



west virginia department of environmental protection

Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Wednesday, April 3, 2019  
WELL WORK PERMIT  
Horizontal 6A / Drilling Deeper

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD  
  
CANONSBURG, PA 15317

Re: Permit approval for HANSEN NO. 7H  
47-051-01654-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: HANSEN NO. 7H  
Farm Name: BAYER MATERIAL SCIENCE  
U.S. WELL NUMBER: 47-051-01654-00-00  
Horizontal 6A Drilling Deeper  
Date Issued: 4/3/2019



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601 57<sup>th</sup> Street, S.E.  
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Fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
dep.wv.gov

**ORDER  
ISSUED UNDER  
WEST VIRGINIA CODE, CHAPTER 22, ARTICLE 6A**

TO: Tug Hill Operating  
380 Southpointe Boulevard, Plaza II, Suite 200  
Cannonsburg, PA 15317

DATE: March 29, 2019  
ORDER NO.: 2019-W-7

**INTRODUCTION**

This Order (hereinafter "Order") is issued by the Office of Oil and Gas (hereinafter "OOG"), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to Tug Hill Operating (hereinafter "Tug Hill" or "Operator"), collectively the "Parties."

**FINDINGS OF THE CHIEF**

In support of this Order, the Chief hereby finds the following:

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. Tug Hill is a "person" as defined by W. Va. Code §22-6-1(n), with a corporate address as 380 Southpointe Boulevard, Plaza II, Suite 200, Cannonsburg, PA 15317.
3. On January 28, 2019 Tug Hill submitted well work permit applications identified as API# 47-051-02174, 47-051-02175, 47-051-02176 and 47-051-02177. The proposed wells are to be located on the Hansen Pad in the Franklin District of Marshall County, West Virginia.
4. On January 28, 2019 Tug Hill requested a waiver for Wetland W1 as outlined in Exhibit B, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API# 47-051-02174, 47-051-02175, 47-051-02176 and 47-051-02177.

## CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “in addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to... (3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing.”
2. West Virginia Code §22-6A-2(a)(6) requires, in part, that “Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter.”
3. West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the Office of Oil and Gas shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The Office of Oil and Gas may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary.”

**ORDER**

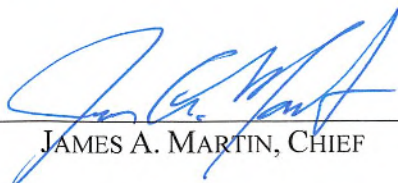
West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland. The Office of Oil and Gas grants the request for a waiver for Wetland W1 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API# 47-051-02174, 47-051-02175, 47-051-02176 and 47-051-02177. The Office of Oil and Gas hereby **ORDERS** that Tug Hill shall meet the following site construction and operational requirements for the Hansen Well Pad:

- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Wetlands W1 shall be protected by twenty-four-inch (24”) compost filter sock and super silt fence. This along with temporary and permanent vegetative cover will prevent sediment from reaching the wetlands
- d. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- e. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- f. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- g. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- h. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- i. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period;
- j. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- k. All records from inspections shall be maintained on site for the life of the project and be available upon request.

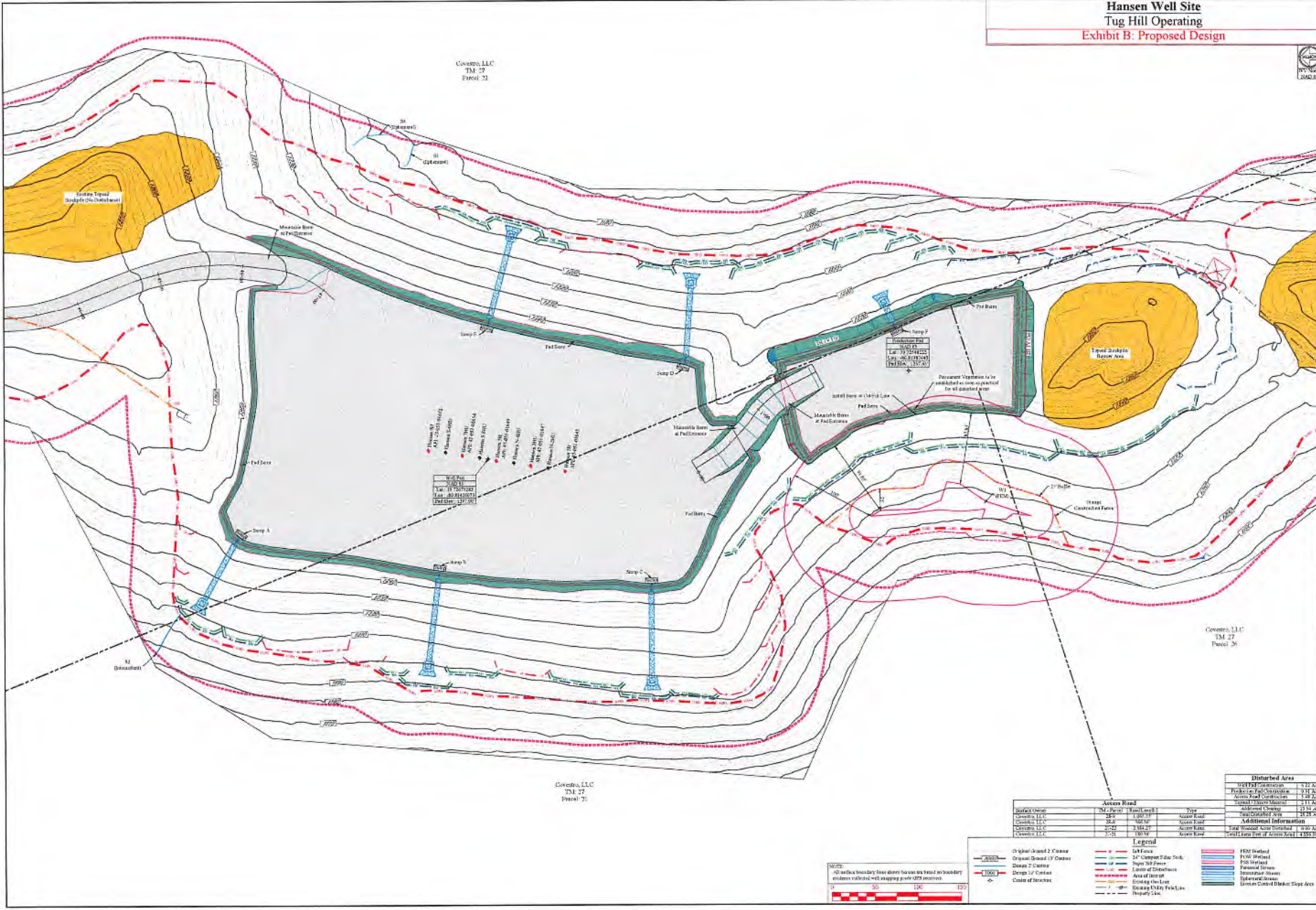
Thus ORDERED, the 29th day of March, 2019.

IN THE NAME OF THE STATE OF WEST VIRGINIA:

OFFICE OF OIL AND GAS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STATE OF WEST VIRGINIA

By:   
JAMES A. MARTIN, CHIEF

Hansen Well Site  
Tug Hill Operating  
Exhibit B: Proposed Design



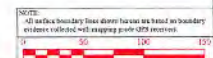
Coverco, LLC  
TM 27  
Parcel 21

Well Pad  
Plan: 10/20/2015  
Elev: 2810.00  
Dist Elev: 1327.00

Well Pad  
Plan: 10/20/2015  
Elev: 2810.00  
Dist Elev: 1327.00

Coverco, LLC  
TM 27  
Parcel 26

Coverco, LLC  
TM 27  
Parcel 21



Access Road	
Surface Type	IM Pavement, Gravel, Dirt
Coverco, LLC	IM Pavement
Coverco, LLC	Gravel
Coverco, LLC	Dirt

Legend	
Digital Ground Surface	1st Floor
Original Ground Surface	2nd Floor
Disturbance	3rd Floor
Design of Center	4th Floor
Scale of Structure	5th Floor
	6th Floor
	7th Floor
	8th Floor
	9th Floor
	10th Floor

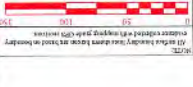
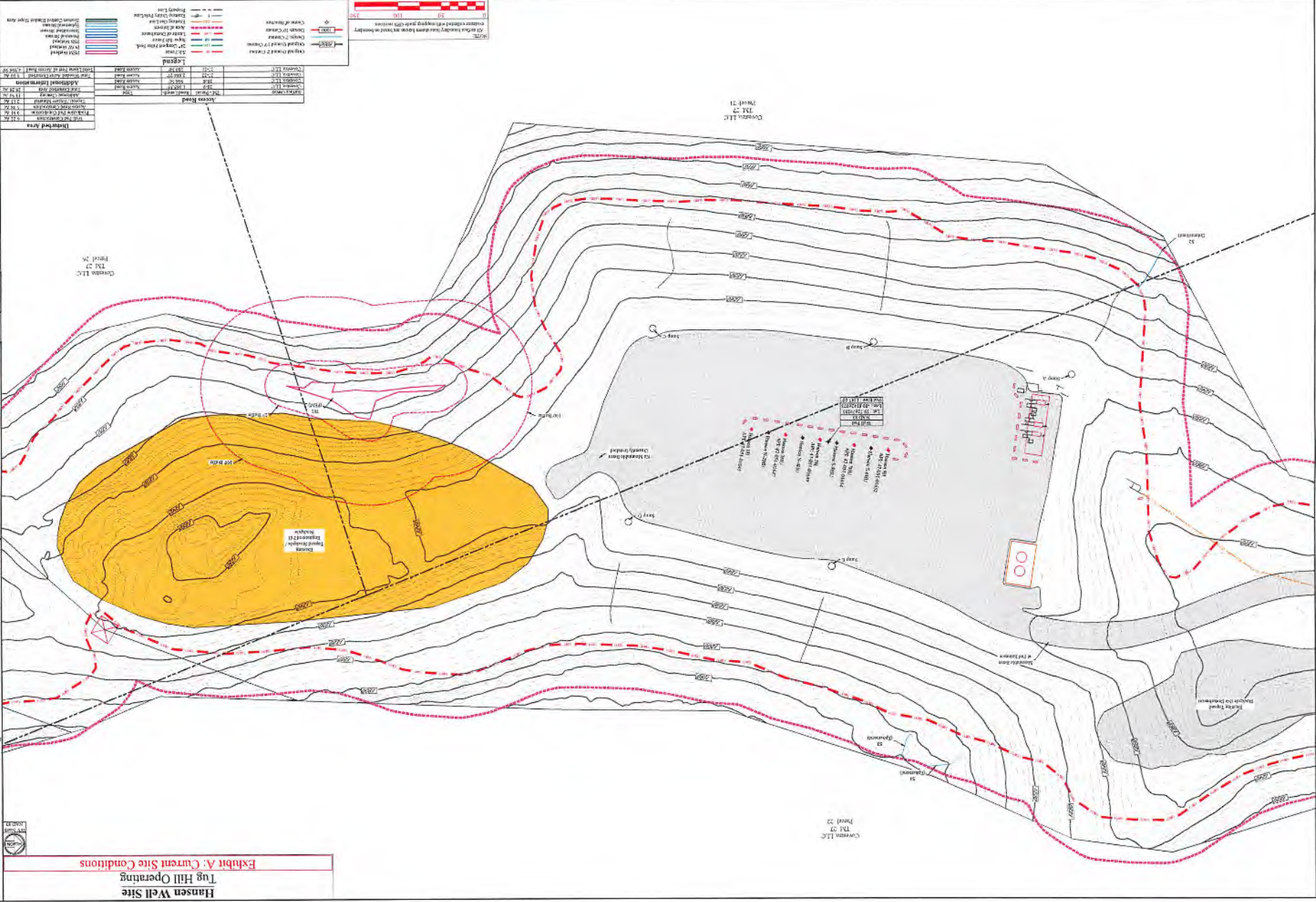
Disturbed Area	
Disturbed Area	1327.00
Disturbed Area	1327.00
Disturbed Area	1327.00
Disturbed Area	1327.00

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Site Plan  
Hansen Well Site  
Franklin District  
Manitoulin County, WV

Date: 01/31/2016  
Scale: As Shown  
Designed By: ZS  
Sheet No: Exhibit B



**Legend**

Symbol	Description
Circle with cross	Wellhead
Circle with dot	Wellhead
Circle with 'X'	Wellhead
Circle with 'O'	Wellhead
Circle with 'A'	Wellhead
Circle with 'B'	Wellhead
Circle with 'C'	Wellhead
Circle with 'D'	Wellhead
Circle with 'E'	Wellhead
Circle with 'F'	Wellhead
Circle with 'G'	Wellhead
Circle with 'H'	Wellhead
Circle with 'I'	Wellhead
Circle with 'J'	Wellhead
Circle with 'K'	Wellhead
Circle with 'L'	Wellhead
Circle with 'M'	Wellhead
Circle with 'N'	Wellhead
Circle with 'O'	Wellhead
Circle with 'P'	Wellhead
Circle with 'Q'	Wellhead
Circle with 'R'	Wellhead
Circle with 'S'	Wellhead
Circle with 'T'	Wellhead
Circle with 'U'	Wellhead
Circle with 'V'	Wellhead
Circle with 'W'	Wellhead
Circle with 'X'	Wellhead
Circle with 'Y'	Wellhead
Circle with 'Z'	Wellhead

**Adjacent Landowners**

Parcel No.	Owner	Acres
111.21	Conover, LLC	111.21
111.22	Conover, LLC	111.22
111.23	Conover, LLC	111.23
111.24	Conover, LLC	111.24
111.25	Conover, LLC	111.25
111.26	Conover, LLC	111.26
111.27	Conover, LLC	111.27
111.28	Conover, LLC	111.28
111.29	Conover, LLC	111.29
111.30	Conover, LLC	111.30
111.31	Conover, LLC	111.31
111.32	Conover, LLC	111.32
111.33	Conover, LLC	111.33
111.34	Conover, LLC	111.34
111.35	Conover, LLC	111.35
111.36	Conover, LLC	111.36
111.37	Conover, LLC	111.37
111.38	Conover, LLC	111.38
111.39	Conover, LLC	111.39
111.40	Conover, LLC	111.40

**Map A**

Parcel No.	Owner
111.21	Conover, LLC
111.22	Conover, LLC
111.23	Conover, LLC
111.24	Conover, LLC
111.25	Conover, LLC
111.26	Conover, LLC
111.27	Conover, LLC
111.28	Conover, LLC
111.29	Conover, LLC
111.30	Conover, LLC
111.31	Conover, LLC
111.32	Conover, LLC
111.33	Conover, LLC
111.34	Conover, LLC
111.35	Conover, LLC
111.36	Conover, LLC
111.37	Conover, LLC
111.38	Conover, LLC
111.39	Conover, LLC
111.40	Conover, LLC

**Current Site Conditions**  
**Hansen Well Site**  
 Franklin District  
 Marshall County, WV

**K S**  
 CONSULTANTS  
 PREPARED FOR  
 TUG HILL  
 OPERATING



**Hansen Well Site**  
**Tug Hill Operating**  
**Exhibit A: Current Site Conditions**

**Wetland and Perennial Stream Waiver Request**Well Operator: Tug Hill Operating, LLCWell Number: Hansen N-2HUWell Pad Name: Hansen Well PadCounty, District, Quadrangle of Well Location: Marshall, Franklin, New Martinsville**1. Describe the proposed project location, including unique identifying names of all wetlands, and the names of perennial streams for which the waiver is sought.**

The Hansen Well Pad is an existing well pad that will be revisited to drill additional wells. The well pad currently has a partial berm and the well pad berm will need to be repaired to bring the pad up to current WVDEP standards (the well pad does currently have a mountable berm at the pad entrance). Wetland W1 is currently outside the 100' well pad buffer but will be within 100' of a proposed production pad to facilitate pad operations. Exhibit A, current site conditions, will be attached to and made part of this waiver request. Exhibit A shows the location of Wetland W1 and the distance from the well pad and proposed production pad.

**Wetland W1:** It is proposed that a well pad berm be repaired on the current Hansen Well Pad and that a proposed production pad be constructed to facilitate pad operations so that additional drilling operations can be performed on the existing well site. Wetland W1 is located outside of the Well Pad 100' buffer but will be within 100' of the proposed production pad. Wetland W1 is located within the original Limits of Disturbance (LOD) of the well site and was created by the poor drainage around the engineered fill stockpile at the south end of the site. To facilitate additional drilling operations on the existing pad, the well pad berm will need to be repaired (which will take place outside of the wetland 100' buffer but borrow area from the proposed production pad will be required which will fall within the 100' buffer). In addition to borrowing material to repair the well pad berms, it is proposed that the borrow area be leveled off to create a production pad with its on berm and mountable berm. Wetland W1 will be protected by both super silt fence and 24" compost filter sock during the repair of the well pad berm and leveling of the borrow area to create a production pad with berms, sumps, and a mountable berm. The western side of the proposed production pad will be constructed at the cut/fill line of the existing borrow area (no fill material aside from the building of the protective berm will occur above Wetland W1). In addition to the super silt fence and 24" compost filter sock, a minimum 25' buffer will be maintained around Wetland W1 and an orange construction fence will be placed to mark the limits of the buffer. Both the super silt fence and 24" compost filter sock shall remain in place until permanent vegetation is established upslope of Wetland W1.



**2. Justify the proposed activity by describing alternatives to the project that were considered.****a. Include a No-Action Alternative to show "the future without the project"****b. Location Alternatives must be shown****c. Must demonstrate why a one hundred buffer cannot be maintained****d. Describe how the proposed project is the least environmentally damaging practicable alternative.**

**2a. No-Action Alternative:** The Hansen Well Pad "No-Action Alternative" will result in Wetland W1 remaining within 100' of an existing well site LOD. Wetland W1 is within the previous construction limits of the well site and appears to have been formed due to poor drainage conditions around the existing engineered fill/proposed borrow area. Regardless of whether or not modifications take place on the well pad, Wetland W1 will still be within the existing LOD of the well pad. Leaving the site in its current condition, without repairing the well pad containment berm, would render the site unsuitable for drilling operations from a WVDEP permitting viewpoint (a suitable well pad berm is required for new well permits for environmental protection requirements).

**2b.1. Location Alternative #1:** Prior to the environmental assessment, it was proposed that an earthen berm be reconstructed on the well pad to provide pad containment and meet WVDEP requirements. With the close proximity of Wetland W1 to the well site, a second alternative was examined to help further protect Wetland W1 while providing an avenue for constructing a compliant well pad.

**2b.2. Location Alternative #2:** After receiving the environmental assessment, the proposed earth berm and borrow area required to repair the berm was reevaluated to address the potential impacts to the delineated wetland. The proximity of Wetland W1 to the proposed production pad earthen berm affected the proposed design of the production pad containment. Rather than importing material from off-site to repair the earthen berm, an alternative protective structure would be constructed above the wetland to provide containment while minimizing soil disturbance. Rather than allowing the site earthwork contractor to sort through the proposed borrow area on an as-needed basis, the borrow area would be regraded with additional erosion and sediment controls to protect the existing wetland (all potential earthwork activities would be limited to the eastern side of the borrow area to further reduce disturbed ground uphill of the wetland, and an earthen berm constructed to further protect the wetland).

