Glutaraldehyde	111-30-8	10.00000	0.00193
			Ethanol	64-17-5	5.00000	0.00075
SCAL16486A	Nalco Champion	Scale Inhibitor				
			Ethylene Glycol	107-21-1	30.00000	0.00263
			Amine Triphosphate	Proprietary	30.00000	0.00236
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors				
			Ethylene glycol	107-21-1	40.00000	0.00041
			Cinnamaldehyde	104-55-2	20.00000	0.00015
			Formic acid	64-18-6	20.00000	0.00014
			Butyl cellosolve	111-76-2	20.00000	0.00013
			Polyether	60828-78-6	10.00000	0.00007
			Acetophenone,thiourea,formalde hyde polymer	68527-49-1	5.00000	0.00004

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)

RECEIVED  
Office of Oil and Gas  
FEB 28 2018  
WV Department of  
Environmental Protection





Southwestern Energy®  
 William Rodgers OHI 205H  
 Ohio County, WV  
 SDC 40  
**Plan vs Actual**

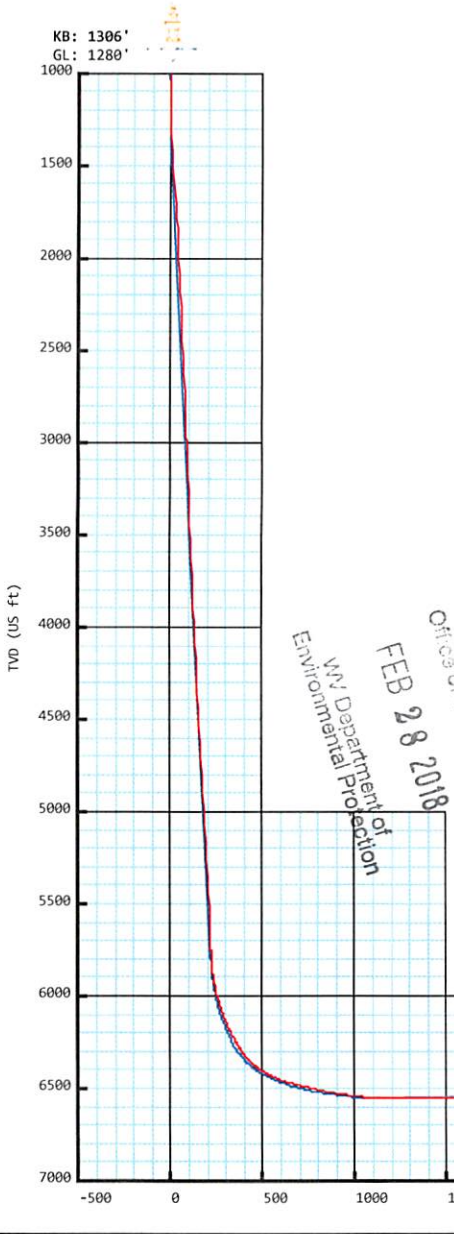
**Plan Data for William Rodgers OHI 205H**

Plan Point Information:

MD	Inc	Az	TVD	+N/-S	+E/-W	VSec	DLS	Toolface	Comments
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(DLSU)	(°)		
0.00	0.00	0.00	0.00	-0.00	-0.00	0.00	0.00	0.0	
26.00	0.00	0.00	26.00	-0.00	-0.00	0.00	0.00	0.0	0.0 KB Offset
1000.00	0.00	0.00	1000.00	-0.00	-0.00	0.00	0.00	0.0	0.0 Nudge KOP
1600.00	12.00	66.66	1595.62	24.80	57.48	14.97	2.00	66.7	Hold
5885.92	12.00	66.66	5787.89	377.81	875.67	228.10	0.00	0.0	0.0 Curve KOP 7° DLS
6720.44	70.00	52.22	6392.00	678.97	1302.87	454.62	7.00	344.0	Build/Turn 9° DLS
7571.36	90.44	336.68	6560.00	1429.88	1477.17	1166.47	9.00	275.5	Landing Point
14658.23	90.44	336.68	6505.00	7937.60	-1328.24	8047.96	0.00	0.0	PBHL WR205H

Target Set Information:  
 Name: William Rodgers 205H  
 Position offsets from Slot centre

Name	TVD	+N/-S	+E/-W	Northing	Easting	Lat	Long
	(USft)	(USft)	(USft)	(USft)	(USft)	(°)	(°)
LP WR205H	6560.00	1429.72	1477.24	14567446.23	1772702.69	40.110838	-80.526871
PBHL WR205H	6505.00	7937.60	-1328.24	14573954.11	1769897.21	40.128749	-80.536783



**Plan Data for William Rodgers OHI 205H**

Field: SOUTHWESTERN\_OHIO CO, WV UTM NAD 83 (17N)  
 Map Unit: USft Vertical Reference Datum (VRD): Mean Sea Level  
 Projected Coordinate System: NAD83 / UTM zone 17N

Site: William Rodgers Pad  
 Unit: USFeet TVD Reference:  
 Company Name: SOUTHWESTERN ENERGY  
 Position: Northing: 14566030.37USft Latitude: 40.106971°  
 Easting: 1771224.60USft Longitude: -80.532184°  
 North Reference: Grid Grid Convergence: 0.30°  
 Elevation Above VRD: 1280.00USft

Slot: William Rodgers OHI 205H  
 Position:  
 Offset is from Site centre  
 +N/-S: -13.86USft Northing: 14566016.51USft Latitude: 40.106933°  
 +E/-W: 0.85USft Easting: 1771225.45USft Longitude: -80.532181°  
 Elevation Above VRD: 1280.00USft

