

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

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WV Department of
Environmental Protection

API 47 - 051 - 02005 County Marshall District Franklin
Quad Powhatan Point Pad Name Corley Field/Pool Name _____
Farm name Corley, James A. and Jill C. Well Number Corley N-8HM
Operator (as registered with the OOG) Tug Hill Operating, LLC
Address 1320 S. University Drive, Suite 215 City Ft. Worth State TX Zip 76107

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,400,367.01 Easting 520,293.32
Landing Point of Curve Northing 4,400,976.49 Easting 520,219.52
Bottom Hole Northing 4,402,323.82 Easting 519,441.35

Elevation (ft) 1255.3' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

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

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

Date permit issued 4/9/2018 Date drilling commenced 4/13/2018 Date drilling ceased 8/21/2018
Date completion activities began 12/21/2018 Date completion activities ceased 2/23/2019
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 70' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1595' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 974' - 980', 1064' - 1072' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
John Nicholas
6/22/2020

API 47-051 - 02005 Farm name Corley, James A. and Jill C. Well number Corley N-8HM

| CASING STRINGS | Hole Size | Casing Size | Depth | New or Used | Grade wt/ft | Basket Depth(s) | Did cement circulate (Y/N) * Provide details below* |
|---------------------------|-----------|-------------|---------|-------------|-------------|-----------------|--|
| Conductor | 36" | 30" | 120' | NEW | 94.5# | N/A | Y |
| Surface | 17 1/2" | 13 3/8" | 983' | NEW | 54.5# | N/A | Y |
| Coal | 17 1/2" | 13 3/8" | 983' | NEW | 54.5# | N/A | Y |
| Intermediate 1 | 12 1/4" | 9 5/8" | 2,625' | NEW | 36# | N/A | Y |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | 8 3/4" | 5 1/2" | 14,258' | NEW | 20# | N/A | Y |
| Tubing | | 2 3/8" | | NEW | 4.7# | N/A | |
| Packer type and depth set | | | | | | | |

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Comment Details

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| 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 | A | | 15.6 | 1.19 | | 0 | 0 |
| Surface | A | 1027 | 15.6 | 1.19 | 1222 | 0 | 8 |
| Coal | A | 1027 | 15.6 | 1.19 | 1222 | 0 | 8 |
| Intermediate 1 | A | 878 | 15.6 | 1.19 | 1045 | 0 | 8 |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | A | 3563 | 14.5 | 1.17 | 4184 | 0 | 8 |
| Tubing | | | | | | | |

Drillers TD (ft) 14,283' Loggers TD (ft) _____
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 6,157'

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

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

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

API 47- 051 - 02005 Farm name Corley, James A. and Jill C. Well number Corley N-8HM

| PRODUCING FORMATION(S) | DEPTHS | |
|------------------------|---------------------|---------------------|
| Marcellus | 6,606' - 6,588' TVD | 7,192' - 14,283' MD |
| | | |
| | | |
| | | |

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1132 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 0 mcfpd Oil 0 bpd NGL 0 bpd Water 600 bpd GAS MEASURED BY Estimated Orifice Pilot

| LITHOLOGY/ FORMATION | TOP | BOTTOM | TOP | BOTTOM | DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC) |
|-------------------------|-------------------------|--------------------|-------------------|-------------------|--|
| | DEPTH IN FT NAME TVD | DEPTH IN FT TVD | DEPTH IN FT MD | DEPTH IN FT MD | |
| *See attachment | 0 | | 0 | | |
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| | | | | | |
| | | | | | |

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling
Address 10350 Richmond Avenue, Suite 700 City Houston State TX Zip 77042

Logging Company n/a
Address _____ City _____ State _____ Zip _____

Cementing Company C&J Well Services
Address 380 Southpointe Boulevard, Suite 210 City Canonsburg State PA Zip 15317

Stimulating Company Halliburton Energy Services, Inc.
Address 121 Champion Way, Suite 200 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Amy L. Miller Telephone 304-376-0111
Signature  Title Permitting Specialist Date 3/23/2020

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**Corley N-8HM
PERFORATION RECORD**