**2c. Must demonstrate why a one hundred foot buffer cannot be maintained:** See Exhibit A, Existing Conditions. A 100' buffer cannot be maintained due to existing site conditions. Wetlands W1 is within 100' of the existing well site.

**2d. Describe how the proposed project is the least environmentally damaging practicable alternative:** The proposed alternative, as shown on Exhibit B, Proposed Design, is the least environmentally damaging, practicable alternative because it allows for the utilization of the existing well pad while protecting the existing delineated wetland. Constructing an additional well pad in close proximity to the existing well pad for the purpose of drilling the proposed wells would require additional clearing of existing vegetation and potentially impacting other aquatic features. By utilizing the existing modified pad, borrow area, and providing protective structures around the existing wetland, the proposed wells can be installed without the large amount of additional clearing and earthwork that a separate pad would require. By modifying the existing well pad and existing engineered fill stockpile area, the well pad can be brought up to current industry standards and water discharged from the pad and borrow area can be better controlled with BMP's to prevent slope erosion that is currently occurring on the well

pad in its current condition (small rills are evident on the well pad and borrow area slopes and will be addressed in the well pad reclamation.

**3. Identify sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. This description should include all additional erosion and sediment control measures and devices that will be used.**

Wetland W1 will be protected with super silt fence and 24" compost filter sock. The controls shall be installed upslope of the wetland. In addition to the E&S controls, an orange construction fence shall be installed to provide a minimum 25' buffer around the existing wetland. As an additional measure to reduce the amount of exposed soil upslope of the wetland, an earthen berm will be used to redirect upslope water away from the wetland. The existing slope vegetation will be maintained and any areas disturbed due to the installation of the upslope erosion and sedimentation controls shall be repaired and seeded as soon as possible. During drilling and completion operations, the well pad and production pad berm shall provide containment of the pads which will further protect Wetland W1.

**4. Provide mapping, plans, specifications and design analysis for the preferred alternative to the project.**

**4.a Specify in writing what additional controls, measures, devices, monitoring, etc. will be used to protect these wetlands and/or perennial streams for which the waiver is sought.**

See Exhibit B, Proposed Design for the proposed site layout and protective control installation locations.

**Vegetative Buffer:** A minimum 25' vegetative buffer shall be maintained around the wetland at all times during construction and operation. The minimum 25' buffer shall be designated as the Limits of Disturbance (LOD) of the site. The LOD will be staked using wooden stakes with blue and white striped ribbon with "LOD" written on the stakes.

**Super Silt Fence:** Super silt fence shall be installed at the upslope edge of the vegetative buffer for the wetland. The super silt fence shall provide sedimentation controls above the wetland to prevent sediments and other materials from being carried downstream into the wetlands. Should any large material, typically rock or stone, manage to roll down a slope, the chainlink fence of the super silt fence structure shall act as a net to capture the material before it can proceed further downslope towards the wetland.

**24" Compost Filter Sock:** A 24" compost filter sock shall be installed 2' upslope of the super silt fence to provide additional sedimentation protection for the wetland.

**Permanent Seeding/Rolled Erosion Control Blankets:** Permanent seeding of all disturbed areas upslope of the wetland shall be performed as soon as practical. Earthwork above the wetland shall be kept to a minimum to reduce the amount of disturbed area upslope of the wetland and shall be vegetated as soon as construction permits. If construction activities upslope of the wetland is completed at the end of the growing season, rolled erosion control blankets shall be installed to provide additional erosion control until permanent vegetation can be established.

04/05/2019

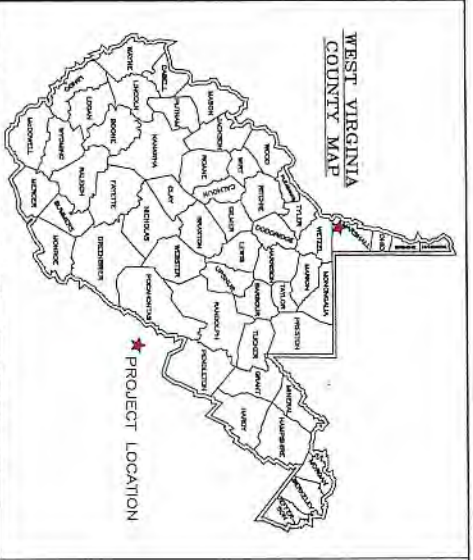
API Number: **051-02174**

Operator's Well Number: **Hansen N-2HU**

Well Pad/Production Pad Berm: Once installed, the well pad berm and production pad berm will provide pad containment and prevent water from leaving the pad except at the designated sump outlet locations (water from the sumps shall only be released in accordance with WVDEP requirements). The sump outlets shall have erosion controls to prevent erosion of the pad slopes that may lead to sedimentation. The proposed well pad and production pad sump outlets shall be placed so that they do not discharge at or near the wetland, providing additional protection to the wetland.

Site Design, Construction  
Erosion and Sedimentation  
Tug Hook  
Mars  
Fram  
Latitude  
Longitude  
Haynes Run - (

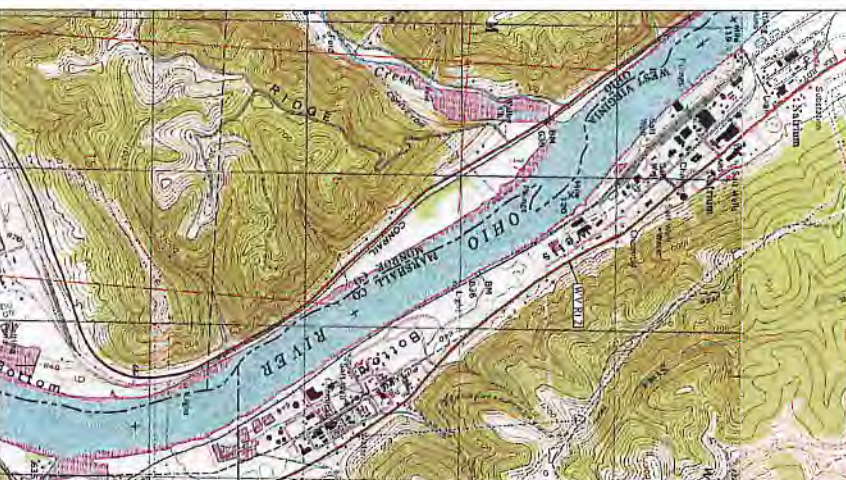
## Exhibit A: Final Design



Site Reference	Center of Well Pad	Center of Production Pad
WV-N NAD 83 N: 459134.91 WV-N NAD 83 E: 1599917.96	WV-N NAD 83 N: 49978.81 WV-N NAD 83 E: 1598864.04	WV-N NAD 83 N: 480035.61 WV-N NAD 83 E: 1598955.04
WV-N NAD 27 N: 456904.88 WV-N NAD 27 E: 1599917.96	WV-N NAD 27 N: 496016.73 WV-N NAD 27 E: 1598864.04	WV-N NAD 27 N: 480035.61 WV-N NAD 27 E: 1598955.04
WV-N NAD 83 E: 8193171.69 WV-N NAD 83 E: 8193171.69	WV-N NAD 83 E: 8193246.22 WV-N NAD 83 E: 8193246.22	WV-N NAD 83 E: 8193246.22 WV-N NAD 83 E: 8193246.22
WV-N NAD 27 E: 8193171.69 WV-N NAD 27 E: 8193171.69	WV-N NAD 27 E: 8193246.22 WV-N NAD 27 E: 8193246.22	WV-N NAD 27 E: 8193246.22 WV-N NAD 27 E: 8193246.22
UTM 17 NAD 83 E: 516999.49 UTM 17 NAD 83 E: 516999.49	UTM 17 NAD 83 E: 519918.81 UTM 17 NAD 83 E: 519918.81	UTM 17 NAD 83 E: 519918.81 UTM 17 NAD 83 E: 519918.81
Pad Elev: 1287.00'	Pad Elev: 1287.00'	Pad Elev: 1287.65'



Haynes Hill	Haynes S-Hill	Haynes N-Hill	Haynes S-Hill	Haynes S-Hill	Haynes S-Hill
WV-N NAD 83 N: 499449.90 WV-N NAD 83 E: 1598483.80	WV-N NAD 83 N: 48926.65 WV-N NAD 83 E: 1598533.55	WV-N NAD 83 N: 48949.50 WV-N NAD 83 E: 1598545.23	WV-N NAD 83 N: 489599.46 WV-N NAD 83 E: 1598679.06	WV-N NAD 83 N: 489929.76 WV-N NAD 83 E: 1598875.06	WV-N NAD 83 N: 489929.76 WV-N NAD 83 E: 1598875.06
WV-N NAD 27 N: 484814.10 WV-N NAD 27 E: 160283.29	WV-N NAD 27 N: 484935.55 WV-N NAD 27 E: 160303.80	WV-N NAD 27 N: 484963.62 WV-N NAD 27 E: 160314.38	WV-N NAD 27 N: 484963.62 WV-N NAD 27 E: 160314.38	WV-N NAD 27 N: 484963.62 WV-N NAD 27 E: 160314.38	WV-N NAD 27 N: 484963.62 WV-N NAD 27 E: 160314.38
Lea. NAD 83: 39.72628202 Lea. NAD 83: 39.72628202	Lea. NAD 83: 39.72628202 Lea. NAD 83: 39.72628202	Lea. NAD 83: 39.72628202 Lea. NAD 83: 39.72628202	Lea. NAD 83: 39.72628202 Lea. NAD 83: 39.72628202	Lea. NAD 83: 39.72628202 Lea. NAD 83: 39.72628202	Lea. NAD 83: 39.72628202 Lea. NAD 83: 39.72628202
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UTM 17 NAD 83 (m) E: 499449.91 UTM 17 NAD 83 (m) E: 499449.91	UTM 17 NAD 83 (m) E: 48926.65 UTM 17 NAD 83 (m) E: 48926.65	UTM 17 NAD 83 (m) E: 48949.50 UTM 17 NAD 83 (m) E: 48949.50	UTM 17 NAD 83 (m) E: 489599.46 UTM 17 NAD 83 (m) E: 489599.46	UTM 17 NAD 83 (m) E: 489929.76 UTM 17 NAD 83 (m) E: 489929.76	UTM 17 NAD 83 (m) E: 489929.76 UTM 17 NAD 83 (m) E: 489929.76



Site Locations (NAD 27)	
Structure	Echidna (D2)
Site Entrance	39.72628202
Center of Well Pad	39.72628202
Center of Production Pad	39.72628202

### Approach Routes:

From the intersection of WV Rt 2 and OH Rt 7 near New Martinsville, WV, Travel North on WV Rt 2 for 6.1 mi., Turn Right onto Co Rt 4 (Wells Hill Rd.). Follow Co Rt 4 for 2.0 mi. The site entrance will be on the Right (South) side of the road.

- All Pad excavation complies with the following restrictions:
  - \*15' from an existing well or developed spring used for human or domestic animals;
  - \*5' from an unsealed drainage or drain greater than 2,500 SF used for poultry or dairy measurement from the center of the pad;
  - \*10' from the edge of distance to wetlands, perennial streams, natural or artificial lake, pond or reservoir;
  - \*300' from the edge of distance to a naturally springing vent stream;
  - \*1,000' of a surface or ground water table in a public water supply;
  - (Well Location Restrictions of WV Code: 25-6-12)

The WV Mines Website was consulted. Previous (Current) mining activities are not within the AOI. WADPEP Website files show that there are active and/or abandoned gas wells within the AOI.

**Project Contacts**

**The Hill Operators**  
Jonathan White - Regulatory Analyst  
734-483-2000 OFF: 304-683-5776 Cell  
Chief Engineer - V.P. Foundation  
817-632-2500 OFF

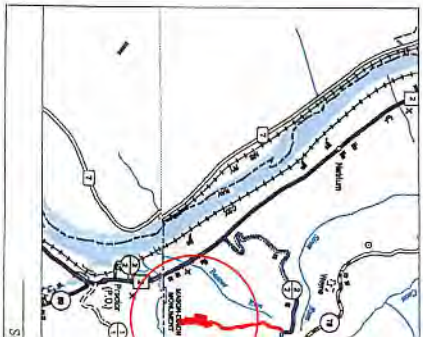
**Services and Engineers**  
Kerensa Kelly  
304-334-0095 Cell  
John P. Sise  
304-442-0020 Cell  
Zachary Starnes/field  
304-634-9991 Cell

**The Hill Operators, LLC**  
Sambrook Place II, Suite 300  
Chambersburg, PA 15117

**Environmental**  
Wetland Determination as provided by: Allmar Ecology  
dated February 19, 2019  
Topographic Information  
The topographic information shown herein is based on aerial photography by Blue Mountain Aerial Mapping, Bureau, WV

**MISS UTILITY OF WEST VIRGINIA**  
1-800-2-43-4348  
Station XIV, Chapter 24-2 requires that you call two business days prior to the date of West Virginia, IT'S THE LAW

**know what's below. Call before you dig.**



**Well Site**  
 Construction Plan, &  
 Permit Control Plans  
 All Operating  
 all County  
 lin District  
 39.72679283°  
 -80.81426073°  
 Ohio River Watershed

**Warning: Issue for Permitting**

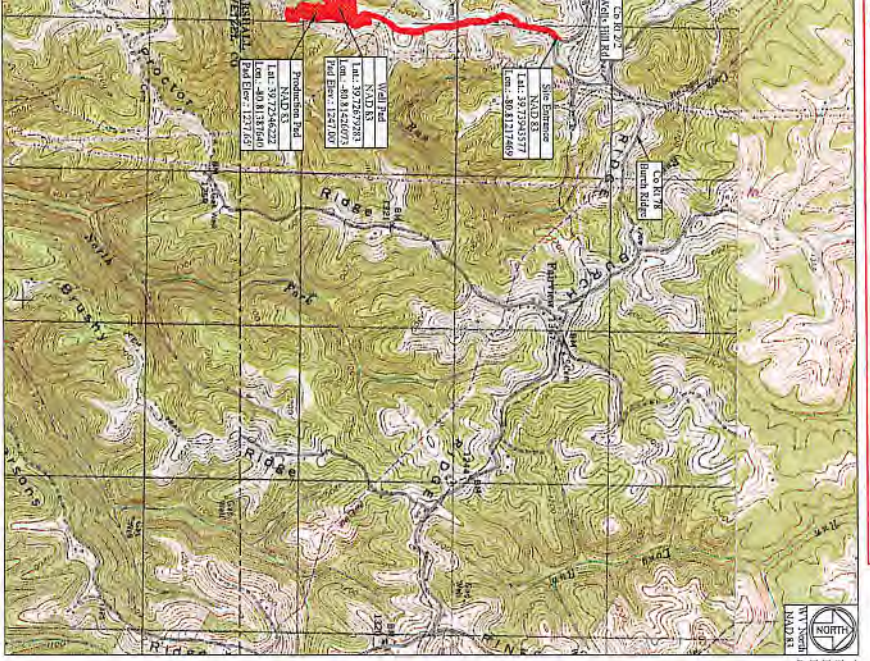
RECEIVED  
 Office of Oil and Gas  
 JAN 28 REC'D  
 WV Department of  
 Environmental Protection

**Pertinent Site Information**  
 Hansen Well Site  
 Emergency Number: 304-845-1920  
 Franklin District, Marshall County, WV  
 Watershed: Haynes Run - Ohio River Watershed  
 Tug Hill Contact Number: 1-817-632-3400

Property Owner Information - Hansen Well Site  
 Property: Marsh Hill, Marshall County

Owner	131 - Parcel	Well Pad Foot	Access Road	Topsoil/Access	Add. Clearing	Total Disturbed
Cowens, LLC	28-2	0.00	1.09	0.00	1.50	2.59
Cowens, LLC	28-8	0.00	0.00	1.18	0.00	1.56
Cowens, LLC	27-22	4.04	0.12	3.14	0.00	6.10
Cowens, LLC	27-21	2.18	0.25	0.00	1.35	2.23
Cowens, LLC	27-20	0.00	0.00	0.00	1.35	1.35
<b>Total</b>	<b>131 - Parcel</b>	<b>6.32</b>	<b>0.91</b>	<b>5.48</b>	<b>2.13</b>	<b>28.28</b>

WV State Plane Coordinate System  
 NAD 83  
 Elevation based on NAVD83  
 Established by Survey Grade GPS  
 and OTC-3 Post-Processing



**Access Road**

Surface Owner	131 - Parcel	Well Pad	Access Road	Type
Cowens, LLC	28-2	0.00	1.09	Access Road
Cowens, LLC	28-8	0.00	0.00	Access Road
Cowens, LLC	27-22	2.68	2.68	Access Road
Cowens, LLC	27-21	0.00	0.00	Access Road

**Disturbed Area**

Well Pad Construction	0.00 AC
Production Pad Construction	0.91 AC
Access Road Construction	5.48 AC
Topsoil/Access Material	1.13 AC
Total Disturbed Area	7.52 AC

**Additional Information:**  
 Total Well Pad Area Disturbed: 0.00 AC  
 Total Production Pad Area Disturbed: 0.91 AC  
 Total Access Road Area Disturbed: 4.59 AC

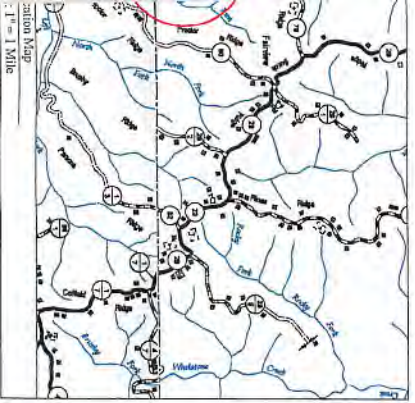
**Hansen Well Site Quantities**

Description	Cent (CV)	Foot (CV)	Spool (CV)	Barrow (CV)	Shut Slope Length of Slope
Well Pad	1,423.28	3,649.30	2,762.34	2,226.02	N/A
Production Pad	3,823.59	260.32	0.00	480.52	N/A
Topsoil/Access Material	6,010.00	540.00	0.00	580.00	76.71
Topsoil/Access Material Storage	4,667.70	4,831.00	2,762.34	1,786.34	N/A
<b>Totals</b>	<b>15,924.47</b>	<b>9,280.62</b>	<b>5,524.64</b>	<b>3,986.88</b>	<b>76.71</b>
<b>Total Spool (CV)</b>	<b>-364.20 (Excess Spool Capacity)</b>				

Received  
 JAN 28 2019  
 Office of Oil and Gas  
 WV Dept. of Environmental Protection  
 1/25/19

**Site Locations (NAD 83)**

Structure	Latitude (DD)	Longitude (DD)
Site Location	39.72679283	-80.81426073
Center of Well Pad	39.72679283	-80.81426073
Center of Production Pad	39.72679283	-80.81426073



The design, construction notes and reference diagrams attached herein have been prepared in accordance with the West Virginia Code of State Rules, the State of West Virginia, and the standards of the State Board of Professional Engineers, Geologists and Surveyors.  
 All Plans, Sheets, Notes, Reference Diagrams and other design materials comprise an integral part of this contract.  
 Designer: Zackary C. Sullivan  
 Designer: Zackary C. Sullivan  
 Date: 01/20/2019

Sheet	Description
1	Cover Sheet
1-1	Schedule of Quantities
M1-N4	Site Notes
2	Production Site Conditions
3	Site Soil Map
4	Clearing Exhibit
5	Overall Plan View
6-7	E&S Plan View
8	Toe Key Exhibit
9-13	Plan View
14	Cross Sections - Well Pad
15	Cross Sections - Production Pad
16-17	Cross Sections - Access Road
G1-G2	Geotechnical Exhibit
S1	Sanitary Disturbed Area Exhibit
M1-A3	Production Exhibit
D1-D2	Erosion and Sediment Control Details
P1	Access Road Details

**Cover Sheet**

**Hansen Well Site**

Franklin District  
 Marshall County, WV

KellyS Surveying  
 1000 S. 11th St.  
 Charleston, WV 25301

**TUG HILL**  
 OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATIONS

Date: 01/20/2019  
 Scale: As Shown  
 Designed By: ZS  
 File No.:  
 Sheet 1 of 17



Site Entrance  
 T.M. 28  
 Parcel 9  
 Lat.: 37°29'25.71"  
 Lon.: -80°51'17.60"

Co. R1 23  
 100'x100' (8)

Co. 11  
 100'x100' (7)

Coveina, LLC  
 T.M. 28  
 Parcel 8

Coveina, LLC  
 T.M. 28  
 Parcel 9

Coveina, LLC  
 T.M. 28  
 Parcel 8

Coveina, LLC  
 T.M. 27  
 Parcel 22

Coveina, LLC  
 T.M. 27  
 Parcel 20

Herf 11  
 Coveina, E. A.  
 T.M. 28  
 Parcel 10

Disturbed Area	
Wetland Construction	6.22/Ac
Pre-Construction	6.01/Ac
Open / Access Material	2.13/Ac
Additional Clearing	13.54/Ac
<b>Total Disturbed Area</b>	<b>28.28/Ac</b>

**Additional Information**  
 Total Wetland Area Disturbed | 6.08/Ac  
 Total Wetland Area of Access Road | 3.92/52'

Access Road	
Surface Drive	5.79'
Coveina, LLC	38.9'
Coveina, LLC	38.8'
Coveina, LLC	2,484.29'
Coveina, LLC	2,721'
Access Road	3.79'
Access Road	1,063.59'
Access Road	862.56'
Access Road	760.38'

**NOTE:**  
 All surface boundary lines shown herein are based on boundary survey conducted by the surveying firm's office.