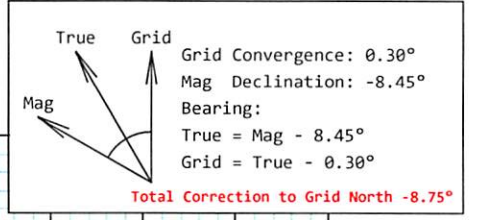
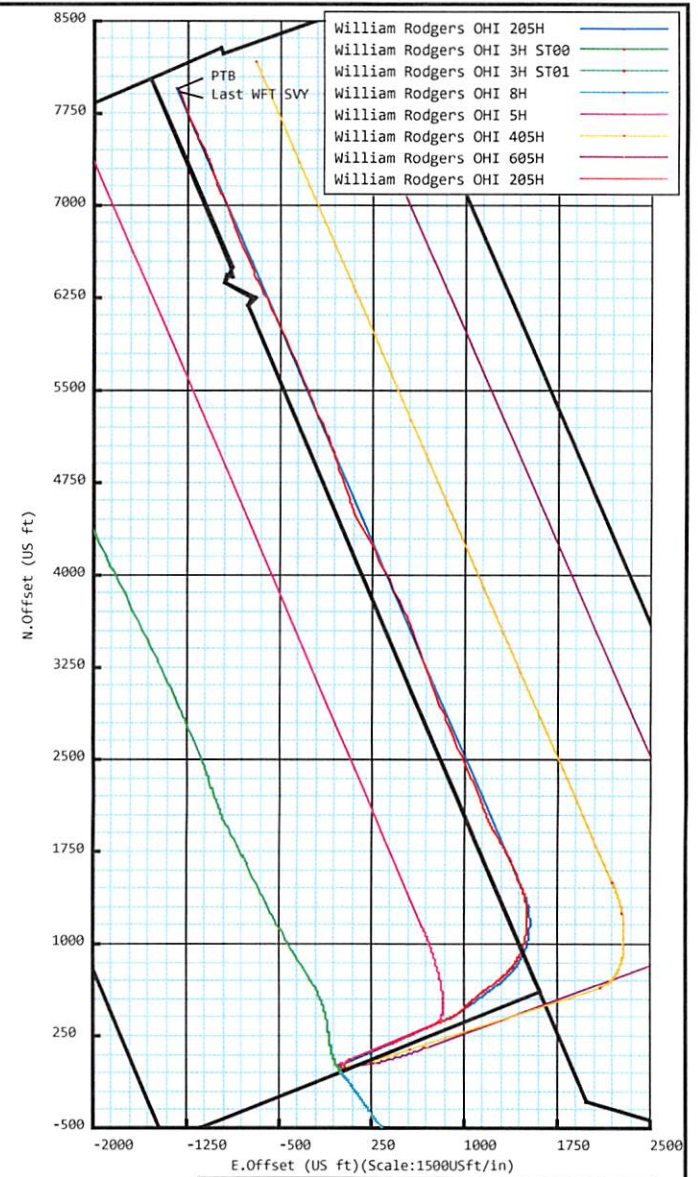
Well: William Rodgers OHI 205H  
 Type: Main-Well  
 File Number:

Plan Folder: P1 Plan: P1:V5  
 Vertical Section: Position offset of origin from Slot centre:  
 +N/-S: -0.00USft Azimuth: 350.50°  
 +E/-W: -0.00USft  
 Magnetic Parameters:  
 Model: Field Strength: Declination: Dip: Date:  
 HDGM 52793(nT) -8.45° 67.52° 2017-07-31

RECEIVED  
 Office of Oil and Gas  
 FEB 28 2018  
 WV Department of Environmental Protection



Drawing By: GWR Date: 07/25/2017  
 Weatherford Drilling Services  
 7725 W. Reno, Ste. #220  
 Oklahoma City, OK 73127  
 +1.405.773.1100 Main  
 +1.405.773.1887 Fax



VS (US ft)(Bearing:350.50° Scale:1000USft/in)

**5D Survey Report**

---

**SOUTHWESTERN ENERGY**

**Field Name:** *SOUTHWESTERN\_OHIO CO, WV UTM NAD 83 (17N)*  
**Site Name:** *William Rodgers Pad*  
**Well Name:** *William Rodgers OHI 205H*  
**Survey:** *Definitive survey*

---

6 August 2017

**Weatherford®**RECEIVED  
Office of Oil and Gas

FEB 28 2018

WV Department of  
Environmental Protection





# Weatherford®

## William Rodgers OHI 205H

<b>Field Name:</b> SOUTHWESTER N_OHIO CO, WV UTM NAD 83 (17N)	<b>Map Units:</b> US ft	<b>Company Name:</b> SOUTHWESTERN ENERGY	
	<b>Vertical Reference Datum (VRD):</b> Mean Sea Level	<b>Projected Coordinate System:</b> NAD83 / UTM zone 17N	
	<b>Comment:</b>		
<b>Site:</b> William Rodgers Pad	<b>Units:</b> US ft	<b>North Reference:</b> Grid	<b>Convergence Angle:</b> 0.30
	<b>Position:</b>	<b>Northing:</b> 14566030.37 US ft	<b>Latitude:</b> 40° 6' 25.10"
		<b>Easting:</b> 1771224.60 US ft	<b>Longitude:</b> -80° 31' 55.86"
<b>Elevation above MSL:</b> 1280.00 US ft	<b>Comment:</b>		
<b>Slot:</b> William Rodgers OHI 205H	<b>Position (Relative to Site Centre)</b>		
	<b>+N/-S:</b> -13.86 US ft	<b>Northing:</b> 14566016.51 US ft	<b>Latitude:</b> 40°6'24.96"
	<b>+E/-W:</b> 0.85 US ft	<b>Easting:</b> 1771225.45 US ft	<b>Longitude:</b> -80°31'55.85"
	<b>Elevation above MSL:</b> 1280.00 US ft		
<b>Well:</b> William Rodgers OHI 205H	<b>Type:</b> Main well	<b>UWI:</b>	
	<b>File Number:</b>	<b>Comment:</b>	
	<b>Closure Distance:</b> 8048.99 US ft	<b>Closure Azimuth:</b> 350.59°	
	<b>Vertical Section: Position of Origin (Relative to Slot centre)</b>		
	<b>+N/-S:</b> -0.00 US ft	<b>+E/-W:</b> -0.00 US ft	<b>Az:</b> 350.50°

<b>Drill floor: Survey Name: Definitive Survey</b>			
<b>Rig Height (Well TVD Reference):</b> 26.00 US ft	<b>Elevation above MSL:</b> 1306.00 US ft	<b>Inclination:</b> 0.00°	<b>Azimuth:</b> 0.00°