WV Department of
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| Stage No. | Perforation Date | Perforated from MD ft. | Perforated to MD. Ft. | Number of Perforations | Formation(s) |
|-----------|------------------|------------------------|-----------------------|------------------------|--------------|
| 1 | 1/23/2019 | 14108 | 14159 | 16 | Marcellus |
| 2 | 1/24/2019 | 13893 | 14046 | 48 | Marcellus |
| 3 | 1/25/2019 | 13718 | 13871 | 48 | Marcellus |
| 4 | 1/25/2019 | 13543 | 13696 | 48 | Marcellus |
| 5 | 1/26/2019 | 13368 | 13521 | 48 | Marcellus |
| 6 | 1/26/2019 | 13193 | 13346 | 48 | Marcellus |
| 7 | 1/27/2019 | 13018 | 13171 | 48 | Marcellus |
| 8 | 1/27/2019 | 12843 | 12996 | 48 | Marcellus |
| 9 | 1/27/2019 | 12668 | 12821 | 48 | Marcellus |
| 10 | 1/28/2019 | 12493 | 12646 | 48 | Marcellus |
| 11 | 1/28/2019 | 12318 | 12471 | 48 | Marcellus |
| 12 | 1/29/2019 | 12143 | 12296 | 48 | Marcellus |
| 13 | 1/29/2019 | 11968 | 12121 | 48 | Marcellus |
| 14 | 1/30/2019 | 11793 | 11946 | 48 | Marcellus |
| 15 | 1/31/2019 | 11618 | 11771 | 48 | Marcellus |
| 16 | 2/1/2019 | 11443 | 11596 | 48 | Marcellus |
| 17 | 2/2/2019 | 11268 | 11421 | 48 | Marcellus |
| 18 | 2/2/2019 | 11093 | 11246 | 48 | Marcellus |
| 19 | 2/3/2019 | 10918 | 11071 | 48 | Marcellus |
| 20 | 2/4/2019 | 10743 | 10896 | 48 | Marcellus |
| 21 | 2/4/2019 | 10568 | 10721 | 48 | Marcellus |
| 22 | 2/5/2019 | 10393 | 10546 | 48 | Marcellus |
| 23 | 2/5/2019 | 10218 | 10371 | 48 | Marcellus |
| 24 | 2/6/2019 | 10043 | 10196 | 48 | Marcellus |
| 25 | 2/6/2019 | 9868 | 10021 | 48 | Marcellus |
| 26 | 2/7/2019 | 9693 | 9846 | 48 | Marcellus |
| 27 | 2/8/2019 | 9518 | 9671 | 48 | Marcellus |
| 28 | 2/8/2019 | 9343 | 9496 | 48 | Marcellus |
| 29 | 2/9/2019 | 9168 | 9321 | 48 | Marcellus |
| 30 | 2/10/2019 | 8993 | 9146 | 48 | Marcellus |
| 31 | 2/11/2019 | 8818 | 8971 | 48 | Marcellus |
| 32 | 2/11/2019 | 8643 | 8796 | 48 | Marcellus |
| 33 | 2/12/2019 | 8468 | 8621 | 48 | Marcellus |
| 34 | 2/13/2019 | 8293 | 8446 | 48 | Marcellus |
| 35 | 2/14/2019 | 8118 | 8271 | 48 | Marcellus |
| 36 | 2/15/2019 | 7943 | 8096 | 48 | Marcellus |
| 37 | 2/16/2019 | 7768 | 7921 | 48 | Marcellus |
| 38 | 2/16/2019 | 7593 | 7746 | 48 | Marcellus |
| 39 | 2/17/2019 | 7418 | 7571 | 48 | Marcellus |
| 40 | 2/18/2019 | 7243 | 7396 | 48 | Marcellus |

Corley N-8HM

STIMULATION INFORMATION PER STAGE

| Stage No. | Ave. Pump Rate (BPM) | Ave Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbls) | Amount of Nitrogen/other (units) |
|-----------|----------------------|------------------------------|------------------------------|------------|--------------------------|------------------------|----------------------------------|
| 1 | 83.9 | 6242 | 5015 | 3059 | 355630 | 7864 | 0 |
| 2 | 88.6 | 7179 | 4758 | 3869 | 436260 | 8312 | 0 |
| 3 | 86.6 | 6866 | 5230 | 4861 | 438100 | 7757 | 0 |
| 4 | 85.1 | 7035 | 5408 | 4910 | 440420 | 7639 | 0 |
| 5 | 85.1 | 6753 | 8193 | 4671 | 436970 | 8298 | 0 |
| 6 | 85.2 | 6874 | 5210 | 4816 | 436580 | 7770 | 0 |
| 7 | 86.9 | 7132 | 5144 | 4025 | 368140 | 6821 | 0 |
| 8 | 89.4 | 6863 | 5456 | 4828 | 436730 | 7833 | 0 |
| 9 | 85.2 | 6580 | 5286 | 4767 | 439220 | 8038 | 0 |
| 10 | 89.4 | 6954 | 5033 | 4801 | 437210 | 7747 | 0 |
| 11 | 85.4 | 6566 | 4905 | 4756 | 434270 | 8253 | 0 |
| 12 | 85.9 | 6687 | 4924 | 4728 | 445830 | 7688 | 0 |
| 13 | 85.2 | 6633 | 5224 | 4694 | 448370 | 7801 | 0 |
| 14 | 85.3 | 6677 | 4951 | 5111 | 442920 | 9289 | 0 |
| 15 | 85.1 | 6664 | 5361 | 4952 | 440560 | 8011 | 0 |
| 16 | 85.4 | 6811 | 5564 | 4783 | 436900 | 7643 | 0 |
| 17 | 85.3 | 6638 | 4864 | 4334 | 439570 | 7678 | 0 |
| 18 | 85.5 | 6606 | 5354 | 4631 | 444460 | 8212 | 0 |
| 19 | 85.9 | 6424 | 5115 | 4792 | 436780 | 7222 | 0 |
| 20 | 84.8 | 6376 | 4803 | 4963 | 440920 | 7344 | 0 |
| 21 | 85.2 | 6526 | 5130 | 5155 | 442770 | 7450 | 0 |
| 22 | 85.3 | 6505 | 5189 | 5269 | 443420 | 7344 | 0 |
| 23 | 85.6 | 6550 | 5228 | 4886 | 442180 | 7446 | 0 |
| 24 | 85.9 | 6504 | 5253 | 5143 | 439350 | 7231 | 0 |
| 25 | 85.1 | 6354 | 5128 | 5165 | 442940 | 7410 | 0 |
| 26 | 85 | 6455 | 5101 | 3850 | 444400 | 7357 | 0 |
| 27 | 85 | 6125 | 5023 | 4257 | 440080 | 7552 | 0 |
| 28 | 85.6 | 6135 | 4515 | 5034 | 442210 | 7767 | 0 |
| 29 | 85.3 | 6219 | 5134 | 5118 | 442330 | 7698 | 0 |