**Hansen Well Site**  
Tug Hill Operating

**Exhibit A: Final Design: Issue for Permitting**

ENVIRONMENTAL SCIENTIFIC COMPANY, INC. (ESA) AND CONSULTING

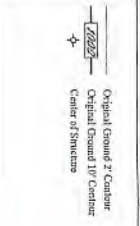


1. Erosion and sediment controls are to be 2' Compact Fine Stock, and 3' Compact Fine Stock. If site conditions are not suitable for 3' Compact Fine Stock, replace stock with 2' Compact Fine Stock. 2' Compact Fine Stock should be installed in the center of the contour. No stripping or 0' (flat) contour is to clear pile until the entire permanent erosion and sediment controls have been installed. Erosion piles.
2. All permanent erosion and sedimentation controls are to be installed in rows that do not require regrading and grading. 3' High setting are to be installed throughout the site and filled in place.
3. Clearing (skidding) and grubbing is to commence to a maximum 60' (width) along the perimeter of the limit of disturbance (LOD) within 4 weeks of start. Following the clearing and grubbing, a water control wall at the top of the temporary perimeter erosion and sedimentation controls have been installed. 60' High 2' compact fine stock is to be installed.
4. Clearing (skidding) and grubbing is to be limited to 200 LF. Where temporary erosion and sediment controls are needed, Erosion and sediment controls are to be added and installed as necessary. Grubbing is to be installed.
5. All stumps and areas are to be ground as the stumps and other woody debris will be ground in a wood chip generator. The wood chips are to be used for mulch. The contractor is responsible for chip hauling and disposal. The wood chip generator will be used for mulch. The wood chips, including wood chips, stumps, branches, etc. will not be buried in the field's topsoil and will be disposed of in a wood chip generator. The wood chips will be used for mulch.
6. All temporary access roads utilized for tree skidding and clearing shall have temporary cover to keep the roads from eroding along the road to contour level.
7. Doubling sections of the removal of stumps, logs, limbs, brush, organic materials, debris, and other obstructions from below original ground surface shall be done with the proposed work.
8. All stumps and areas are to be ground as the stumps and other woody debris will be ground in a wood chip generator. The wood chips are to be used for mulch. The contractor is responsible for chip hauling and disposal. The wood chip generator will be used for mulch. The wood chips, including wood chips, stumps, branches, etc. will not be buried in the field's topsoil and will be disposed of in a wood chip generator. The wood chips will be used for mulch.
9. All temporary access roads utilized for tree skidding and clearing shall have temporary cover to keep the roads from eroding along the road to contour level.
10. For all erosion and sediment controls, the general contractor shall submit a construction inspection schedule and plan for installation prior to any construction activities.

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JAN 28 2019  
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WV Dept. of Environmental Protection



MSS UTILITY OF WEST VIRGINIA  
1480-245-4848  
Section XIV Chapter 24-C requires that you call before business hours you dig in the state of West Virginia.  
IT'S THE LAW



Coveira, LLC  
TUG 27  
Parcel: 26

Date	Revision
01-20-2019	Design

**Clearing Exhibit**

**Hansen Well Site**

Franklin District  
Marshall County, WV

Date: 01/20/2019  
Scale: As Shown  
Designed By: ZS  
File No.  
Sheet 4 of 17

**TUG HILL OPERATING**

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

**Kelly Surveying**  
P.O. Box 234  
Canaan Valley, WV 26015  
304-835-4444

## PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

### CONDITIONS

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1. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
2. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
3. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
4. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
5. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
6. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.



04/05/2019



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west virginia department of environmental protection

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Oil and Gas Conservation Commission  
601 57<sup>th</sup> Street SE, Charleston, WV 25304  
304-926-0499 Ext 1274

Barry K. Lay, Chairman  
dep.wv.gov

March 12, 2019

Department of Environmental Protection  
Office of Oil and Gas  
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-01654

COMPANY: Tug Hill Operating, LLC

FARM: Covestro, LLC Hansen 7HU

COUNTY: Marshall DISTRICT: Franklin QUAD: New Martinsville

The deep well review of the application for the above company is Approved to drill to Trenton for Point Pleasant completion.

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: none
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

  
Susan Rose  
Administrator

WW-6B  
(04/15)

API NO. 47-051 - 01654 **04/05/2019**  
OPERATOR WELL NO. Hansen 7HU  
Well Pad Name: Hansen

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Franklin New Martinsville 7  
Operator ID County District Quadrangle

2) Operator's Well Number: Hansen 7HU Well Pad Name: Hansen

3) Farm Name/Surface Owner: Covestro LLC, FKA Bayer Material Science, LLC Public Road Access: County Route 2/2 - Wells Hill Road

4) Elevation, current ground: 1,245' Elevation, proposed post-construction: 1,245'

5) Well Type (a) Gas X Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_  
Other \_\_\_\_\_

(b) If Gas Shallow \_\_\_\_\_ Deep X  
Horizontal X X Drill Deeper

*JW*  
*1/23/19*

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant is the target formation at a depth of 11,147' - 11,266' thickness of 119' and anticipated pressure of approx. 9,500 psi

8) Proposed Total Vertical Depth: 11,416'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 18,069'

11) Proposed Horizontal Leg Length: 6,221.63'

12) Approximate Fresh Water Strata Depths: \* 850'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 1,740'

15) Approximate Coal Seam Depths: Sewickly Coal - 758' and Pittsburgh Coal - 843' \*

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes \_\_\_\_\_ No X

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

Received  
JAN 28 2019  
WV Dept. of Environmental Protection  
Office of Oil and Gas

WW-6B  
(04/15)

47 05 1 016 5400  
 API NO. 47- 051 - 01654 **04/05/2019**  
 OPERATOR WELL NO. Hansen 7HU  
 Well Pad Name: Hansen

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	Existing	BW	94	n/a	120'	Existing
Fresh Water	13 3/8"	Existing	H40	48	n/a	1,209'	Existing
Coal	9 5/8"	Existing	J55	36	n/a	2,627'	Existing
Intermediate	7"	NEW	HPP110	26	10,245'	10,245'	1,615 Ft^3(CTS)
Production	4.5"	NEW	HPP110	13.5	18,069'	18,069'	2,230 Ft^3(CTS)
Tubing	2 3/8"	NEW				10,918'	
Liners							

*already set go*

*OW 1/23/19*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	Existing	.438	1,530	1,224	Existing	Existing
Fresh Water	13 3/8"	Existing	.380	2,740	2,192	Existing	Existing
Coal	9 5/8"	Existing	.352	3,520	2,816	Existing	Existing
Intermediate	7"	8.875"	.362	11,320	9,056	See #24	1.99
Production	4 1/2"	6.00"	.290	14,110	11,288	See #24	1.19
Tubing	2 3/8"			14,850	11,880		
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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 WY Dept. of Environmental Protection

WW-6B  
(10/14)

API NO. 47- 051 - 01654 **04/05/2019**

OPERATOR WELL NO. Hansen 7HU

Well Pad Name: Hansen

*JW*  
*2/20/19*

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Modify direction of well bore:  
Plug back open hole with solid cement plug up into the 9.625" casing to stabilize well bore

Drill through cement and modify direction:  
Drill out cement below previous casing set depth (approximately 150' in original hole) until separation from 9.625" casing is gained and cement/formation properties are conducive to sidetracking operations. Perform open-hole sidetrack, gain separation from the original wellbore and drill to TD per directional plan attached. Planned TD is through the Point Pleasant and 150' into the Trenton formation. Log vertical section and set a solid cement plug back to proposed KOP (approximately 9,800' in the new wellbore). Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well to be completed with approximately 15,550,000 lb proppant and 240,414 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 28.28

22) Area to be disturbed for well pad only, less access road (acres): 6.22

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

24) Describe all cement additives associated with each cement type:

\*See Attachment

25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

**Received**

*FEB 22*

Office of Oil and Gas

WV Dept. of Environmental Protection

\*Note: Attach additional sheets as needed.

4705101654<sup>DD</sup>

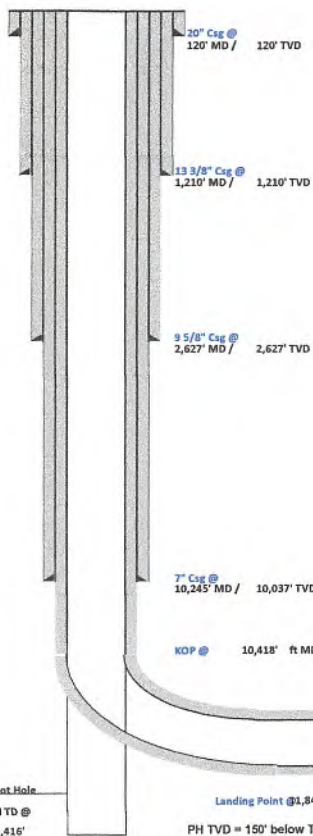


WELL NAME: Hansen 7HU  
 STATE: WV COUNTY: Marshall  
 DISTRICT: Franklin  
 DF Elev: 1,247' GL Elev: 1,247'  
 TD: 18,069'  
 TH Latitude: 39.72687441  
 TH Longitude: -80.81424599  
 BH Latitude: 39.7138196  
 BH Longitude: -80.7974822

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	848'
Sewickley Coal	758'
Pittsburgh Coal	843'
Big Lime	2,062'
Berea	2,605'
Tully	6,457'
Marcellus	6,516'
Onondaga	6,568'
Salina	7,219'
Lockport	8,241'
Utica	10,894'
Point Pleasant	11,147'
Landing Depth	11,197'
Trenton	11,266'
Pilot Hole TD	11,416'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	26	20	120'	120'	BW	BW	Surface
Surface	17.5	13.375	1,210'	1,210'	48	H40	Surface
Intermediate 1	12 1/4	9 5/8	2,627'	2,627'	36	J55	Surface
Intermediate 2	8 7/8	7	10,245'	10,037'	26	HPP110	Surface
Production	6	4 1/2	18,069'	11,306'	13.5	HCP110	Surface

CEMENT SUMMARY			DRILLING DETAILS		
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	220	A	15.6	Air	None
Surface	943	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	902	A	15	Air	1 Centralizer every other jt
Intermediate 2	1,379	A	14.5	Air	1 Centralizer every other jt
Production	1,523	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Lateral TD @ 18,069' ft MD  
11,306' ft TVD

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FEB 22 2019

Office of Oil and Gas  
 WV Dept. of Environmental Protection

**Conductor and Fresh Water Casing Cement:***Premium NE-1 + 2% CaCl*

- Premium NE-1 – Class A Portland API Spec
- CaCl – Calcium Chloride

**Coal Casing Cement:***Premium NE-1 + 1.5% CaCl + Flake*

- Premium NE-1 – Class A Portland API spec
- CaCl – Calcium Chloride
- CelloFlake

**Intermediate Casing Cement:**Lead: *Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170*Tail: *Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate*

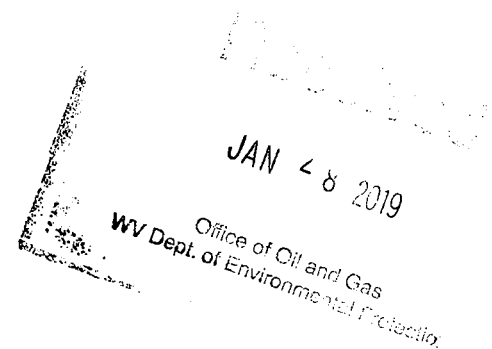
- Premium NE-1 – Class A Portland API spec
- BA-90 – Gas Migration Mitigator
- R-3 – Cement Retarder
- KCl – Potassium Chloride
- FP-13L – Anti-Foaming Agent
- MPA-170 – Gelling Agent
- CD-32 – Dispersant
- FL-52 – Fluid Loss Agent
- ASA-301 – Free Water Control Agent
- Sodium Metasilicate – Extending Agent

**Kick Off Plug:***Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L*

- CD-32 – Dispersant
- Sodium Metasilicate – Extending Agent
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent

**Production Casing Cement:**Lead: *50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L*Tail: *25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L*

- R-3 – Cement Retarder
- MPA-250 – Gelling Agent
- FP-13L – Anti-Foaming Agent





**TUG HILL**  
OPERATING

4705101654 DD

**Tug Hill Operating, LLC Casing and Cement Program**

**Hansen 7HU**

**Casing**

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	20"	BW	26"	120'	CTS
Surface	13 3/8"	H40	17 1/2"	1,210'	CTS
Intermediate 1	9 5/8"	J55	12 1/4"	2,627'	CTS
Intermediate 2	7"	HPP110	8 7/8"	10,245'	CTS
Production	4 1/2"	HCP110	6"	18,069'	CTS

**Cement**

Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2

Intermediate 1: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.2

Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

Received

FEB 22 2019

Office of Oil and Gas  
WV Dept. of Environmental Protection

Area of Review 4705101654DD

Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, [dducoeur@dpslandservices.com](mailto:dducoeur@dpslandservices.com) DPS GIS (1/14/2019) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with IHS All Wells Layer
2. Map with Farm lines overlain and any well spots identified on Farm Maps
3. More recent (1970s vintage) topos and older topos

Discussion with Phil Dinterman WVGES GIS Department (7/15/2016)

- WVGES has plotted every well spot they have access to and are aware of with that contains a coordinate. 30000, 70000, and 90000 series wells are available via the WVGES online map. Some locations aren't great due to vintage and manipulation of maps through time
- 30000 series – any well drilled prior to 1929 – APIs were not assigned to original wells
- 70000 series – Well spots pulled from old Farm line maps that the WVGES has access to
- 90000 series – Any sources that the WVGES has access that shows a well spot but has no additional supporting information. DEP does not have 90000 series on their maps.
- There can be duplication between wells in the 3 series
- Phil indicated that other Operators are providing a screenshot of the WVGES map with their planned well and using that for permits



4705101654DY

Permit well - Hansen 7HU  
Wells within 500' Buffer

Note: Well spots depicted on Area of Review map (page 3) are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101645 4705101646	Tug Hill Operating Gastar Exploration	6522' TVD, 12308 MD	Marcellus Shale	None	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Marcellus Horizontal Well, Producing Cancelled Location
4705101647 4705101648	Tug Hill Operating (Gastar Exploration ) Gastar Exploration	6,067' TVD, 6,409 TMD, Top holed only	None	None	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Top hole only, Revised to be current Hansen No. 3H utilizing Utica well the existing top hole Cancelled Location
4705101649 4705101650 4705101651	Tug Hill Operating Gastar Exploration Gastar Exploration	6532' TVD, 12178 MD	Marcellus Shale	None	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Marcellus Horizontal Well, Producing Cancelled Location Cancelled Location
4705101652 4705101653	Tug Hill Operating Gastar Exploration	6532' TVD, 12178 MD	Marcellus Shale	None	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Marcellus Horizontal Well, Producing Cancelled Location
4705101654	Tug Hill Operating (Gastar Exploration )	5760' TVD, top holed only	None	None	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Top hole only
4710300408	Ernest A. Strakosch	2,880' TVD	Gordon Sd	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Plugged 5/23/1962
4710300088	Unknown	2,485' TVD	Unknown	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Plugged 1934

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WV Dept. of Environmental Protection



WV Geological & Economic Survey Well: County = 51 Permit = 01648

Location Information: [View Map](#)

APN	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_76	LAT_CD	LONG_CD	UTME	UTMN
4705101648	Wayne	1949	Franklin	New-Mercersville	New-Mercersville	32-240710	-80-814274	219216.4	4367448.1

Bottom Hole Location Information:

APN	EP_FLAG	UTME	UTMN	LONG_CD	LAT_CD
4705101648	1	AA	Franklin	32-240710	-80-814274

Owner Information:

APN	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR	AT_COMPLETION	PROP_VD	PROP_TROT_FM	TYM_EST_FR
4705101648	...	...	...	Baron/Marshall/Scotco LLC	44	...	...	...	Baron/Marshall/Scotco LLC et al	Gasstar/Espritco/USA, Inc.	5443	Marcellus Fm	2007

Completion Information:

APN	CMP_ID	SUFFIX	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	RG	CMP_MTHD	TVD	TMO	NEW_FTO	ROD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	T_B
4705101648	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Comment: --F-- Additional Lease Numbers: WV16-0076-0011WV16-0095-006

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 01648

Location Information: [View Map](#)

APN	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_76	LAT_CD	LONG_CD	UTME	UTMN
4705101649	Wayne	1949	Franklin	New-Mercersville	New-Mercersville	32-240700	-80-814268	219217.4	4367449.1

Bottom Hole Location Information:

APN	EP_FLAG	UTME	UTMN	LONG_CD	LAT_CD
4705101649	1	AA	Franklin	32-240700	-80-814268

Owner Information:

APN	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR	AT_COMPLETION	PROP_VD	PROP_TROT_FM	TYM_EST_FR
4705101649	...	...	...	Baron/Marshall/Scotco LLC	44	...	...	...	Baron/Marshall/Scotco LLC et al	Gasstar/Espritco/USA, Inc.	5443	Marcellus Fm	2007

Completion Information:

APN	CMP_ID	SUFFIX	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	RG	CMP_MTHD	TVD	TMO	NEW_FTO	ROD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	T_B
4705101649	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Comment: --F-- Additional Lease Numbers: WV16-0076-0011WV16-0127-001, KCP 0420

Pay/Show/Water Information:

APN	CMP_ID	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FMLTOP	DEPTH_BOTTOM	O_BEF	O_AFT	O_BEF	O_AFT	WATER_ONLY
4705101649	4152015	Water	Fresh Water	Vertical	...	...	...	...	...	...	...	...

