WR-35
Rev. 8/23/13



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

API 47 - 009 - 00191 County BROOKE District BUFFALO
Quad BETHANY Pad Name ALAN H. DEGARMO BRK PAD Field/Pool Name PANHANDLE FIELD WET
Farm name ALAN H. DEGARMO & MARY DEGARMO Well Number ALAN H. DEGARMO BRK 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 4,455,197.663 | Easting 536,399.034 |
| Landing Point of Curve | Northing 4,455,441.004 | Easting 536,746.122 |
| Bottom Hole | Northing 4,458,002.006 | Easting 535,545.388 |

Elevation (ft) 1204 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 5/31/2017 Date drilling commenced 10/03/2017 Date drilling ceased 11/15/2017
Date completion activities began 12/28/2017 Date completion activities ceased 03/04/2018
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 212 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 428 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 271 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
SB 6/11/18

Reviewed
CBO 6-11-18

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API 47- 009 - 00191 Farm name ALAN H. DEGARMO & MARY DEGARMO Well number ALAN H. DEGARMO BRK 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 | 26 | 20 | 126 | NEW | J-55/94# | | Y |
| Surface | 17.5 | 13.375 | 365 | NEW | J-55/54.50# | 198.49'/160.03' | Y |
| Coal | SEE SURFACE | | | | | | |
| Intermediate 1 | 12.25 | 9.625 | 1697 | NEW | J-55/36# | | Y |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | 8.75/8.50 | 5.5 | 15675 | NEW | HCP-110/20# | | Y |
| Tubing | | 2.375 | 6469 | NEW | P-110/4.7# | | N |
| Packer type and depth set | | | | | | | |

Comment Details Packer Top - 253.72', Bottom - 236.77'

| 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 | 486 | 15.60 | 1.19 | 578.34 | SURFACE | 8 |
| Coal | SEE SURFACE | | | | | | |
| Intermediate 1 | CLASS A | 635 | 15.60 | 1.20 | 762 | SURFACE | 8 |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | CLASS A | 2938 | 15.60 | 1.19 | 3496.22 | SURFACE | 24 |
| Tubing | | | | | | | |

Drillers TD (ft) 15675 Loggers TD (ft) 15675
Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 5230

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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API 47- 009 - 00191 Farm name ALAN H. DEGARMO & MARY DEGARMO Well number ALAN H. DEGARMO BRK 205H

## PERFORATION RECORD

| Stage No. | Perforation date | Perforated from MD ft. | Perforated to MD ft. | Number of Perforations | Formation(s) |
|---|---|---|---|---|---|
| | SEE | ATTACHMENT | 1 | | |
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Please insert additional pages as applicable.

## STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

| Stage No. | Stimulations 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/other (units) |
|---|---|---|---|---|---|---|---|---|
| | | SEE | ATTACHMENT | 2 | | | | |
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| PRODUCING FORMATION(S) | DEPTHS | |
|---|---|---|
| MARCELLUS | 5893 TVD | 6428 MD |
| | | |
| | | |
| | | |

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown □ Open Flow OIL TEST □ Flow □ Pump

SHUT-IN PRESSURE Surface 1114 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

| OPEN FLOW | Gas | Oil | NGL | Water | GAS MEASURED BY |
|---|---|---|---|---|---|
| | 3,416 mcfpd | 569 bpd | _____ bpd | 509 bpd | □ Estimated □ Orifice □ Pilot |

| LITHOLOGY/ FORMATION NAME | TOP DEPTH IN FT 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 (FRESHWATER, BRINE, OIL, GAS, $H_2S$, ETC) |
|---|---|---|---|---|---|
| | 0 | | 0 | | |
| | SEE | ATTACHMENT | 3 | | |
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Please insert additional pages as applicable.

Drilling Contractor SWN DRILLING COMPANY
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Logging Company WEATHERFORD
Address 2000 ST. JAMES PLACE City HOUSTON State TX Zip 77056

Cementing Company SCHLUMBERGER WELL SERVICES
Address 1080 US HWY 33 EAST City WESTON State WV Zip 26452

Stimulating Company HALLIBURTON ENERGY SERVICES
Address 5416 ELK RIVER ROAD City BLUE CREEK State WV Zip 25026

Please insert additional pages as applicable.

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Completed by BOBBY WILLIS Telephone 832-796-2884
Signature _____ Title REGULATORY ANALYST Date 05/09/18

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

# Hydraulic Fracturing Fluid Product Component Information Disclosure

| | |
|---|---|
| Job Start Date: | 12/30/2017 |
| Job End Date: | 2/13/2018 |
| State: | West Virginia |
| County: | Brooke |
| API Number: | 47-009-00191-00-00 |
| Operator Name: | Southwestern Energy |
| Well Name and Number: | Alan H DeGarmo BRK 205H |
| Latitude: | 40.24643600 |
| Longitude: | -80.57203900 |
| Datum: | NAD27 |
| Federal Well: | NO |
| Indian Well: | NO |
| True Vertical Depth: | 5,879 |
| Total Base Water Volume (gal): | 20,140,859 |
| 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 |
|---|---|---|---|---|---|---|---|
| Fresh Water | Operator | Base Fluid | | | | | |
| | | | Water | 7732-18-5 | 100.00000 | 83.26854 | Density = 8.330 |
| Ingredients | Listed Above | Listed Above | | | | | |
| | | | Water | 7732-18-5 | 100.00000 | 1.07492 | |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID | Halliburton | Solvent | | | | | |
| | | | | Listed Below | | | |
| SAND-PREMIUM WHITE-40/70, BULK | Halliburton | Proppant | | | | | |
| | | | | Listed Below | | | |
| CALCIUM CHLORIDE - HI-TEST PELLETS | Halliburton | Accelerator | | | | | |
| | | | | Listed Below | | | |
| HAI-150E | Halliburton | Corrosion Inhibitor | | | | | |
| | | | | Listed Below | | | |
| SCAL16486A | NALCO | Scale Inhibitor | | | | | |
| | | | | Listed Below | | | |
| FR-76 | Halliburton | Friction Reducer | | | | | |
| | | | | Listed Below | | | |
| BIOC11219A | NALCO | Biocide | | | | | |
| | | | | Listed Below | | | |
| SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676) | Halliburton | Proppant | | | | | |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | Listed Below | | | |
| FDP-S1176-15 | Halliburton | Friction Reducer | | | | | |
| | | | | Listed Below | | | |
| Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients. | | | | | | | |
| | | | Crystalline silica, quartz | 14808-60-7 | 100.00000 | 15.59113 | |
| | | | Hydrochloric acid | 7647-01-0 | 15.00000 | 0.15326 | |
| | | | Hydrotreated light petroleum distillate | 64742-47-8 | 30.00000 | 0.02659 | |
| | | | Inorganic salt | Proprietary | 30.00000 | 0.01501 | |
| | | | Acrylamide acrylate copolymer | Proprietary | 30.00000 | 0.01501 | Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226 |
| | | | Methanol | 67-56-1 | 60.00000 | 0.01367 | |
| | | | Polyacrylate | Proprietary | 30.00000 | 0.01159 | |
| | | | Benzyl-Dimethyl-Ammonium Chloride | 68424-85-1 | 30.00000 | 0.00684 | |
| | | | Glutaraldehyde | 111-30-8 | 10.00000 | 0.00228 | |
| | | | Sodium chloride | 7647-14-5 | 5.00000 | 0.00201 | |
| | | | Sobitan, mono-9-octadececenoate, (Z) | 1338-43-8 | 5.00000 | 0.00193 | |
| | | | Castor oil, ethoxylated | 61791-12-6 | 5.00000 | 0.00193 | |
| | | | Ammonium chloride | 12125-02-9 | 5.00000 | 0.00193 | |
| | | | 9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-,(Z) | 93-83-4 | 5.00000 | 0.00193 | |
| | | | Amine Triphosphate | Proprietary | 30.00000 | 0.00157 | |
| | | | Ethylene Glycol | 107-21-1 | 30.00000 | 0.00157 | |
| | | | Calcium chloride | 10043-52-4 | 96.00000 | 0.00155 | |
| | | | Non-hazardous food substance | Proprietary | 100.00000 | 0.00031 | |
| | | | Strontium chloride | 10476-85-4 | 5.00000 | 0.00008 | |
| | | | Potassium chloride | 7447-40-7 | 5.00000 | 0.00008 | |

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* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%
*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)

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swn
Southwestern Energy®

**Well Name:** **Alan H Degarmo BRK 205H** 47009001910000 ATTACHMENT 3

| 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 | 212.00 | 212.00 | |
| Top of Salt Water | 428.00 | 428.00 | NA | NA | |
| Pittsburgh Coal | 271.00 | 271.00 | NA | NA | |
| Pottsville (ss) | 420.00 | 420.00 | 499.00 | 499.00 | |
| Mauch Chunk (shale) | 501.00 | 501.00 | 1279.00 | 1279.00 | |
| Raven Cliff (ss) | 755.00 | 755.00 | 951.00 | 951.00 | |
| Maxton (ss) | 1144.00 | 1144.00 | 1205.00 | 1205.00 | |
| Greenbriar (ls) | 1279.00 | 1279.00 | 1458.00 | 1458.00 | |
| Big Injun (ss) | 1458.00 | 1458.00 | 1601.00 | 1601.00 | |
| Berea (siltstone) | 1948.00 | 1948.00 | 1999.00 | 1999.00 | |
| Rhinestreet (shale) | 5581.00 | 5354.00 | 5864.00 | 5593.00 | |
| Cashaqua (shale) | 5864.00 | 5593.00 | 5926.00 | 5641.00 | |
| Middlesex (shale) | 5926.00 | 5641.00 | 6020.00 | 5706.00 | |
| Burket (shale) | 6020.00 | 5706.00 | 6043.00 | 5721.00 | |
| Tully (ls) | 6043.00 | 5721.00 | 6143.00 | 5779.00 | |
| Mahantango (shale) | 6143.00 | 5779.00 | 6428.00 | 5893.00 | |
| Marcellus (shale) | 6428.00 | 5893.00 | NA | NA | GAS |

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**ALAN H DEGARMO BRK 205H**

**ATTACHMENT 1**

**PERF REPORT**

| STAGE NUM | Perf Date | Perf Top MD | Perf Bottom MD | # SHOTS PER STG |
|---|---|---|---|---|
| 1 | 12/29/2017 | 15,459 | 15,568 | 42 |
| 2 | 12/30/2017 | 15,319 | 15,428 | 42 |
| 3 | 12/31/2017 | 15,039 | 15,148 | 42 |
| 4 | 12/31/2017 | 15,179 | 15,288 | 42 |
| 5 | 1/1/2018 | 14,899 | 15,008 | 42 |
| 6 | 1/1/2018 | 14,759 | 14,868 | 42 |
| 7 | 1/11/2018 | 14,619 | 14,728 | 42 |
| 8 | 1/12/2018 | 14,479 | 14,588 | 42 |
| 9 | 1/13/2018 | 14,339 | 14,448 | 42 |
| 10 | 1/14/2018 | 14,199 | 14,308 | 42 |
| 11 | 1/14/2018 | 14,059 | 14,168 | 42 |
| 12 | 1/15/2018 | 13,919 | 14,028 | 42 |
| 13 | 1/15/2018 | 13,779 | 13,886 | 42 |
| 14 | 1/16/2018 | 13,639 | 13,748 | 42 |
| 15 | 1/17/2018 | 13,499 | 13,608 | 42 |
| 16 | 1/17/2018 | 13,359 | 13,468 | 42 |
| 17 | 1/17/2018 | 13,219 | 13,328 | 42 |
| 18 | 1/17/2018 | 13,079 | 13,188 | 42 |
| 19 | 1/18/2018 | 12,939 | 13,048 | 42 |
| 20 | 1/18/2018 | 12,799 | 12,908 | 42 |
| 21 | 1/18/2018 | 12,659 | 12,768 | 42 |
| 22 | 1/18/2018 | 12,519 | 12,628 | 42 |
| 23 | 1/19/2018 | 12,379 | 12,488 | 42 |
| 24 | 1/19/2018 | 12,239 | 12,348 | 42 |
| 25 | 1/19/2019 | 12,099 | 12,208 | 42 |
| 26 | 1/20/2018 | 11,959 | 12,068 | 42 |
| 27 | 1/20/2018 | 11,819 | 11,926 | 42 |
| 28 | 1/20/2018 | 11,679 | 11,788 | 42 |
| 29 | 1/21/2018 | 11,539 | 11,648 | 42 |
| 30 | 1/21/2018 | 11,399 | 11,508 | 42 |
| 31 | 1/22/2018 | 11,259 | 11,368 | 43 |
| 32 | 1/23/2018 | 11,119 | 11,228 | 41 |
| 33 | 1/30/2018 | 10,979 | 11,086 | 42 |
| 34 | 1/25/2018 | 10,839 | 10,946 | 42 |
| 35 | 1/25/2018 | 10,699 | 10,808 | 42 |
| 36 | 1/27/2018 | 10,559 | 10,668 | 42 |
| 37 | 1/27/2018 | 10,419 | 10,526 | 42 |
| 38 | 1/28/2018 | 10,279 | 10,388 | 42 |
| 39 | 1/28/2018 | 10,139 | 10,248 | 42 |
| 40 | 1/29/2018 | 9,999 | 10,108 | 42 |
| 41 | 1/29/2018 | 9,859 | 9,968 | 42 |
| 42 | 1/30/2018 | 9,719 | 9,828 | 42 |
| 43 | 1/31/2018 | 9,579 | 9,686 | 42 |