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| Stage No. | Ave. Pump Rate (BPM) | Ave Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbbls) | Amount of Nitrogen/other (units) |
|-----------|----------------------|------------------------------|------------------------------|------------|--------------------------|-------------------------|----------------------------------|
| 30 | 85.8 | 6353 | 5546 | 4966 | 445955 | 8450 | 0 |
| 31 | 85.1 | 6219 | 5012 | 4790 | 437390 | 7474 | 0 |
| 32 | 85.2 | 6258 | 5002 | 4549 | 439160 | 7348 | 0 |
| 33 | 85.6 | 6269 | 5072 | 5093 | 436970 | 7420 | 0 |
| 34 | 85.5 | 6278 | 5031 | 4778 | 435710 | 7470 | 0 |
| 35 | 85.1 | 6276 | 5648 | 5000 | 442340 | 7591 | 0 |
| 36 | 85 | 6240 | 5065 | 5025 | 442420 | 7465 | 0 |
| 37 | 85.2 | 6152 | 4939 | 4796 | 440550 | 7348 | 0 |
| 38 | 85 | 6254 | 4933 | 4779 | 438820 | 7377 | 0 |
| 39 | 85.5 | 6428 | 5100 | 5152 | 439000 | 7292 | 0 |
| 40 | 85.5 | 6395 | 5146 | 5055 | 441620 | 7480 | 0 |

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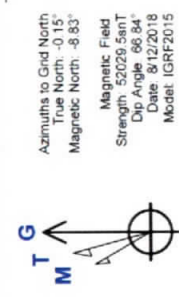
| LITHOLOGY/FORMATION | TOP DEPTH IN FT/ Name TVD | BOTTOM DEPTH IN FT TVD | TOP DEPTH IN FT MD | BOTTOM DEPTH IN FT MD | DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID |
|---------------------|------------------------------|---------------------------|-----------------------|--------------------------|---|
| Maxton | 1962 | 2056 | 1964 | 2060 | Sandstone |
| Big Lime | 2056 | 2098 | 2060 | 2102 | Limestone |
| Big Injun | 2098 | 2415 | 2102 | 2429 | Sandstone |
| Weir | 2415 | 2594 | 2429 | 2614 | Sandstone |
| Berea | 2594 | 2874 | 2614 | 2903 | Sandstone |
| Gordon | 2874 | 2938 | 2903 | 2970 | Sandstone |
| Fifty Foot | 2938 | 3538 | 2970 | 3595 | Sandstone |
| Speechley | 3538 | 4952 | 3595 | 5075 | Sandstone |
| Benson | 4952 | 5328 | 5075 | 5464 | Sandstone |
| Alexander | 5328 | 5960 | 5464 | 6128 | Siltstone |
| Rhinestreet | 5960 | 6389 | 6128 | 6677 | Black shale |
| Middlesex | 6389 | 6455 | 6677 | 6790 | Black shale |
| Geneseo/Burkett | 6455 | 6484 | 6790 | 6847 | Black shale |
| Tully | 6484 | 6522 | 6847 | 6930 | Limestone |
| Hamilton | 6522 | 6577 | 6930 | 7080 | Grey shale |
| Marcellus | 6577 | - | 7080 | - | Black shale |

