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west virginia department of environmental protection

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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, August 1, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BOULEVARD, PLAZA II  
SUITE 200  
CANNONSBURG, PA 15317

Re: Permit approval for BLAKE N-2HM  
47-051-02049-00-00

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: BLAKE N-2HM  
Farm Name: WILBERT H. BUNGARD, ET U  
U.S. WELL NUMBER: 47-051-02049-00-00  
Horizontal 6A New Drill  
Date Issued: 8/1/2018

# 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. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. 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.
5. 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.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. 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.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

## PERMIT CONDITIONS

11. 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](mailto:DEPOOGNotify@wv.gov).

**4705102049**

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      Glen Easton 7.5'  
Operator ID      County      District      Quadrangle

2) Operator's Well Number: Blake N-2HM      Well Pad Name: Blake

3) Farm Name/Surface Owner: Wilbert H. Bungard, et ux      Public Road Access: Burch Ridge Road - County Route 29

4) Elevation, current ground: 1326'      Elevation, proposed post-construction: 1326'

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

(b) If Gas    Shallow    x      Deep  
Horizontal    X

6) Existing Pad: Yes or No    Yes

*ju*  
*5/17/18*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus is the target formation at a depth of 6494 - 6545' thickness of 51' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,645'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 17,939'

11) Proposed Horizontal Leg Length: 11,026'

12) Approximate Fresh Water Strata Depths: 70', 1042' ✓

13) Method to Determine Fresh Water Depths: Use shallow offset wells to determine deepest freshwater. Or determine using predrill tests, testing while drilling or petrophysical evaluation of resistivity.

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 951' and Pittsburgh Coal - 1036'

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: \_\_\_\_\_

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WW-6B  
(04/15)

API NO. 47- 051 -  
 OPERATOR WELL NO. Blake N-2HM  
 Well Pad Name: Blake  
**4705102049**

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	30"	NEW	BW	BW	120'	120' ✓	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	48#	1,120'	1,120' ✓	1128ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	1,120'	1,120'	1128ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,800'	2,800'	932ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	17,939'	17,939'	4571ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,801'	
Liners							

*5/17/18*

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	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.33	1,730	1,384	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	1,730	1,384	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE#24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	9,000	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

**PACKERS**

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

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WW-6B  
(10/14)

API NO. 47-051 - \_\_\_\_\_

OPERATOR WELL NO. Blake N-2HM

Well Pad Name: Blake

47058028  
5/11/18  
2049

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. Log vertical section and run a solid cement plug back to proposed KOP. 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 27,565,000 lb proppant and 426,175 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.72 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.94 acres

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

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\*Note: Attach additional sheets as needed.

## Area of Review

### 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 (05/04/) 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

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Page 1 of 6

08/03/2018

## Permit well - Blake N-2HM

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
4705101698	Tug Hill Operating	6,552 TVD 12,573' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101701	Tug Hill Operating	6,572 TVD 13,355' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101766	Tug Hill Operating	11,066 TVD	None	None	Yes, existing Point Pleasant producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Point Pleasant horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.