<b>Survey Name: Definitive Survey</b>			
<b>Date:</b> 02/Nov/2015	<b>Survey Tool:</b> See Survey Tool Ranges below.	<b>Comment:</b>	<b>Company:</b>

<b>Magnetic Model:</b>			
<b>Model Name:</b> HDGM	<b>Date:</b> 31/Jul/2017	<b>Field Strength:</b> 52793.0 nT	<b>Declination:</b> -8.45° <b>Dip:</b> 67.52°

<b>Tie Point:</b>					
<b>MD:</b> 0.00 US ft	<b>Inclination:</b> 0.00°	<b>Azimuth:</b> 0.00°	<b>TVD:</b> 0.00 US ft	<b>North Offset:</b> -0.00 US ft	<b>East Offset:</b> -0.00 US ft

<b>Survey Tool Ranges:</b>			
Name	Start MD (USFt)	End MD (USFt)	Source Survey
EMS	0.00	298.00	EMS
MFAC_US_V2	298.00	779.00	WFT MWD_01-MFAC
MWD	779.00	2017.00	WFT MWD_01-MWD
MWD	2017.00	6182.00	WFT MWD_02-MWD
MWD	6182.00	14627.00	WFT MWD_03-MWD

RECEIVED  
Office of Oil and Gas  
FEB 28 2018  
WV Department of  
Environmental Protection



## 5D Survey Report

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	0.00	-0.00	-0.00	14566016.51	1771225.45	0.00	
208.00	0.40	291.75	208.00	0.38	0.27	-0.67	14566016.78	1771224.78	0.19	
298.00	0.40	281.95	298.00	0.65	0.45	-1.27	14566016.96	1771224.18	0.08	
390.00	0.30	21.65	390.00	0.98	0.74	-1.50	14566017.25	1771223.95	0.59	
503.00	0.25	68.96	502.99	1.28	1.10	-1.16	14566017.61	1771224.29	0.20	
594.00	0.52	44.86	593.99	1.56	1.47	-0.68	14566017.98	1771224.77	0.34	
686.00	0.49	40.64	685.99	2.06	2.06	-0.13	14566018.57	1771225.32	0.05	
779.00	0.42	14.58	778.99	2.62	2.69	0.21	14566019.20	1771225.66	0.23	
871.00	0.48	13.61	870.98	3.28	3.40	0.39	14566019.91	1771225.84	0.07	
964.00	1.25	65.84	963.97	3.90	4.19	1.41	14566020.70	1771226.86	1.11	
1057.00	3.03	73.34	1056.90	4.46	5.31	4.69	14566021.82	1771230.14	1.93	
1149.00	4.86	73.41	1148.68	5.25	7.12	10.75	14566023.63	1771236.20	1.99	
1242.00	6.75	66.81	1241.20	7.03	10.40	19.55	14566026.91	1771245.00	2.15	
1334.00	8.53	64.56	1332.38	10.18	15.46	30.68	14566031.97	1771256.13	1.96	
1427.00	9.01	61.36	1424.29	14.46	21.91	43.30	14566038.42	1771268.75	0.74	
1519.00	9.31	56.29	1515.12	19.88	29.49	55.82	14566046.00	1771281.27	0.94	
1612.00	9.89	53.28	1606.82	26.61	38.44	68.48	14566054.95	1771293.93	0.82	
1705.00	9.91	56.38	1698.44	33.54	47.65	81.54	14566064.16	1771306.99	0.57	
1797.00	11.41	61.85	1788.85	39.68	56.33	96.16	14566072.84	1771321.61	1.96	
1890.00	12.69	67.37	1879.80	44.95	64.60	113.70	14566081.11	1771339.15	1.85	
1983.00	13.24	69.35	1970.43	49.33	72.28	133.09	14566088.79	1771358.54	0.76	
2017.00	13.72	68.57	2003.49	50.91	75.13	140.49	14566091.64	1771365.94	1.51	
2107.00	13.33	64.82	2091.00	55.92	83.44	159.82	14566099.95	1771385.27	1.07	
2200.00	13.28	65.92	2181.50	61.51	92.36	179.27	14566108.87	1771404.72	0.28	
2289.00	12.57	67.44	2268.25	66.27	100.25	197.55	14566116.76	1771423.00	0.88	
2382.00	12.09	72.26	2359.10	69.95	107.10	216.17	14566123.61	1771441.62	1.22	
2475.00	11.93	71.33	2450.07	72.88	113.15	234.55	14566129.66	1771460.00	0.27	
2567.00	11.67	69.82	2540.12	76.12	119.40	252.29	14566135.91	1771477.74	0.44	
2660.00	11.45	69.04	2631.24	79.70	125.95	269.74	14566142.46	1771495.19	0.29	
2753.00	11.11	68.04	2722.44	83.47	132.60	286.67	14566149.11	1771512.12	0.42	
2846.00	10.42	66.91	2813.80	87.38	139.25	302.72	14566155.76	1771528.17	0.78	
2938.00	10.99	70.27	2904.20	90.89	145.47	318.63	14566161.98	1771544.08	0.92	
3031.00	12.28	72.19	2995.29	93.89	151.49	336.39	14566168.00	1771561.84	1.45	
3124.00	12.49	71.21	3086.13	96.94	157.75	355.33	14566174.26	1771580.78	0.32	
3216.00	12.03	68.40	3176.03	100.56	164.49	373.66	14566181.00	1771599.11	0.82	
3309.00	11.78	66.16	3267.03	104.94	171.89	391.35	14566188.40	1771616.80	0.56	
3402.00	11.31	66.08	3358.15	109.57	179.43	408.37	14566195.94	1771633.82	0.51	
3494.00	10.95	62.65	3448.42	114.49	187.10	424.38	14566203.61	1771649.83	0.82	
3587.00	11.38	67.97	3539.66	119.19	194.60	440.73	14566211.11	1771666.18	1.20	
3680.00	12.49	71.01	3630.65	122.84	201.31	458.75	14566217.82	1771684.20	1.37	
3772.00	12.65	70.73	3720.44	126.19	207.87	477.66	14566224.38	1771703.11	0.19	
3865.00	12.39	67.34	3811.23	130.19	215.08	496.48	14566231.59	1771721.93	0.84	
3958.00	11.53	67.24	3902.21	134.59	222.52	514.26	14566239.03	1771739.71	0.92	
4050.00	10.36	64.98	3992.54	138.91	229.58	530.24	14566246.09	1771755.69	1.35	
4143.00	10.58	65.54	4083.99	143.35	236.65	545.58	14566253.16	1771771.03	0.26	
4236.00	11.43	67.86	4175.28	147.57	243.66	561.89	14566260.17	1771787.34	1.03	
4328.00	12.77	68.21	4265.23	151.73	250.87	579.78	14566267.38	1771805.23	1.46	
4421.00	12.85	68.36	4355.92	156.10	258.49	598.93	14566275.00	1771824.38	0.09	
4514.00	12.32	67.43	4446.69	160.52	266.12	617.71	14566282.63	1771843.16	0.61	
4606.00	11.86	66.26	4536.64	165.06	273.69	635.43	14566290.20	1771860.88	0.57	
4699.00	11.92	65.61	4627.65	169.88	281.50	652.92	14566298.01	1771878.37	0.16	
4792.00	12.29	66.28	4718.58	174.78	289.45	670.73	14566305.96	1771896.18	0.43	
4884.00	12.08	66.30	4808.51	179.55	297.26	688.51	14566313.77	1771913.96	0.23	
4976.00	11.35	63.57	4898.59	184.54	305.16	705.43	14566321.67	1771930.88	1.00	
5070.00	12.03	63.09	4990.64	190.17	313.71	722.45	14566330.22	1771947.90	0.73	
5162.00	12.90	66.08	5080.47	195.59	322.21	740.39	14566338.72	1771965.84	1.18	
5255.00	13.08	67.14	5171.09	200.61	330.51	759.57	14566347.02	1771985.02	0.32	