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Well: Corley N-08HM (slot I)
Site: Corley Pad
Project: Marshall County, WV
Design: rev3
Rig: Precision 110

Geoidetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level
 Depth Reference: RKB=1254+28 @ 1282.00usft (Precision 110)
 Surface location: Northing: Easting: Longitude: Latitude
 14438870.34 17089994.74 39 75297147 -80 76311595
 Total Corr. (M-S): To convert a Magnetic Direction to a Grid Direction, Subtract 8.83°



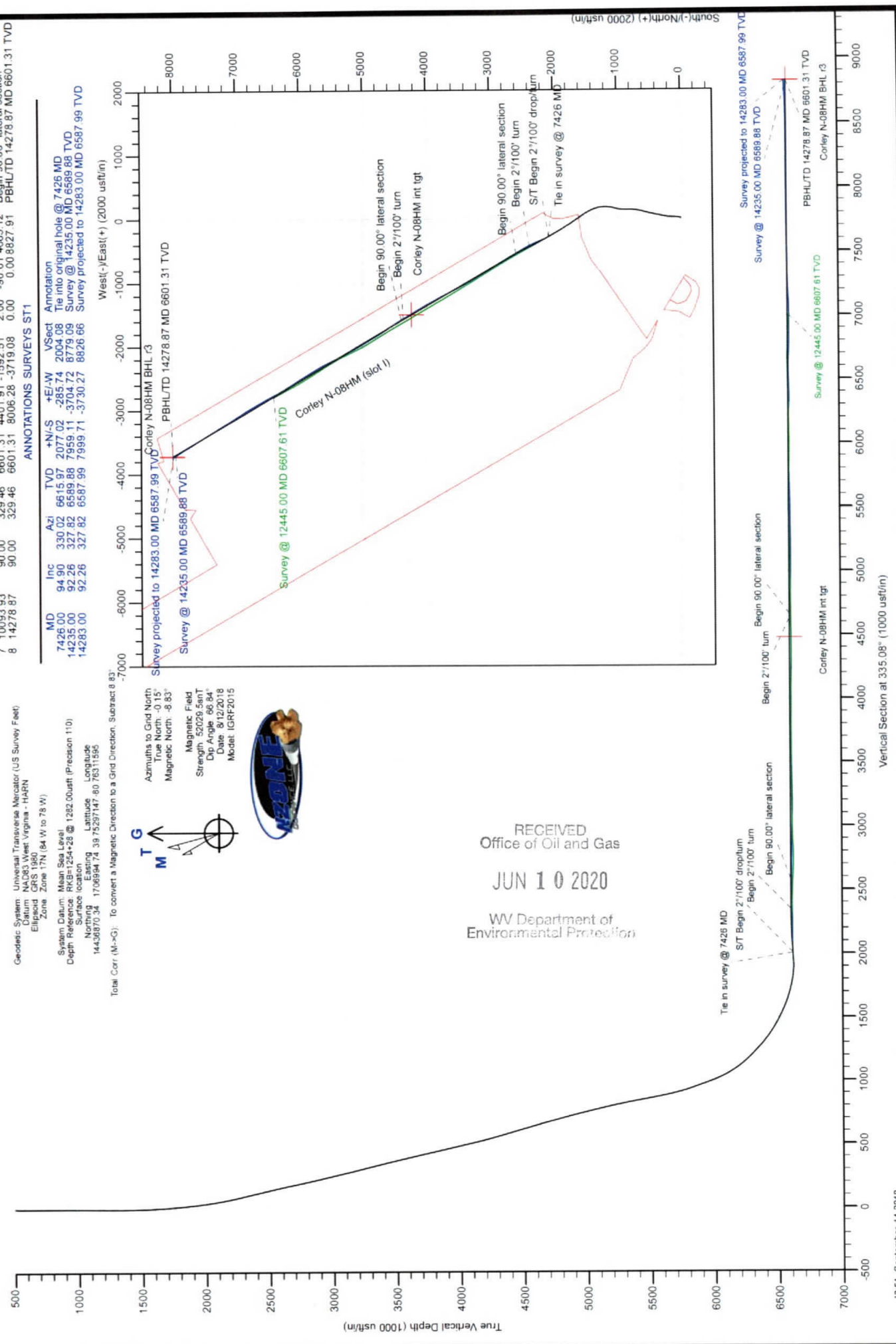
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SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | VFace | VSect | Annotation |
|-----|----------|-------|--------|---------|---------|----------|------|---------|---------|-----------------------------------|
| 1 | 7426.00 | 94.90 | 330.02 | 6615.97 | 2077.02 | -285.74 | 0.00 | 0.00 | 2004.06 | Tie in survey @ 7426 MD |
| 2 | 7428.00 | 94.85 | 330.01 | 6615.80 | 2078.74 | -286.73 | 2.55 | -166.73 | 2006.07 | S/T Begin 2°/100' lateral section |
| 3 | 7770.13 | 90.00 | 334.84 | 6601.31 | 2381.57 | -444.85 | 2.00 | 135.00 | 2347.32 | Begin 2°/100' lateral section |
| 4 | 8003.68 | 90.00 | 330.17 | 6601.31 | 2588.69 | -552.63 | 2.00 | -90.00 | 2590.57 | Begin 90°/00' lateral section |
| 5 | 9908.32 | 90.00 | 330.17 | 6601.31 | 4241.00 | -1500.00 | 0.00 | 0.00 | 4478.21 | Begin 2°/100' lateral section |
| 6 | 10058.32 | 90.00 | 330.17 | 6601.31 | 4371.13 | -1574.61 | 0.00 | 0.00 | 4627.66 | Begin 90°/00' lateral section |
| 7 | 10093.93 | 90.00 | 329.46 | 6601.31 | 4401.91 | -1592.51 | 2.00 | -90.01 | 4663.12 | PBHLTD 14278.87 MD 6601.31 TVD |
| 8 | 14278.87 | 90.00 | 329.46 | 6601.31 | 8006.28 | -3719.08 | 0.00 | 0.00 | 8827.91 | PBHLTD 14278.87 MD 6601.31 TVD |