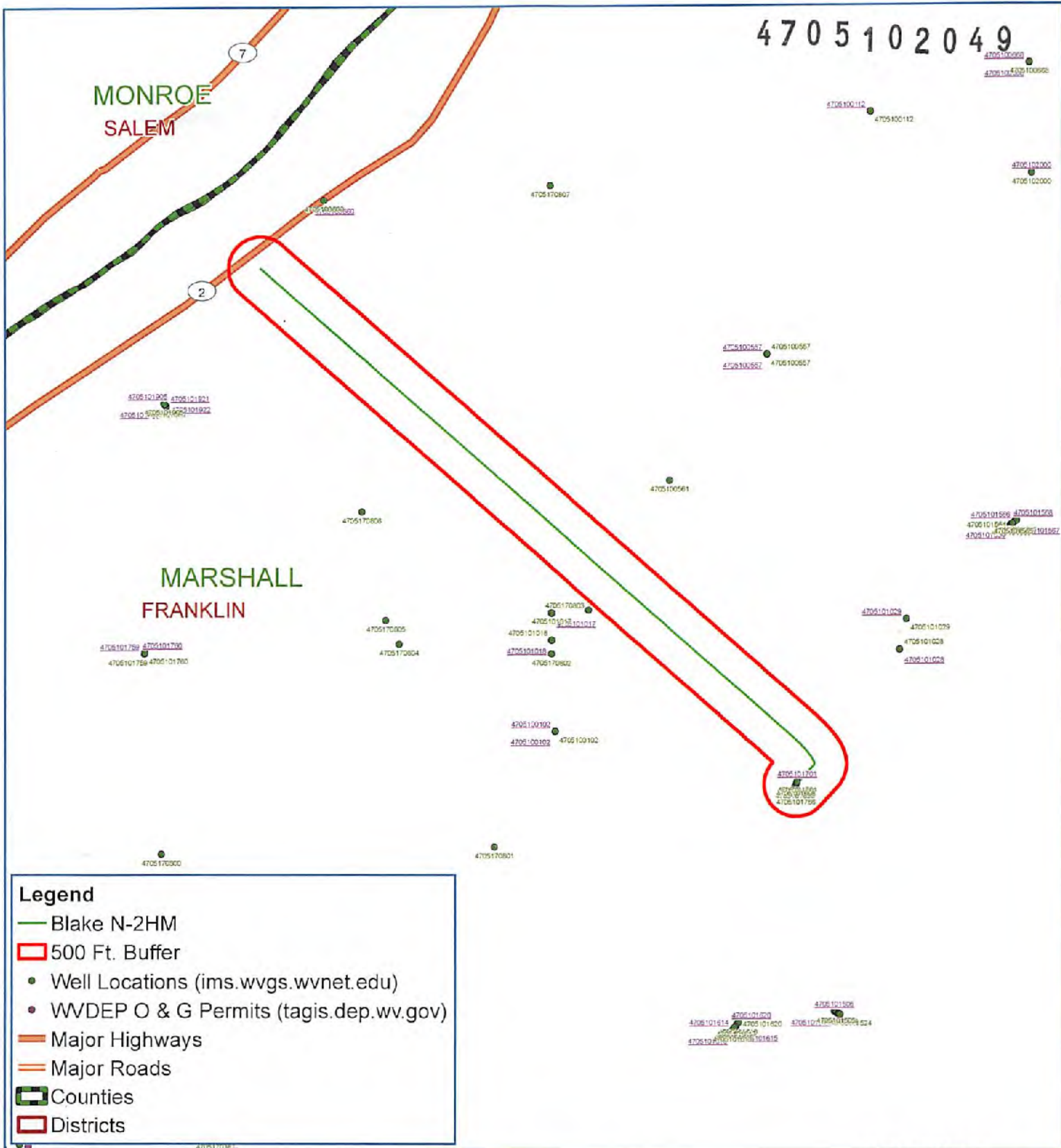
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08/03/2018



4705102049

MONROE  
SALEM

MARSHALL  
FRANKLIN

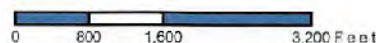


**Legend**

- Blake N-2HM
- 500 Ft. Buffer
- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Counties
- Districts



# Blake N - 2HM Franklin District Marshall County, WV



Map Created: May 4, 2018  
Map Current As Of: May 4, 2018

Notes:  
- All locations are approximate and are for visualization purposes only.