RECEIVED  
Office of Oil and Gas

FEB 28 2018

WV Department of  
Environmental Protection

## 5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
5348.00	13.03	65.79	5261.69	205.70	338.90	778.83	14566355.41	1772004.28	0.33	
5441.00	12.56	65.48	5352.38	210.99	347.39	797.60	14566363.90	1772023.05	0.51	
5533.00	11.76	64.67	5442.32	216.14	355.56	815.17	14566372.07	1772040.62	0.89	
5626.00	10.70	68.14	5533.54	220.57	362.83	831.75	14566379.34	1772057.20	1.35	
5719.00	12.35	70.83	5624.66	224.09	369.31	849.16	14566385.82	1772074.61	1.87	
5811.00	12.54	70.97	5714.50	227.40	375.79	867.89	14566392.30	1772093.34	0.21	
5858.00	13.63	69.26	5760.28	229.32	379.42	877.90	14566395.93	1772103.35	2.46	
5904.00	16.22	66.18	5804.72	231.97	383.93	888.84	14566400.44	1772114.29	5.89	
5951.00	19.10	62.37	5849.50	235.98	390.15	901.66	14566406.66	1772127.11	6.60	
5997.00	21.91	60.30	5892.58	241.29	397.90	915.79	14566414.41	1772141.24	6.31	
6043.00	24.64	57.14	5934.84	248.06	407.35	931.30	14566423.86	1772156.75	6.52	
6090.00	26.99	55.16	5977.15	256.51	418.76	948.29	14566435.27	1772173.74	5.33	
6136.00	29.52	52.01	6017.66	266.38	431.71	965.79	14566448.22	1772191.24	6.38	
6182.00	31.70	50.81	6057.25	277.78	446.32	984.09	14566462.83	1772209.54	4.92	
6257.00	33.94	43.61	6120.30	300.12	473.95	1013.82	14566490.46	1772239.27	6.00	
6303.00	37.22	43.56	6157.71	316.19	493.33	1032.27	14566509.84	1772257.72	7.13	
6350.00	42.17	45.99	6193.86	333.68	514.61	1053.43	14566531.12	1772278.88	11.04	
6396.00	45.46	49.01	6227.05	351.00	536.10	1076.92	14566552.61	1772302.37	8.47	
6442.00	49.03	51.77	6258.28	367.92	557.60	1102.94	14566574.11	1772328.39	8.92	
6489.00	53.34	51.58	6287.73	385.57	580.31	1131.67	14566596.82	1772357.12	9.18	
6535.00	57.08	51.82	6313.97	403.77	603.72	1161.31	14566620.23	1772386.76	8.14	
6582.00	60.77	51.49	6338.23	423.19	628.69	1192.87	14566645.20	1772418.32	7.87	
6628.00	64.24	51.90	6359.46	442.84	653.98	1224.89	14566670.49	1772450.34	7.58	
6675.00	67.48	52.48	6378.68	463.18	680.26	1258.77	14566696.77	1772484.22	6.98	
6721.00	70.32	51.57	6395.24	483.64	706.67	1292.60	14566723.18	1772518.05	6.44	
6767.00	71.49	47.63	6410.29	505.96	734.84	1325.69	14566751.35	1772551.14	8.48	
6814.00	72.26	42.51	6424.92	531.85	766.38	1357.29	14566782.89	1772582.74	10.48	
6860.00	73.11	37.14	6438.62	560.46	800.09	1385.40	14566816.60	1772610.85	11.30	
6906.00	74.14	32.62	6451.60	592.00	836.29	1410.63	14566852.80	1772636.08	9.69	
6953.00	74.84	28.96	6464.17	626.54	875.19	1433.81	14566891.70	1772659.26	7.65	
6999.00	75.61	24.81	6475.91	662.34	914.85	1453.91	14566931.36	1772679.36	8.88	
7046.00	76.75	20.46	6487.14	700.98	956.96	1471.47	14566973.47	1772696.92	9.31	
7092.00	77.76	16.01	6497.29	740.68	999.57	1485.50	14567016.08	1772710.95	9.69	
7138.00	78.07	11.91	6506.93	781.93	1043.21	1496.35	14567059.72	1772721.80	8.74	
7185.00	78.02	8.23	6516.66	825.25	1088.47	1504.39	14567104.98	1772729.84	7.66	
7231.00	78.40	4.41	6526.07	868.56	1133.22	1509.34	14567149.73	1772734.79	8.17	
7278.00	80.59	1.68	6534.64	913.67	1179.36	1511.79	14567195.87	1772737.24	7.37	
7324.00	82.59	358.46	6541.37	958.53	1224.86	1511.84	14567241.37	1772737.29	8.18	
7370.00	83.51	354.63	6546.93	1003.93	1270.43	1509.09	14567286.94	1772734.54	8.50	
7417.00	84.63	351.17	6551.79	1050.63	1316.81	1503.31	14567333.32	1772728.76	7.70	
7463.00	86.30	347.26	6555.43	1096.46	1361.84	1494.73	14567378.35	1772720.18	9.22	
7509.00	87.47	342.67	6557.93	1142.17	1406.19	1482.82	14567422.70	1772708.27	10.28	
7556.00	88.40	338.15	6559.63	1188.40	1450.43	1467.08	14567466.94	1772692.53	9.81	
7602.00	89.38	336.88	6560.52	1233.21	1492.92	1449.49	14567509.43	1772674.94	3.49	
7695.00	91.67	338.52	6559.66	1323.89	1578.95	1414.20	14567595.46	1772639.65	3.03	
7787.00	90.68	336.03	6557.78	1413.42	1663.79	1378.67	14567680.30	1772604.12	2.91	
7880.00	91.60	333.03	6555.93	1502.80	1747.72	1338.69	14567764.23	1772564.14	3.37	
7973.00	90.37	327.77	6554.33	1590.09	1828.54	1292.78	14567845.05	1772518.23	5.81	
8066.00	91.60	328.86	6552.73	1676.19	1907.66	1243.94	14567924.17	1772469.39	1.77	
8158.00	91.79	334.90	6550.00	1763.30	1988.73	1200.62	14568005.24	1772426.07	6.57	
8251.00	91.97	338.97	6546.95	1853.64	2074.23	1164.21	14568090.74	1772389.66	4.38	
8297.00	92.28	336.18	6545.25	1898.44	2116.72	1146.67	14568133.23	1772372.12	6.10	
8343.00	93.89	339.13	6542.77	1943.21	2159.20	1129.21	14568175.71	1772354.66	7.30	
8436.00	92.90	338.55	6537.26	2034.13	2245.77	1095.70	14568262.28	1772321.15	1.23	
8529.00	91.85	337.95	6533.41	2124.94	2332.08	1061.27	14568348.59	1772286.72	1.30	
8622.00	91.17	337.23	6530.96	2215.55	2418.02	1025.83	14568434.53	1772251.28	1.06	
8714.00	91.05	336.06	6529.18	2304.86	2502.47	989.36	14568518.98	1772214.81	1.28	
8807.00	91.05	337.00	6527.47	2395.09	2587.76	952.33	14568604.27	1772177.78	1.01	
8900.00	90.74	337.82	6526.02	2485.66	2673.61	916.61	14568690.12	1772142.06	0.94	