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**ALAN H DEGARMO BRK 205H**

**ATTACHMENT 1**

**PERF REPORT**

| STAGE NUM | Perf Date | Perf Top MD | Perf Bottom MD | # SHOTS PER STG |
|---|---|---|---|---|
| 44 | 1/31/2018 | 9,439 | 9,548 | 42 |
| 45 | 2/2/2018 | 9,299 | 9,408 | 42 |
| 46 | 2/2/2018 | 9,159 | 9,268 | 42 |
| 47 | 2/3/2018 | 9,019 | 9,126 | 42 |
| 48 | 2/3/2018 | 8,879 | 8,988 | 42 |
| 49 | 2/4/2018 | 8,739 | 8,848 | 42 |
| 50 | 2/4/2018 | 8,599 | 8,708 | 42 |
| 51 | 2/5/2018 | 8,459 | 8,568 | 42 |
| 52 | 2/5/2018 | 8,316 | 8,428 | 42 |
| 53 | 2/6/2018 | 8,179 | 8,288 | 42 |
| 54 | 2/6/2018 | 8,039 | 8,148 | 42 |
| 55 | 2/7/2018 | 7,899 | 8,008 | 42 |
| 56 | 2/9/2018 | 7,759 | 7,868 | 42 |
| 57 | 2/9/2018 | 7,619 | 7,728 | 42 |
| 58 | 2/9/2018 | 7,479 | 7,588 | 42 |
| 59 | 2/10/2018 | 7,339 | 7,448 | 42 |
| 60 | 2/10/2018 | 7,199 | 7,308 | 42 |
| 61 | 2/10/2018 | 7,059 | 7,166 | 42 |
| 62 | 2/11/2018 | 6,919 | 7,026 | 42 |
| 63 | 2/11/2018 | 6,779 | 6,888 | 42 |
| 64 | 2/12/2018 | 6,639 | 6,748 | 42 |
| 65 | 2/13/2018 | 6,499 | 6,608 | 42 |

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**ALAN H DEGARMO BRK 205H**
**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/othe |
|---|---|---|---|---|---|---|---|---|
| 1 | 12/30/2017 | 84 | 8,324 | 8,787 | 3,953 | 529,100 | 9,755 | |
| 2 | 12/31/2017 | 91 | 8,115 | 8,513 | 4,449 | 500,800 | 8,117 | |
| 3 | 12/31/2017 | 71 | 8,250 | 9,391 | 6,780 | 513,260 | 10,683 | |
| 4 | 1/1/2018 | 84 | 8,462 | 9,215 | 3,473 | 473,920 | 8,515 | |
| 5 | 1/1/2018 | 88 | 8,085 | 8,434 | 4,620 | 497,760 | 8,136 | |
| 6 | 1/11/2018 | 87 | 8,185 | 8,736 | 4,642 | 489,420 | 7,581 | |
| 7 | 1/11/2018 | 90 | 7,744 | 8,605 | 4,306 | 505,840 | 8,434 | |
| 8 | 1/13/2018 | 92 | 8,162 | 9,300 | 4,584 | 493,040 | 8,212 | |
| 9 | 1/14/2018 | 95 | 9,168 | 8,493 | 4,340 | 509,040 | 7,992 | |
| 10 | 1/14/2018 | 98 | 8,350 | 8,818 | 3,885 | 515,340 | 8,147 | |
| 11 | 1/14/2018 | 94 | 7,878 | 8,373 | 4,353 | 471,400 | 9,710 | |
| 12 | 1/15/2018 | 98 | 8,153 | 8,783 | 3,930 | 508,320 | 7,845 | |
| 13 | 1/16/2018 | 93 | 8,239 | 9,159 | 3,947 | 489,540 | 7,749 | |
| 14 | 1/17/2018 | 95 | 7,781 | 8,284 | 4,368 | 509,000 | 7,954 | |
| 15 | 1/17/2018 | 94 | 7,838 | 8,203 | 3,886 | 496,360 | 7,565 | |
| 16 | 1/17/2018 | 92 | 8,083 | 8,788 | 4,354 | 505,000 | 7,423 | |
| 17 | 1/17/2018 | 95 | 7,793 | 8,732 | 4,248 | 451,080 | 7,130 | |
| 18 | 1/18/2018 | 76 | 8,115 | 9,507 | 3,759 | 497,760 | 10,626 | |
| 19 | 1/18/2018 | 81 | 8,109 | 9,110 | 3,640 | 513,280 | 10,425 | |
| 20 | 1/18/2018 | 90 | 7,487 | 8,728 | 4,242 | 476,620 | 7,760 | |
| 21 | 1/18/2018 | 98 | 7,816 | 8,434 | 4,340 | 505,240 | 7,881 | |
| 22 | 1/19/2018 | 99 | 7,782 | 8,242 | 4,193 | 506,600 | 7,592 | |
| 23 | 1/19/2018 | 27 | 8,083 | 9,138 | 6,817 | 9,580 | 2,849 | |
| 24 | 1/19/2018 | 98 | 7,583 | 8,056 | 4,238 | 508,360 | 6,786 | |
| 25 | 1/20/2018 | 96 | 7,634 | 8,165 | 4,195 | 499,360 | 7,714 | |
| 26 | 1/20/2018 | 91 | 7,504 | 8,158 | 4,563 | 503,700 | 7,223 | |
| 27 | 1/20/2018 | 91 | 7,674 | 9,145 | 4,301 | 505,140 | 8,495 | |
| 28 | 1/21/2018 | 99 | 7,748 | 8,321 | 4,344 | 518,220 | 6,491 | |
| 29 | 1/21/2018 | 89 | 7,177 | 9,046 | 5,110 | 474,610 | 6,613 | |
| 30 | 1/22/2018 | 87 | 7,854 | 9,476 | 4,653 | 337,810 | 8,394 | |
| 31 | 1/22/2018 | 28 | 6,315 | 9,489 | 4,514 | 4,200 | 2,431 | |
| 32 | 1/23/2018 | 94 | 7,104 | 7,660 | 4,313 | 517,580 | 7,795 | |
| 33 | 1/25/2018 | 97 | 7,280 | 7,580 | 4,459 | 504,220 | 7,466 | |
| 34 | 1/25/2018 | 95 | 7,372 | 8,522 | 4,536 | 512,200 | 7,321 | |
| 35 | 1/27/2018 | 99 | 7,786 | 8,403 | 4,677 | 493,700 | 8,202 | |
| 36 | 1/27/2018 | 99 | 7,326 | 7,830 | 4,384 | 504,120 | 7,384 | |
| 37 | 1/28/2018 | 99 | 7,779 | 7,373 | 4,350 | 492,860 | 6,867 | |
| 38 | 1/28/2018 | 98 | 7,399 | 8,174 | 4,380 | 491,940 | 7,247 | |
| 39 | 1/29/2018 | 100 | 7,646 | 9,032 | 4,524 | 497,820 | 7,509 | |
| 40 | 1/29/2018 | 99 | 7,671 | 8,732 | 4,358 | 492,140 | 6,745 | |
| 41 | 1/30/2018 | 99 | 8,491 | 8,927 | 4,352 | 495,660 | 7,528 | |
| 42 | 1/31/2018 | 95 | 7,946 | 9,038 | 4,313 | 511,140 | 7,706 | |
| 43 | 1/31/2018 | 96 | 7,541 | 8,901 | 4,433 | 504,794 | 7,536 | |
| 44 | 2/1/2018 | 97 | 7,423 | 8,190 | 4,191 | 495,640 | 6,960 | |
| 45 | 2/2/2018 | 99 | 7,364 | 8,453 | 4,516 | 501,420 | 7,401 | |
| 46 | 2/2/2018 | 98 | 7,782 | 8,630 | 4,343 | 501,340 | 6,879 | |
| 47 | 2/3/2018 | 73 | 6,605 | 8,515 | 4,153 | 500,900 | 8,197 | |
| 48 | 2/3/2018 | 100 | 7,369 | 8,083 | 4,011 | 511,020 | 7,076 | |
| 49 | 2/4/2018 | 97 | 7,338 | 8,277 | 4,510 | 502,320 | 8,483 | |
| 50 | 2/5/2018 | 98 | 7,173 | 8,686 | 4,100 | 468,480 | 6,762 | |
| 51 | 2/5/2018 | 100 | 7,233 | 7,601 | 4,590 | 498,100 | 7,169 | |
| 52 | 2/6/2018 | 99 | 7,190 | 7,771 | 4,410 | 503,020 | 6,861 | |
| 53 | 2/6/2018 | 99 | 6,968 | 7,765 | 3,919 | 498,840 | 7,110 | |

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**ALAN H DEGARMO BRK 205H**
**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/othe |
|---|---|---|---|---|---|---|---|---|
| 54 | 2/7/2018 | 96 | 6,556 | 7,696 | 4,081 | 507,260 | 7,183 | |
| 55 | 2/8/2018 | 96 | 7,069 | 8,360 | 4,131 | 495,940 | 7,304 | |
| 56 | 2/9/2018 | 100 | 6,587 | 7,222 | 4,441 | 498,890 | 7,081 | |
| 57 | 2/9/2018 | 100 | 7,168 | 8,210 | 4,434 | 506,420 | 7,081 | |
| 58 | 2/10/2018 | 97 | 7,039 | 9,066 | 4,436 | 507,040 | 7,392 | |
| 59 | 2/10/2018 | 100 | 6,971 | 7,436 | 4,509 | 498,040 | 6,940 | |
| 60 | 2/10/2018 | 98 | 6,934 | 8,036 | 4,592 | 509,420 | 6,483 | |
| 61 | 2/11/2018 | 99 | 6,961 | 8,821 | 4,501 | 507,380 | 6,211 | |
| 62 | 2/11/2018 | 97 | 6,841 | 7,951 | 4,303 | 498,660 | 6,167 | |
| 63 | 2/12/2018 | 98 | 6,758 | 8,750 | 4,042 | 498,100 | 5,763 | |
| 64 | 2/12/2018 | 99 | 6,744 | 7,951 | 4,377 | 503,860 | 5,753 | |
| 65 | 2/13/2018 | 98 | 6,450 | 7,718 | 3,634 | 502,960 | 5,245 | |

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# Alan H Degarmo BRK 205H
Brooke Co, WV
SDC 40
**Plan vs Actual**

## Plan Data for Alan H Degarmo BRK 205H

Plan Point Information:
DogLeg Severity Unit: °/100.00ft  Position offsets from Slot centre

| MD (USft) | Inc (°) | Az (°) | TVD (USft) | +N/-S (USft) | +E/-W (USft) | VSec (USft) | DLS (DLSU) | Toolface (°) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 5321.00 | 22.62 | 77.08 | 5114.29 | 185.78 | 1143.39 | -155.23 | 4.49 | 242.0 | Last WFT SVY |
| 5416.00 | 22.45 | 65.93 | 5202.08 | 197.27 | 1177.78 | -154.26 | 4.50 | 262.6 | PTB |
| 5420.07 | 22.45 | 65.93 | 5205.85 | 197.90 | 1179.20 | -154.06 | 0.00 | 0.0 | Curve KOP 9.5° DLS |
| 5645.81 | 30.00 | 18.99 | 5410.30 | 269.68 | 1237.60 | -102.40 | 9.50 | 267.6 | Build/Turn 7° DLS |
| 6369.94 | 70.00 | 334.88 | 5878.65 | 782.82 | 1146.04 | 415.17 | 7.00 | 302.3 | Build 9° DLS |
| 6599.11 | 90.63 | 334.88 | 5917.00 | 986.26 | 1050.66 | 637.56 | 9.00 | 0.0 | Landing Point |
| 15672.05 | 90.63 | 334.88 | 5818.00 | 9200.61 | -2800.67 | 9617.43 | 0.00 | 0.0 | PBHL AHD205H |