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Prepared by  
WV Department of  
Environmental Protection  
**EPS**  
08/03/2018  
LAND SERVICES

4705 + 02049



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

**Blake N-2HM**

**Casing**

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	1,120'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,800'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	17,939'	CTS

**Cement**

- Conductor: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
- Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
- Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
- Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
- 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 = 1.19

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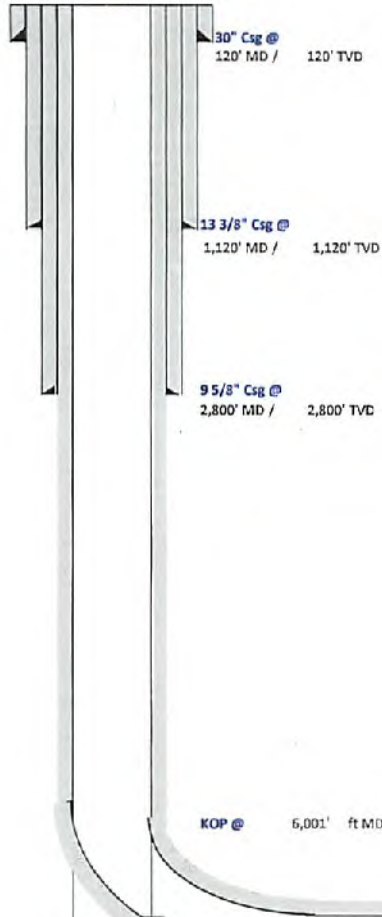


WELL NAME: **Blake N-2HM**  
 STATE: **WV** COUNTY: **Marshall**  
 DISTRICT: **Franklin**  
 DF Elev: **1,326'** GL Elev: **1,326'**  
 TD: **17,939'**  
 TH Latitude: **39.76422598**  
 TH Longitude: **-80.80495697**  
 BH Latitude: **39.786364**  
 BH Longitude: **-80.824692**

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1042
Sewickley Coal	951
Pittsburgh Coal	1036
Big Lime	2042
Weir	2430
Berea	2585
Gordon	2865
Rhinastreet	5906
Geneseo/Burkett	6353
Tully	6437
Hamilton	6460
Marcellus	6494
Landing Depth	6529
Onondaga	6545
Pilot Hole Depth	6645

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	1,120'	1,120'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,800'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	17,939'	6,337'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,143	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	908	A	15	Air	1 Centralizer every other jt
Production	4,031	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Pilot Hole  
PH TD @  
6,645' TVD

Landing Point @ 6,529' MD / 6,529' TVD  
PH TVD = 100' below Onondaga Top

KOP @ 6,001' ft MD

Lateral TD @ 17,939' ft MD  
6,337' ft TVD

*Handwritten signature and date: 5/17/18*

4705902049

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Well: Blake 02 HM (slot E)  
 Site: Blake Pad  
 Project: Marshall County, West Virginia.  
 Design: rev0

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 @ 1326.00ft

Northing: 14440940.05    Easting: 1695226.07    Latitude: 39.75422598    Longitude: -80.80495697