RECEIVED  
Office of Oil and Gas

FEB 28 2018

WV Department of  
Environmental Protection



## 5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
8992.00	90.86	337.05	6524.73	2575.27	2758.56	881.31	14568775.07	1772106.76	0.85	
9085.00	91.36	338.19	6522.93	2665.91	2844.54	845.91	14568861.05	1772071.36	1.34	
9178.00	90.92	339.03	6521.08	2756.90	2931.11	812.00	14568947.62	1772037.45	1.02	
9270.00	90.37	338.66	6520.05	2846.99	3016.91	778.80	14569033.42	1772004.25	0.72	
9363.00	90.49	338.73	6519.35	2938.02	3103.55	745.01	14569120.06	1771970.46	0.15	
9456.00	90.49	340.57	6518.55	3029.35	3190.74	712.67	14569207.25	1771938.12	1.98	
9548.00	90.43	339.85	6517.81	3119.87	3277.30	681.52	14569293.81	1771906.97	0.79	
9641.00	90.49	339.62	6517.07	3211.23	3364.54	649.31	14569381.05	1771874.76	0.26	
9734.00	90.43	340.39	6516.32	3302.67	3451.93	617.51	14569468.44	1771842.96	0.83	
9823.00	90.56	339.80	6515.55	3390.21	3535.61	587.22	14569552.12	1771812.67	0.68	
9916.00	90.43	336.61	6514.75	3481.06	3621.95	552.69	14569638.46	1771778.14	3.43	
10009.00	90.49	334.69	6514.00	3570.94	3706.67	514.35	14569723.18	1771739.80	2.07	
10101.00	90.55	334.51	6513.17	3659.42	3789.77	474.89	14569806.28	1771700.34	0.21	
10194.00	90.55	333.90	6512.27	3748.68	3873.50	434.42	14569890.01	1771659.87	0.66	
10287.00	90.49	333.81	6511.43	3837.78	3956.98	393.44	14569973.49	1771618.89	0.12	
10379.00	90.49	333.69	6510.64	3925.87	4039.49	352.75	14570056.00	1771578.20	0.13	
10472.00	90.55	332.83	6509.80	4014.69	4122.54	310.91	14570139.05	1771536.36	0.93	
10565.00	90.37	331.90	6509.05	4103.07	4204.93	267.78	14570221.44	1771493.23	1.02	
10658.00	90.62	331.86	6508.25	4191.19	4286.95	223.95	14570303.46	1771449.40	0.27	
10748.00	90.55	332.54	6507.33	4276.64	4366.56	181.97	14570383.07	1771407.42	0.76	
10840.00	90.74	332.88	6506.30	4364.23	4448.31	139.79	14570464.82	1771365.24	0.42	
10930.00	90.68	335.39	6505.18	4450.57	4529.28	100.54	14570545.79	1771325.99	2.79	
11023.00	90.62	340.19	6504.12	4541.26	4615.35	65.40	14570631.86	1771290.85	5.16	
11115.00	90.68	340.81	6503.08	4631.86	4702.07	34.69	14570718.58	1771260.14	0.68	
11208.00	90.93	341.70	6501.77	4723.64	4790.13	4.81	14570806.64	1771230.26	0.99	
11298.00	90.68	342.93	6500.51	4812.71	4875.86	-22.53	14570892.37	1771202.92	1.39	
11391.00	90.43	341.27	6499.61	4904.71	4964.35	-51.11	14570980.86	1771174.34	1.80	
11484.00	90.31	338.07	6499.01	4996.04	5051.55	-83.42	14571068.06	1771142.03	3.44	
11576.00	90.37	336.67	6498.46	5085.63	5136.46	-118.82	14571152.97	1771106.63	1.52	
11669.00	90.53	337.15	6497.73	5176.02	5222.01	-155.29	14571238.52	1771070.16	0.54	
11762.00	90.49	337.95	6496.90	5266.65	5307.96	-190.80	14571324.47	1771034.65	0.86	
11855.00	90.43	338.20	6496.16	5357.47	5394.23	-225.53	14571410.74	1770999.92	0.28	
11948.00	90.43	335.66	6495.46	5447.86	5479.78	-261.96	14571496.29	1770963.49	2.73	
12040.00	90.49	336.11	6494.72	5536.88	5563.75	-299.55	14571580.26	1770925.90	0.49	