Production Gas Information: (Volumes in Mcf) \* 2018 data are incomplete at this time

APN	PRODUCING_OPERATOR	PRD_YEAR	ANN_OAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101649	Gasstar/Espritco/USA, Inc.	2014	16,668	0	0	0	0	0	0	0	0	0	0	0	16,668

Production Oil Information: (Volumes in Bbl) \*\* some operators may have reported NGL under Oil \* 2018 data are incomplete at this time

APN	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101649	Gasstar/Espritco/USA, Inc.	2014	2,040	0	0	0	0	0	0	0	0	0	0	0	2,040

Production NGL Information: (Volumes in Bbl) \*\* some operators may have reported NGL under Oil \* 2018 data are incomplete at this time

APN	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101649	Gasstar/Espritco/USA, Inc.	2014	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) \* 2018 data are incomplete at this time

APN	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101649	Tug Hill Operating, LLC	2017	2,600	40	46	104	226	225	224	229	209	217	224	240	240

WV Geological & Economic Survey Well: County = 51 Permit = 01660

Location Information: [View Map](#)

APN	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_76	LAT_CD	LONG_CD	UTME	UTMN
4705101660	Wayne	1949	Franklin	New-Mercersville	New-Mercersville	32-240650	-80-814200	219218.4	4367464.1

Bottom Hole Location Information:

APN	EP_FLAG	UTME	UTMN	LONG_CD	LAT_CD
4705101660	1	AA	Franklin	32-240650	-80-814200

Owner Information:

APN	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR	AT_COMPLETION	PROP_VD	PROP_TROT_FM	TYM_EST_FR
4705101660	...	...	...	Baron/Marshall/Scotco LLC	44	...	...	...	Baron/Marshall/Scotco LLC et al	Gasstar/Espritco/USA, Inc.	5443	Marcellus Fm	2007

Completion Information:

APN	CMP_ID	SUFFIX	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	RG	CMP_MTHD	TVD	TMO	NEW_FTO	ROD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	T_B
4705101660	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Comment: --F-- Additional Lease Numbers: WV16-0069-0001WV18-0127-0011WV16-0115-000

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

Received  
JAN 23 2019



WV Geological & Economic Survey Well: County = 51 Permit = 01654

Location Information: View Map  
 API COUNTY PERMIT TAX\_DISTRICT QUAD\_75 QUAD\_15 LAT\_DD LONG\_DD UTMN UTMN  
 4705101654 51 01654 5101654 1654 40 30541 89 25176

Bottom Hole Location Information:  
 API PERM FLAG UTMN UTMN LONG\_DD LAT\_DD  
 4705101654 1 40 30541 89 25176 40 30541 89 25176

Owner Information:  
 API CMP\_ID SURFID STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AT\_COMPLETION PROF\_VO PROF\_TOTL FM TFM\_EST\_PR  
 4705101654 1 40 30541 89 25176 40 30541 89 25176

Completion Information:  
 API CMP\_ID SPUD\_DT ELEV DATUM FIELD DEEPST\_FM DEEPST\_JMT INITIAL\_CLASS FINAL\_CLASS TYPE RIG CMP\_MTHD YTD TMO NEW\_FIS ROD G\_BEF G\_AFT G\_BEF G\_AFT NGL\_BCE  
 4705101654 1 40 30541 89 25176 40 30541 89 25176

Pa/Show/Water Information:  
 API CMP\_ID ACTIVITY PRODUCT SECTION DEPTH\_TOP FM\_TOP DEPTH\_BOTTOM FM\_BOTTOM G\_BEF G\_AFT G\_BEF G\_AFT WATER\_GNTY  
 4705101654 1 40 30541 89 25176 40 30541 89 25176

Production Gas Information: (Volumes in Mcf) \* 2018 data are incomplete at this time

Production Oil Information: (Volumes in Bbl) \*\* some operators may have reported NGL under Oil \* 2018 data are incomplete at this time

Production NGL Information: (Volumes in Bbl) \*\* some operators may have reported NGL under Oil \* 2018 data are incomplete at this time

Production Water Information: (Volumes in Gallons) \* 2018 data are incomplete at this time

Stratigraphy Information:  
 API SURFID FM FM\_QUALITY DEPTH\_TOP DEPTH\_BOTTOM THICKNESS THICKNESS\_QUALITY ELEV DATUM  
 4705101654 1 40 30541 89 25176 40 30541 89 25176

There is no Wireline (E-Log) data for this well  
 There is no Plugging data for this well  
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 103 Permit = 00408

Location Information: View Map  
 API COUNTY PERMIT TAX\_DISTRICT QUAD\_75 QUAD\_15 LAT\_DD LONG\_DD UTMN UTMN  
 471000048 103 00408 10300408 0408 40 30541 89 25176

Bottom Hole Location Information:  
 API PERM FLAG UTMN UTMN LONG\_DD LAT\_DD  
 471000048 1 40 30541 89 25176 40 30541 89 25176

Owner Information:  
 API CMP\_ID SURFID STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AT\_COMPLETION PROF\_VO PROF\_TOTL FM TFM\_EST\_PR  
 471000048 1 40 30541 89 25176 40 30541 89 25176

Completion Information:  
 API CMP\_ID SPUD\_DT ELEV DATUM FIELD DEEPST\_FM DEEPST\_JMT INITIAL\_CLASS FINAL\_CLASS TYPE RIG CMP\_MTHD YTD TMO NEW\_FIS ROD G\_BEF G\_AFT G\_BEF G\_AFT NGL\_BCE  
 471000048 1 40 30541 89 25176 40 30541 89 25176

Pa/Show/Water Information:  
 API CMP\_ID ACTIVITY PRODUCT SECTION DEPTH\_TOP FM\_TOP DEPTH\_BOTTOM FM\_BOTTOM G\_BEF G\_AFT G\_BEF G\_AFT WATER\_GNTY  
 471000048 1 40 30541 89 25176 40 30541 89 25176

There is no Production Gas data for this well  
 There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil  
 There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil  
 There is no Production Water data for this well

Stratigraphy Information:  
 API SURFID FM FM\_QUALITY DEPTH\_TOP DEPTH\_BOTTOM THICKNESS THICKNESS\_QUALITY ELEV DATUM  
 471000048 1 40 30541 89 25176 40 30541 89 25176

Wireline (E-Log) Information:  
 API LOG\_TOP LOG\_BOT DEEPST\_FM LOG\_AVAL SCAN DIGITIZED GR\_TOP GR\_BOT D\_TOP D\_BOT N\_TOP N\_BOT T\_TOP T\_BOT Y\_TOP Y\_BOT O\_TOP O\_BOT INCH2 INCH8 REDUCED ROD  
 471000048 1 40 30541 89 25176 40 30541 89 25176

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 JAN 4 8 2019  
 Office of Oil and Gas  
 WV Dept. of Environmental Protection

WV Geological & Economic Survey Well: County = 103 Permit = 00088

Location Information: View Map  
 API COUNTY PERMIT TAX\_DISTRICT QUAD\_75 QUAD\_15 LAT\_DD LONG\_DD UTMN UTMN  
 471000088 103 00088 10300088 088 40 30541 89 25176

Bottom Hole Location Information:  
 API PERM FLAG UTMN UTMN LONG\_DD LAT\_DD  
 471000088 1 40 30541 89 25176 40 30541 89 25176

Owner Information:  
 API CMP\_ID SURFID STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AT\_COMPLETION PROF\_VO PROF\_TOTL FM TFM\_EST\_PR  
 471000088 1 40 30541 89 25176 40 30541 89 25176

Completion Information:  
 API CMP\_ID SPUD\_DT ELEV DATUM FIELD DEEPST\_FM DEEPST\_JMT INITIAL\_CLASS FINAL\_CLASS TYPE RIG CMP\_MTHD YTD TMO NEW\_FIS ROD G\_BEF G\_AFT G\_BEF G\_AFT NGL\_BCE  
 471000088 1 40 30541 89 25176 40 30541 89 25176

Pa/Show/Water Information:  
 API CMP\_ID ACTIVITY PRODUCT SECTION DEPTH\_TOP FM\_TOP DEPTH\_BOTTOM FM\_BOTTOM G\_BEF G\_AFT G\_BEF G\_AFT WATER\_GNTY  
 471000088 1 40 30541 89 25176 40 30541 89 25176

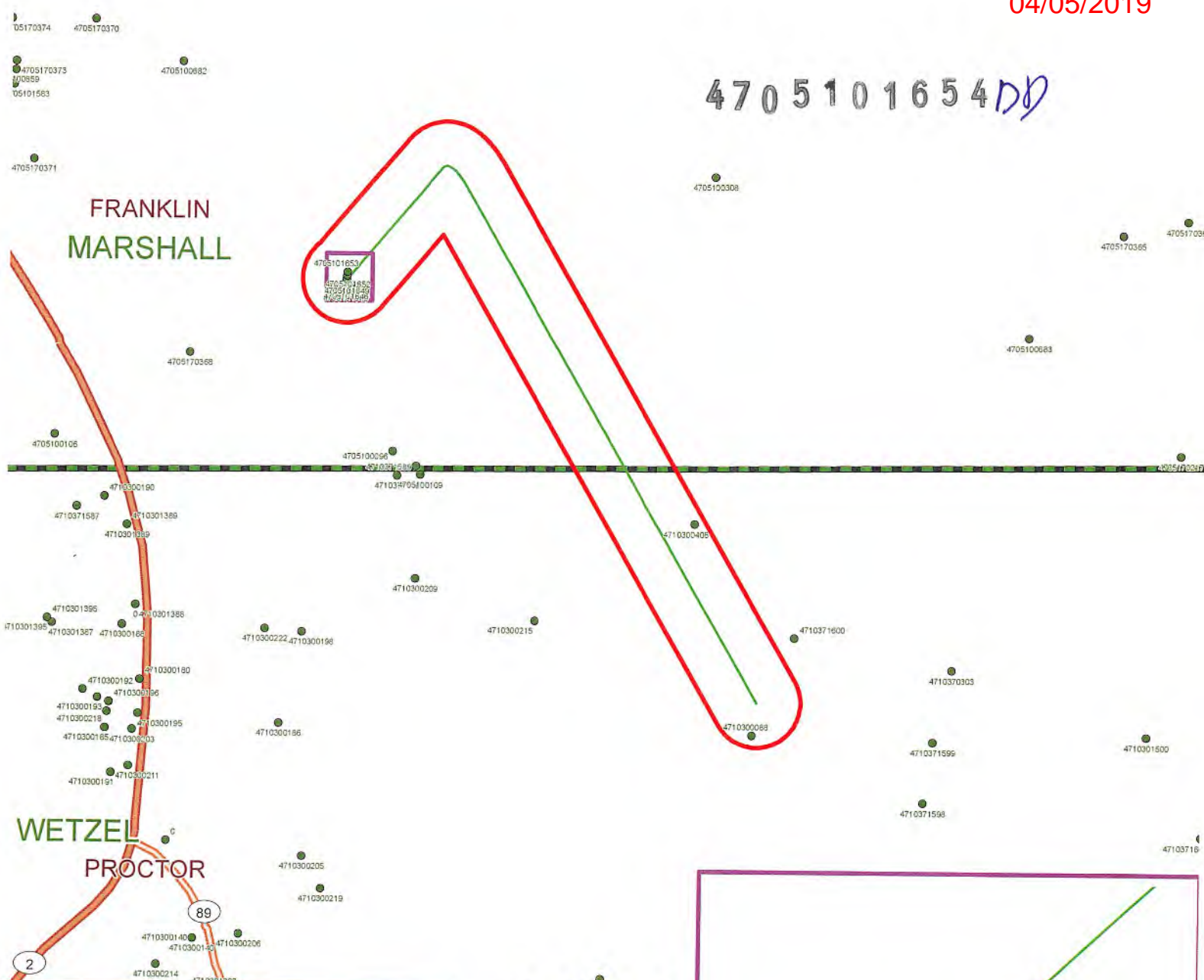
There is no Production Gas data for this well  
 There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil  
 There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil  
 There is no Production Water data for this well

Stratigraphy Information:  
 API SURFID FM FM\_QUALITY DEPTH\_TOP DEPTH\_BOTTOM THICKNESS THICKNESS\_QUALITY ELEV DATUM  
 471000088 1 40 30541 89 25176 40 30541 89 25176

Plugging Information:  
 API PLS\_ID DEPTH\_PRF  
 471000088 1 40 30541 89 25176

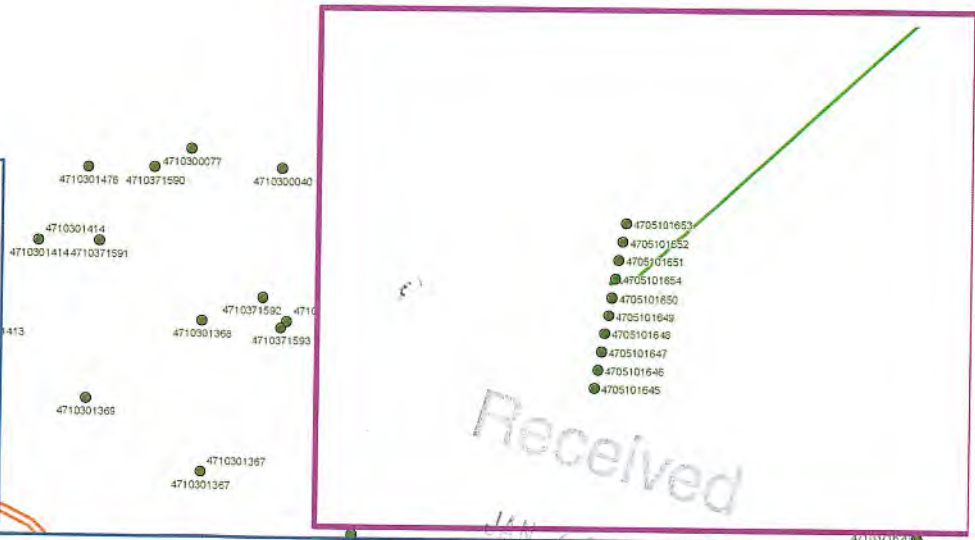
There is no Sample data for this well

4705101654 DD



**Legend**

- Well Locations (ims.wvgs.wvnet.edu)
- Hansen - 7HU
- 500 Ft. Buffer
- Major Highways
- Major Roads
- ▭ Counties
- ▭ Districts



# Hansen - 7HU

## Franklin District

### Marshall County, WV

Office of Oil and Gas  
WV Dept. of Environmental Protection





Well: Hansen 7HU (C)  
 Site: Hansen  
 Project: Wetzel County, West Virginia (UTM17 NAD83)  
 Design: rev4



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	2786.00	2.98	115.22	2785.83	2.04	10.71	0.00	0.00	6.11	S/T Begin 2°/100' build/turn
2	2967.76	3.00	40.32	2967.41	3.65	18.07	2.00	-127.16	10.16	Begin 3.00° tangent
3	4502.46	3.00	40.32	4500.00	64.89	70.04	0.00	0.00	3.41	Begin 2°/100' build
4	5148.37	15.92	40.32	5135.78	145.65	138.58	2.00	0.00	-5.49	Begin 15.92° tangent
5	10418.17	15.92	40.32	10203.51	1247.61	1073.81	0.00	0.00	-126.87	Begin 6°/100' build/turn
6	11348.11	49.00	149.74	11021.40	1023.78	1355.80	6.00	120.62	230.70	Begin 8°/100' build
7	11848.11	89.00	149.74	11197.00	628.74	1586.27	8.00	0.00	673.29	Begin 89.00° lateral
8	18068.60	89.00	149.74	11306.00	-4743.37	4720.45	0.00	0.00	6691.95	PBHL/TD 18068.60 MD/11306.00 TVD

Geodetic 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: GL=1247 @ 1247.00ft

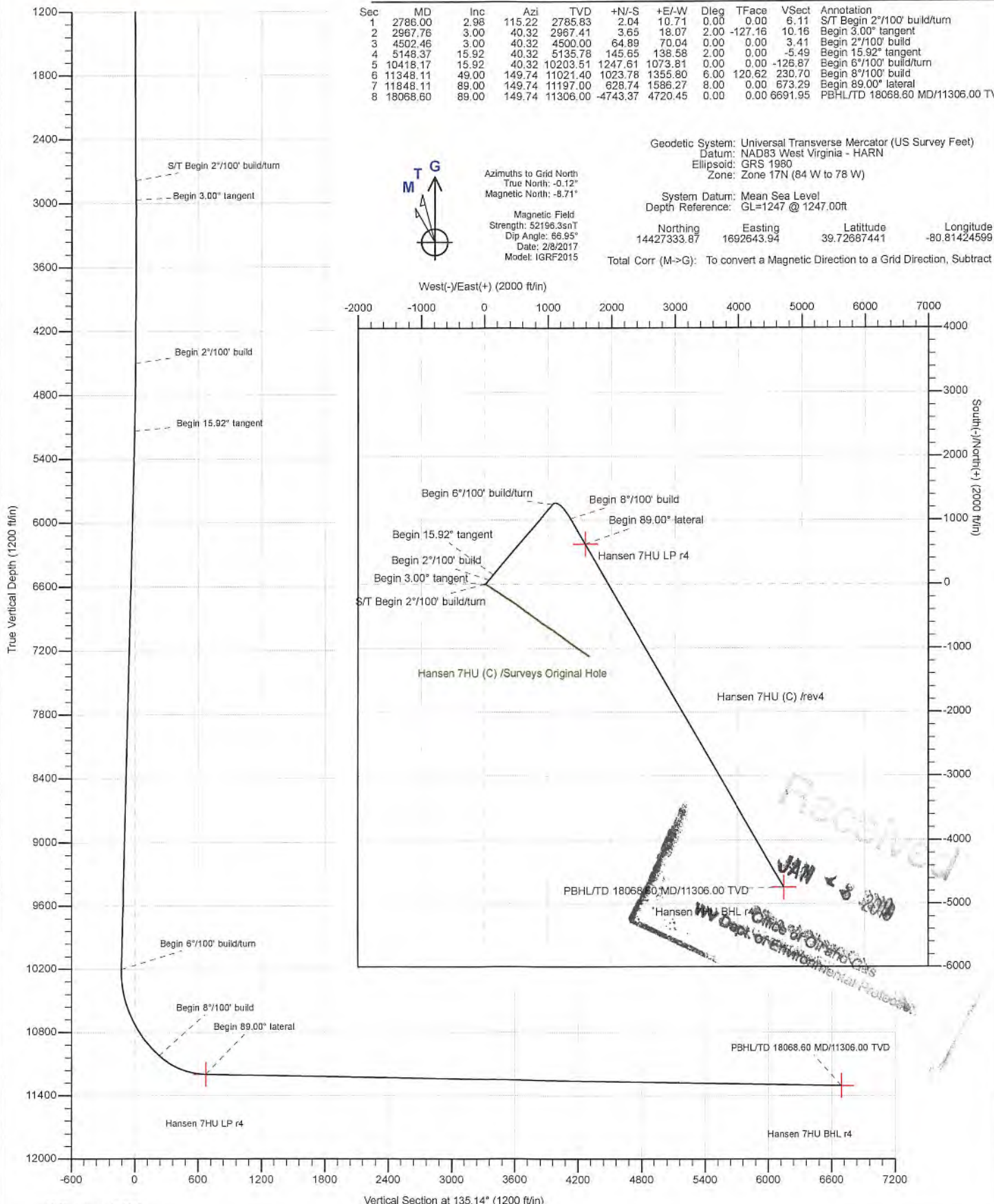
Northing: 14427333.87 Easting: 1692643.94 Latitude: 39.72687441 Longitude: -80.81424599