Target Set Information:
Name: Alan H Degarmo BRK 205H
Position offsets from Slot centre

| Name | TVD (USft) | +N/-S (USft) | +E/-W (USft) | Northing (USft) | Easting (USft) | Lat (°) | Long (°) |
|---|---|---|---|---|---|---|---|
| LP AHD205H | 5917.00 | 798.39 | 1138.74 | 14617559.39 | 1760974.57 | 40.248614 | -80.567944 |
| PBHL AHD205H | 5818.00 | 9200.61 | -2800.67 | 14625961.61 | 1757035.16 | 40.271738 | -80.581920 |

## Plan Data for Alan H Degarmo BRK 205H

**Field: SOUTHWESTERN_BROOKE CO, WV UTM NAD 83 (17N)**
Map Unit: USFt  Vertical Reference Datum (VRD):
Projected Coordinate System: NAD83 / UTM zone 17N

**Site: Alan H Degarmo Pad**
Unit: USFeet  TVD Reference:
Company Name: SOUTHWESTERN ENERGY
Position: Northing: 14616754.85USft  Latitude: 40.246420°
Easting: 1759766.13USft  Longitude: -80.572289°
North Reference: Grid  Grid Convergence: 0.28°
Elevation Above VRD: 1204.00USft

**Slot: Alan H Degarmo BRK 205H**
Position:
Offset is from Site centre
+N/-S: 6.15USft  Northing: 14616761.00USft  Latitude: 40.246436°
+E/-W: 69.70USft  Easting: 1759835.83USft  Longitude: -80.572039°
Elevation Above VRD: 1204.00USft

**Well: Alan H Degarmo BRK 205H**
Type: Main-Well
File Number:
Plan Folder: P2  Plan: P2:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft  Azimuth: 343.07°
+E/-W: -0.00USft
Magnetic Parameters:

| Model: | Field Strength: | Declination: | Dip: | Date: |
|---|---|---|---|---|
| HDGM | 52611(nT) | -8.42° | 67.70° | 2017-10-30 |

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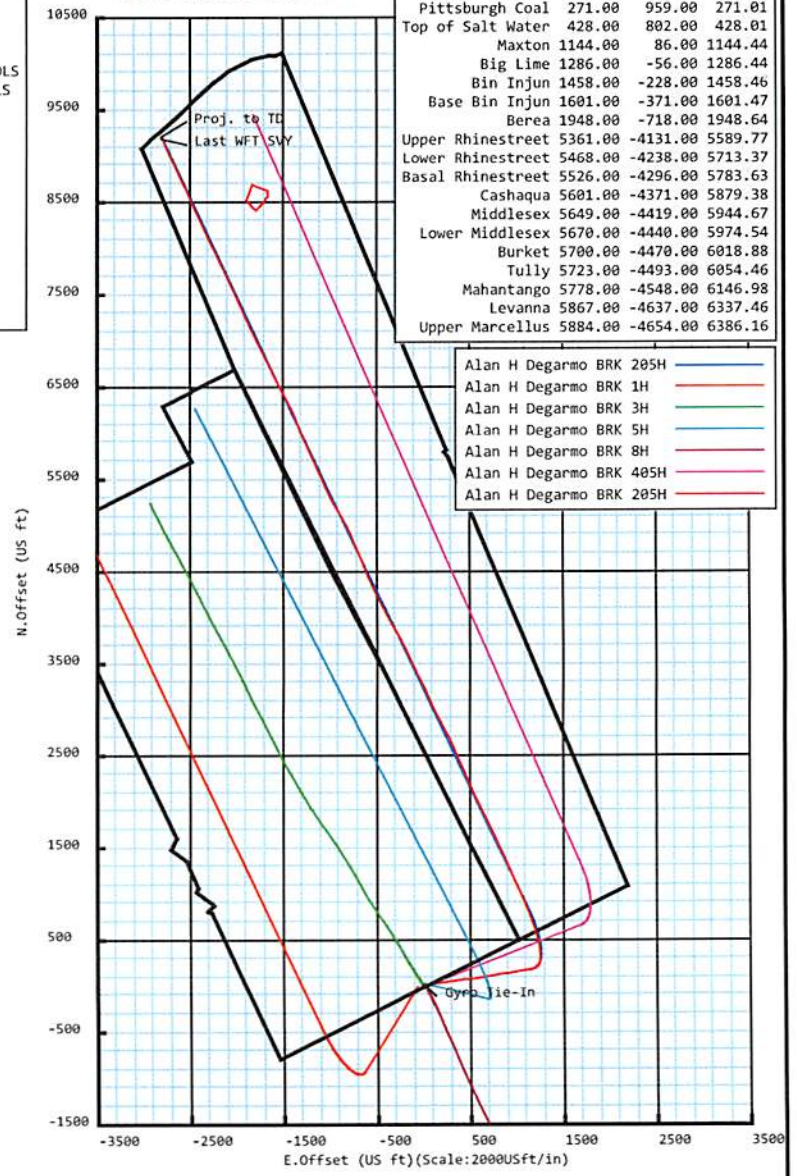
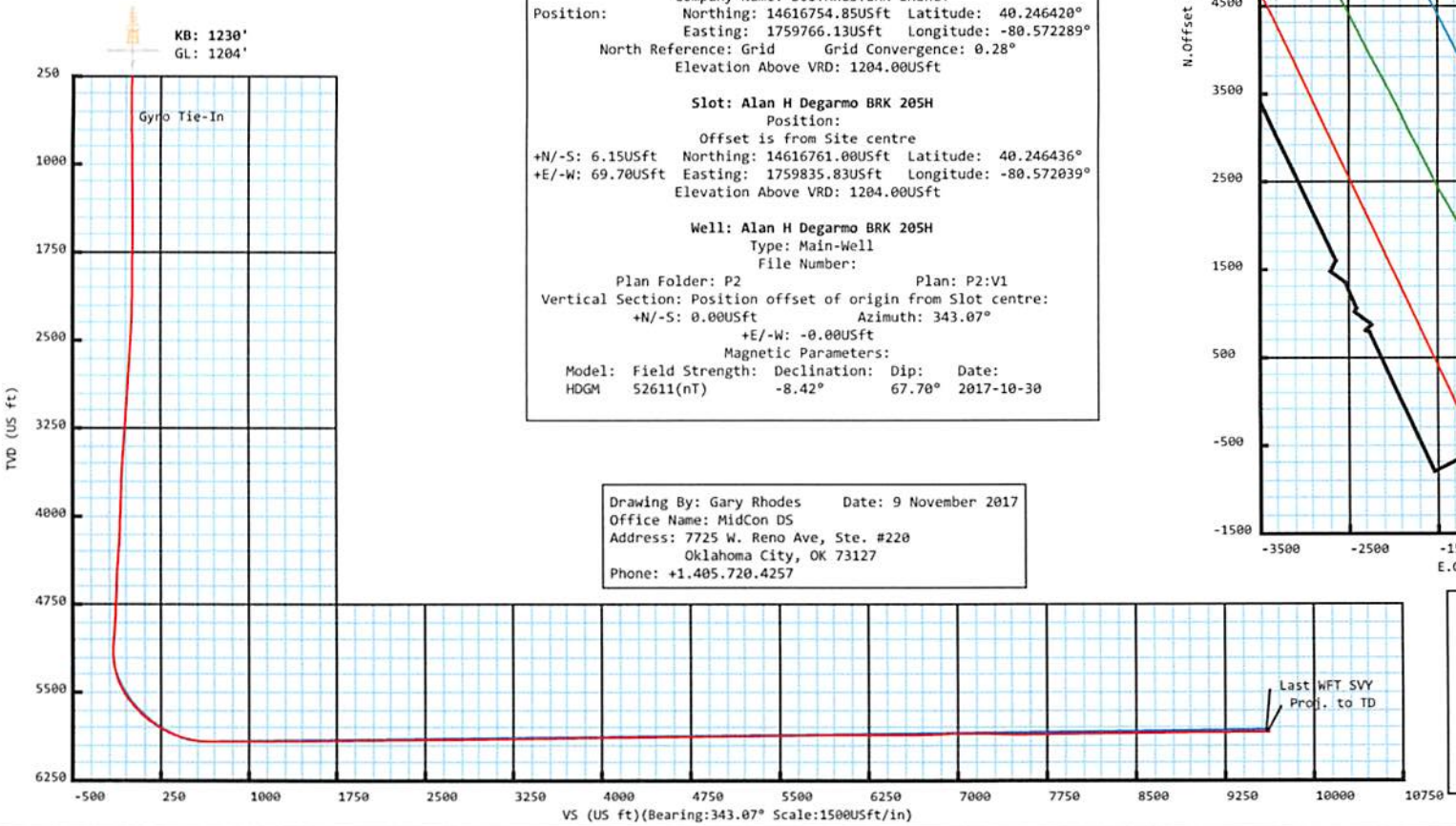
## Plan Data for Alan H Degarmo BRK 205H

**Formation Point Information:**

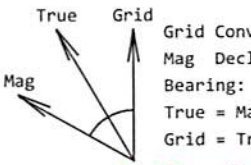
| Name | TVD (USft) | SS (USft) | MD (USft) |
|---|---|---|---|
| Pittsburgh Coal | 271.00 | 959.00 | 271.01 |
| Top of Salt Water | 428.00 | 802.00 | 428.01 |
| Maxton | 1144.00 | 86.00 | 1144.44 |
| Big Lime | 1286.00 | -56.00 | 1286.44 |
| Bin Injun | 1458.00 | -228.00 | 1458.46 |
| Base Bin Injun | 1601.00 | -371.00 | 1601.47 |
| Berea | 1948.00 | -718.00 | 1948.64 |
| Upper Rhinestreet | 5361.00 | -4131.00 | 5589.77 |
| Lower Rhinestreet | 5468.00 | -4238.00 | 5713.37 |
| Basal Rhinestreet | 5526.00 | -4296.00 | 5783.63 |
| Cashaqua | 5601.00 | -4371.00 | 5879.38 |
| Middlesex | 5649.00 | -4419.00 | 5944.67 |
| Lower Middlesex | 5670.00 | -4440.00 | 5974.54 |
| Burket | 5700.00 | -4470.00 | 6018.88 |
| Tully | 5723.00 | -4493.00 | 6054.46 |
| Mahantango | 5778.00 | -4548.00 | 6146.98 |
| Levanna | 5867.00 | -4637.00 | 6337.46 |
| Upper Marcellus | 5884.00 | -4654.00 | 6386.16 |





Drawing By: Gary Rhodes  Date: 9 November 2017
Office Name: MidCon DS
Address: 7725 W. Reno Ave, Ste. #220
Oklahoma City, OK 73127
Phone: +1.405.720.4257


Grid Convergence: 0.28°
Mag Declination: -8.42°
Bearing:
True = Mag - 8.42°
Grid = True - 0.28°
**Total Correction to Grid North -8.70°**

Southwestern Energy®

**5D Survey Report**

## SOUTHWESTERN ENERGY

**Field Name:** *SOUTHWESTERN_BROOKE CO, WV UTM NAD 83 (17N)*
**Site Name:** *Alan H Degarmo Pad*
**Well Name:** *Alan H Degarmo BRK 205H*
**Survey:** *Definitive survey*

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# Alan H Degarmo BRK 205H

**Field Name:** SOUTHWESTERN_BROOKE CO, WV UTM NAD 83 (17N)

**Map Units:** US ft **Company Name:** SOUTHWESTERN ENERGY

**Vertical Reference Datum (VRD):**

**Projected Coordinate System:** NAD83 / UTM zone 17N

**Comment:**

**Site:** Alan H Degarmo Pad

**Units:** US ft **North Reference:** Grid **Convergence Angle:** 0.28

**Position:** **Northing:** 14616754.85 US ft **Latitude:** 40.246420 **Easting:** 1759766.13 US ft **Longitude:** -80.572289