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.77°

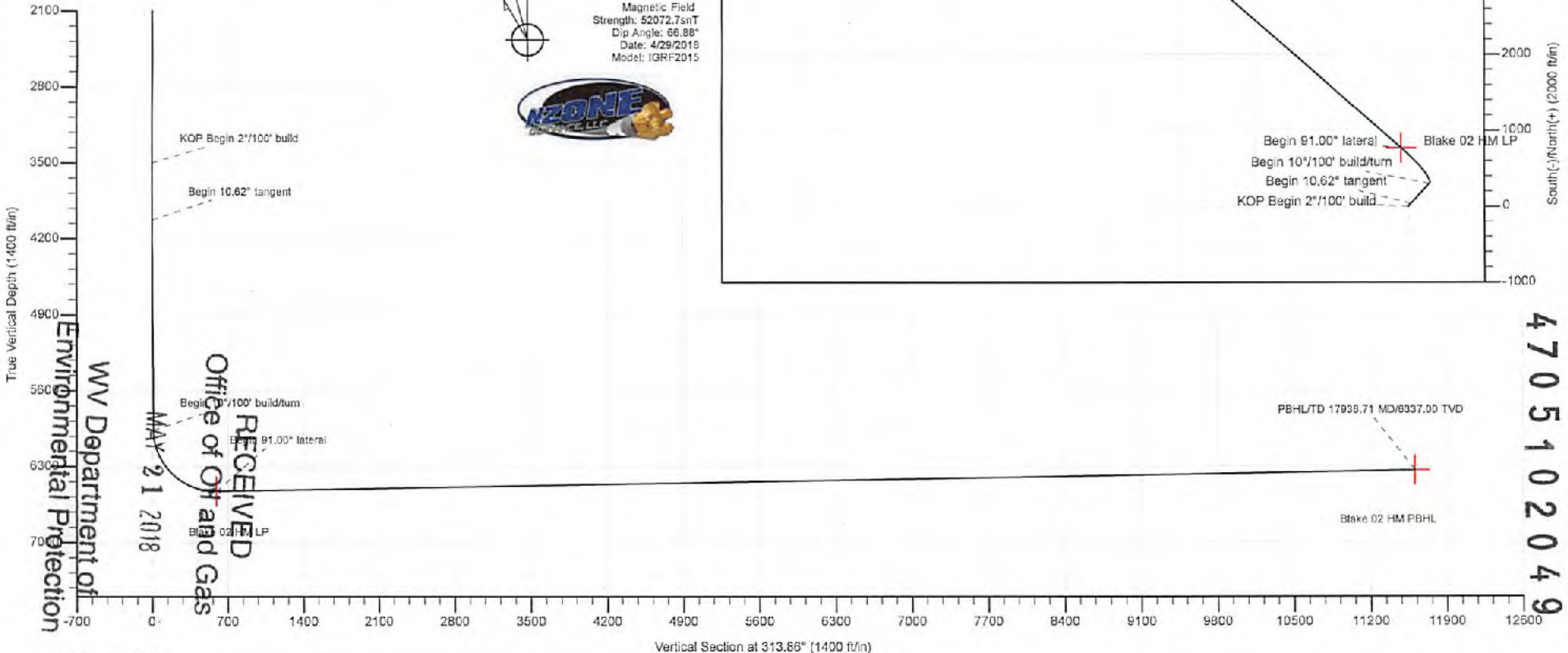
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3500.00	0.00	0.00	3500.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	4031.19	10.62	42.52	4028.15	36.19	33.19	2.00	42.52	1.15	Begin 10.62° tangent
4	6000.87	10.62	42.52	5954.07	303.04	278.60	0.00	0.00	9.65	Begin 10°/100' build/turn
5	6912.93	91.00	311.29	6529.00	769.44	-86.08	10.00	-91.02	596.65	Begin 91.00° lateral
6	17938.71	91.00	311.29	6337.00	6044.25	-8371.08	0.00	0.00	1609.69	PBHL/TD 17938.71 MD/6337.00 TVD



Azimuths to Grid North  
 True North: -0.12°  
 Magnetic North: -8.77°

Magnetic Field  
 Strength: 52072.7nT  
 Dip Angle: 66.88°  
 Date: 4/29/2018  
 Model: IGRF2015



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4705102049

WW-9  
(4/16)

API Number 47 - 051 - \_\_\_\_\_  
Operator's Well No. Blake N-2HM

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) Fish Creek - Ohio River (Undefined) Quadrangle Powhatan Point 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 2459, UIC 965, UIC 359, UIC 2D0732540, UIC 2D0732523 )
- 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. All drill cuttings to be disposed of in a 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) and 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 \_\_\_\_\_  
Company Official (Typed Name) Sean Gasser  
Company Official Title Engineer

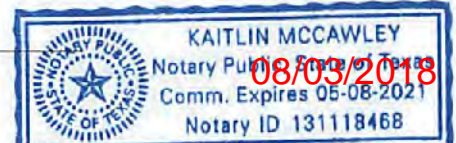
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MAY 21 2018