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.71°



Azimuths to Grid North  
 True North: -0.12°  
 Magnetic North: -8.71°

Magnetic Field  
 Strength: 52196.3snT  
 Dip Angle: 66.95°  
 Date: 2/8/2017  
 Model: IGRF2015



Received  
 JAN 13 2019  
 WV Dept. of Environmental Protection  
 Office of Oil and Gas



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Hansen 7HU (C)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1247 @ 1247.00ft
<b>Project:</b>	Wetzel County, West Virginia (UTM17 NAD83)	<b>MD Reference:</b>	GL=1247 @ 1247.00ft
<b>Site:</b>	Hansen	<b>North Reference:</b>	Grid
<b>Well:</b>	Hansen 7HU (C)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Sidetrack 01		
<b>Design:</b>	rev4		

<b>Project</b>	Wetzel County, West Virginia (UTM17 NAD83)		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Hansen				
<b>Site Position:</b>		<b>Northing:</b>	14,427,333.87 usft	<b>Latitude:</b>	39.72687441
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,692,643.93 usft	<b>Longitude:</b>	-80.81424599
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.12 °

<b>Well</b>	Hansen 7HU (C)					
<b>Well Position</b>	<b>+N-S</b>	0.00 ft	<b>Northing:</b>	14,427,333.87 usft	<b>Latitude:</b>	39.72687441
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,692,643.93 usft	<b>Longitude:</b>	-80.81424599
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	0.00 ft	<b>Ground Level:</b>	1,247.00 ft

<b>Wellbore</b>	Sidetrack 01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	2/8/2017	-8.59	66.95	52,196.32380109

<b>Design</b>	rev4			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	2,786.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	135.14

<b>Plan Survey Tool Program</b>	<b>Date</b>	1/11/2019		
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	2,786.00	18,068.60 rev4 (Sidetrack 01)	MWD	MWD - Standard

<b>Plan Sections</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
2,786.00	2.98	115.22	2,785.83	2.04	10.71	0.00	0.00	0.00	0.00	
2,967.76	3.00	40.32	2,967.41	3.65	18.07	2.00	0.01	-41.21	-127.16	
4,502.46	3.00	40.32	4,500.00	64.89	70.04	0.00	0.00	0.00	0.00	
5,148.37	15.92	40.32	5,135.78	145.65	138.58	2.00	2.00	0.00	0.00	
10,418.17	15.92	40.32	10,203.51	1,247.61	1,073.81	0.00	0.00	0.00	0.00	
11,348.11	49.00	149.74	11,021.40	1,023.78	1,355.80	6.00	3.56	11.77	120.62	
11,848.11	89.00	149.74	11,197.00	628.74	1,586.27	8.00	8.00	0.00	0.00	Hansen 7HU LP r4
18,068.60	89.00	149.74	11,306.00	-4,743.37	4,720.45	0.00	0.00	0.00	0.00	Hansen 7HU BHL r4





Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hansen 7HU (C)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1247 @ 1247.00ft
Project:	Wetzel County, West Virginia (UTM17 NAD83)	MD Reference:	GL=1247 @ 1247.00ft
Site:	Hansen	North Reference:	Grid
Well:	Hansen 7HU (C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Sidetrack 01		
Design:	rev4		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,786.00	2.98	115.22	2,785.83	2.04	10.71	14,427,335.91	1,692,654.65	39.72687995	-80.81420787
<b>S/T Begin 2°/100' build/tum</b>									
2,800.00	2.82	110.68	2,799.82	1.76	11.36	14,427,335.63	1,692,655.30	39.72687919	-80.81420556
2,900.00	2.42	66.62	2,899.72	1.73	15.61	14,427,335.60	1,692,659.54	39.72687908	-80.81419047
2,967.76	3.00	40.32	2,967.41	3.65	18.07	14,427,337.52	1,692,662.00	39.72688434	-80.81418170
<b>Begin 3.00° tangent</b>									
3,000.00	3.00	40.32	2,999.60	4.94	19.16	14,427,338.81	1,692,663.09	39.72688787	-80.81417781
3,100.00	3.00	40.32	3,099.47	8.93	22.55	14,427,342.80	1,692,666.48	39.72689881	-80.81416574
3,200.00	3.00	40.32	3,199.33	12.92	25.93	14,427,346.79	1,692,669.87	39.72690975	-80.81415366
3,300.00	3.00	40.32	3,299.19	16.91	29.32	14,427,350.78	1,692,673.25	39.72692069	-80.81414159
3,400.00	3.00	40.32	3,399.06	20.90	32.71	14,427,354.77	1,692,676.64	39.72693163	-80.81412952
3,500.00	3.00	40.32	3,498.92	24.89	36.09	14,427,358.76	1,692,680.02	39.72694256	-80.81411744
3,600.00	3.00	40.32	3,598.78	28.88	39.48	14,427,362.75	1,692,683.41	39.72695350	-80.81410537
3,700.00	3.00	40.32	3,698.64	32.87	42.86	14,427,366.74	1,692,686.80	39.72696444	-80.81409330
3,800.00	3.00	40.32	3,798.51	36.86	46.25	14,427,370.73	1,692,690.18	39.72697538	-80.81408122
3,900.00	3.00	40.32	3,898.37	40.85	49.64	14,427,374.72	1,692,693.57	39.72698632	-80.81406915
4,000.00	3.00	40.32	3,998.23	44.84	53.02	14,427,378.71	1,692,696.96	39.72699726	-80.81405707
4,100.00	3.00	40.32	4,098.10	48.83	56.41	14,427,382.70	1,692,700.34	39.72700820	-80.81404500
4,200.00	3.00	40.32	4,197.96	52.82	59.80	14,427,386.69	1,692,703.73	39.72701914	-80.81403293
4,300.00	3.00	40.32	4,297.82	56.81	63.18	14,427,390.69	1,692,707.12	39.72703008	-80.81402085
4,400.00	3.00	40.32	4,397.69	60.80	66.57	14,427,394.68	1,692,710.50	39.72704102	-80.81400878
4,500.00	3.00	40.32	4,497.55	64.79	69.96	14,427,398.67	1,692,713.89	39.72705196	-80.81399671
4,502.46	3.00	40.32	4,500.00	64.89	70.04	14,427,398.76	1,692,713.97	39.72705223	-80.81399641
<b>Begin 2°/100' build</b>									
4,600.00	4.95	40.32	4,597.31	70.05	74.41	14,427,403.92	1,692,718.35	39.72706636	-80.81398081
4,700.00	6.95	40.32	4,696.76	77.95	81.12	14,427,411.82	1,692,725.06	39.72708803	-80.81395689
4,800.00	8.95	40.32	4,795.80	88.50	90.07	14,427,422.37	1,692,734.01	39.72711694	-80.81392498
4,900.00	10.95	40.32	4,894.29	101.67	101.25	14,427,435.54	1,692,745.19	39.72715306	-80.81388512
5,000.00	12.95	40.32	4,992.11	117.46	114.65	14,427,451.33	1,692,758.59	39.72719634	-80.81383735
5,100.00	14.95	40.32	5,089.16	135.84	130.25	14,427,469.71	1,692,774.18	39.72724673	-80.81378173
5,148.37	15.92	40.32	5,135.78	145.65	138.58	14,427,479.53	1,692,782.51	39.72727363	-80.81375203
<b>Begin 15.92° tangent</b>									
5,200.00	15.92	40.32	5,185.43	156.45	147.74	14,427,490.32	1,692,791.68	39.72730323	-80.81371936
5,300.00	15.92	40.32	5,281.60	177.36	165.49	14,427,511.23	1,692,809.42	39.72736056	-80.81365609
5,400.00	15.92	40.32	5,377.76	198.27	183.24	14,427,532.14	1,692,827.17	39.72741788	-80.81359281
5,500.00	15.92	40.32	5,473.93	219.18	200.99	14,427,553.05	1,692,844.92	39.72747521	-80.81352954
5,600.00	15.92	40.32	5,570.10	240.09	218.73	14,427,573.97	1,692,862.67	39.72753253	-80.81346627
5,700.00	15.92	40.32	5,666.26	261.00	236.48	14,427,594.88	1,692,880.41	39.72758986	-80.81340299
5,800.00	15.92	40.32	5,762.43	281.92	254.23	14,427,615.79	1,692,898.16	39.72764719	-80.81333972
5,900.00	15.92	40.32	5,858.59	302.83	271.97	14,427,636.70	1,692,915.91	39.72770451	-80.81327644
6,000.00	15.92	40.32	5,954.76	323.74	289.72	14,427,657.61	1,692,933.65	39.72776184	-80.81321317
6,100.00	15.92	40.32	6,050.92	344.65	307.47	14,427,678.52	1,692,951.40	39.72781916	-80.81314989
6,200.00	15.92	40.32	6,147.09	365.56	325.21	14,427,699.43	1,692,969.15	39.72787649	-80.81308661
6,300.00	15.92	40.32	6,243.25	386.47	342.96	14,427,720.34	1,692,986.89	39.72793381	-80.81302334
6,400.00	15.92	40.32	6,339.42	407.38	360.71	14,427,741.25	1,693,004.64	39.72799114	-80.81296006
6,500.00	15.92	40.32	6,435.58	428.29	378.46	14,427,762.16	1,693,022.39	39.72804846	-80.81289679
6,600.00	15.92	40.32	6,531.75	449.20	396.20	14,427,783.07	1,693,040.13	39.72810579	-80.81283351
6,700.00	15.92	40.32	6,627.92	470.11	413.95	14,427,803.98	1,693,057.88	39.72816312	-80.81277024
6,800.00	15.92	40.32	6,724.08	491.02	431.70	14,427,824.89	1,693,075.63	39.72822044	-80.81270696
6,900.00	15.92	40.32	6,820.25	511.93	449.44	14,427,845.80	1,693,093.38	39.72827777	-80.81264369
7,000.00	15.92	40.32	6,916.41	532.84	467.19	14,427,866.71	1,693,111.12	39.72833509	-80.81258041
7,100.00	15.92	40.32	7,012.58	553.75	484.94	14,427,887.63	1,693,128.87	39.72839242	-80.81251713
7,200.00	15.92	40.32	7,108.74	574.67	502.68	14,427,908.54	1,693,146.62	39.72844974	-80.81245386



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hansen 7HU (C)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1247 @ 1247.00ft
Project:	Wetzel County, West Virginia (UTM17 NAD83)	MD Reference:	GL=1247 @ 1247.00ft
Site:	Hansen	North Reference:	Grid
Well:	Hansen 7HU (C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Sidetrack 01		
Design:	rev4		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
7,300.00	15.92	40.32	7,204.91	595.58	520.43	14,427,929.45	1,693,164.36	39.72850707	-80.81239058	
7,400.00	15.92	40.32	7,301.07	616.49	538.18	14,427,950.36	1,693,182.11	39.72856439	-80.81232730	
7,500.00	15.92	40.32	7,397.24	637.40	555.93	14,427,971.27	1,693,199.86	39.72862172	-80.81226403	
7,600.00	15.92	40.32	7,493.40	658.31	573.67	14,427,992.18	1,693,217.60	39.72867904	-80.81220075	
7,700.00	15.92	40.32	7,589.57	679.22	591.42	14,428,013.09	1,693,235.35	39.72873637	-80.81213747	
7,800.00	15.92	40.32	7,685.73	700.13	609.17	14,428,034.00	1,693,253.10	39.72879369	-80.81207420	
7,900.00	15.92	40.32	7,781.90	721.04	626.91	14,428,054.91	1,693,270.84	39.72885102	-80.81201092	
8,000.00	15.92	40.32	7,878.07	741.95	644.66	14,428,075.82	1,693,288.59	39.72890834	-80.81194764	
8,100.00	15.92	40.32	7,974.23	762.86	662.41	14,428,096.73	1,693,306.34	39.72896567	-80.81188436	
8,200.00	15.92	40.32	8,070.40	783.77	680.15	14,428,117.64	1,693,324.09	39.72902299	-80.81182109	
8,300.00	15.92	40.32	8,166.56	804.68	697.90	14,428,138.55	1,693,341.83	39.72908032	-80.81175781	
8,400.00	15.92	40.32	8,262.73	825.59	715.65	14,428,159.46	1,693,359.58	39.72913764	-80.81169453	
8,500.00	15.92	40.32	8,358.89	846.50	733.40	14,428,180.37	1,693,377.33	39.72919497	-80.81163125	
8,600.00	15.92	40.32	8,455.06	867.42	751.14	14,428,201.29	1,693,395.07	39.72925229	-80.81156798	
8,700.00	15.92	40.32	8,551.22	888.33	768.89	14,428,222.20	1,693,412.82	39.72930962	-80.81150470	
8,800.00	15.92	40.32	8,647.39	909.24	786.64	14,428,243.11	1,693,430.57	39.72936694	-80.81144142	
8,900.00	15.92	40.32	8,743.55	930.15	804.38	14,428,264.02	1,693,448.31	39.72942427	-80.81137814	
9,000.00	15.92	40.32	8,839.72	951.06	822.13	14,428,284.93	1,693,466.06	39.72948159	-80.81131486	
9,100.00	15.92	40.32	8,935.89	971.97	839.88	14,428,305.84	1,693,483.81	39.72953891	-80.81125159	
9,200.00	15.92	40.32	9,032.05	992.88	857.62	14,428,326.75	1,693,501.56	39.72959624	-80.81118831	
9,300.00	15.92	40.32	9,128.22	1,013.79	875.37	14,428,347.66	1,693,519.30	39.72965356	-80.81112503	
9,400.00	15.92	40.32	9,224.38	1,034.70	893.12	14,428,368.57	1,693,537.05	39.72971089	-80.81106175	
9,500.00	15.92	40.32	9,320.55	1,055.61	910.87	14,428,389.48	1,693,554.80	39.72976821	-80.81099847	
9,600.00	15.92	40.32	9,416.71	1,076.52	928.61	14,428,410.39	1,693,572.54	39.72982554	-80.81093519	
9,700.00	15.92	40.32	9,512.88	1,097.43	946.36	14,428,431.30	1,693,590.29	39.72988286	-80.81087191	
9,800.00	15.92	40.32	9,609.04	1,118.34	964.11	14,428,452.21	1,693,608.04	39.72994019	-80.81080864	
9,900.00	15.92	40.32	9,705.21	1,139.26	981.85	14,428,473.12	1,693,625.78	39.72999751	-80.81074536	
10,000.00	15.92	40.32	9,801.37	1,160.17	999.60	14,428,494.04	1,693,643.53	39.73005483	-80.81068208	
10,100.00	15.92	40.32	9,897.54	1,181.08	1,017.35	14,428,514.95	1,693,661.28	39.73011216	-80.81061880	
10,200.00	15.92	40.32	9,993.70	1,201.99	1,035.09	14,428,535.86	1,693,679.02	39.73016948	-80.81055552	
10,300.00	15.92	40.32	10,089.87	1,222.90	1,052.84	14,428,556.77	1,693,696.77	39.73022681	-80.81049224	
10,400.00	15.92	40.32	10,186.04	1,243.81	1,070.59	14,428,577.68	1,693,714.52	39.73028413	-80.81042896	
10,418.17	15.92	40.32	10,203.51	1,247.61	1,073.81	14,428,581.48	1,693,717.74	39.73029455	-80.81041746	
<b>Begin 6°/100' build/turn</b>										
10,500.00	14.05	57.98	10,282.59	1,261.44	1,089.51	14,428,595.31	1,693,733.44	39.73033244	-80.81036154	
10,600.00	13.90	83.00	10,379.72	1,269.35	1,111.74	14,428,603.21	1,693,755.67	39.73035402	-80.81028239	
10,700.00	16.11	104.72	10,476.38	1,267.28	1,137.11	14,428,601.15	1,693,781.04	39.73034820	-80.81019217	
10,800.00	19.92	119.84	10,571.51	1,255.27	1,165.33	14,428,589.14	1,693,809.27	39.73031505	-80.81009188	
10,900.00	24.58	129.87	10,664.07	1,233.44	1,196.11	14,428,567.31	1,693,840.04	39.73025492	-80.80998260	
11,000.00	29.71	136.74	10,753.05	1,202.03	1,229.08	14,428,535.90	1,693,873.02	39.73016847	-80.80986553	
11,100.00	35.09	141.71	10,837.47	1,161.39	1,263.91	14,428,495.26	1,693,907.84	39.73005665	-80.80974197	
11,200.00	40.63	145.48	10,916.40	1,111.96	1,300.20	14,428,445.83	1,693,944.14	39.72992069	-80.80961325	
11,300.00	46.26	148.49	10,988.98	1,054.28	1,337.57	14,428,388.15	1,693,981.50	39.72976207	-80.80948080	
11,348.11	49.00	149.74	11,021.40	1,023.78	1,355.80	14,428,357.65	1,693,999.73	39.72967820	-80.80941618	
<b>Begin 8°/100' build</b>										
11,400.00	53.15	149.74	11,054.00	988.92	1,376.14	14,428,322.79	1,694,020.07	39.72958234	-80.80934410	
11,500.00	61.15	149.74	11,108.20	916.41	1,418.44	14,428,250.28	1,694,062.37	39.72938298	-80.80919421	JAN 2019
11,600.00	69.15	149.74	11,150.20	838.10	1,464.13	14,428,171.97	1,694,108.06	39.72916765	-80.80903230	
11,700.00	77.15	149.74	11,179.17	755.50	1,512.32	14,428,089.37	1,694,156.25	39.72894052	-80.80886153	
11,800.00	85.15	149.74	11,194.54	670.23	1,562.07	14,428,004.10	1,694,206.00	39.72870604	-80.80868522	
11,848.11	89.00	149.74	11,197.00	628.74	1,586.27	14,427,962.61	1,694,230.20	39.72859195	-80.80859944	
<b>Begin 89.00° lateral</b>										
11,900.00	89.00	149.74	11,197.91	583.92	1,612.42	14,427,917.79	1,694,256.35	39.72846872	-80.80850679	