ANNOTATIONS SURVEYS ST1

| MD | Inc | Azi | TVD | +N/-S | +E/-W | VFace | VSect | Annotation |
|----------|-------|--------|---------|---------|----------|---------|---------|---|
| 7426.00 | 94.90 | 330.02 | 6615.97 | 2077.02 | -285.74 | 0.00 | 2004.06 | Tie into original hole @ 7426 MD |
| 14235.00 | 92.26 | 327.82 | 6589.88 | 7959.11 | -3704.72 | 8779.09 | | Survey @ 14235.00 MD 6589.88 TVD |
| 14283.00 | 92.26 | 327.82 | 6587.99 | 7999.71 | -3730.27 | 8826.66 | | Survey projected to 14283.00 MD 6587.99 TVD |



Hydraulic Fracturing Fluid Product Component Information Disclosure

| | |
|--------------------------------|-------------------------|
| Job Start Date: | 1/23/2019 |
| Job End Date: | 2/18/2019 |
| State: | West Virginia |
| County: | Marshall |
| API Number: | 47-051-02005-00-00 |
| Operator Name: | Tug Hill Operating, LLC |
| Well Name and Number: | Corley N 8HM |
| Latitude: | 39.75297147 |
| Longitude: | -80.76311595 |
| Datum: | NAD27 |
| Federal Well: | NO |
| Indian Well: | NO |
| True Vertical Depth: | 6,617 |
| Total Base Water Volume (gal): | 13,208,174 |
| Total Base Non Water Volume: | 0 |



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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 | 67.79251 | Density = 8.330 |
| Produced Water | Operator | Base Fluid | | | | | |
| | | | Water | 7732-18-5 | 100.00000 | 18.04458 | Density = 9.000 |

| Ingredients | Listed Above | Listed Above | Water | 7732-18-5 | 100.00000 | 0.61855 |
|--------------------------------|--------------|----------------------|-------|--------------|-----------|---------|
| LD-2850 | multi-chem | Friction Reducer | | | | |
| OILPERM A | Halliburton | Non-ionic Surfactant | | Listed Below | | |
| SCALECHEK LP-50 | Halliburton | Scale Inhibitor | | Listed Below | | |
| CALCIUM CHLORIDE - FLAKE | Halliburton | Additive | | Listed Below | | |
| MC MX 8-4743 | multi-chem | Biocide | | Listed Below | | |
| SAND-PREMIUM WHITE-30/50, BULK | Halliburton | Proppant | | Listed Below | | |
| FDP-S1296-17 | Halliburton | Corrosion Inhibitor | | Listed Below | | |