12133.00	90.43	336.38	6493.97	5627.02	5648.87	-337.01	14571665.38	1770888.44	0.30	
12226.00	90.37	335.88	6493.32	5717.11	5733.91	-374.65	14571750.42	1770850.80	0.54	
12319.00	90.12	335.57	6492.93	5807.03	5818.68	-412.88	14571835.19	1770812.57	0.43	
12412.00	90.19	335.88	6492.67	5896.95	5903.46	-451.11	14571919.97	1770774.34	0.34	
12504.00	90.12	335.15	6492.43	5985.82	5987.19	-489.24	14572003.70	1770736.21	0.80	
12597.00	90.25	334.27	6492.13	6075.31	6071.27	-528.97	14572087.78	1770696.48	0.96	
12690.00	90.43	334.77	6491.57	6164.72	6155.23	-568.98	14572171.74	1770656.47	0.57	
12783.00	90.37	333.82	6490.92	6254.02	6239.02	-609.31	14572255.53	1770616.14	1.02	
12875.00	89.75	331.81	6490.83	6341.67	6320.85	-651.34	14572337.36	1770574.11	2.29	
12968.00	89.82	334.84	6491.18	6430.51	6403.94	-693.09	14572420.45	1770532.36	3.26	
13061.00	89.94	337.88	6491.37	6520.68	6489.13	-730.38	14572505.64	1770495.07	3.27	
13154.00	89.82	338.37	6491.57	6611.52	6575.43	-765.03	14572591.94	1770460.42	0.54	
13247.00	90.26	338.38	6491.50	6702.44	6661.89	-799.30	14572678.40	1770426.15	0.47	
13339.00	90.19	338.66	6491.14	6792.44	6747.50	-832.99	14572764.01	1770392.46	0.31	
13432.00	90.18	337.37	6490.84	6883.24	6833.73	-867.80	14572850.24	1770357.65	1.39	
13525.00	90.26	338.20	6490.48	6973.96	6919.83	-902.96	14572936.34	1770322.49	0.90	
13618.00	89.69	339.03	6490.52	7064.96	7006.42	-936.87	14573022.93	1770288.58	1.08	
13710.00	89.94	337.91	6490.82	7154.94	7092.00	-970.64	14573108.51	1770254.81	1.25	
13803.00	89.94	339.02	6490.92	7245.89	7178.51	-1004.77	14573195.02	1770220.68	1.19	
13896.00	90.12	341.15	6490.87	7337.36	7265.94	-1036.45	14573282.45	1770189.00	2.30	
13989.00	89.82	339.34	6490.92	7428.87	7353.46	-1067.88	14573369.97	1770157.57	1.97	
14082.00	89.88	334.38	6491.16	7519.21	7438.95	-1104.42	14573455.46	1770121.03	5.33	
14174.00	89.14	333.00	6491.95	7607.28	7521.42	-1145.19	14573537.93	1770080.26	1.70	
14267.00	89.08	336.28	6493.39	7696.71	7605.43	-1185.01	14573621.94	1770040.44	3.53	
14360.00	89.26	339.22	6494.74	7787.40	7691.49	-1220.22	14573708.00	1770005.23	3.17	



## 5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
14453.00	89.26	338.99	6495.94	7878.56	7778.37	-1253.39	14573794.88	1769972.06	0.25	
14546.00	89.20	338.73	6497.19	7969.64	7865.10	-1286.92	14573881.61	1769938.53	0.29	
14604.00	89.32	339.01	6497.94	8026.44	7919.20	-1307.83	14573935.71	1769917.62	0.53	Last WFT SVY
14627.00	89.32	339.01	6498.21	8048.98	7940.67	-1316.07	14573957.18	1769909.38	0.00	PTB

RECEIVED  
Office of Oil and Gas

FEB 28 2018

WV Department of  
Environmental Protection

Longitude: 80°30'00"

SURFACE HOLE 8980'

Longitude: 80°10'00"

BOTTOM HOLE 11339'

SURFACE HOLE 6591'

BOTTOM HOLE 13536'

Latitude: 40°07'30"

Latitude: 40°07'20"

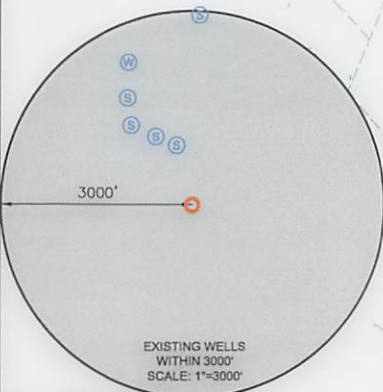
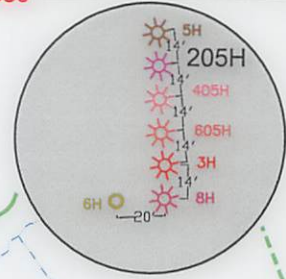
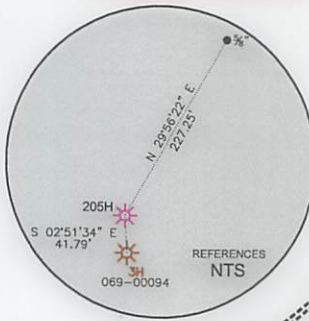