Planning Report - Geographic

4705101654 DD

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Hansen 7HU (C)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1247 @ 1247.00ft
<b>Project:</b>	Wetzel County, West Virginia (UTM17 NAD83)	<b>MD Reference:</b>	GL=1247 @ 1247.00ft
<b>Site:</b>	Hansen	<b>North Reference:</b>	Grid
<b>Well:</b>	Hansen 7HU (C)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Sidetrack 01		
<b>Design:</b>	rev4		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
17,400.00	89.00	149.74	11,294.28	-4,165.96	4,383.58	14,423,167.92	1,697,027.51	39.71540743	-80.79868852
17,500.00	89.00	149.74	11,296.04	-4,252.32	4,433.97	14,423,081.56	1,697,077.89	39.71516995	-80.79851004
17,600.00	89.00	149.74	11,297.79	-4,338.68	4,484.35	14,422,995.20	1,697,128.28	39.71493246	-80.79833156
17,700.00	89.00	149.74	11,299.54	-4,425.04	4,534.74	14,422,908.84	1,697,178.66	39.71469497	-80.79815308
17,800.00	89.00	149.74	11,301.29	-4,511.40	4,585.12	14,422,822.48	1,697,229.04	39.71445749	-80.79797461
17,900.00	89.00	149.74	11,303.05	-4,597.77	4,635.51	14,422,736.11	1,697,279.43	39.71422000	-80.79779613
18,000.00	89.00	149.74	11,304.80	-4,684.13	4,685.89	14,422,649.75	1,697,329.81	39.71398251	-80.79761766
18,068.60	89.00	149.74	11,306.00	-4,743.37	4,720.45	14,422,590.51	1,697,364.38	39.71381960	-80.79749523
PBHL/TD 18068.60 MD/11306.00 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Hansen 7HU LP r4 - plan hits target center - Point	0.00	0.00	11,197.00	628.74	1,586.27	14,427,962.61	1,694,230.20	39.72859195	-80.80859944
Hansen 7HU BHL r4 - plan hits target center - Point	0.00	0.00	11,306.00	-4,743.37	4,720.45	14,422,590.51	1,697,364.38	39.71381960	-80.79749523

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
2,786.00	2,785.83	2.04	10.71	S/T Begin 2°/100' build/turn	
2,967.76	2,967.41	3.65	18.07	Begin 3.00° tangent	
4,502.46	4,500.00	64.89	70.04	Begin 2°/100' build	
5,148.37	5,135.78	145.65	138.58	Begin 15.92° tangent	
10,418.17	10,203.51	1,247.61	1,073.81	Begin 6°/100' build/turn	
11,348.11	11,021.40	1,023.78	1,355.80	Begin 8°/100' build	
11,848.11	11,197.00	628.74	1,586.27	Begin 89.00° lateral	
18,068.60	11,306.00	-4,743.37	4,720.45	PBHL/TD 18068.60 MD/11306.00 TVD	

Received

JAN 28 2019

Office of Oil and Gas  
WV Dept. of Environmental Protection

04/05/2019

WW-9  
(4/16)

API Number 47 - 051 - 01654

Operator's Well No. Hansen 7HU

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) French Creek - Ohio River Quadrangle New Martinsville 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes  No

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: AST Tanks with proper containment will be used for staging fresh water for frac and flow back water

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? AST Tanks will be used with proper contain

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number UIC 9658, UIC2D0732540, UIC2D0732523 )
- Reuse (at API Number )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain )

Will closed loop system be used? If so, describe: Yes - For Vertical and Horizontal Drilling

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air for vertical / Oil for Horizontal

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Oil Base

Additives to be used in drilling medium? Barite for weight

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Wetzel County Sanitary Landfill / Westmoreland Sanitary Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) / Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Jim Pancake

Company Official (Typed Name) Jim Pancake

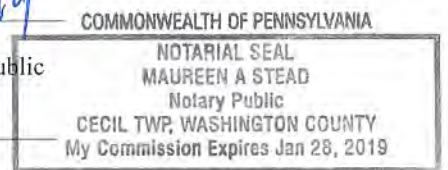
Company Official Title Vice President Geoscience

Subscribed and sworn before me this 21 day of JANUARY, 20 19

Maureen A Stead

Notary Public

My commission expires 1/28/19



WW-9

# PROPOSED HANSEN 7HU #47-051-01654

SUPPLEMENT PG 1

SHEET 2

REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

SHEET 1  
SHEET 2

DRAWING NOT  
TO SCALE

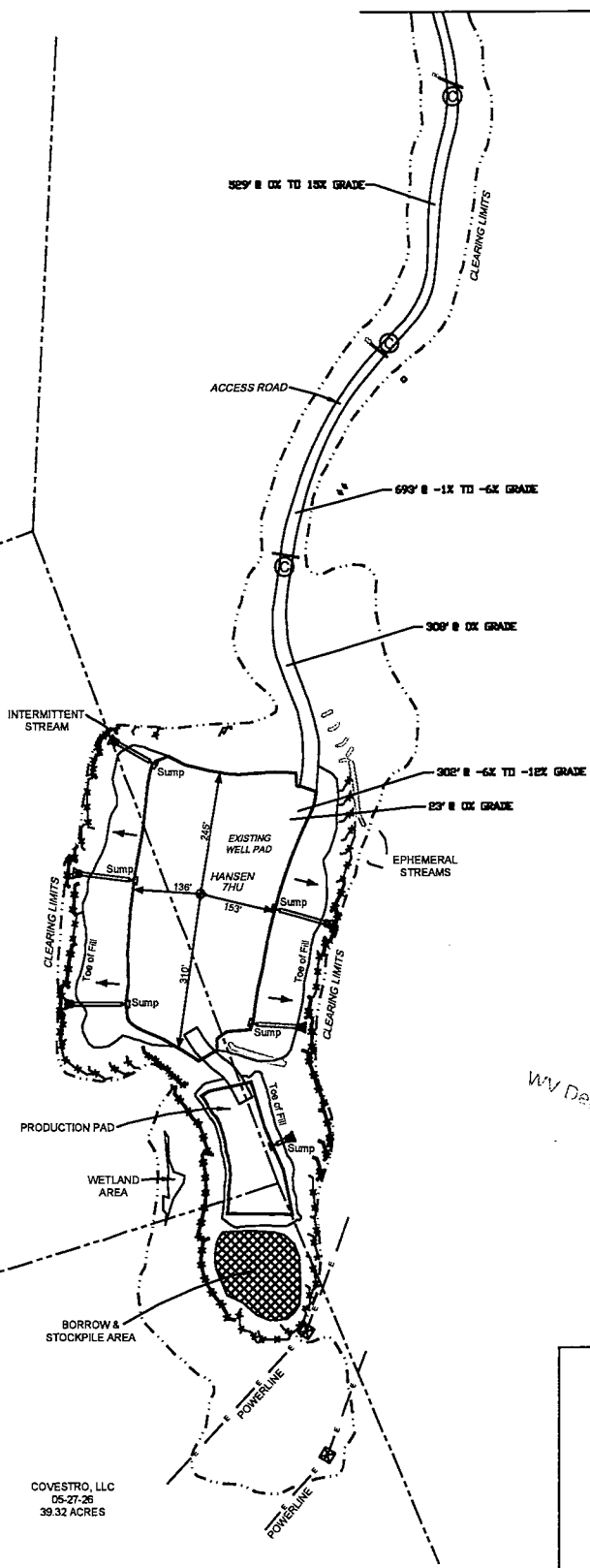
COVESTRO, LLC  
05-27-20  
93.027 ACRES

COVESTRO, LLC  
05-27-22  
172.79 ACRES

COVESTRO, LLC  
05-27-21  
22.67 ACRES

APPALACHIAN  
POWER CO.  
05-27-20.1  
43.973 ACRES

COVESTRO, LLC  
05-27-26  
39.32 ACRES



RECEIVED  
JAN 28 2019  
Office of Oil and Gas  
WV Dept. of Environmental Protection

**LEGEND**

Note:  
 (C) — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).  
 - - - - - Silt Fence and or Sediment and Erosion Control Measure.  
 - - - - - Surface Boundary  
 — E — Overhead Utility

WW-9

# PROPOSED HANSEN 7HU #47-051-01654

SUPPLEMENT PG 1

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REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

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ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

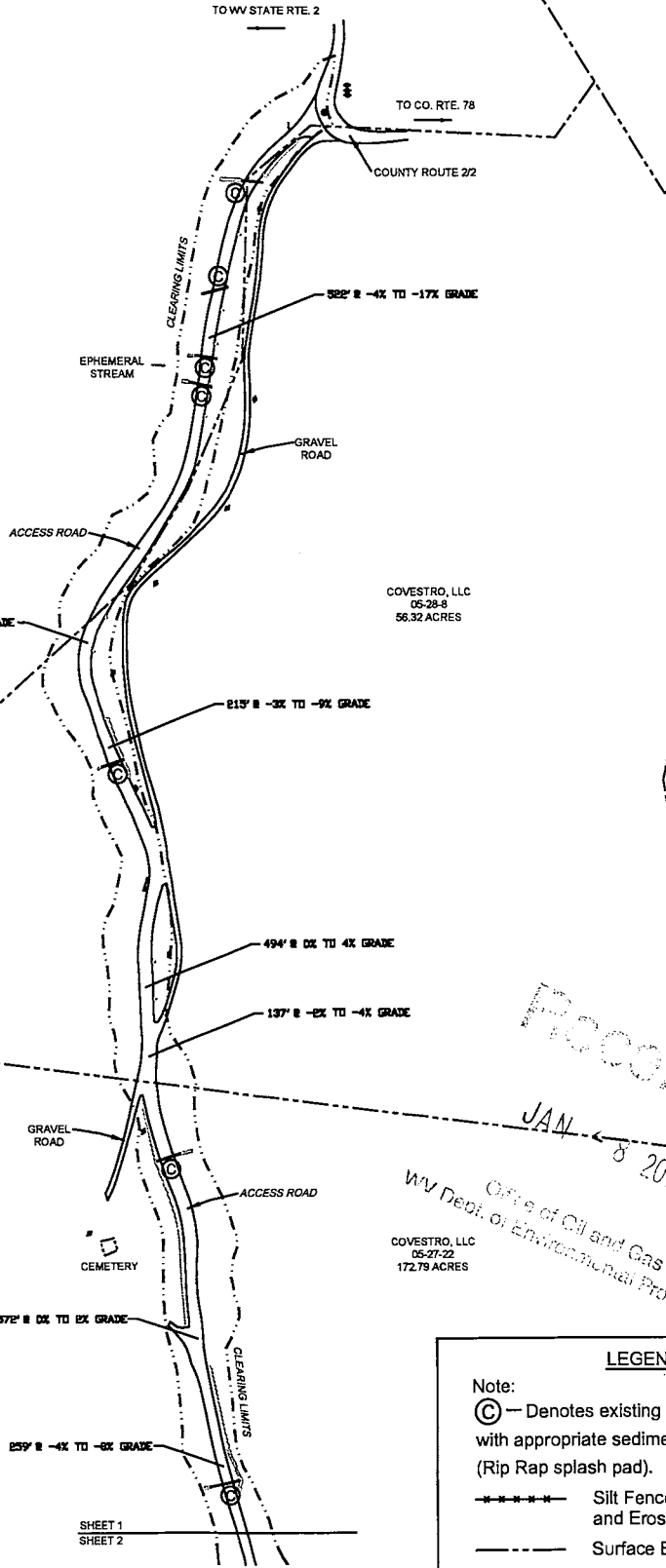
COVESTRO, LLC  
05-28-9  
93.4 ACRES

COVESTRO, LLC  
05-28-8  
56.32 ACRES

CARL L. COFFIELD, SR.  
& LANA R. COFFIELD  
05-28-7  
64 ACRES

COVESTRO, LLC  
05-27-20  
93.027 ACRES

COVESTRO, LLC  
05-21-22  
172.79 ACRES



DRAWING NOT TO SCALE

Received  
JAN 8 2019

Office of Oil and Gas  
WV Dept. of Environmental Protection

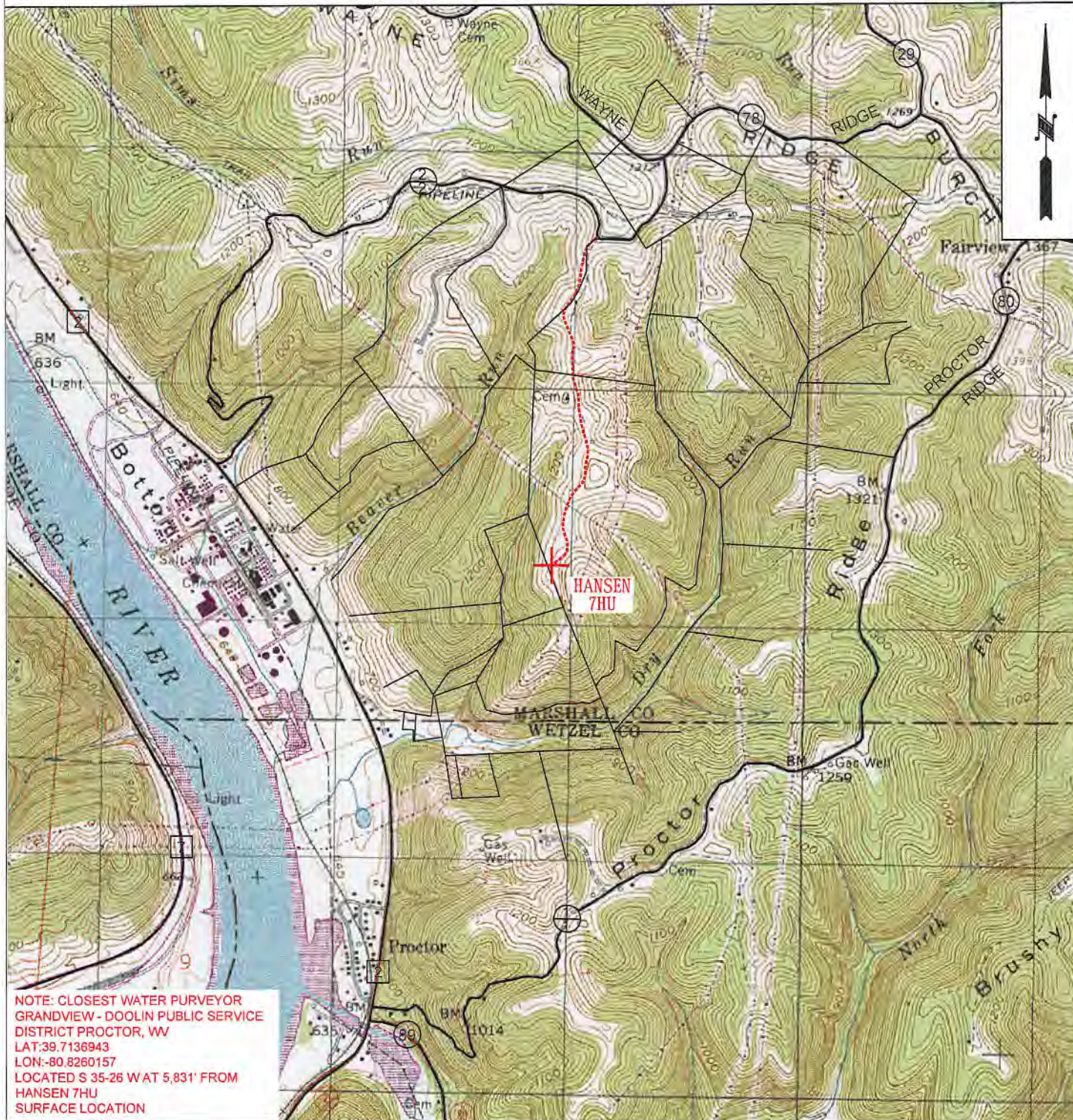
**LEGEND**

Note:  
 (C) — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).  
 - - - - - Silt Fence and or Sediment and Erosion Control Measure.  
 - - - - - Surface Boundary  
 - - - - - Overhead Utility

WW-9

SUPPLEMENT PG 2

# PROPOSED HANSEN 7HU #47-051-01654



NOTE: CLOSEST WATER PURVEYOR  
GRANDVIEW - DOOLIN PUBLIC SERVICE  
DISTRICT PROCTOR, WV  
LAT: 39.7136943  
LON: -80.8260157  
LOCATED S 35-26 W AT 5,831' FROM  
HANSEN 7HU  
SURFACE LOCATION



**TUG HILL**  
OPERATING

OPERATOR **JAN 4 8 2019**  
**470510851**  
TUG HILL OPERATING, LLC  
380 SOUTH POINT BLVD  
SUITE 200 environmental Protection  
CANONSBURG, PA 15317

TOPO SECTION

NEW MARTINSVILLE 7.5'

SCALE:

1" = 2000'

LEASE NAME

HANSEN

DATE:

DATE: 01/17/2019



Form WW-9

Operator's Well No. Hansen 7HU

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 28.28 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Winter Rye	168	Tall Fescue	40
Winter Wheat	180	Ladino Clover	3
Field Bromegrass	40	Redtop	3

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jae Uchokan*

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Received

JAN 48 2019

Office of Oil and Gas  
WV Dept. of Environmental Protection

Title: Oil and Gas Inspector

Date: 1/23/19

Field Reviewed? (  ) Yes (  ) No



# Well Site Safety Plan

## Tug Hill Operating, LLC

*gcu*  
*1/23/19*

Well Name: Hansen 7HU

Pad Location: Hansen  
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING - 4,397,460.22

EASTING - 515,918.82

January 2019

Received

JAN 28 2019

Office of Oil and Gas  
WV Dept. of Environmental Protection

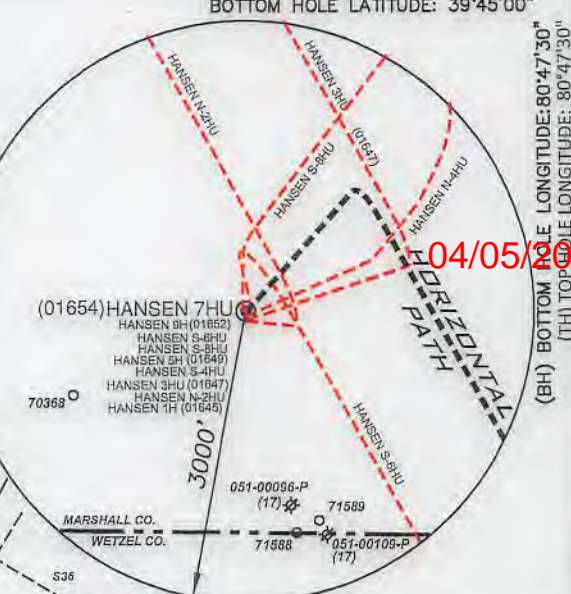
# HANSEN LEASE WELL 7HU

## 435.7610± ACRES

### NOTES

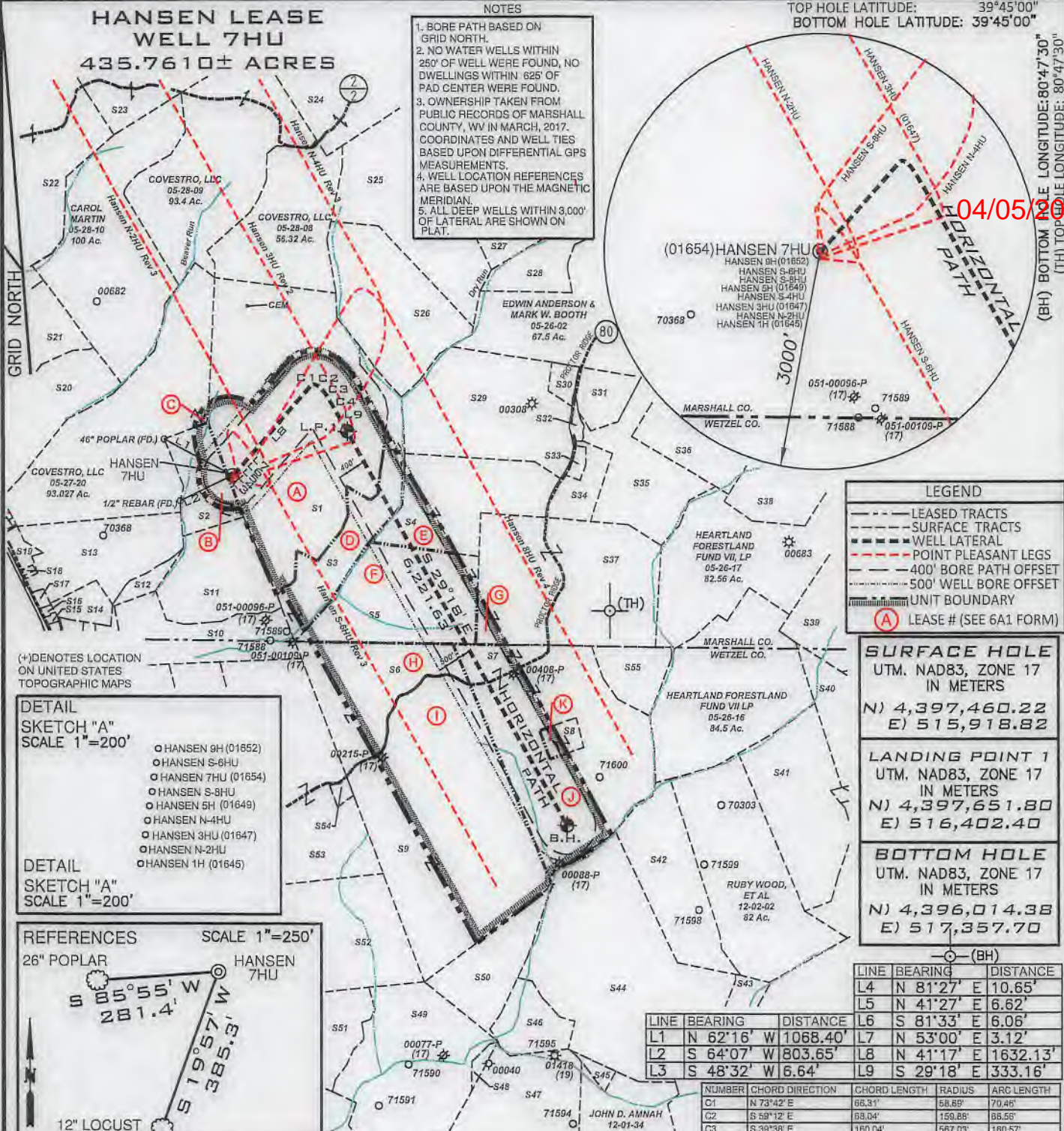
1. BORE PATH BASED ON GRID NORTH.
2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
5. ALL DEEP WELLS WITHIN 3,000' OF LATERAL ARE SHOWN ON PLAT.