**Elevation above Field Reference:** 1204.00 US ft

**Comment:**

**Slot:** Alan H Degarmo BRK 205H

**Position (Relative to Site Centre)**

**+N/-S:** 6.15 US ft **Northing:** 14616761.00 US ft **Latitude:** 40.246436

**+E/-W:** 69.70 US ft **Easting:** 1759835.83 US ft **Longitude:** -80.572039

**Elevation above Field Reference:** 1204.00 US ft

**Comment:**

**Well:** Alan H Degarmo BRK 205H

**Type:** Main well **UWI:**

**File Number:** **Comment:**

**Closure Distance:** 9616.86US ft **Closure Azimuth:** 343.05°

**Vertical Section: Position of Origin (Relative to Slot centre)**

**+N/-S:** 0.00 US ft **+E/-W:** -0.00 US ft **Az:** 343.07°

**Drill floor: Survey Name: Definitive Survey**

**Rig Height (Drill Floor):** 26.00US ft **Elevation above Field Reference:** 1230.00US ft **Inclination:** 0.00° **Azimuth:** 0.00°

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**Survey Name: Definitive Survey**

**Date:** 13/Oct/2017 **Survey Tool:** *See Survey Tool Ranges below.* **Comment:** **Company:**

**Magnetic Model:**

**Model Name:** HDGM **Date:** 30/Oct/2017 **Field Strength:** 52611.0nT **Declination:** -8.42° **Dip:** 67.70°

**Tie Point:**

**MD:** 0.00 US ft **Inclination:** 0.00° **Azimuth:** 0.00° **TVD:** 0.00 US ft **North Offset:** 0.00 US ft **East Offset:** -0.00 US ft

**Survey Tool Ranges:**

| Name | Start MD(USFt) | End MD(USFt) | Source Survey |
|---|---|---|---|
| GYRO_GC_WIR+DPIPE_GYD | 0.00 | 628.00 | Gyro_01 |
| MFAC_US_V2 | 628.00 | 779.00 | WFT MFAC_01-1 |
| MWD | 779.00 | 872.00 | WFT MWD_01-1 |
| MFAC_US_V2 | 872.00 | 964.00 | WFT MFAC_01-2 |
| MWD | 964.00 | 1057.00 | WFT MWD_01-2 |
| MFAC_US_V2 | 1057.00 | 1635.00 | WFT MFAC_01-3 |
| MFAC_US_V2 | 1635.00 | 1890.00 | WFT MFAC_02-1 |
| MWD | 1890.00 | 5321.00 | WFT MWD_02-1 |
| MWD | 5321.00 | 5629.00 | WFT MWD_03 |

**Survey Tool Ranges:**

| Name | Start MD(USFt) | End MD(USFt) | Source Survey |
|---|---|---|---|
| MWD | 5629.00 | 15675.00 | WFT MWD_04 |

**Wellpath created using minimum curvature.**

**Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)**

| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N.Offset (US ft) | E.Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (°/100US ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.00 | 40.246436 | -80.572039 | 0.00 | |
| 100.00 | 0.77 | 228.02 | 100.00 | -0.28 | -0.45 | -0.50 | 40.246435 | -80.572041 | 0.77 | |
| 200.00 | 0.59 | 245.12 | 199.99 | -0.64 | -1.12 | -1.47 | 40.246433 | -80.572044 | 0.27 | |
| 237.00 | 0.41 | 224.78 | 236.99 | -0.73 | -1.29 | -1.73 | 40.246433 | -80.572045 | 0.68 | |
| 264.00 | 0.32 | 226.66 | 263.99 | -0.81 | -1.41 | -1.86 | 40.246433 | -80.572045 | 0.34 | |
| 271.01 | 0.29 | 224.74 | 271.00 | -0.83 | -1.44 | -1.88 | 40.246432 | -80.572046 | 0.42 | Pittsburgh Coal : |
| 357.00 | 0.14 | 114.57 | 356.99 | -1.00 | -1.64 | -1.94 | 40.246432 | -80.572046 | 0.42 | |
| 428.01 | 0.84 | 79.29 | 428.00 | -1.11 | -1.57 | -1.35 | 40.246432 | -80.572044 | 1.03 | Top of Salt Water : |
| 447.00 | 1.04 | 78.10 | 446.98 | -1.14 | -1.51 | -1.04 | 40.246432 | -80.572043 | 1.03 | |
| 538.00 | 1.89 | 63.93 | 537.95 | -0.98 | -0.68 | 1.11 | 40.246434 | -80.572035 | 1.01 | |
| 628.00 | 3.06 | 53.21 | 627.87 | 0.07 | 1.41 | 4.37 | 40.246440 | -80.572023 | 1.39 | Gyro Tie-In |
| 686.00 | 3.30 | 51.38 | 685.78 | 1.22 | 3.38 | 6.92 | 40.246446 | -80.572014 | 0.45 | |
| 779.00 | 2.77 | 38.73 | 778.65 | 3.47 | 6.80 | 10.41 | 40.246455 | -80.572001 | 0.92 | |
| 872.00 | 1.63 | 34.92 | 871.58 | 5.56 | 9.64 | 12.58 | 40.246463 | -80.571994 | 1.24 | |
| 964.00 | 0.53 | 47.60 | 963.56 | 6.55 | 11.00 | 13.64 | 40.246466 | -80.571990 | 1.22 | |
| 1057.00 | 0.16 | 354.93 | 1056.56 | 6.86 | 11.42 | 13.95 | 40.246468 | -80.571989 | 0.49 | |
| 1104.00 | 0.10 | 308.33 | 1103.56 | 6.96 | 11.51 | 13.91 | 40.246468 | -80.571989 | 0.25 | |
| 1144.44 | 0.17 | 281.59 | 1144.00 | 7.02 | 11.54 | 13.82 | 40.246468 | -80.571989 | 0.22 | Maxton : |
| 1196.00 | 0.27 | 269.32 | 1195.56 | 7.09 | 11.56 | 13.63 | 40.246468 | -80.571990 | 0.22 | |
| 1243.00 | 0.47 | 276.25 | 1242.56 | 7.19 | 11.58 | 13.33 | 40.246468 | -80.571991 | 0.44 | |
| 1286.44 | 0.52 | 291.30 | 1286.00 | 7.38 | 11.67 | 12.97 | 40.246468 | -80.571992 | 0.32 | Big Lime : |
| 1289.00 | 0.52 | 292.09 | 1288.55 | 7.40 | 11.67 | 12.94 | 40.246468 | -80.571992 | 0.32 | |
| 1382.00 | 0.86 | 259.82 | 1381.55 | 7.75 | 11.71 | 11.87 | 40.246468 | -80.571996 | 0.54 | |
| 1428.00 | 0.71 | 255.05 | 1427.54 | 7.80 | 11.58 | 11.25 | 40.246468 | -80.571998 | 0.36 | |
| 1458.46 | 0.70 | 251.96 | 1458.00 | 7.80 | 11.47 | 10.89 | 40.246468 | -80.572000 | 0.13 | Bin Injun : |
| 1521.00 | 0.69 | 245.41 | 1520.54 | 7.74 | 11.19 | 10.19 | 40.246467 | -80.572002 | 0.13 | |
| 1601.47 | 0.71 | 243.83 | 1601.00 | 7.60 | 10.77 | 9.30 | 40.246466 | -80.572005 | 0.03 | Base Bin Injun : |
| 1614.00 | 0.71 | 243.59 | 1613.53 | 7.57 | 10.70 | 9.16 | 40.246466 | -80.572006 | 0.03 | |
| 1635.00 | 0.58 | 244.34 | 1634.53 | 7.54 | 10.60 | 8.95 | 40.246465 | -80.572007 | 0.62 | |
| 1765.00 | 0.56 | 220.43 | 1764.52 | 7.09 | 9.83 | 7.94 | 40.246463 | -80.572010 | 0.18 | |
| 1797.00 | 0.73 | 217.64 | 1796.52 | 6.89 | 9.55 | 7.72 | 40.246462 | -80.572011 | 0.54 | |
| 1890.00 | 2.01 | 77.71 | 1889.50 | 6.41 | 9.43 | 8.95 | 40.246462 | -80.572007 | 2.81 | |
| 1948.64 | 5.69 | 77.43 | 1948.00 | 6.11 | 10.28 | 12.79 | 40.246464 | -80.571993 | 6.27 | Berea : |
| 1983.00 | 7.84 | 77.39 | 1982.12 | 5.80 | 11.16 | 16.74 | 40.246467 | -80.571979 | 6.27 | |
| 2076.00 | 11.48 | 75.64 | 2073.79 | 4.91 | 14.84 | 31.90 | 40.246477 | -80.571924 | 3.93 | |
| 2168.00 | 13.20 | 75.07 | 2163.66 | 4.13 | 19.82 | 50.92 | 40.246490 | -80.571856 | 1.87 | |
| 2261.00 | 15.19 | 76.23 | 2253.81 | 3.09 | 25.46 | 73.02 | 40.246505 | -80.571777 | 2.16 | |
| 2354.00 | 17.63 | 80.69 | 2343.02 | 0.55 | 30.64 | 98.75 | 40.246519 | -80.571684 | 2.95 | |
| 2446.00 | 20.13 | 82.93 | 2430.07 | -4.01 | 34.84 | 128.22 | 40.246530 | -80.571579 | 2.83 | |
| 2539.00 | 21.55 | 81.70 | 2516.98 | -9.31 | 39.28 | 161.00 | 40.246542 | -80.571461 | 1.60 | |
| 2632.00 | 22.06 | 81.46 | 2603.33 | -14.42 | 44.33 | 195.17 | 40.246556 | -80.571339 | 0.56 | |
| 2725.00 | 22.67 | 82.44 | 2689.33 | -19.89 | 49.29 | 230.21 | 40.246569 | -80.571213 | 0.77 | |
| 2817.00 | 22.89 | 83.53 | 2774.16 | -26.02 | 53.64 | 265.56 | 40.246580 | -80.571086 | 0.52 | |
| 2910.00 | 21.37 | 82.01 | 2860.30 | -31.94 | 58.03 | 300.32 | 40.246592 | -80.570962 | 1.75 | |
| 3003.00 | 21.30 | 79.09 | 2946.93 | -36.34 | 63.58 | 333.68 | 40.246607 | -80.570842 | 1.14 | |
| 3095.00 | 21.60 | 81.32 | 3032.56 | -40.53 | 69.30 | 366.83 | 40.246622 | -80.570723 | 0.94 | |
| 3188.00 | 20.18 | 82.77 | 3119.45 | -45.69 | 73.90 | 399.67 | 40.246634 | -80.570605 | 1.62 | |
| 3281.00 | 20.31 | 84.43 | 3206.70 | -51.57 | 77.49 | 431.65 | 40.246643 | -80.570491 | 0.63 | |
| 3374.00 | 19.57 | 86.32 | 3294.13 | -58.32 | 80.05 | 463.26 | 40.246650 | -80.570377 | 1.06 | |
| 3467.00 | 19.67 | 87.05 | 3381.73 | -65.67 | 81.86 | 494.43 | 40.246655 | -80.570266 | 0.28 | |