CIVIL & ENVIRONMENTAL CONSULTANTS, INC.  
600 MARKETPLACE AVENUE, SUITE 200  
BRIDGEPORT, WV 26330  
304-933-3119

**SURFACE HOLE LOCATION (SHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4,439,730.707  
EASTING: 539,870.606  
**LANDING POINT (LPL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4,440,124.484  
EASTING: 540,338.972  
**BOTTOM HOLE LOCATION (BHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4,442,150.097  
EASTING: 539,465.749

**PERMIT SURFACE HOLE LOCATION (SHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4,439,730.712  
EASTING: 539,870.597  
**PERMIT LANDING POINT (LPL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4,440,117.940  
EASTING: 540,330.568  
**PERMIT BOTTOM HOLE LOCATION (BHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4,442,151.033  
EASTING: 539,469.458

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



**WELL RESTRICTIONS**

- 1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
- 2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
- 3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 969 FEET OF PROPOSED WELL.
- 4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 800 FEET OF THE LIMITS OF DISTURBANCE.
- 5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
- 6. 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**

- 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.

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.

P.S. 991



2000 0 2000

GRAPHIC SCALE IN FEET

COMPANY: **SWN** Production Company, LLC **SWN** Production Company™

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

WILLIAM RODGERS OHI  
OPERATOR'S WELL #: 205H  
API WELL #: 47 STATE 069 COUNTY 00192 PERMIT

WELL TYPE: OIL  WASTE DISPOSAL  PRODUCTION  DEEP  GAS  LIQUID INJECTION  STORAGE  SHALLOW   
WATERSHED: WHEELING CREEK ELEVATION: 1280.0  
DISTRICT: LIBERTY COUNTY: OHIO QUADRANGLE: VALLEY GROVE  
SURFACE OWNER: WILLIAM I RODGERS & DOUGLAS W RODGERS ACREAGE: 143±  
OIL & GAS ROYALTY OWNER: WILLIAM I RODGERS & DOUGLAS W RODGERS ACREAGE: 143±  
DRILL  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION   
CONVERT  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY) ASDRILLED  
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6557 TVD 14,478 TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL  
ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300  
CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:  
PROPOSED SURFACE HOLE / BOTTOM HOLE  
EXISTING / PRODUCING WELLHEAD  
LPL X LANDING POINT LOCATION  
EXISTING WATER WELL  
EXISTING SPRING  
SURVEYED BOUNDARY  
DRILLING UNIT  
LEASE BOUNDARY  
ASDRILLED PATH  
PROPOSED PATH  
REVISIONS:  
DATE: 02-21-2018  
DRAWN BY: K.E.S.  
SCALE: 1" = 2000'  
DRAWING NO: 171-944  
WELL LOCATION PLAT





CIVIL & ENVIRONMENTAL CONSULTANTS, INC.  
 600 MARKETPLACE AVENUE, SUITE 200  
 BRIDGEPORT, WV 26330  
 304-933-3119

WELL BORE TABLE FOR SURFACE OWNERS			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	William I. Rodgers & Douglas Wayne Rodgers (S/R)	3-L12-1	143.09
2	TUNNEL RIDGE, LLC (S) LOIS MILLER (R) ALICE ANDERSON (R)	3-L12-4.6	60.00
3	RAYMOND M. & H E MILLER	3-L12-2	81.355
4	JEFFREY S. & DANA R. OCH	3-L12-2.1	44.145
5	THELMA A. MILLER LIFE ESTATE (S/R) CARL E. MILLER JR., REMAINDERMAN (S/R)	3-L9-15	54.91
6	THELMA A. MILLER	3-L9-15.3	42.38
7	WILLIAM E. NOBLE	3-L9-14	47.28
8	WM H & D M BALL	3-L9-8	0.5
9	WM H & D M BALL	3-L9-6.2	0.2362
10	WM H & D M BALL	9-L9-6.3	2.0051
11	MICHAEL H. FISHER	3-L9-6.6	29.065
12	ROBERT F. & N C REASS	3-L9-1	173.9

ADJOINING OWNERS TABLE			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	WILLIAM I. RODGERS	3-L12-5.1	17.16
B	TODD M. MAXWELL	3-L12-27	11.74
C	CATHY J. CALDWELL & JERRY W. CALDWELL	3-L12-6	5.52
D	MARION S. MAZGAJ & MILDRED J. MAZGAJ	3-L11-62	52.63
E	JAMES R. CREIGHTON & MARTHA E. CREIGHTON	3-L11-29	70.05
F	TIMMY B. MINCH & AMY LYNN MINCH	3-L9-12	109.75
G	WILLIAM H. BALL & LARRY G. BALL	3-L9-11	44.69
H	PATRICK & PAMELA LEONARD	3-L8-38	5.0
I	PATRICK & PAMELA LEONARD	3-L9-9	2.055
J	CHARLES P & D E SMITH	3-L9-10	3.622
K	CHARLES P & D E SMITH	3-L9-14.1	0.450
L	LARRY G. BALL	3-L8-42	51.77
M	JODY LEE SHILLING	3-L8-10	40.1
N	ROBERT C. JONES	3-L8-11	168.6125
O	GEORGE E. PORTER III	3-L8-9.5	7.502
P	MARGARET ANN PORTER	3-L8-9.2	2.261
Q	LESLIE K. REEDY	3-L8-9.4	14.65
R	GLENN A. DILLE	3-L8-9.7	105.0
S	DELMER K. & V G LOEW	3-L6-19	139.49375
T	RODNEY G. & JESSICA J. PLANTS	3-L9-2.2	1.2
U	RODNEY G. & JESSICA J. PLANTS	3-L9-2.3	0.45
V	RODNEY G. & JESSICA J. PLANTS	3-L9-2	112.08
W	DAVID E & B L MCNABB	3-L9-6.8	15.663
X	DANIEL LEE & DIANE L. HENRY	3-L9-6.5	30.278
Y	THELMA A. MILLER	3-L9-15.4	62.25
Z	CARL E. III & J E MILLER	3-L9-15.2	1.00
AA	BERNIE & EVERETT METZ	3-L9-17	20.377
BB	KEVIN R. & J A WURTZBACHER	3-L9-17.3	1.09
CC	WILLIAM R. & JEAN W. WURTZBACHER	3-L9-17.1	4.252
DD	RAYMOND M. & H E MILLER	3-L12-2	81.355
EE	TUNNEL RIDGE	3-L12-3	23.588
FF	HILDA E. MILLER	230-007-00-00-0012-00	6.935
GG	JACK M. & J DILLIE	3-L12-4.1	9.63

REVISIONS:

COMPANY:

**SWN**  
Production Company, LLC

**SWN** <sup>R+</sup>/<sub>A</sub> V+<sup>o</sup>  
Production Company™

OPERATOR'S WILLIAM RODGERS OHI

DATE: 02-21-2018

WELL #: 205H

DRAWN BY: K.E.S.