TOP HOLE LATITUDE: 39°45'00"  
BOTTOM HOLE LATITUDE: 39°45'00"



(BH) BOTTOM HOLE LONGITUDE: 80°47'30"  
(TH) TOP HOLE LONGITUDE: 80°47'30"

04/05/2019



### LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- 400' BORE PATH OFFSET
- 500' WELL BORE OFFSET
- UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)

### SURFACE HOLE

UTM. NAD83, ZONE 17 IN METERS

N) 4,397,460.22  
E) 515,918.82

### LANDING POINT 1

UTM. NAD83, ZONE 17 IN METERS

N) 4,397,651.80  
E) 516,402.40

### BOTTOM HOLE

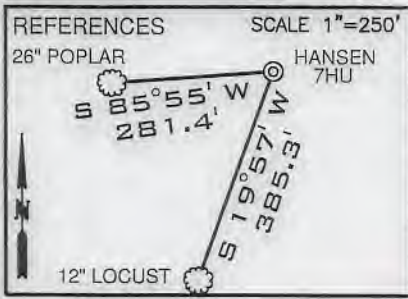
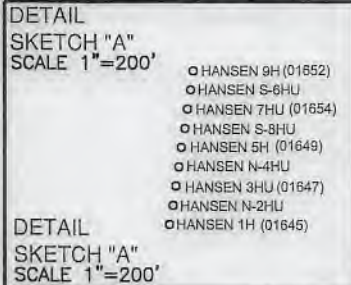
UTM. NAD83, ZONE 17 IN METERS

N) 4,396,014.38  
E) 517,357.70

LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L4	N 81°27' E	10.65'	L7	N 53°00' E	3.12'
L5	N 41°27' E	6.62'	L8	N 41°17' E	1632.13'
L6	S 81°33' E	6.06'	L9	S 29°18' E	333.16'
L1	N 62°16' W	1068.40'			
L2	S 64°07' W	803.65'			
L3	S 48°32' W	6.64'			

NUMBER	CHORD DIRECTION	CHORD LENGTH	RADIUS	ARC LENGTH
C1	N 73°42' E	66.31'	58.89'	70.46'
C2	S 59°12' E	93.04'	159.88'	88.58'
C3	S 39°38' E	160.04'	567.03'	180.57'
C4	S 30°12' E	228.58'	3367.54'	228.63'



FILE NUMBER \_\_\_\_\_

DRAWING NUMBER HANSEN\_7HU\_REV4

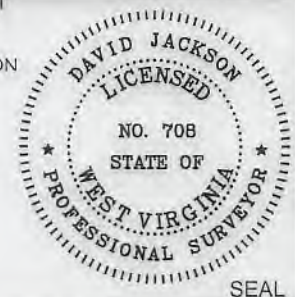
SCALE 1" = 2000'

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

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

LOCATION ELEVATION 1247.0' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER

DISTRICT FRANKLIN COUNTY MARSHALL

QUADRANGLE NEW MARTINSVILLE 7.5' LEASE NUMBER \_\_\_\_\_ SEE WW-6A1 FORM

SURFACE OWNER COVESTRO, LLC ACREAGE 172.79

OIL & GAS ROYALTY OWNER PPG INDUSTRIES, INC. LEASE ACREAGE 172.79

PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER X REDRILL \_\_\_ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION \_\_\_  
PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE (SPECIFY) \_\_\_\_\_  
PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,416' TMD: 18,069'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
CT CORPORATION SYSTEM

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD  
FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME PERMIT

**HANSEN LEASE  
WELL 7HU  
435.7610± ACRES**

04/05/2019

Number	TAX MAP -PARCEL	ADJOINER OWNER	ACRES
S1	A 05-27-22	COVESTRO, LLC.	172.79
S2	B 05-27-21	COVESTRO, LLC.	22.67
S3	D 05-27-23	ROBERT F. ROTHLSBERGER	35.77
S4	E 05-26-19	ERIC JAY & KARROLL S. BOOTH	50.0
S5	F 05-27-24	ROBERT F. ROTHLSBERGER	60.10
S6	H 12-1-8.1	ROBERT F. ROTHLSBERGER	50.33
S7	J 12-1-40	MARK W. BOOTH, ETAL	117.0
S8	K 12-1-41	MARK W. BOOTH, ETAL	5.0
S9	I 12-1-8	BENJAMIN J. KOCHER	168.67
S10	05-27-25	JAMES RICHMOND	41.35
S11	05-27-26	COVESTRO, LLC	39.32
S12	05-27-27	JAMES ANDREW & KAREN LYNNE RICHMOND	8.9353
S13	05-27-20.1	APPALACHIAN POWER CO.	43.973
S14	05-27-28	COVESTRO, LLC.	8.0
S15	05-27-42	COVESTRO, LLC.	0.52
S16	05-27-42.1	COVESTRO, LLC.	0.52
S17	12-27-41	MARTHA JEAN ARRICK	0.99
S18	05-27-30	COVESTRO, LLC.	0.371
S19	05-27-31.1	COVESTRO, LLC.	3.0
S20	05-27-19	COVESTRO, LLC.	33.786
S21	05-28-11	CAROL A. MARTIN	24.681
S22	05-28-2	COVESTRO, LLC.	99.5
S23	05-28-3	TH EXPLORATION III, LLC	53.44
S24	05-28-4	TH EXPLORATION III, LLC	48.44
S25	05-28-6	ULA F. NELSON	70.0
S26	05-28-7	CARL L. COFFIELD, SR. & LANA R. COFFIELD	64.0
S27	05-28-5	TH EXPLORATION III, LLC	105.9
S28	05-26-1	EDWIN BOOTH ANDERSON & MARK W. ANDERSON	12.94
S29	05-26-4.5	ERIC JAY BOOTH	74.388
S30	05-26-4	JAMES R. & MELODY A. ANDERSON	3.887
S31	05-26-4.6	OTIS F. RUSH, JR.	12.268
S32	05-26-4.2	OTIS S. & GLENDA RUSH	1.58
S33	05-26-4.3	CRYSTAL & RANDOLPH F. MATASK	2.253
S34	05-26-4.1	OTIS S. RUSH, ETUX	12.188
S35	05-26-4.4	OTIS F. & GLENDA M. RUSH	39.436
S36	05-26-5	MICHAEL J. WILEY, ETAL	65.0
S37	G 05-26-18	ERIC JAY BOOTH	94.0
S38	05-26-6	HEARTWOOD FORESTLAND FUND VII LP.	36.17
S39	05-26-15	ROBERT D. OLIVER, ET UX	69.0
S40	12-2-5	CLIFFORD W. & ALBERTA B. JOHNSON	75.96
S41	12-2-3	NELSON M. & MARY D. MILLER	51.75
S42	12-2-1	NELSON M. & MARY D. MILLER	49.0
S43	12-2-7	JOHN D. AMNAH	44.5
S44	12-1-20	CHARLES E. FROHNAPFEL, TRUSTEE OF THE CHARLES E. FROHNAPFEL LIVING TRUST DATED OCTOBER 3, 2017	126.0
S45	12-1-34.1	HERBERT PARSONS & VIRGINIA YOHO ROY	2.0
S46	12-1-31	STEVEN JACK & SUSAN LOUISE HAFER	20.0
S47	12-1-32	BAXTER FARM, LLC.	78.74
S48	12-1-29	BAXTER FARM, LLC.	2.0
S49	12-1-28	STEVEN J. & SUSAN L. HAFER	88.39
S50	12-1-19	STEVEN J. & SUSAN L. HAFER	36.5
S51	12-1-18	TRAVIS DARRELL BLAKE & ANGELA DAWN MITCHELL	48.4
S52	12-1-17	VIVIAN A. PARSONS, ETAL	112.0
S53	12-1-7	KEITH ACKER, ETAL.	101.0
S54	12-1-7.1	HARRY WAYMAN ESTATE	2.0
S55	12-2-24	MARK W. BOOTH, MAGGIE ANN ROCKWELL & GEORGE E. BOOTH, JR.	13.1



P.S. 708

*David R. Jackson*

47-051-01654 DD



**TUG HILL  
OPERATING**

OPERATOR'S  
WELL #: HANSEN 7HU  
DISTRICT: Franklin  
COUNTY: Marshall  
STATE: WV  
API #: 47-051-01654

WELL PLAT  
PAGE 2 OF 3  
DATE: 01/26/2019

form wwg

**HANSEN LEASE  
WELL 7HU  
435.7610± ACRES**

04/05/2019

Lease No.	Tags	Tax Parcel	Oil & Gas Royalty Owner	Deed Book	Page
10*14418	A	5-27-22	PPG INDUSTRIES, INC.	878	610
10*14500	B	5-27-21	BAYER MATERIAL SCIENCE LLC	826	305
10*14493	C	5-27-20	BETTY JEAN NEELY	748	468
10*14494	C	5-27-20	MARY LOU WILSON	748	471
10*14495	C	5-27-20	PATRICIA HARTMAN	752	197
10*14496	C	5-27-20	STEPHANIE L HALL	752	215
10*14497	C	5-27-20	CAROL DEEN GARDNER	752	212
10*14500	C	5-27-20	BAYER MATERIAL SCIENCE LLC	826	305
10*14609	D	5-27-23	PATRICIA HADDIX	700	113
10*14610	D	5-27-23	SUZANNE HILL	699	45
10*14611	D	5-27-23	LILLIAN PRISCILLA GRIMM	699	41
10*19908	E	5-26-19	GOLDA K ANDERSON	945	434
10*21935	E	5-26-19	KARROLL S BOOTH AND LOIS E BOOTH	940	493
10*22015	E	5-26-19	ERIC JAY BOOTH	942	217
10*14504	F	5-27-24	GEORGE A. STICKLER	756	83
10*19733	G	5-26-18	GEORGE E BOOTH SR AND MARGARET E BOOTH	944	575
10*19910	G	5-26-18	GOLDA K ANDERSON	945	440
10*21450	G	5-26-18	ERIC JAY BOOTH	953	258
10*15066	H	12-1-8.1	ROBERT J. HENRY	110A	335
10*23504	H	12-1-8.1	ROBERT F ROTHLSBERGER	210A	803
10*15066	I	12-1-8	ROBERT J. HENRY	110A	335
10*15071	I	12-1-8	BENJAMIN J. KOCHER	119A	463
10*15088	J	12-1-40	MARK W BOOTH	154A	122
10*15089	J	12-1-40	MAGGIE ANN ROCKWELL	152A	437
10*15090	J	12-1-40	GEORGE E BOOTH JR	152A	440
10*21151	J	12-1-40	RICHARD K REYNOLDS & SHIRLEY REYNOLDS	198A	347
10*21165	J	12-1-40	GARNETT IRENE ROBINSON	198A	349
10*15088	K	12-1-41	MARK W BOOTH	154A	122
10*15089	K	12-1-41	MAGGIE ANN ROCKWELL	152A	437
10*15090	K	12-1-41	GEORGE E BOOTH JR	152A	440



47-051-01654 DD

P.S.  
708

*David L. Jackson*



**TUG HILL**  
OPERATING

OPERATOR'S  
WELL #: HANSEN 7HU  
DISTRICT: Franklin  
COUNTY: Marshall  
STATE: WV  
API #: 47-051-01654

WELL PLAT  
PAGE 3 OF 3  
DATE: 01/26/2019

WW-6A1  
(5/13)

Operator's Well No. Hansen 7HU

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
----------------------	-----------------------	-----------------------	---------	-----------

\*See attached pages



**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Tug Hill Operating, LLC  
 By: Amy L. Miller *Amy Miller*  
 Its: Permitting Specialist

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*14418	A ↓	5-27-22	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	35/144 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC ✓
10*14500	B ↓	5-27-21	BAYER MATERIAL SCIENCE LLC	GASTAR EXPLORATION INC	1/8+	826	305	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14493	C ↓	5-27-20	BETTY JEAN NEELY	GASTAR EXPLORATION USA, INC	1/8+	748	468	NA	NA	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	36/9 Gastar Exploration USA Inc to TH Exploration II, LLC
10*14494	C	5-27-20	MARY LOU WILSON	GASTAR EXPLORATION USA, INC	1/8+	748	471	NA	NA	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	36/9 Gastar Exploration USA Inc to TH Exploration II, LLC
10*14495	C	5-27-20	PATRICIA HARTMAN	GASTAR EXPLORATION USA, INC	1/8+	752	197	NA	NA	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	36/9 Gastar Exploration USA Inc to TH Exploration II, LLC
10*14496	C	5-27-20	STEPHANIE L HALL	GASTAR EXPLORATION USA, INC	1/8+	752	215	NA	NA	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	36/9 Gastar Exploration USA Inc to TH Exploration II, LLC
10*14497	C	5-27-20	CAROL DEEN GARDNER	GASTAR EXPLORATION USA, INC	1/8+	752	212	NA	NA	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	36/9 Gastar Exploration USA Inc to TH Exploration II, LLC
10*14500	C	5-27-20	BAYER MATERIAL SCIENCE LLC	GASTAR EXPLORATION INC	1/8+	826	305	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14609	D ↓	5-27-23	PATRICIA HADDIX	CHESAPEAKE APPALACHIA LLC	1/8+	700	113	NA	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

JUNE 19 2019  
 Office of Natural Gas  
 Maryland Department of General Services

05101-5420

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*14610	D	5-27-23	SUZANNE HILL	CHESAPEAKE APPALACHIA LLC	1/8+	699	45	NA	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14611	D	5-27-23	LILLIAN PRISCILLA GRIMM	CHESAPEAKE APPALACHIA LLC	1/8+	699	41	NA	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*19908	E	5-26-19	GOLDA K ANDERSON	TH EXPLORATION, LLC	1/8+	945	434	NA	NA	NA	NA	NA
10*21935	E	5-26-19	KARROLL S BOOTH AND LOIS E BOOTH	AMERICAN PETROLEUM PARTNERS OPERATING LLC	1/8+	940	493	NA	NA	NA	NA	41/224 American Petroleum Partners Operating LLC to TH Exploration LLC
10*22015	E	5-26-19	ERIC JAY BOOTH	AMERICAN PETROLEUM PARTNERS OPERATING LLC	1/8+	942	217	NA	NA	NA	NA	41/224 American Petroleum Partners Operating LLC to TH Exploration LLC
10*14504	F	5-27-24	GEORGE A. STICKLER	GASTAR EXPLORATION USA, INC	1/8+	756	83	NA	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*19733	G	5-26-18	GEORGE E BOOTH SR AND MARGARET E BOOTH	TH EXPLORATION, LLC	1/8+	944	575	NA	NA	NA	NA	NA
10*19910	G	5-26-18	GOLDA K ANDERSON	TH EXPLORATION, LLC	1/8+	945	440	NA	NA	NA	NA	NA
10*21450	G	5-26-18	ERIC JAY BOOTH	TH EXPLORATION, LLC	1/8+	953	258	NA	NA	NA	NA	NA

JAN 4 2019  
 Maryland Department of the General Services  
 Statewide Information System



470510165407

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*15066	H	12-1-8.1	ROBERT J. HENRY	GASTAR EXPLORATION USA, INC	1/8+	110A	335	NA	NA	NA	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*23504	H	12-1-8.1	ROBERT F ROTHLSBERGER	TH EXPLORATION, LLC	1/8+	210A	803	NA	NA	NA	NA	NA
10*15066	I	12-1-8	ROBERT J. HENRY	GASTAR EXPLORATION USA, INC	1/8+	110A	335	NA	NA	NA	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*15071	I	12-1-8	BENJAMIN J. KOCHER	STONE ENERGY CORPORATION	1/8+	119A	463	NA	NA	137A/877 Stone Energy Corporation to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*15088	J	12-1-40	MARK W BOOTH	GASTAR EXPLORATION INC	1/8+	154A	122	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*15089	J	12-1-40	MAGGIE ANN ROCKWELL	GASTAR EXPLORATION INC	1/8+	152A	437	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*15090	J	12-1-40	GEORGE E BOOTH JR	GASTAR EXPLORATION INC	1/8+	152A	440	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*21151	J	12-1-40	RICHARD K REYNOLDS & SHIRLEY REYNOLDS	TH EXPLORATION, LLC	1/8+	198A	347	NA	NA	NA	NA	NA
10*21165	J	12-1-40	GARNETT IRENE ROBINSON	TH EXPLORATION, LLC	1/8+	198A	349	NA	NA	NA	NA	NA

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 JAN 10 2019  
 WV Dept. of Environmental Protection

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*15088	K	12-1-41	MARK W BOOTH	GASTAR EXPLORATION INC	1/8+	154A	122	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*15089	K	12-1-41	MAGGIE ANN ROCKWELL	GASTAR EXPLORATION INC	1/8+	152A	437	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	173A/431 Gastar Exploration Inc to TH Exploration II LLC
10*15090	K	12-1-41	GEORGE E BOOTH JR	GASTAR EXPLORATION INC	1/8+	152A	440	NA	NA	NA	32/428 Gastar Exploration USA to Atinum Marcellus I LLC	173A/431 Gastar Exploration Inc to TH Exploration II LLC

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 JAN 4 8 2019  
 Office of Oil and Gas  
 NY Dept. of Environmental Protection

AFFIDAVIT

**COPY** 04/05/2019

STATE OF TEXAS §  
§ SS  
COUNTY OF TARRANT §

470510165400

On this 18<sup>th</sup> day of October, 2016, before me, the undersigned authority, personally appeared David D. Kalish ("Affiant") who being first duly sworn under oath, deposes and saith:

1. TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC are wholly owned subsidiaries of THQ Appalachia I, LLC.
2. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under an Operating Services Agreement dated July 23, 2014.
3. David D. Kalish, the Affiant, is the Vice President of Tug Hill Operating, LLC, THQ Appalachia I, LLC, TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC, and;
3. Tug Hill Operating, LLC is authorized to operate and maintain the assets owned by THQ Appalachia I, LLC, including, as referenced above, TH Exploration, LLC, TH Exploration II, LLC, and TH Exploration III, LLC, including oil and gas leases, wells, pipelines, surface facilities, and other all other assets that support the business of THQ Appalachia I, LLC, and;
4. Specifically, Tug Hill Operating, LLC is authorized to submit and obtain well work permits and carry out all activities pursuant to such work permits for assets owned by TH Exploration, LLC, TH Exploration II, LLC, TH Exploration III, LLC.