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|--|-------------|----------|--|---|--------------|-----------|--|--|--|----------|--|--|--|
| HYDROCHLORIC ACID | Halliburton | Solvent | | | | | | | | | | | |
| | | | | | Listed Below | | | | | | | | |
| SAND-PREMIUM WHITE-40/70, BULK | Halliburton | Proppant | | | | | | | | | | | |
| | | | | | Listed Below | | | | | | | | |
| SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676) | Halliburton | Proppant | | | | | | | | | | | |
| 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 | | | | 13.40508 | | | |
| | | | | Hydrochloric acid | 7647-01-0 | 7.50000 | | | | 0.04638 | | | |
| | | | | Sodium chloride | 7647-14-5 | 30.00000 | | | | 0.02472 | | | |
| | | | | Hydrotreated light petroleum distillate | 64742-47-8 | 30.00000 | | | | 0.02471 | | | |
| | | | | Sodium nitrate | 7631-99-4 | 60.00000 | | | | 0.02093 | | | |
| | | | | Methanol | 67-56-1 | 100.00000 | | | | 0.00667 | | | |
| | | | | Phosphonic acid salt | Proprietary | 30.00000 | | | | 0.00622 | | | |
| | | | | 9-Octadecenamide, n, n-bis-2(hydroxy-ethyl)-, (Z) | 93-83-4 | 5.00000 | | | | 0.00412 | | | |
| | | | | Ammonium chloride | 12125-02-9 | 5.00000 | | | | 0.00412 | | | |
| | | | | Alcohols, C12-16, ethoxylated | 68551-12-2 | 5.00000 | | | | 0.00412 | | | |
| | | | | Calcium chloride | 10043-52-4 | 100.00000 | | | | 0.00054 | | | |
| | | | | Ethanol | 64-17-5 | 60.00000 | | | | 0.00028 | | | |
| | | | | Oxyalkylated phenolic resin | Proprietary | 30.00000 | | | | 0.00019 | | | |
| | | | | Heavy aromatic petroleum naphtha | 64742-94-5 | 30.00000 | | | | 0.00014 | | | |

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| | | | | | | | |
|--|--|--|--|-------------|----------|---------|--|
| | | | Modified thiourea polymer | Proprietary | 30.00000 | 0.00014 | |
| | | | Potassium chloride | 7447-40-7 | 5.00000 | 0.00003 | |
| | | | Strontium chloride | 10476-85-4 | 5.00000 | 0.00003 | |
| | | | Naphthalene | 91-20-3 | 5.00000 | 0.00002 | |
| | | | Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched | 127087-87-0 | 5.00000 | 0.00002 | |
| | | | Ethoxylated alcohols | Proprietary | 5.00000 | 0.00002 | Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226 |
| | | | Propargyl alcohol | 107-19-7 | 5.00000 | 0.00002 | |
| | | | 1,2,4 Trimethylbenzene | 95-63-6 | 1.00000 | 0.00000 | |

* 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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(BH) 6,521'

(TH) 3,743'

**CORLEY LEASE
WELL N-8HM
566.192± ACRES**

ASDRILLED LEG
PERMITTED LEG

LEGEND
 - - - LEASE TRACTS
 - - - SURFACE TRACTS
 - - - UNIT BOUNDARY
 (A) LEASE # (SEE 6A1 FORM)

TOP HOLE LATITUDE: 39°47'30"
 BOTTOM HOLE LATITUDE: 39°47'30"
 N-7HM(051-01972)
 N-8HM(051-01971)
 N-8HM(051-01970)
 1H (051-01396)
 3H (051-01397)
 N-8HM(051-02005)
 N-10HU(051-1998)
 N-8HU(051-01983)
 2H (051-01437)
 4H (051-01438)
 5H (051-01439P)

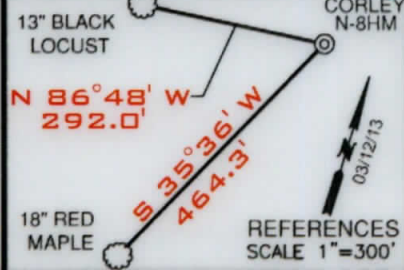
DETAIL
 SKETCH "A"
 SCALE 1"=200'

| LINE | BEARING | DISTANCE |
|------|------------|----------|
| L5 | N 20°02' W | 181.83' |
| L6 | N 31°52' W | 221.02' |
| L7 | N 30°52' W | 428.23' |

| LINE | BEARING | DISTANCE |
|------|------------|----------|
| L1 | N 07°37' W | 776.78' |
| L2 | N 87°03' E | 902.35' |
| L3 | N 09°33' E | 1172.17' |
| L4 | N 02°03' W | 122.08' |

GRID NORTH

- NOTES**
1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND. NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.



(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

ASDRILLED SURFACE HOLE
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,400,367.01
 E) 520,293.32

LANDING POINT 1
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,400,976.49
 E) 520,219.52

BOTTOM HOLE
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,402,323.82
 E) 519,441.35

FILE NUMBER _____
 DRAWING NUMBER CORLEY_WP_N-8HM
 SCALE 1" = 1500'
 MINIMUM DEGREE OF ACCURACY 1/200
 PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.S. 708 *David L Jackson*



JACKSON SURVEYING INC.
 P.O. Box 1460
 Clarksburg, WV 26302
 304-623-5851



WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET, SE
 CHARLESTON, WV 25304