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5D Survey Report

| Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N.Offset (US ft) | E.Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (°/100US ft) | Comment |
| 3559.00 | 18.94 | 83.89 | 3468.56 | -72.21 | 84.24 | 524.74 | 40.246661 | -80.570157 | 1.39 | |
| 3652.00 | 18.89 | 80.92 | 3556.54 | -77.10 | 88.23 | 554.61 | 40.246671 | -80.570050 | 1.04 | |
| 3745.00 | 19.09 | 82.80 | 3644.48 | -81.73 | 92.51 | 584.57 | 40.246683 | -80.569942 | 0.69 | |
| 3838.00 | 19.57 | 78.34 | 3732.24 | -85.73 | 97.56 | 614.91 | 40.246696 | -80.569834 | 1.67 | |
| 3930.00 | 20.26 | 76.45 | 3818.74 | -88.08 | 104.41 | 645.49 | 40.246714 | -80.569724 | 1.03 | |
| 4023.00 | 20.51 | 79.92 | 3905.91 | -90.98 | 111.03 | 677.18 | 40.246732 | -80.569610 | 1.33 | |
| 4115.00 | 20.68 | 81.18 | 3992.04 | -95.19 | 116.35 | 709.11 | 40.246746 | -80.569496 | 0.52 | |
| 4208.00 | 20.93 | 77.21 | 4078.98 | -98.71 | 122.54 | 741.53 | 40.246763 | -80.569379 | 1.54 | |
| 4301.00 | 20.61 | 78.10 | 4165.93 | -101.34 | 129.59 | 773.75 | 40.246782 | -80.569264 | 0.48 | |
| 4394.00 | 21.17 | 81.89 | 4252.82 | -105.35 | 135.34 | 806.39 | 40.246797 | -80.569147 | 1.57 | |
| 4486.00 | 21.20 | 85.06 | 4338.61 | -111.35 | 139.11 | 839.41 | 40.246807 | -80.569028 | 1.25 | |
| 4579.00 | 19.76 | 84.72 | 4425.73 | -118.02 | 142.01 | 871.82 | 40.246815 | -80.568912 | 1.55 | |
| 4672.00 | 19.69 | 82.49 | 4513.27 | -123.76 | 145.50 | 903.01 | 40.246824 | -80.568800 | 0.81 | |
| 4764.00 | 19.97 | 78.93 | 4599.82 | -127.90 | 150.55 | 933.79 | 40.246837 | -80.568690 | 1.35 | |
| 4857.00 | 19.96 | 76.83 | 4687.23 | -130.56 | 157.21 | 964.84 | 40.246855 | -80.568579 | 0.77 | |
| 4950.00 | 21.11 | 79.82 | 4774.32 | -133.57 | 163.79 | 996.78 | 40.246873 | -80.568464 | 1.67 | |
| 5043.00 | 22.74 | 80.48 | 4860.59 | -137.86 | 169.72 | 1030.99 | 40.246889 | -80.568341 | 1.77 | |
| 5135.00 | 24.51 | 81.10 | 4944.88 | -142.82 | 175.62 | 1067.38 | 40.246904 | -80.568211 | 1.94 | |
| 5182.00 | 25.22 | 83.44 | 4987.52 | -145.98 | 178.27 | 1086.96 | 40.246911 | -80.568140 | 2.58 | |
| 5228.00 | 25.18 | 84.84 | 5029.15 | -149.74 | 180.27 | 1106.45 | 40.246917 | -80.568071 | 1.30 | |
| 5274.00 | 23.54 | 81.93 | 5071.05 | -153.16 | 182.44 | 1125.29 | 40.246922 | -80.568003 | 4.42 | |
| 5321.00 | 22.62 | 77.08 | 5114.29 | -155.23 | 185.78 | 1143.39 | 40.246931 | -80.567938 | 4.49 | |
| 5351.00 | 22.80 | 73.10 | 5141.97 | -155.64 | 188.76 | 1154.58 | 40.246939 | -80.567898 | 5.16 | |
| 5397.00 | 24.07 | 67.29 | 5184.18 | -154.70 | 194.97 | 1171.76 | 40.246956 | -80.567836 | 5.73 | |
| 5444.00 | 23.21 | 60.62 | 5227.24 | -151.74 | 203.22 | 1188.68 | 40.246979 | -80.567776 | 5.97 | |
| 5490.00 | 22.21 | 50.47 | 5269.69 | -146.44 | 213.20 | 1203.29 | 40.247006 | -80.567723 | 8.78 | |
| 5537.00 | 22.00 | 40.06 | 5313.25 | -138.23 | 225.60 | 1215.81 | 40.247040 | -80.567678 | 8.34 | |
| 5583.00 | 24.25 | 31.84 | 5355.57 | -127.30 | 240.22 | 1226.34 | 40.247080 | -80.567640 | 8.54 | |
| 5588.96 | 24.44 | 30.38 | 5361.00 | -125.66 | 242.33 | 1227.61 | 40.247085 | -80.567635 | 10.59 | Upper Rhinestreet : |
| 5629.00 | 26.09 | 21.21 | 5397.22 | -113.11 | 257.69 | 1234.99 | 40.247128 | -80.567609 | 10.59 | |
| 5671.00 | 28.53 | 10.85 | 5434.56 | -96.96 | 276.16 | 1240.22 | 40.247178 | -80.567590 | 12.70 | |
| 5707.00 | 30.07 | 5.69 | 5465.95 | -81.03 | 293.58 | 1242.74 | 40.247226 | -80.567580 | 8.21 | |
| 5709.37 | 30.24 | 5.48 | 5468.00 | -79.93 | 294.77 | 1242.85 | 40.247229 | -80.567580 | 8.40 | Lower Rhinestreet : |
| 5753.00 | 33.39 | 1.93 | 5505.08 | -58.40 | 317.71 | 1244.31 | 40.247292 | -80.567574 | 8.40 | |
| 5778.32 | 35.16 | 0.08 | 5526.00 | -44.84 | 331.97 | 1244.55 | 40.247331 | -80.567573 | 8.12 | Basal Rhinestreet : |
| 5800.00 | 36.70 | 358.62 | 5543.55 | -32.63 | 344.69 | 1244.40 | 40.247366 | -80.567573 | 8.12 | |
| 5846.00 | 39.37 | 355.36 | 5579.79 | -5.12 | 372.98 | 1242.89 | 40.247444 | -80.567578 | 7.26 | |
| 5873.62 | 40.25 | 354.32 | 5601.00 | 12.19 | 390.59 | 1241.30 | 40.247492 | -80.567584 | 3.98 | Cashaqua : |
| 5893.00 | 40.87 | 353.62 | 5615.73 | 24.56 | 403.12 | 1239.98 | 40.247527 | -80.567588 | 3.98 | |
| 5937.84 | 43.34 | 350.94 | 5649.00 | 54.24 | 432.90 | 1235.92 | 40.247609 | -80.567602 | 6.81 | Middlesex : |
| 5939.00 | 43.40 | 350.87 | 5649.84 | 55.02 | 433.69 | 1235.80 | 40.247611 | -80.567603 | 6.81 | |
| 5967.18 | 45.26 | 349.26 | 5670.00 | 74.57 | 453.08 | 1232.40 | 40.247664 | -80.567615 | 7.71 | Lower Middlesex : |
| 5985.00 | 46.45 | 348.30 | 5682.41 | 87.29 | 465.62 | 1229.91 | 40.247699 | -80.567623 | 7.71 | |
| 6011.01 | 48.43 | 347.04 | 5700.00 | 106.39 | 484.34 | 1225.81 | 40.247750 | -80.567638 | 8.42 | Burket : |
| 6032.00 | 50.04 | 346.07 | 5713.70 | 122.25 | 499.80 | 1222.11 | 40.247793 | -80.567651 | 8.42 | |
| 6046.61 | 50.96 | 345.48 | 5723.00 | 133.52 | 510.73 | 1219.34 | 40.247823 | -80.567660 | 7.05 | Tully : |
| 6078.00 | 52.96 | 344.26 | 5742.34 | 158.22 | 534.59 | 1212.89 | 40.247888 | -80.567683 | 7.05 | |
| 6124.00 | 55.50 | 342.79 | 5769.22 | 195.54 | 570.37 | 1202.30 | 40.247987 | -80.567720 | 6.10 | |
| 6139.70 | 56.56 | 342.58 | 5778.00 | 208.56 | 582.80 | 1198.42 | 40.248021 | -80.567734 | 6.81 | Mahantango : |
| 6171.00 | 58.66 | 342.17 | 5794.76 | 234.99 | 607.99 | 1190.42 | 40.248090 | -80.567762 | 6.81 | |
| 6217.00 | 61.76 | 341.67 | 5817.62 | 274.90 | 645.93 | 1178.03 | 40.248194 | -80.567806 | 6.80 | |
| 6263.00 | 65.08 | 341.30 | 5838.20 | 316.01 | 684.94 | 1164.96 | 40.248302 | -80.567852 | 7.25 | |
| 6309.00 | 68.11 | 340.39 | 5856.47 | 358.19 | 724.81 | 1151.11 | 40.248411 | -80.567901 | 6.83 | |
| 6338.61 | 70.22 | 340.00 | 5867.00 | 385.83 | 750.84 | 1141.73 | 40.248483 | -80.567934 | 7.23 | Levanna : |
| 6356.00 | 71.46 | 339.77 | 5872.70 | 402.23 | 766.27 | 1136.08 | 40.248525 | -80.567954 | 7.23 | |

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Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)

| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N.Offset (US ft) | E.Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (°/100US ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| 6393.69 | 73.67 | 339.22 | 5884.00 | 438.12 | 799.95 | 1123.49 | 40.248618 | -80.567999 | 6.03 | Upper Marcellus : |
| 6402.00 | 74.16 | 339.10 | 5886.30 | 446.08 | 807.41 | 1120.65 | 40.248639 | -80.568009 | 6.03 | |
| 6449.00 | 77.14 | 338.09 | 5897.95 | 491.47 | 849.79 | 1104.03 | 40.248755 | -80.568068 | 6.67 | |
| 6495.00 | 80.41 | 337.97 | 5906.90 | 536.41 | 891.63 | 1087.15 | 40.248870 | -80.568127 | 7.11 | |
| 6541.00 | 84.39 | 336.87 | 5912.98 | 581.77 | 933.72 | 1069.64 | 40.248986 | -80.568189 | 8.97 | |
| 6588.00 | 87.78 | 335.85 | 5916.19 | 628.33 | 976.67 | 1050.84 | 40.249104 | -80.568256 | 7.53 | |
| 6680.00 | 90.37 | 334.62 | 5917.68 | 719.45 | 1060.19 | 1012.31 | 40.249334 | -80.568393 | 3.12 | |
| 6773.00 | 90.12 | 336.84 | 5917.28 | 811.68 | 1144.96 | 974.09 | 40.249567 | -80.568528 | 2.40 | |
| 6866.00 | 90.00 | 336.65 | 5917.18 | 904.12 | 1230.41 | 937.37 | 40.249803 | -80.568658 | 0.24 | |
| 6959.00 | 90.00 | 336.99 | 5917.18 | 996.57 | 1315.90 | 900.76 | 40.250038 | -80.568788 | 0.37 | |
| 7051.00 | 90.25 | 336.13 | 5916.98 | 1087.97 | 1400.31 | 864.17 | 40.250270 | -80.568918 | 0.97 | |
| 7144.00 | 90.43 | 335.48 | 5916.43 | 1180.22 | 1485.14 | 826.05 | 40.250504 | -80.569053 | 0.73 | |
| 7237.00 | 90.43 | 336.04 | 5915.73 | 1272.46 | 1569.93 | 787.87 | 40.250737 | -80.569188 | 0.60 | |
| 7329.00 | 90.31 | 334.85 | 5915.14 | 1363.65 | 1653.61 | 749.64 | 40.250967 | -80.569324 | 1.30 | |
| 7422.00 | 90.43 | 334.34 | 5914.54 | 1455.63 | 1737.62 | 709.75 | 40.251198 | -80.569465 | 0.56 | |
| 7515.00 | 90.55 | 334.45 | 5913.74 | 1547.56 | 1821.48 | 669.56 | 40.251429 | -80.569608 | 0.18 | |
| 7607.00 | 90.55 | 333.94 | 5912.86 | 1638.46 | 1904.30 | 629.51 | 40.251657 | -80.569750 | 0.55 | |
| 7700.00 | 90.43 | 334.09 | 5912.06 | 1730.29 | 1987.90 | 588.76 | 40.251887 | -80.569894 | 0.21 | |
| 7793.00 | 90.43 | 334.84 | 5911.36 | 1822.24 | 2071.81 | 548.68 | 40.252118 | -80.570037 | 0.81 | |
| 7886.00 | 90.43 | 337.07 | 5910.67 | 1914.52 | 2156.73 | 510.79 | 40.252352 | -80.570171 | 2.40 | |
| 7979.00 | 90.49 | 336.38 | 5909.92 | 2006.95 | 2242.16 | 474.04 | 40.252587 | -80.570301 | 0.74 | |
| 8071.00 | 90.55 | 336.92 | 5909.08 | 2098.36 | 2326.62 | 437.58 | 40.252819 | -80.570430 | 0.59 | |
| 8164.00 | 90.49 | 336.38 | 5908.24 | 2190.78 | 2412.00 | 400.72 | 40.253054 | -80.570561 | 0.58 | |
| 8257.00 | 90.49 | 336.54 | 5907.44 | 2283.16 | 2497.26 | 363.58 | 40.253289 | -80.570693 | 0.17 | |
| 8349.00 | 90.55 | 336.47 | 5906.61 | 2374.55 | 2581.63 | 326.90 | 40.253521 | -80.570823 | 0.10 | |
| 8442.00 | 90.49 | 335.20 | 5905.77 | 2466.80 | 2666.47 | 288.83 | 40.253755 | -80.570958 | 1.37 | |
| 8534.00 | 90.43 | 331.81 | 5905.03 | 2557.51 | 2748.80 | 247.80 | 40.253981 | -80.571103 | 3.69 | |
| 8627.00 | 90.43 | 331.55 | 5904.33 | 2648.67 | 2830.66 | 203.68 | 40.254207 | -80.571260 | 0.28 | |
| 8720.00 | 90.31 | 331.79 | 5903.73 | 2739.84 | 2912.52 | 159.55 | 40.254432 | -80.571417 | 0.29 | |
| 8812.00 | 90.74 | 334.54 | 5902.89 | 2830.45 | 2994.60 | 118.02 | 40.254658 | -80.571564 | 3.03 | |
| 8905.00 | 90.62 | 336.36 | 5901.78 | 2922.62 | 3079.19 | 79.39 | 40.254891 | -80.571701 | 1.96 | |
| 8998.00 | 90.74 | 336.72 | 5900.68 | 3015.01 | 3164.49 | 42.36 | 40.255125 | -80.571832 | 0.41 | |
| 9090.00 | 90.74 | 334.67 | 5899.49 | 3106.24 | 3248.33 | 4.50 | 40.255356 | -80.571966 | 2.23 | |
| 9183.00 | 90.74 | 331.61 | 5898.29 | 3197.83 | 3331.28 | -37.51 | 40.255585 | -80.572116 | 3.29 | |
| 9276.00 | 90.92 | 334.23 | 5896.94 | 3289.35 | 3414.06 | -79.84 | 40.255812 | -80.572266 | 2.82 | |
| 9369.00 | 90.62 | 334.45 | 5895.69 | 3381.27 | 3497.89 | -120.10 | 40.256043 | -80.572409 | 0.40 | |
| 9462.00 | 90.74 | 335.79 | 5894.59 | 3473.36 | 3582.25 | -159.23 | 40.256275 | -80.572548 | 1.45 | |
| 9554.00 | 90.92 | 335.12 | 5893.25 | 3564.54 | 3665.92 | -197.44 | 40.256506 | -80.572683 | 0.75 | |
| 9647.00 | 90.74 | 331.38 | 5891.91 | 3656.15 | 3748.95 | -239.29 | 40.256734 | -80.572832 | 4.03 | |
| 9740.00 | 90.74 | 330.06 | 5890.71 | 3746.99 | 3830.06 | -284.77 | 40.256957 | -80.572993 | 1.42 | |
| 9832.00 | 91.05 | 331.38 | 5889.27 | 3836.85 | 3910.29 | -329.76 | 40.257178 | -80.573153 | 1.47 | |
| 9925.00 | 90.99 | 332.45 | 5887.61 | 3928.08 | 3992.33 | -373.53 | 40.257404 | -80.573309 | 1.15 | |
| 10018.00 | 90.43 | 333.66 | 5886.46 | 4019.65 | 4075.22 | -415.67 | 40.257632 | -80.573458 | 1.43 | |
| 10111.00 | 90.37 | 332.54 | 5885.81 | 4111.24 | 4158.16 | -457.74 | 40.257861 | -80.573608 | 1.21 | |
| 10203.00 | 90.37 | 334.60 | 5885.22 | 4201.97 | 4240.53 | -498.69 | 40.258087 | -80.573753 | 2.24 | |
| 10296.00 | 90.49 | 334.85 | 5884.52 | 4293.99 | 4324.63 | -538.40 | 40.258319 | -80.573894 | 0.30 | |
| 10389.00 | 90.80 | 337.59 | 5883.47 | 4386.31 | 4409.72 | -575.89 | 40.258553 | -80.574027 | 2.96 | |
| 10482.00 | 90.86 | 340.51 | 5882.12 | 4479.06 | 4496.55 | -609.14 | 40.258792 | -80.574144 | 3.14 | |
| 10574.00 | 90.68 | 337.28 | 5880.89 | 4570.80 | 4582.36 | -642.26 | 40.259028 | -80.574262 | 3.52 | |
| 10667.00 | 90.86 | 338.74 | 5879.64 | 4663.42 | 4668.59 | -677.07 | 40.259265 | -80.574385 | 1.58 | |
| 10760.00 | 90.86 | 335.44 | 5878.24 | 4755.89 | 4754.23 | -713.27 | 40.259501 | -80.574513 | 3.55 | |
| 10852.00 | 90.68 | 337.76 | 5877.01 | 4847.29 | 4838.65 | -749.80 | 40.259733 | -80.574643 | 2.53 | |
| 10945.00 | 90.86 | 336.62 | 5875.76 | 4939.79 | 4924.37 | -785.85 | 40.259969 | -80.574770 | 1.24 | |
| 11038.00 | 90.55 | 332.15 | 5874.61 | 5031.70 | 5008.20 | -826.04 | 40.260200 | -80.574913 | 4.82 | |
| 11130.00 | 90.55 | 330.39 | 5873.73 | 5121.74 | 5088.87 | -870.26 | 40.260422 | -80.575070 | 1.91 | |
| 11223.00 | 90.49 | 330.14 | 5872.88 | 5212.43 | 5169.62 | -916.39 | 40.260644 | -80.575234 | 0.28 | |
| 11316.00 | 90.49 | 329.91 | 5872.09 | 5303.02 | 5250.17 | -962.85 | 40.260866 | -80.575399 | 0.25 | |
| 11408.00 | 90.68 | 333.71 | 5871.15 | 5393.23 | 5331.24 | -1006.30 | 40.261089 | -80.575554 | 4.14 | |

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Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)

| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N.Offset (US ft) | E.Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (°/100US ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| 11501.00 | 90.49 | 336.59 | 5870.20 | 5485.33 | 5415.62 | -1045.38 | 40.261321 | -80.575692 | 3.10 | |
| 11594.00 | 90.68 | 336.35 | 5869.25 | 5577.71 | 5500.88 | -1082.50 | 40.261556 | -80.575824 | 0.33 | |
| 11686.00 | 90.80 | 336.84 | 5868.06 | 5669.11 | 5585.30 | -1119.05 | 40.261788 | -80.575953 | 0.55 | |
| 11779.00 | 90.68 | 334.97 | 5866.86 | 5761.38 | 5670.19 | -1157.01 | 40.262022 | -80.576088 | 2.01 | |
| 11872.00 | 90.12 | 335.82 | 5866.21 | 5853.54 | 5754.74 | -1195.73 | 40.262255 | -80.576225 | 1.09 | |
| 11964.00 | 90.25 | 335.61 | 5865.91 | 5944.78 | 5838.60 | -1233.57 | 40.262485 | -80.576359 | 0.27 | |
| 12057.00 | 90.74 | 335.87 | 5865.11 | 6037.02 | 5923.39 | -1271.78 | 40.262719 | -80.576495 | 0.60 | |
| 12150.00 | 89.51 | 336.58 | 5864.91 | 6129.35 | 6008.49 | -1309.27 | 40.262953 | -80.576628 | 1.53 | |
| 12243.00 | 90.25 | 340.05 | 5865.10 | 6222.02 | 6094.89 | -1343.63 | 40.263191 | -80.576750 | 3.82 | |
| 12335.00 | 90.12 | 338.04 | 5864.80 | 6313.79 | 6180.81 | -1376.53 | 40.263427 | -80.576866 | 2.19 | |
| 12428.00 | 90.06 | 333.91 | 5864.66 | 6406.05 | 6265.73 | -1414.38 | 40.263661 | -80.577000 | 4.44 | |
| 12520.00 | 90.06 | 332.09 | 5864.56 | 6496.63 | 6347.70 | -1456.15 | 40.263886 | -80.577149 | 1.98 | |
| 12613.00 | 90.06 | 331.98 | 5864.46 | 6587.91 | 6429.84 | -1499.76 | 40.264112 | -80.577303 | 0.12 | |
| 12706.00 | 90.18 | 333.92 | 5864.27 | 6679.46 | 6512.66 | -1542.05 | 40.264340 | -80.577454 | 2.09 | |
| 12798.00 | 92.09 | 333.19 | 5862.45 | 6770.17 | 6595.02 | -1583.01 | 40.264567 | -80.577599 | 2.22 | |
| 12891.00 | 94.81 | 334.26 | 5856.85 | 6861.76 | 6678.25 | -1624.10 | 40.264796 | -80.577745 | 3.14 | |
| 12984.00 | 90.12 | 334.26 | 5852.85 | 6953.55 | 6761.92 | -1664.44 | 40.265026 | -80.577888 | 5.04 | |
| 13077.00 | 90.99 | 333.16 | 5851.95 | 7045.31 | 6845.29 | -1705.63 | 40.265256 | -80.578034 | 1.51 | |
| 13169.00 | 89.82 | 332.26 | 5851.30 | 7135.80 | 6927.05 | -1747.81 | 40.265481 | -80.578184 | 1.60 | |
| 13262.00 | 87.84 | 333.90 | 5853.20 | 7227.37 | 7009.95 | -1789.90 | 40.265709 | -80.578334 | 2.76 | |
| 13355.00 | 88.46 | 334.41 | 5856.20 | 7319.20 | 7093.60 | -1830.42 | 40.265939 | -80.578477 | 0.86 | |
| 13448.00 | 88.89 | 335.64 | 5858.35 | 7411.25 | 7177.88 | -1869.68 | 40.266171 | -80.578617 | 1.40 | |
| 13541.00 | 89.88 | 334.42 | 5859.35 | 7503.33 | 7262.18 | -1908.93 | 40.266403 | -80.578756 | 1.69 | |
| 13633.00 | 91.05 | 337.10 | 5858.61 | 7594.57 | 7346.05 | -1946.70 | 40.266634 | -80.578890 | 3.18 | |
| 13726.00 | 90.62 | 336.16 | 5857.25 | 7686.97 | 7431.41 | -1983.59 | 40.266869 | -80.579021 | 1.11 | |
| 13819.00 | 90.74 | 335.03 | 5856.15 | 7779.17 | 7516.10 | -2022.01 | 40.267102 | -80.579157 | 1.22 | |
| 13912.00 | 90.74 | 334.25 | 5854.94 | 7871.16 | 7600.13 | -2061.84 | 40.267333 | -80.579298 | 0.84 | |
| 14004.00 | 90.62 | 335.06 | 5853.85 | 7962.16 | 7683.27 | -2101.22 | 40.267562 | -80.579438 | 0.89 | |
| 14097.00 | 90.62 | 334.46 | 5852.85 | 8054.18 | 7767.38 | -2140.87 | 40.267794 | -80.579579 | 0.65 | |
| 14190.00 | 90.71 | 334.55 | 5851.77 | 8146.14 | 7851.32 | -2180.90 | 40.268025 | -80.579721 | 0.14 | |
| 14282.00 | 90.86 | 334.57 | 5850.51 | 8237.12 | 7934.39 | -2220.41 | 40.268253 | -80.579861 | 0.16 | |
| 14375.00 | 90.49 | 333.79 | 5849.41 | 8328.99 | 8018.10 | -2260.92 | 40.268484 | -80.580005 | 0.93 | |
| 14468.00 | 90.62 | 333.92 | 5848.51 | 8420.79 | 8101.58 | -2301.89 | 40.268713 | -80.580150 | 0.20 | |
| 14561.00 | 90.49 | 334.90 | 5847.61 | 8512.72 | 8185.45 | -2342.06 | 40.268944 | -80.580293 | 1.06 | |
| 14653.00 | 90.49 | 336.03 | 5846.82 | 8603.91 | 8269.14 | -2380.26 | 40.269175 | -80.580428 | 1.23 | |
| 14746.00 | 90.31 | 335.40 | 5846.17 | 8696.14 | 8353.91 | -2418.51 | 40.269408 | -80.580564 | 0.70 | |
| 14839.00 | 90.86 | 335.21 | 5845.22 | 8788.28 | 8438.40 | -2457.36 | 40.269640 | -80.580702 | 0.63 | |
| 14932.00 | 90.80 | 336.55 | 5843.88 | 8880.54 | 8523.27 | -2495.36 | 40.269874 | -80.580837 | 1.44 | |
| 15025.00 | 90.97 | 336.14 | 5842.44 | 8972.89 | 8608.45 | -2532.67 | 40.270108 | -80.580969 | 0.48 | |
| 15117.00 | 90.37 | 334.10 | 5841.36 | 9063.99 | 8691.90 | -2571.37 | 40.270338 | -80.581106 | 2.31 | |
| 15210.00 | 90.25 | 334.99 | 5840.86 | 9155.96 | 8775.87 | -2611.34 | 40.270569 | -80.581248 | 0.97 | |
| 15303.00 | 90.00 | 335.02 | 5840.66 | 9248.04 | 8860.16 | -2650.64 | 40.270801 | -80.581388 | 0.27 | |
| 15396.00 | 90.06 | 335.06 | 5840.61 | 9340.13 | 8944.47 | -2689.88 | 40.271033 | -80.581527 | 0.08 | |
| 15488.00 | 90.43 | 335.57 | 5840.22 | 9431.29 | 9028.06 | -2728.30 | 40.271263 | -80.581663 | 0.68 | |
| 15581.00 | 90.62 | 336.13 | 5839.36 | 9523.55 | 9112.92 | -2766.35 | 40.271497 | -80.581798 | 0.64 | |
| 15652.00 | 90.92 | 336.23 | 5838.41 | 9594.03 | 9177.86 | -2795.02 | 40.271675 | -80.581900 | 0.45 | Last WFT SVY |
| 15675.00 | 90.92 | 336.23 | 5838.04 | 9616.86 | 9198.91 | -2804.29 | 40.271733 | -80.581933 | 0.00 | Proj. to TD |