Subscribed and sworn before me this 17<sup>th</sup> day of May, 2018  
Kaitlin McCawley Kaitlin McCawley Notary Public

WV Department of  
Environmental Protection

My commission expires 5/8/2021



Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 20.72 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
Annual Ryegrass	40	Orchard Grass	12
Spring Oats	96	Ladino	3
		White Clover	2

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: *Jim Unholzer*

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

Title: Oil and Gas Inspector

Date: 5/17/18

Field Reviewed?  Yes  No

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08/03/2018

WW-9

PROPOSED BLAKE N-2HM

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.

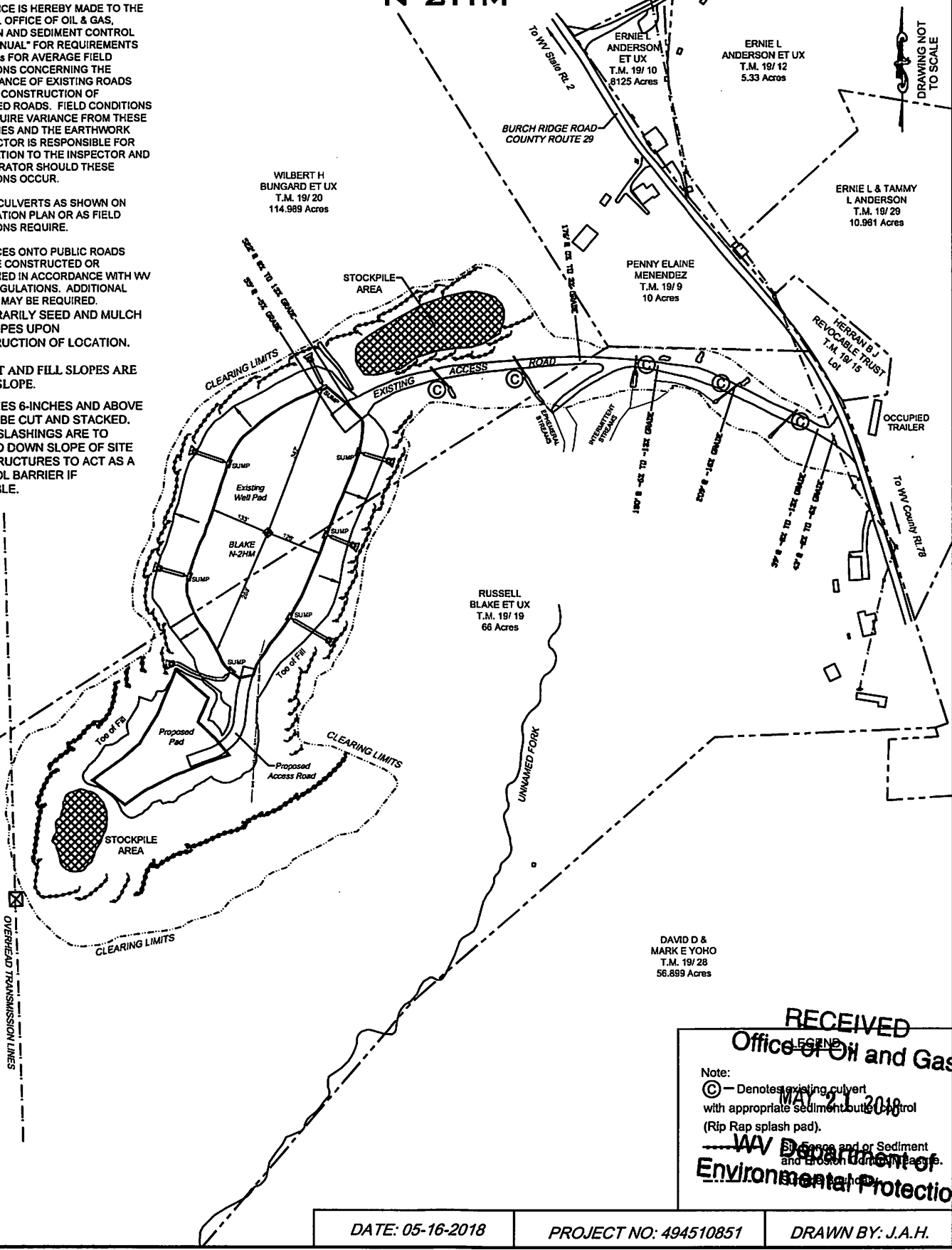
INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