DATE: OCTOBER 07, 2019

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

OPERATORS WELL NO. CORLEY N-8HM
 API WELL NO. 47-051-02005
 STATE WV COUNTY MARSHALL PERMIT 02005

LOCATION ELEVATION 1255.3' WATERSHED (HUC 10) Fish Creek
 DISTRICT Franklin COUNTY Marshall
 QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE 6A1 Form

SURFACE OWNER James A. & Jill C. Corley, et al ACREAGE 92.61
 OIL & GAS ROYALTY OWNER James A. & Jill C. Corley, et al LEASE ACREAGE 92.61
 PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___
 PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) ASDRILLED

TARGET FORMATION Marcellus ESTIMATED DEPTH TVD: 6,620' TMD: 12,445'

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

(BH) BOTTOM HOLE LONGITUDE: 80°45'00"
 (TH) TOP HOLE LONGITUDE: 80°45'00"
 (BH) 7,684'
 (TH) 14,111'

form wv6

**CORLEY LEASE
WELL N-8HM
566.192± ACRES**

GRID NORTH

| | |
|----------------------------------|---------------|
| PERMITTED | |
| SURFACE HOLE | |
| UTM. NAD83, ZONE 17 IN METERS | |
| N) 4,400,366.88 | E) 520,293.04 |
| LANDING POINT 1 | |
| UTM. NAD83, ZONE 17 IN METERS | |
| N) 4,400,889.52 | E) 520,266.63 |
| BOTTOM HOLE | |
| UTM. NAD83, ZONE 17 IN METERS | |
| N) 4,402,807.20 | E) 519,159.46 |