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Office of Oil and Gas
MAY 17 2018
WV Department of
Environmental Protection

Longitude: 80°32'30" — SURFACE HOLE 8493'

Longitude: 80°32'30" — BOTTOM HOLE 11239'

SURFACE HOLE 1203'

Latitude: 40°15'00"

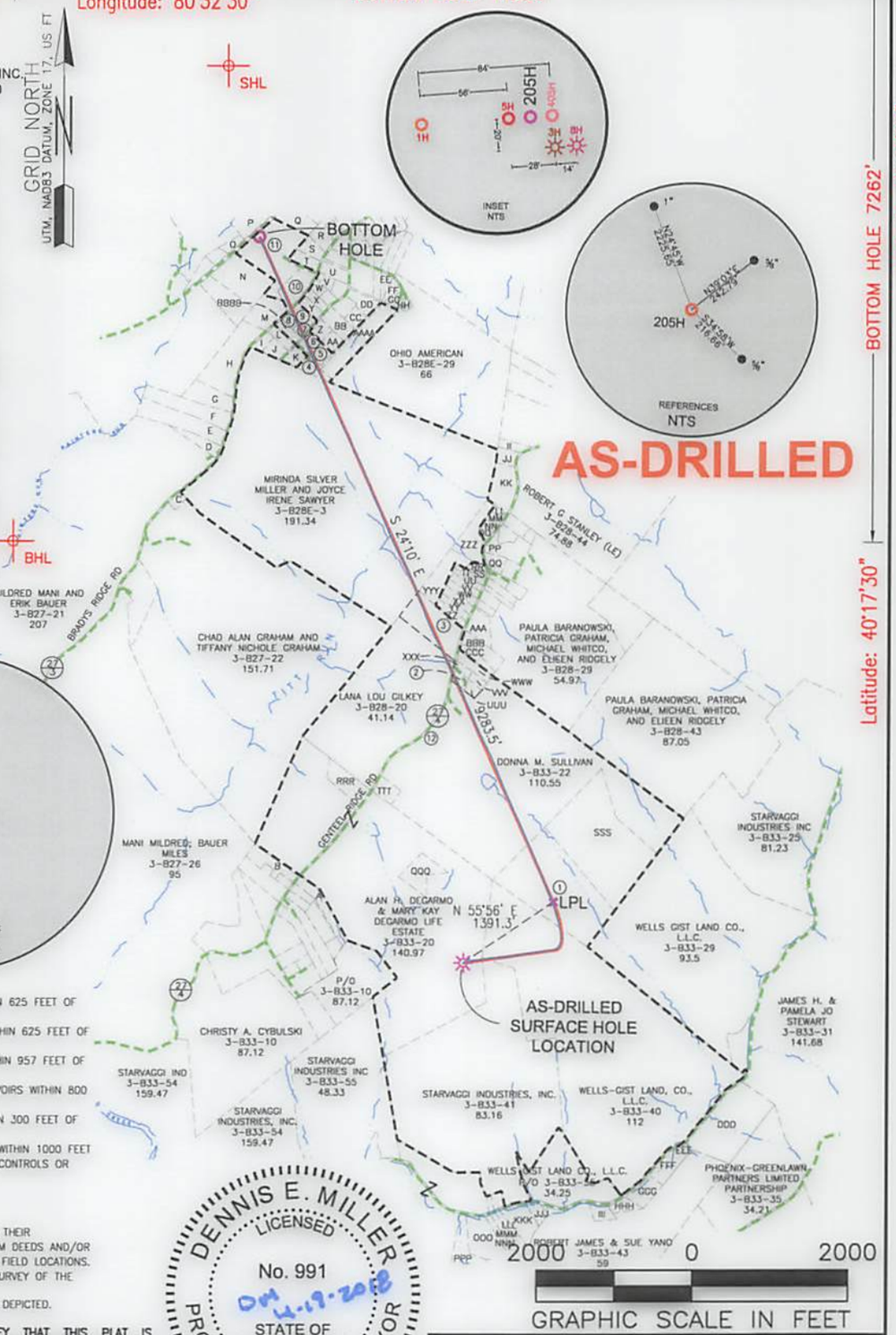
BOTTOM HOLE 7262'

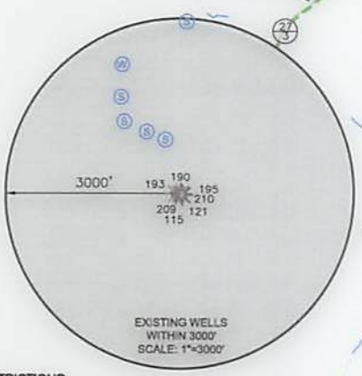
Latitude: 40°17'30"


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


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

| | |
|---|---|
| SURFACE HOLE LOCATION (SHL): | |
| UTM (NAD83, ZONE 17, METERS): | NORTHING: 4,455,197.663 EASTING: 536,399.034 |
| LANDING POINT (LPL): | |
| UTM (NAD83, ZONE 17, METERS): | NORTHING: 4,455,441.004 EASTING: 536,746.122 |
| BOTTOM HOLE LOCATION (BHL): | |
| UTM (NAD83, ZONE 17, METERS): | NORTHING: 4,458,002.006 EASTING: 535,545.388 |
| PERMIT SURFACE HOLE LOCATION (SHL): | |
| UTM (NAD83, ZONE 17, METERS): | NORTHING: 4,455,197.616 EASTING: 536,399.017 |
| PERMIT LANDING POINT (LPL): | |
| UTM (NAD83, ZONE 17, METERS): | NORTHING: 4,455,311.339 EASTING: 536,777.891 |
| PERMIT BOTTOM HOLE LOCATION (BHL): | |
| UTM (NAD83, ZONE 17, METERS): | NORTHING: 4,458,001.461 EASTING: 535,544.269 |




**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 957 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.
4. 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

DENNIS E. MILLER — LICENSED — No. 991 — STATE OF WEST VIRGINIA — PROFESSIONAL SURVEYOR

04-19-2018

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)

OPERATOR'S WELL #: ALAN H. DEGARMO BRK 205H

API WELL #: 47 (STATE) 009 (COUNTY) 00191 (PERMIT)

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

WATERSHED: UPPER OHIO SOUTH — ELEVATION: 1204.0

DISTRICT: BUFFALO — COUNTY: BROOKE — QUADRANGLE: BETHANY

SURFACE OWNER: ALAN H. DEGARMO & MARY KAY DEGARMO, LIFE ESTATE — ACREAGE: 140.97±

OIL & GAS ROYALTY OWNER: ALAN H. DEGARMO — ACREAGE: 140.97±

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: 5,838.04 TVD 15,675 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 LANDING POINT LOCATION
- EXISTING WATER WELL
- EXISTING SPRING
- SURVEYED BOUNDARY
- DRILLING UNIT
- LEASE BOUNDARY
- ASDRILLED PATH
- PROPOSED PATH

REVISIONS:

DATE: 04-18-2018
DRAWN BY: K.E.S.
SCALE: 1" = 2000'
DRAWING NO: 164-764
WELL LOCATION PLAT

P:\2016\164-764\-SURVEY\DWG\ALAN H DEGARMO BRK 205H ASDRILLED.DWG
WEDNESDAY APRIL 18 2018 02:42PM

PROPERTY NUMBER 2501166075
PAD ID 3001155492

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

# AS-DRILLED

| WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS | | | |
|---|---|---|---|
| TRACT | SURFACE OWNER (S) / ROYALTY OWNER (R) | TAX PARCEL | ACRES |
| | ALAN H. DEGARMO & MARY KAY DEGARMO, LIFE ESTATE | 3-B33-20 | 140.97 |
| TRACT | SURFACE OWNER | TAX PARCEL | ACRES |
| 1 | WELLS-GIST LAND, CO., L.L.C. | 3-B33-23 | 22.60 |
| 2 | ALEXANDER & DONNA DIGHT | 3-B28-21 | 0.74 |
| 3 | LANA LOU GILKEY | 3-B28-19 | 8.83 |
| 4 | LARRY & JOAN NICHOLSON | 3-B28E-16 | 1.13 |
| 5 | MARY E. CROSS | 3-B28E-18 | 1.0 |
| 6 | KIMBERLY ANN RAGER | 3-B28E-25 | 1.0 |
| 7 | DONALD & VICKIE CONGELIO | 3-B28E-13 | 0.50 |
| 8 | THOMAS J. MARTINKA | 3-B28E-07 | 0.50 |
| 9 | KENNETH & ALLISON LEONARD | 3-B28E-08 | 1.0 |
| 10 | MICHAEL & SHERYL KOSCEVIC | 3-B28A-17 | 2.90 |
| 11 | SAMANTHA BAKER | 3-B28A-02 | 11.40 |
| 12 | WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS | GENTEEL RIDGE ROAD | 1.68 |