DISTRICT:  
LIBERTY

COUNTY:  
OHIO

STATE:  
WV

SCALE: N/A

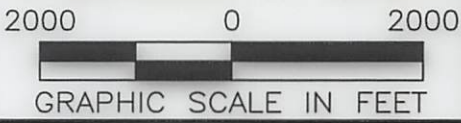
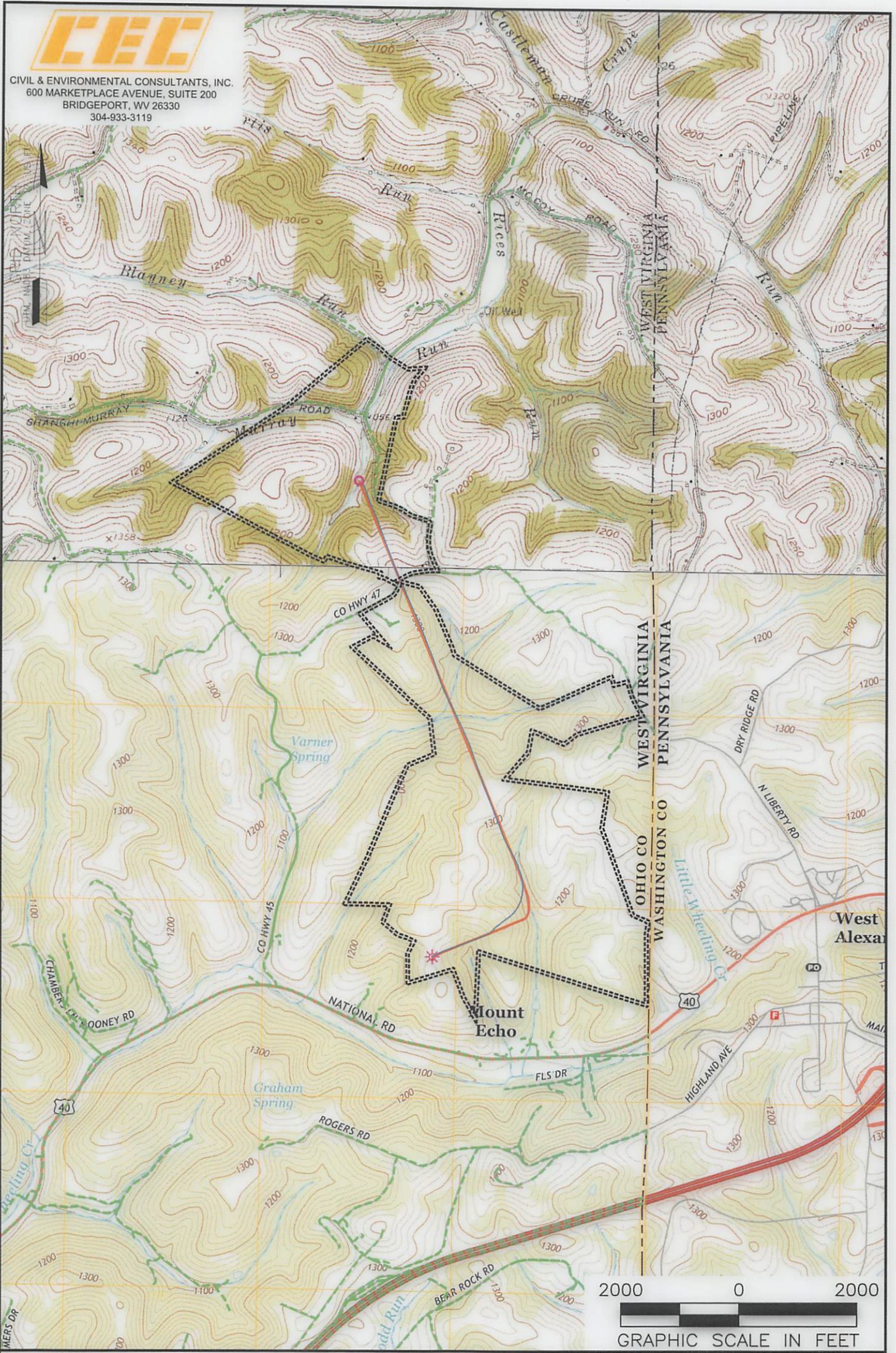
DRAWING NO: 171-944

WELL LOCATION PLAT 2





CIVIL & ENVIRONMENTAL CONSULTANTS, INC.  
 600 MARKETPLACE AVENUE, SUITE 200  
 BRIDGEPORT, WV 26330  
 304-933-3119



**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.
4. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

**LEGEND:**

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

<b>WELL OPERATOR:</b> SWN PRODUCTION COMPANY, LLC		<b>WELL (FARM) NAME:</b> WILLIAM RODGERS OHI		<b>WELL #</b> 205H	<b>SERIAL #</b> XXXX
<b>ADDRESS:</b> P.O. BOX 1300 JANE LEW, WV 26378		<b>COUNTY - CODE</b> OHIO - 069		<b>DISTRICT;</b> LIBERTY	
<b>SURFACE OWNER:</b> WILLIAM I RODGERS & DOUGLAS W RODGERS		<b>USGS 7 1/2 QUADRANGLE MAP NAME</b> VALLEY GROVE, WV			