FURTHER, AFFIANT SAITH NOT.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this 18<sup>th</sup> day of October, 2016.

David D. Kalish  
Affiant: David D. Kalish

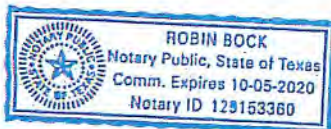
JURAT  
Office of Oil and Gas  
WV Dept. of Environmental Protection  
JAN 4 2019

Jan Pest  
MARSHALL County 03:44:28 PM  
Instrument No 1416299  
Date Recorded 10/19/2016  
Document Type MIS  
Pages Recorded 1  
Book-Page 28-62  
Recording Fee \$5.00  
Additional \$5.00

STATE OF TEXAS §  
§ SS  
COUNTY OF TARRANT §

Sworn and subscribed to (or affirmed) before me on this, the 18<sup>th</sup> day of October, 2016, by David D. Kalish

IN WITNESS WHEREOF, I hereunto set my hand and official seal.



My Commission Expires: 10-05-2020  
Signature/Notary Public: Robin Bock  
Name/Notary Public (Print): Robin Bock

Jan Pest  
MARSHALL County 01:22:38 PM  
Instrument No 1403489  
Date Recorded 04/27/2016  
Document Type ASN  
Pages Recorded 77  
Book-Page 36-9  
Recording Fee \$77.00  
Additional 413.00

04/05/2019

WHEN RECORDED, RETURN TO:  
TH Exploration II, LLC  
1320 South University Drive, Suite 500  
Fort Worth, Texas 76107  
Attn: David Kalish

Execution Version

ASSIGNMENT AND BILL OF SALE

4705101654 107

STATE OF WV §  
§ KNOW ALL MEN BY THESE PRESENTS:  
COUNTY OF MARSHALL §

THIS ASSIGNMENT AND BILL OF SALE (this "Assignment"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "Effective Time"), is between Gasbar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("Assignor"), and TH Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("Assignee"). Assignor and Assignee are each, individually, referred to herein as a "Party" and, collectively, as the "Parties".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "Purchase Agreement"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in subsections (a) through (b) of this Section 1, less and except the Excluded Assets, collectively, the "Conveyed Interests"):

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzell, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "Leases");

(b) all rights and interests in, under or derived from all unitization agreements in effect with respect to any of the Leases and the units created thereby, including those described

US 4050690

RECORDED  
JAN 4 2019  
Office of Oil and Gas  
West Virginia Department of Environmental Protection

04/05/2019

DPS LAND SERVICES-CORP-TIM SCHULTZ  
6000 TOWN CENTER BLVD STE 145  
CANDANSBURG, PA 15317-5841

WHEN RECORDED RETURN TO:  
TH Exploration II, LLC  
1320 South University Drive, Suite 500  
Fort Worth, Texas 76107  
Attn: David Kalish

470510165400 Execution Version

ASSIGNMENT AND BILL OF SALE

STATE OF WV §  
COUNTY OF WETZEL § KNOW ALL MEN BY THESE PRESENTS:  
§

THIS ASSIGNMENT AND BILL OF SALE (this "Assignment"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "Effective Time"), is between Gastar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("Assignor"), and TH Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("Assignee"). Assignor and Assignee are each, individually, referred to herein as a "Party" and, collectively, as the "Parties".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "Purchase Agreement"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in subsections (a) through (k) of this Section 1, less and except the Excluded Assets, collectively, the "Conveyed Interests"):

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzel, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "Leases");



STATE OF WEST VIRGINIA §  
 COUNTY OF MARSHALL §

Marshall County  
 Jan Pest, Clerk  
 Instrument 1436500  
 02/14/2018 @ 01:32:11 PM  
 ASSIGNMENTS  
 Book 41 @ Page 224  
 Pages Recorded 7  
 Recording Cost \$ 13.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 5<sup>th</sup> day of February, 2018, and made effective December 12, 2017 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated December 12, 2017 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit "A", attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the

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 JAN - 8 2019  
 Office of Oil and Gas  
 WV Dept. of Environmental Protection



January 24, 2019

WV Department of Environmental Protection  
Office of Oil & Gas  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
Attention: Laura Adkins

RE: Hansen 7HU

Subject: Marshall County 80 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 80 in the area reflected on the Hansen 7HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 304-376-0111, or by email at [amiller@tug-hilop.com](mailto:amiller@tug-hilop.com).

Sincerely,

Amy L. Miller  
Permitting Specialist – Appalachia Region

Received  
JAN 28 2019  
Office of Oil and Gas  
WV Dept. of Environmental Protection

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE CERTIFICATION

Date of Notice Certification: 01/25/2019

API No. 47- 051 - 01054

Operator's Well No. Hansen 7HU

Well Pad Name: Hansen

**Notice has been given:**

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: West Virginia  
County: Marshall  
District: Franklin  
Quadrangle: New Martinsville 7.5'  
Watershed: French Creek - Ohio River

UTM NAD 83 Easting: 515,918.82  
Northing: 4,397,460.22  
Public Road Access: County Route 2/2 - Wells Hill Road  
Generally used farm name: Covestro, LLC

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

\*PLEASE CHECK ALL THAT APPLY

- 1. NOTICE OF SEISMIC ACTIVITY or  NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED
- 2. NOTICE OF ENTRY FOR PLAT SURVEY or  NO PLAT SURVEY WAS CONDUCTED
- 3. NOTICE OF INTENT TO DRILL or  NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or  WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)
- 4. NOTICE OF PLANNED OPERATION
- 5. PUBLIC NOTICE
- 6. NOTICE OF APPLICATION

OOG OFFICE USE ONLY

- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED
- RECEIVED

JAN 4 8 2019

Office of Oil and Gas  
West Virginia Department of Environmental Protection

**Required Attachments:**

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.



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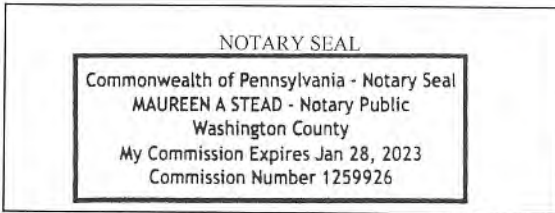
04/05/2019

**Certification of Notice is hereby given:**

THEREFORE, I Amy L. Miller, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator: Tug Hill Operating, LLC  
By: Amy L. Miller  
Its: Permitting Specialist - Appalachia Region  
Telephone: 724-749-8388

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030  
Email: amiller@tug-hillop.com



Subscribed and sworn before me this 25 day of JANUARY, 2019  
Maureen A Stead Notary Public  
My Commission Expires 1/28/23

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

Received  
JAN 28 2019  
Office of Oil and Gas  
WV Dept. of Environmental Protection

WW-6A  
(9-13)

470510165400

API NO. 47-051 - 0165400  
OPERATOR WELL NO. Hansen 7HU  
Well Pad Name: Hansen **04/05/2019**

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF APPLICATION**

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 1/24/2019 **Date Permit Application Filed:** 1/25/2019

**Notice of:**

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)  
 Name: Covestro, LLC Attn: Tax Department (Well Pad and Access Road)  
 Address: 1 Covestro Circle  
Pittsburgh, PA 15205  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: CONSOL Energy, LLC Attn: Casey Saunders  
 Address: 1000 CONSOL Energy Drive  
Canonsburg, PA 15317  
 COAL OPERATOR  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
 Name: none  
 Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

\*Please attach additional forms if necessary

*Received*  
**JAN 4 8 2019**

Oil and Gas  
Environmental Protection

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

010504/05/2019  
OPERATOR WELL NO. Hansen 7HU  
Well Pad Name: Hansen

**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

WW-6A  
(8-13)

API NO. 47-051 - 0165170 **04/05/2019**  
OPERATOR WELL NO. Hansen 7HU  
Well Pad Name: Hansen

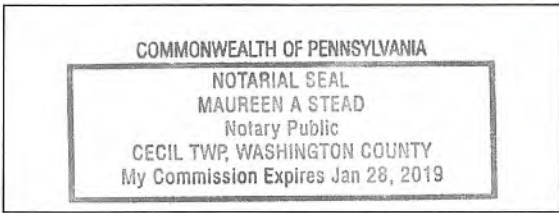
**Notice is hereby given by:**

Well Operator: Tug Hill Operating, LLC  
Telephone: 724-749-8388  
Email: amiller@tug-hilop.com *anyshue*

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 23 day of JANUARY, 2019.  
Maureen A Stead Notary Public  
My Commission Expires 1/28/19

Received  
JAN 4 2019  
Office of Oil and Gas  
WV Dept. of Environmental Protection

470510165400 04/05/2019

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF ENTRY FOR PLAT SURVEY

**Notice Time Requirement:** Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

**Date of Notice:** 1/7/2018 **Date of Planned Entry:** 1/14/2018

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)

Name: Covestro, LLC, Attn: Tax Department (Well Pad and Access Road)  
Address: 1 Covestro Circle  
Pittsburgh, PA 15205

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: CONSOL Energy, LLC Attn: Casey Saunders  
Address: 1000 CONSOL Energy Drive  
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: TH Exploration III, LLC Attn: David Kalish  
Address: 1320 S. University Drive, Suite 500  
Ft. Worth, TX 76107

\*please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: West Virginia	Approx. Latitude & Longitude: 39.4336.5; -80.4851.3
County: Marshall	Public Road Access: Wells Hill Lane (CR 2/2)
District: Franklin	Watershed: French Creek - Ohio River
Quadrangle: New Martinsville 7.5'	Generally used farm name: Covestro, LLC

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: Tug Hill Operating, LLC  
Telephone: 724-749-8388  
Email: amiller@tug-hilltop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

04/05/2019

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF PLANNED OPERATION

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 01/24/2019 **Date Permit Application Filed:** 01/25/2019

**Delivery method pursuant to West Virginia Code § 22-6A-16(c)**

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED  HAND  
DELIVERY

4705101654 DD

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

**Notice is hereby provided to the SURFACE OWNER(s)**

(at the address listed in the records of the sheriff at the time of notice):

Name: Covestro, LLC Attn: Tax Department (Well Pad and Access Road)  
Address: 1 Covestro Circle  
Pittsburgh, PA 15205

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 515,918.82  
County: Marshall Northing: 4,397,460.22  
District: Franklin Public Road Access: County Route 2/2 - Wells Hill Road  
Quadrangle: New Martinsville 7.5' Generally used farm name: Covestro, LLC  
Watershed: French Creek - Ohio River

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: Tug Hill Operating, LLC  
Telephone: 724-749-8388  
Email: amiller@tug-hillop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

Received



4705-01654  
04/05/2019  
DD



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110  
Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.  
Secretary of Transportation/  
Commissioner of Highways

January 24, 2019

Jill M. Newman  
Deputy Commissioner

James A. Martin, Chief  
Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

Subject: DOH Permit for the Hansen Pad, Marshall County  
Hansen 7HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permits #06-2017-0178 which have been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 2/2 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

Very Truly Yours,

Gary K. Clayton, P.E.  
Regional Maintenance Engineer  
Central Office O&G Coordinator

Cc: Amy Miller  
Tug Hill Operating, LLC  
CH, OM, D-6  
File

Received  
JAN 24 2019  
Office of Oil and Gas  
WV Dept. of Environmental Protection

4705 \* 0165400  
04/05/2019



TUG HILL

470510165400

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

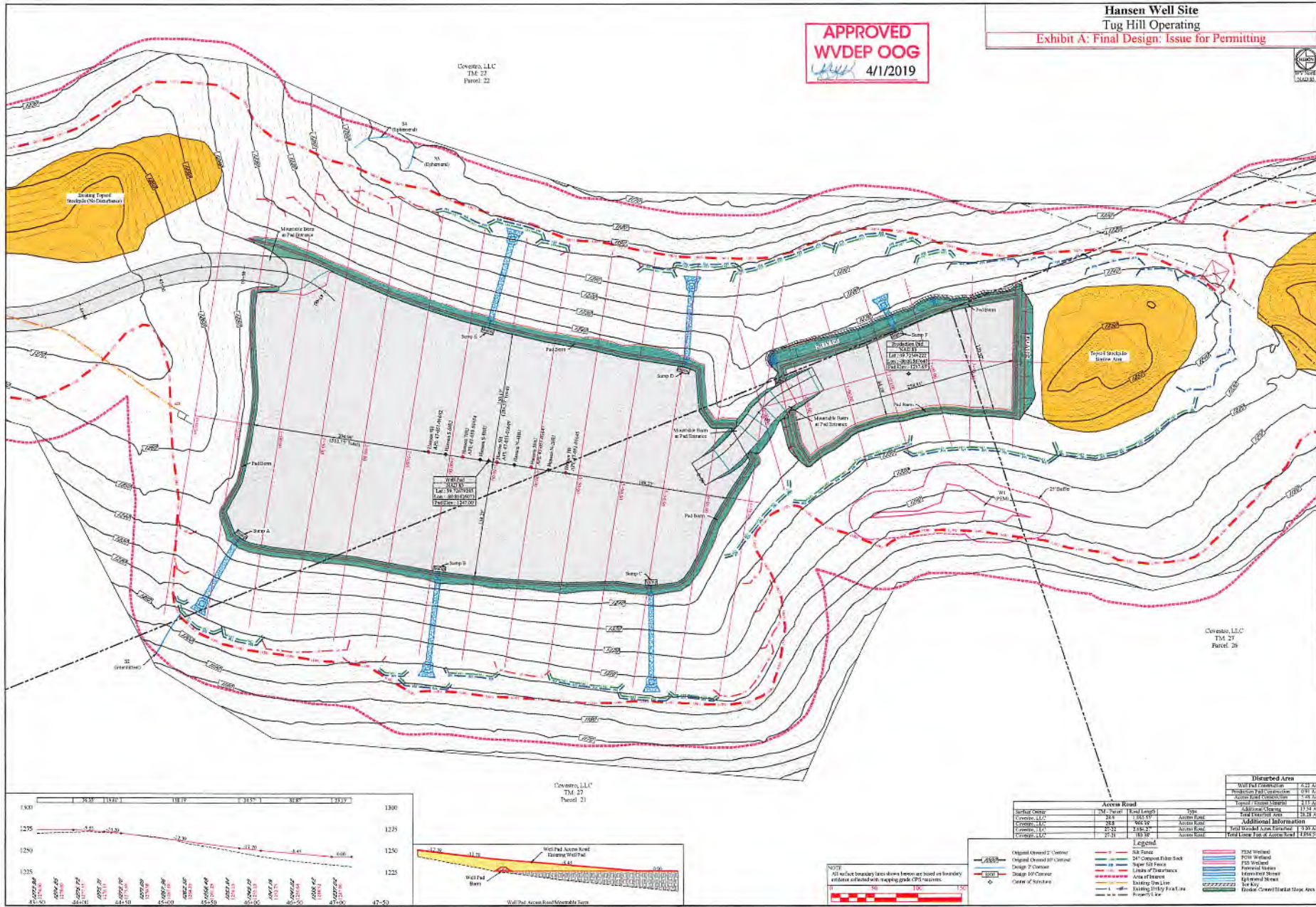
PRODUCT NAME:	CHEMICAL DESCRIPTION:	PRODUCT USE:	HAZARDOUS COMPONENT:
GBW-20C	Hemicellulase Breaker	Breaker - Water	None
ALPHA 1427		Biocide	Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride CAS# 007173-51-5 Alky dimethyl benzyl ammonium Chloride (C12-16) – CAS#068424-85-1 Ethanol – CAS# 000064-17-5 Water – CAS# 007732-18-5
FRAC SAND	Silica Sand (various Mesh sizes)	Proppant	Crystalline silica (quartz) CAS# 14808-60-7
S-8C, Sand	Silica Sand (100 mesh)	Sand	Silica – CAS# 14808-60-7
GW-3LDF		Gellant - Water	Petroleum Distillate Blend – Proprietary, (Not Associated with Diesel Fuel) Guar gum – CAS# 009000-30-0
FRW-18		Friction Reducer	Hydrotreated light distillate CAS# 064742-47-8
Scaletrol		Scale Inhibitor	Ethylene glycol – CAS# 000107-21-1 Diethylene glycol – CAS# 000111-46-6

Received  
JAN 4 8 2019  
Office of Oil and Gas  
WV Dept of Environmental Protection



**APPROVED**  
**WVDEP OOG**  
 4/1/2019

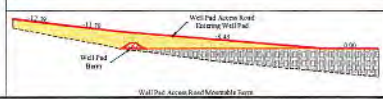
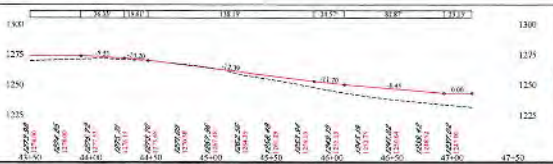
**Hansen Well Site**  
 Tug Hill Operating  
 Exhibit A: Final Design: Issue for Permitting



Coverco, LLC  
 TM 27  
 Parcel 22

Coverco, LLC  
 TM 27  
 Parcel 26

Coverco, LLC  
 TM 27  
 Parcel 23



Aspen Road		Type
Station	24+00	24+00
Station	24+00	24+00
Station	24+00	24+00
Station	24+00	24+00

Legend	
Original Ground Control	24\"/>

Disturbed Area	
Well Path Construction	4.4 AC
Production Pad Construction	0.81 AC
Well Pad Construction	1.4 AC
Access Road Construction	2.11 AC
Topsoil Storage	11.0 AC
Additional Storage	12.58 AC
Total Disturbed Area	24.31 AC

NOTE:  
 All setback boundary lines shown herein are based on boundary evidence of actual work mapping grade CPS locations.

DATE: 01/20/2019  
 SCALE: As Shown  
 DRAWING BY: ZS  
 FILE NO:  
 SHEET 12 OF 17

**TUG HILL OPERATING**

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

**K&S Surveying**  
 1000 W. Main Street  
 Morgantown, WV 26501

**Hansen Well Site**  
 Franklin District  
 Mingo County, WV