| ADJOINING OWNERS TABLE | | | |
|---|---|---|---|
| TRACT | SURFACE OWNER | TAX PARCEL | ACRES |
| A | JOANN MYERS LIFE ESTATE & JAMES W. MYERS REMAINDER | 3-B33-19 | 2.40 |
| B | THOMAS M. & DEBORAH J. OLDAKER | 3-B33-1 | 2.39 |
| C | VERMURI HOME & GARDEN LLC. | 3-B27-20 | 0.459 |
| D | DAVID E. & DEBORAH CRAWFORD | 3-B27-19 | 1.60 |
| E | DAVID E. & DEBORAH CRAWFORD | 3-B27H-50 | 5.69 |
| F | JAMES & KRISTIE FLOYD | 3-B27H-49 | 5.03 |
| G | MARY B. WILSON NORTHCRAFT | 3-B27H-48 | 11.06 |
| H | MIRINDA SILVER MILLER & JOYCE IRENE SAWYER | 3-B28E-3 | 191.0 |
| I | JOEL LYNN ROGERS, SR. | 3-B28E-4 | 1.0 |
| J | JOEL LYNN ROGERS, SR. | 3-B28E-14 | 1.02 |
| K | CHAD E. ROGERS | 3-B28E-15 | 1.0 |
| L | RUSSELL D. HARVEY | 3-B28E-5 | 1.0 |
| M | GEORGE & DEBORAH STRAKA | 3-B28E-2 | 5.7 |
| N | KENNETH & SHEILA MOWDER | 3-B28A-1 | 9.56 |
| O | KENNETH & SHEILA MOWDER | 4-CC27-137 | 1.49 |
| P | ROBERT & MICHELLE FONNER | 4-CC28-1 | 12.06 |
| Q | HELEN E. MARTINDILL | 3-B28A-3 | 1.90 |
| R | JP MORGAN CHASE BANK (FORECLOSURE) | 3-B28A-14 | 4.93 |
| S | LINDA & AARON MOZINGO | 3-B28A-15 | 1.438 |
| T | LINDA & AARON MOZINGO | 3-B28A-16 | 1.5 |
| U | LARRY N. RICHARDS | 3-B28A-20 | 1.31 |
| V | JACKIE R. JR. & GLENDA S. COLLEY | 3-B28A-19 | 0.873 |
| W | JACKIE R. JR. & GLENDA S. COLLEY | 3-B28A-18 | 0.503 |
| X | GARY F. & JANET C. SEAVOLT | 3-B28E-10 | 1.0 |
| Y | JODY E. COWAN | 3-B28E-9 | 1.0 |
| Z | FRANK R. & SUSAN J. CANISTRARO | 3-B28E-24 | 1.0 |
| AA | FRANK R. & SUSAN J. CANISTRARO | 3-B28E-19 | 1.0 |
| BB | WAYNE A. & JOYCE A. ABERCROMBE | 3-B28E-20 | 2.0 |
| CC | ROBERT ALLEN & SHARON SWAIN | 3-B28E-21 | 1.0 |
| DD | ROBERT ALLEN & SHARON SWAIN | 3-B28E-22 | 1.58 |
| EE | KENNETH E. WILLIAMS | 3-B28A-27 | 0.69 |
| FF | HERMAN ALLEN & ANITA WILLIAMS | 3-B28E-26 | 0.66 |
| GG | CARL RICHARD SMITH | 3-B28E-27 | 0.55 |
| HH | CARL RICHARD SMITH | 3-B28E-28 | 0.50 |
| II | CALVIN D. & LYNETTE STANLEY | 3-B28-1 | 0.85 |
| JJ | CALVIN D. & LYNETTE STANLEY | 3-B28-2 | 1.15 |
| KK | CALVIN D. & LYNETTE STANLEY | 3-B28-3 | 3.89 |
| LL | RIKKI LEE & BRENDA SUE LONG | 3-B28-4 | 0.50 |
| MM | AMBER L. SUTAK | 3-B28-5 | 0.50 |
| NN | ROBIN ROBERT & SHARI L. REED | 3-B28-6 | 0.50 |
| OO | RICHARD C. SMITH | 3-B28-7 | 0.50 |
| PP | ROBERT C. STANLEY | 3-B28-38.01 | 2.203 |

REVISIONS:

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

OPERATOR'S WELL #: ALAN H. DEGARMO BRK 205H

DISTRICT: BUFFALO | COUNTY: BROOKE | STATE: WV

DATE: 04-18-2018
DRAWN BY: K.E.S.
SCALE: N/A
DRAWING NO: 164-764
WELL LOCATION PLAT 2

P:\2016\164-764\-SURVEY\DWG\ALAN H DEGARMO BRK 205H ASDRILLED.DWG
WEDNESDAY APRIL 18 2018 02:43PM

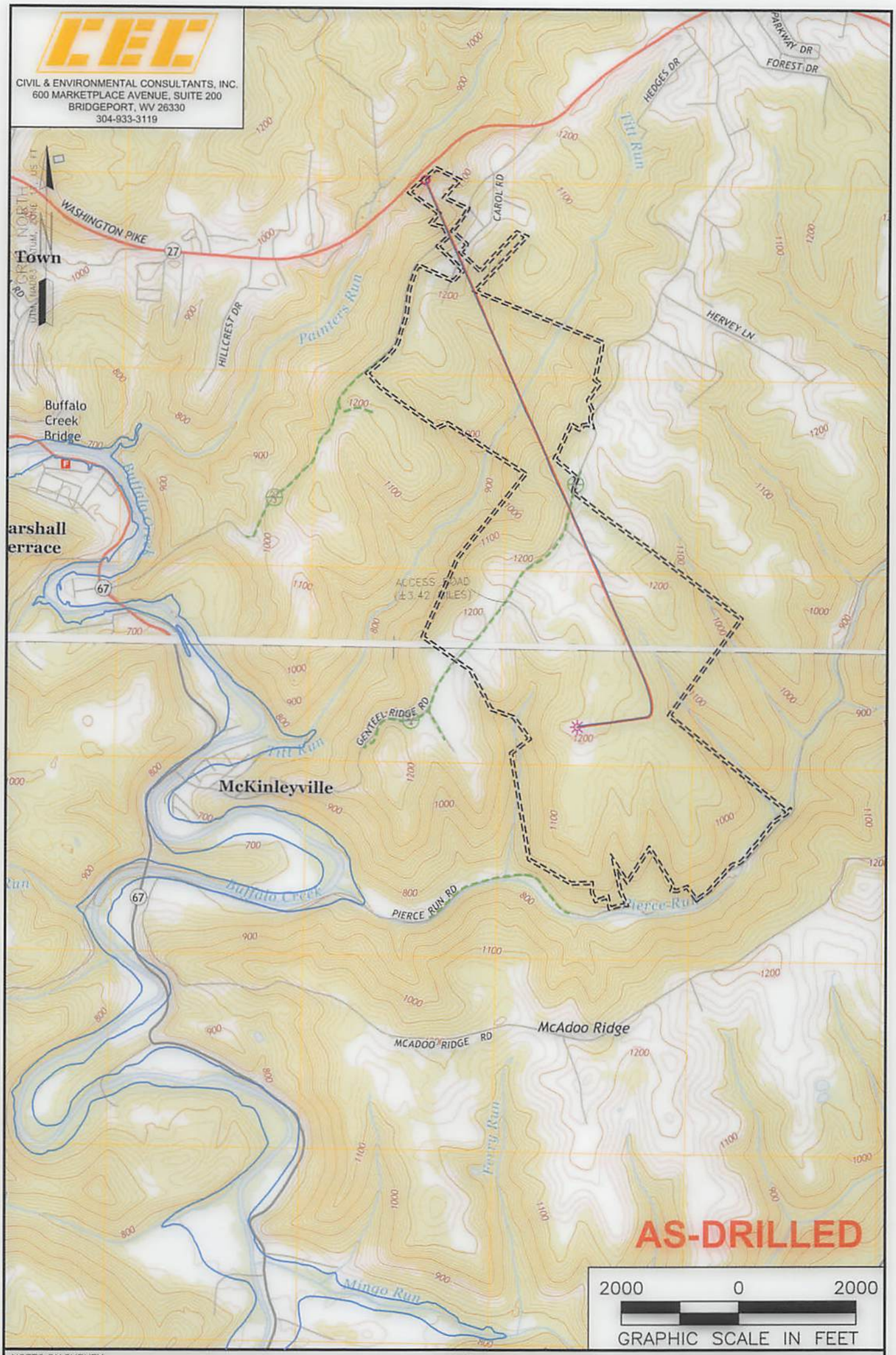
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
600 MARKETPLACE AVENUE, SUITE 200
BRIDGEPORT, WV 26330
304-933-3119

| ADJOINING OWNERS TABLE | | | |
|---|---|---|---|
| TRACT | SURFACE OWNER | TAX PARCEL | ACRES |
| QQ | REBECCA L. HALL | 3-B28-36 | 1.0 |
| RR | CHAD GRAHAM & TIFFANY PEARSON | 3-B28-10 | 0.50 |
| SS | THOMAS A. & MERCIDITA R. BLOXHAM | 3-B28-11 | 0.50 |
| TT | ROBERT & PAULA WHITE | 3-B28-12 | 0.86 |
| UU | GARY & ALLISON CAVALLO | 3-B28-13 | 1.0 |
| VV | GARY & ALLISON CAVALLO | 3-B28-14 | 1.0 |
| WW | GARY & ALLISON CAVALLO | 3-B28-15 | 1.01 |
| XX | WILLIAM M. & BONNIE L. WEAVER | 3-B28-16 | 1.02 |
| YY | RONALD W. OSTROSKY | 3-B28-17 | 1.02 |
| ZZ | GERALD D. & LEILA BRADY | 3-B28-18 | 1.03 |
| AAA | PARTICIA GRAHAM & PAULA BARANOWSKI | 3-B28-28 | 2.24 |
| BBB | FRED H. & KELLI J. WENZEL | 3-B28-27 | 2.4 |
| CCC | CHARLES L. & MADELINE MCGOWAN | 3-B28-26 | 1.0 |
| DDD | WELLS-GIST LAND CO., L.L.C. | 3-B33-35 | 34.25 |
| EEE | TRUSTEES OF THE STONE CHAPEL CHURCH | 3-B33-36 | 0.3 |
| FFF | JON T. & MARLENA L. SMITH | 3-B33-37 | 2.0 |
| GGG | LEONA LAROCHE, LAWRENCE MCLAUGHLIN & FLOYD HENNIS | 3-B33-38 | 2.18 |
| HHH | LEONA LAROCHE, LAWRENCE MCLAUGHLIN & FLOYD HENNIS | 3-B33-39 | 1.1 |
| III | CHARLES S. JR & ETHEL F. RUSSELL | 3-B33-42 | 1.0 |
| JJJ | LISA MERIGO | 3-B33-44 | 1.0 |
| KKK | NICHOLAS J. & AMY L. CROSS | 3-B33-45 | 3.52 |
| LLL | WELLS-GIST LAND CO., L.L.C. | 3-B33-46 | 0.71 |
| MMM | WELLS-GIST LAND CO., L.L.C. | 3-B33-47 | 0.71 |
| NNN | GROVER HAUGHT LIFE ESTATE & LAWRENCE MCLAUGHLIN SR. REMAINDER | 3-B33-48 | 1.0 |
| OOO | CARL E. DEGARMO JR. | 3-B33-49 | 6.26 |
| PPP | MELVIN PELUCHETTE | 3-B33-52 | 4.32 |
| QQQ | PATRICK DEGARMO | 3-B33-20.2 | 1.53 |
| RRR | KAYTHRYN DEGARMO | 3-B33-20.1 | 2.50 |
| SSS | WELLS-GIST LAND CO., L.L.C. | 3-B33-24 | 26.41 |
| TTT | MARY ANN CHARLTON & DAVID M. EDWARDS | 3-B33-21 | 1.53 |
| UUU | ALEXANDER & DONNA DIGHT | 3-B28-22 | 0.67 |
| VVV | ALEXANDER & DONNA DIGHT | 3-B28-23 | 0.66 |
| WWW | RYAN & CAROLYN BOOK | 3-B28-25 | 1.60 |
| XXX | ROBERT & TAMMY HOLMES | 3-B28-24 | 0.50 |
| YYY | JOHN & LUANNE SNYDER | 3-B28-09 | 4.04 |
| ZZZ | JOHN & LUANNE SNYDER | 3-B28-08 | 4.38 |
| AAAA | NANCY BARTLETT | 3-B28E-17 | 6.13 |
| BBBB | THOMAS J. MARTINKA | 3-B28E-06 | 1.0 |

**AS-DRILLED**

| | | | |
|---|---|---|---|
| REVISIONS: | COMPANY: SWN Production Company, LLC | SWN Production Company™ | |
| | OPERATOR'S WELL #: | ALAN H. DEGARMO BRK 205H | DATE: 04-18-2018 |
| | DISTRICT: BUFFALO | COUNTY: BROOKE | STATE: WV |
| | | | DRAWN BY: K.E.S. |
| | | | SCALE: N/A |
| | | | DRAWING NO: 164-764 |
| | | | WELL LOCATION PLAT 3 |

P:\2016\164-764\-SURVEY\DWG\ALAN H DEGARMO BRK 205H ASDRILLED.DWG
WEDNESDAY APRIL 18 2018 02:43PM




**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.

1. 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

| | | | |
|---|---|---|---|
| WELL OPERATOR: SWN PRODUCTION COMPANY, LLC | WELL (FARM) NAME: ALAN H. DEGARMO BRK | WELL # 205H | SERIAL # XXXX |
| ADDRESS: P.O. BOX 1300 JANE LEW, WV 26378 | COUNTY – CODE BROOKE – 009 | DISTRICT; BUFFALO | |
| SURFACE OWNER: ALAN H. DEGARMO & MARY KAY DEGARMO, LIFE ESTATE | USGS 7 1/2 QUADRANGLE MAP NAME BETHANY, WV | | |

P:\2016\164-764\-SURVEY\DWG\ALAN H DEGARMO BRK 205H ASDRILLED.DWG
WEDNESDAY APRIL 18 2018 02:43PM

PROPERTY NUMBER 2501166075
PAD ID 3001155492