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.

OVERHEAD TRANSMISSION LINES



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LEGEND  
Note:  
© - Denotes existing culvert with appropriate sediment control (Rip Rap splash pad).  
--- Denotes proposed Sediment and Erosion Control Structure.

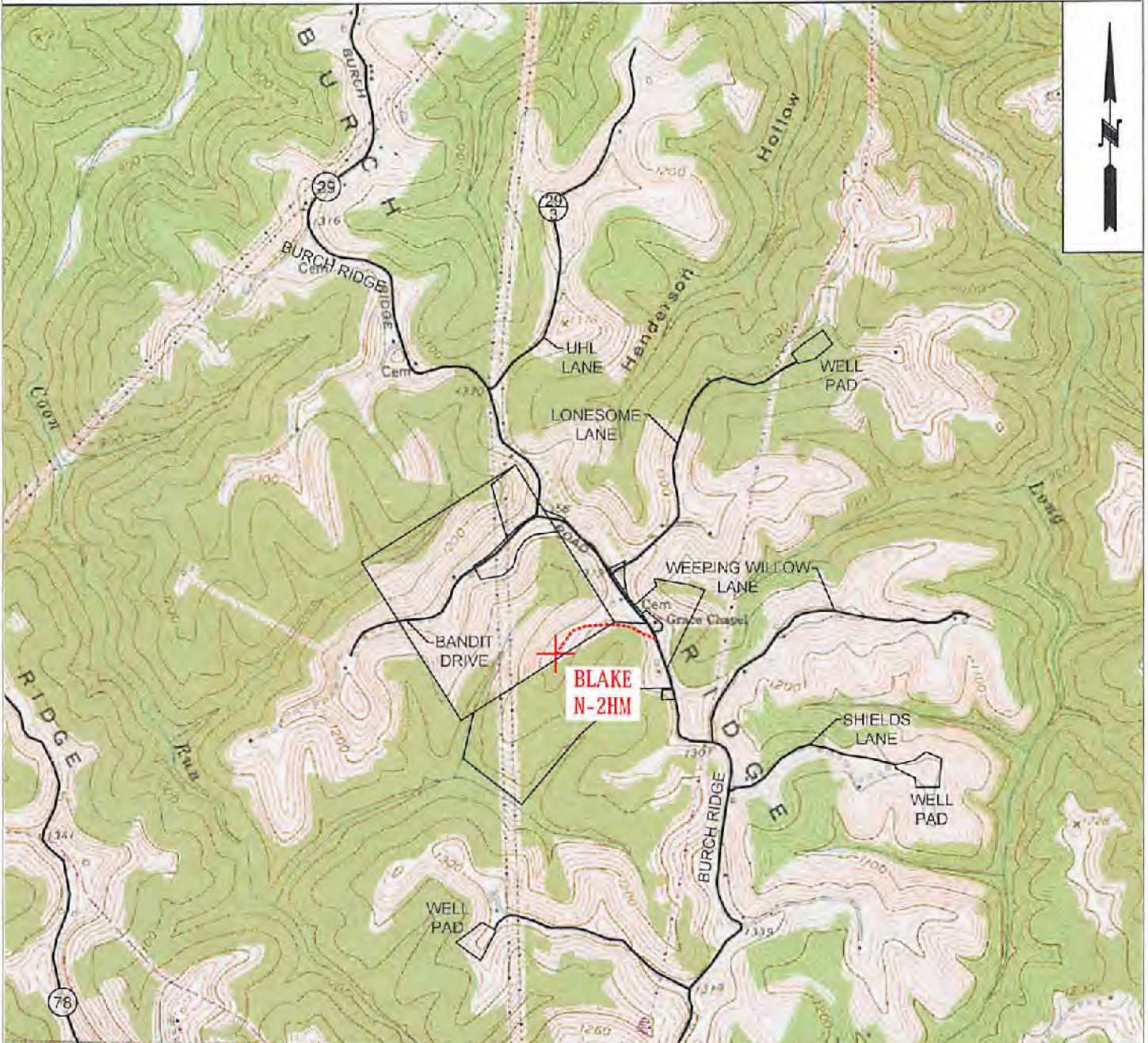
DATE: 05-16-2018	PROJECT NO: 494510851	DRAWN BY: J.A.H.
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08/03/2018