P.S. 708

David L Jackson

| Number | TAX MAP 17 | ADJOINER OWNER | ACRES |
|--------|---------------|---|--------|
| S1 | T.M. 17-10.5 | Williams Ohio Valley Midstream LLC | 4.24 |
| S2 | T.M. 17-12.1 | Williams Ohio Valley Midstream LLC | 1.67 |
| S3 | T.M. 17-12 | James A. & Jill C. Corley | 3.33 |
| S4 | T.M. 18-13.8 | Lori D. Carpenter | 5.545 |
| S5 | T.M. 18-29 | Carl G Berg | 5.319 |
| S6 | T.M. 18-32 | Kenneth E Rastall | 5.335 |
| S7 | T.M. 18-32.1 | Lori D. Carpenter | 1.165 |
| S8 | T.M. 18-31 | Kenneth E Rastall | 6.94 |
| S9 | T.M. 18-13.10 | Carl Berg | 10.88 |
| S10 | T.M. 18-30 | John Schmidt et al | 5.46 |
| S11 | T.M. 18-59 | Southern Country Farms Inc. | 15.79 |
| S12 | T.M. 18-33 | Sandra K & Glenn E Whisler | 5.343 |
| S13 | T.M. 18-13.14 | Glenn E & Sandra K Whisler | 2.116 |
| S14 | T.M. 18-48 | Marvin Dean Roberts Et Ux & Brad & Bridget Williams | 2.920 |
| S15 | T.M. 18-13.7 | Victor W. Woods Jr. & Jessica L. Woods | 5.255 |
| S16 | T.M. 18-13.6 | Glenn Eugene Whisler Et Ux | 5.384 |
| S17 | T.M. 18-13.13 | Glenn E & Sandra K Whisler | 5.59 |
| S18 | T.M. 18-34 | Jodi A & Gary A Hall | 5.002 |
| S19 | T.M. 18-17 | Michael Fincham & Kezia Winters | 6.555 |
| S20 | T.M. 18-15.5 | Darrell & Teresa Boley | 23.547 |
| S21 | T.M. 18-12 | William L Wayne Et Ux | 2.270 |
| S22 | T.M. 18-10 | David & Nancy Anderson | 0.907 |
| S23 | T.M. 18-10.2 | David V Anderson Et Ux | 1.377 |
| S24 | T.M. 18-10.1 | David V Anderson Et Ux | 1.65 |
| S25 | T.M. 18-11.2 | Edward Lee Burge Jr. | 2.0 |
| S26 | T.M. 18-11.1 | Edward Lee Burge Jr. | 18.0 |
| S27 | T.M. 18-15 | Edward Lee Burge Jr. | 2.495 |
| S28 | T.M. 18-6.1 | Joseph J. Kramer Et Ux | 39.40 |
| S29 | T.M. 18-23.4 | Michael R. & Brenda K. Bryan | 3.0 |
| S30 | T.M. 18-23.1 | Ray E. Minor Et Ux | 2.0 |
| S31 | T.M. 18-23.3 | Greg & Christina Riddle | 1.0 |
| S32 | T.M. 16-24 | Alan M. Beyser Et Ux | 1.083 |
| S33 | T.M. 16-23.2 | Alan M. Beyser Et Ux | 1.726 |
| S34 | T.M. 16-22.1 | Heather A. Burgy | 1.465 |
| S35 | T.M. 18-56 | William E. O'Hara | 3.965 |
| S36 | T.M. 18-55 | William E. O'Hara | 3.202 |
| S37 | T.M. 18-28 | Dotson Harrison et ux | 6.36 |
| S38 | T.M. 18-28.1 | Carol Diane Helmick | 5.696 |
| S39 | T.M. 18-13.2 | Steven G. Berisford | 6.023 |
| S40 | T.M. 18-13 | Southern Country Farms Inc | 11.054 |
| S41 | T.M. 18-50 | Steven G. Berisford | 2.170 |
| S42 | T.M. 18-15.2 | Edward L. Burge | 4.171 |
| S43 | T.M. 18-49 | Tanner Butler | 2.023 |
| S44 | T.M. 18-37 | John Wetzel | 2.064 |
| S45 | T.M. 18-38 | Marlon Connor | 2.231 |
| S46 | T.M. 18-39 | Marlon R. Connor | 2.001 |
| S47 | T.M. 18-40 | Cory A. Holt | 2.237 |
| S48 | T.M. 18-41 | Cory A. Holt | 2.308 |
| S49 | T.M. 18-25 | Charles & Maria Rayl | 2.521 |
| S50 | T.M. 18-44 | Renee Streight | 2.133 |
| S51 | T.M. 18-27.1 | Marlon R. Connor | 2.003 |
| S52 | T.M. 18-27.2 | Linda L. Moore | 3.009 |
| S53 | T.M. 18-27 | Linda L. Moore | 2.447 |
| S54 | T.M. 18-28 | Linda L. Moore | 2.624 |
| S55 | T.M. 18-53 | Christopher M. Previtera | 2.00 |
| S56 | T.M. 18-13.11 | Linda L. Moore | 3.156 |
| S57 | T.M. 18-53.1 | Christopher M. Previtera | 6.283 |
| S58 | T.M. 18-60 | Christopher M. Previtera | 6.297 |
| S59 | T.M. 18-13 | Southern Country Farms Inc | 8.60 |
| S60 | T.M. 18-58 | Kevin Roberts | 2.435 |
| S61 | T.M. 18-35 | Mary Anderson | 2.635 |
| S62 | T.M. 18-42 | Roger Howard Hall Jr. | 2.383 |
| S63 | T.M. 17-10.2 | Sidney Pozell et ux Ests. | 2.6 |
| S64 | T.M. 17-9.2 | Jeri J. White | 7.136 |
| S65 | T.M. 17-9.1 | Linda L. Moore | 1.0 |
| S66 | T.M. 17-10 | James Corley Et Al | 92.61 |
| S67 | T.M. 17-10.1 | James & Jill Corley | 4.51 |
| S68 | T.M. 17-10.3 | James & Jill Corley | 37.39 |
| S69 | T.M. 17-10.4 | Ron Murrin Et Al | 2.01 |
| S70 | T.M. 18-19 | Roger White Jr. | 10.0 |
| S71 | T.M. 18-18 | Linda Coen | 3.0 |
| S72 | T.M. 18-57 | Marvin Roberts | 2.228 |
| S73 | T.M. 18-61 | Roger White Jr. | 2.984 |
| S74 | T.M. 18-52 | Roger Hall | 2.536 |
| S75 | T.M. 18-51 | Roger Hall | 2.505 |
| S76 | T.M. 18-43 | Roy & Renee Butler | 2.532 |
| S77 | T.M. 18-13.1 | Cory Holt | 9.248 |
| S78 | T.M. 18-14 | Michael Fincham & Kezia Winters | 6.386 |
| S79 | T.M. 18-45 | Michael Fincham & Kezia Winters | 2.07 |
| S80 | T.M. 18-46 | Dale & Patricia Gardner | 2.03 |
| S81 | T.M. 18-47 | Robert Pelley II & Susan Briggs | 2.01 |
| S82 | T.M. 18-13.5 | Bryan Wesley | 1.023 |
| S83 | T.M. 18-36 | Ruth Mulligan Est. | 2.003 |
| S84 | T.M. 18-13.3 | Robert Closteman | 9.813 |
| S85 | T.M. 18-15.1 | Jason Blair | 5.948 |
| S86 | T.M. 18-11 | Benjamin Robnson | 12.883 |
| S87 | T.M. 15-10 | Mark Ruckman | 153.75 |
| S88 | T.M. 16-22 | James M. Ruckman Et Ux | 54.605 |
| S89 | T.M. 16-23 | CNX Land Resources Inc. | 60.138 |
| S90 | T.M. 15-9 | CNX Land Resources Inc. | 81.98 |



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Corley N-8HM
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API #: 47-051-02005

WELL PLAT
PAGE 2 OF 2
DATE: 10/07/2019