WW-9

# PROPOSED BLAKE N-2HM

4705102049  
SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR  
 GRANDVIEW - DOOLIN PUBLIC SERVICE  
 DISTRICT PROCTOR, WV  
 LAT: 39.7136943  
 LON: -80.8260157  
 LOCATED S 18-40 W AT 19,335' FROM  
 BLAKE N-2HM  
 SURFACE LOCATION

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	OPERATOR	494510851	TOPO SECTION	MAY 21 2018
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT WV	LEASE NAME
			SCALE: 1" = 2000'	Department of Environmental Protection
				DATE: 05-16-2018

08/03/2018



4705102049



*John*  
5/17/18

# Well Site Safety Plan

## Tug Hill Operating, LLC

Well Name: Blake N-2HM

Pad Location: Blake Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,401,607.33

Easting: 516,705.94

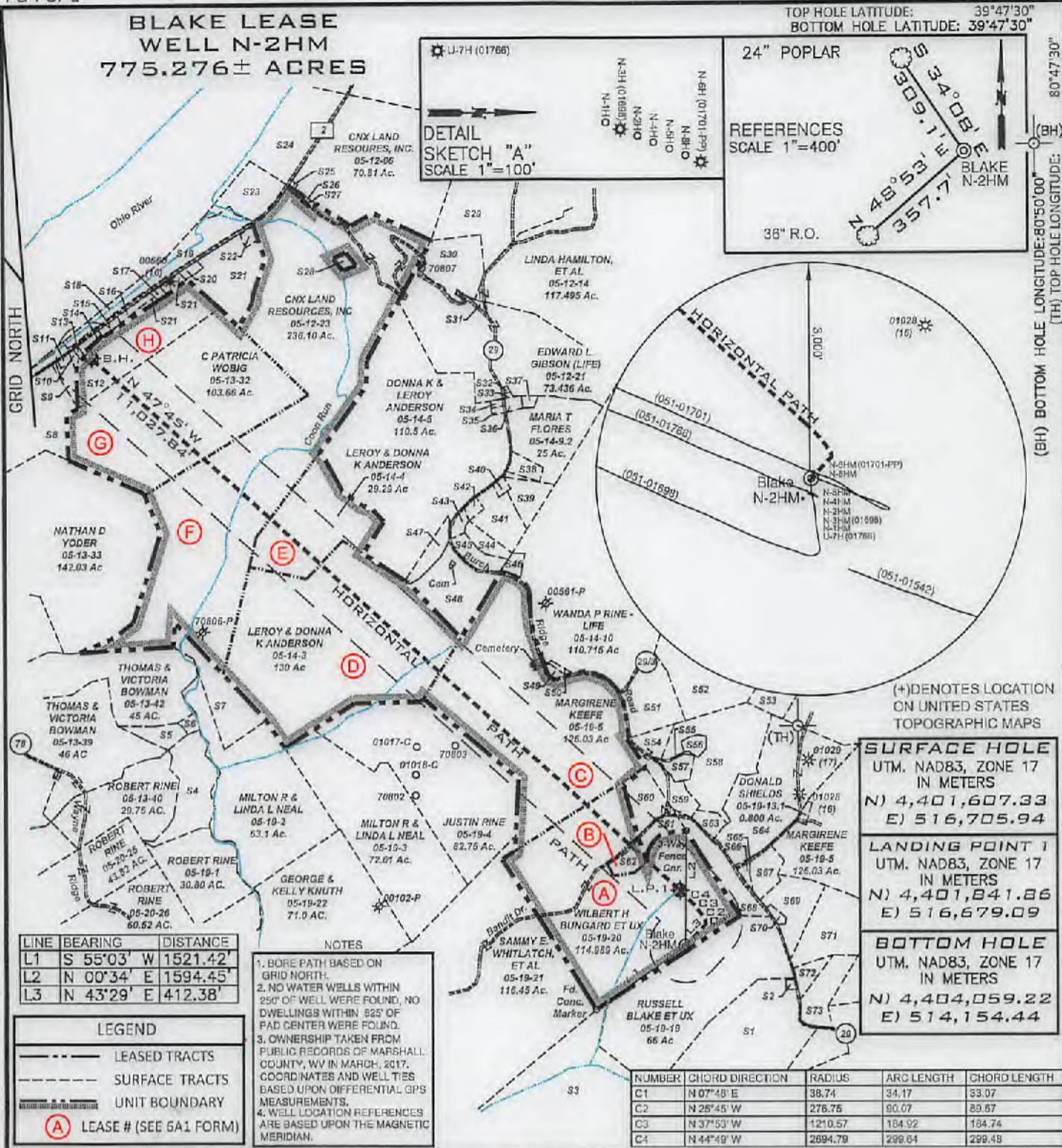
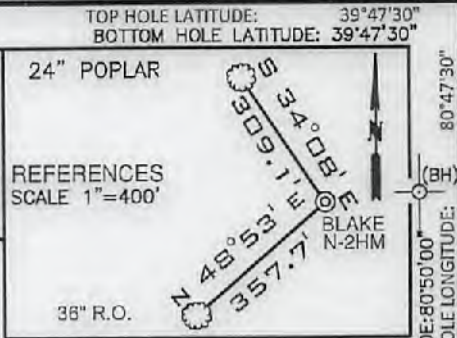
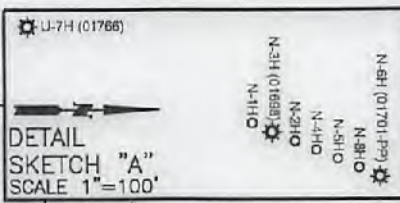
May 2018  
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MAY 21 2018

WV Department of  
Environmental Protection

08/03/2018

# BLAKE LEASE WELL N-2HM 775.276± ACRES



(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

<b>SURFACE HOLE</b> UTM, NAD83, ZONE 17 IN METERS N) 4,401,607.33 E) 516,705.94
<b>LANDING POINT 1</b> UTM, NAD83, ZONE 17 IN METERS N) 4,401,841.86 E) 516,679.09
<b>BOTTOM HOLE</b> UTM, NAD83, ZONE 17 IN METERS N) 4,404,059.22 E) 514,154.44

LINE	BEARING	DISTANCE
L1	S 55°03' W	1521.42'
L2	N 00°34' E	1594.45'
L3	N 43°29' E	412.38'

- NOTES
- BORE PATH BASED ON GRID NORTH.
  - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 525' OF PAD CENTER WERE FOUND.
  - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
  - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

**LEGEND**

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

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	N 07°48' E	38.74	34.17	33.07
C2	N 26°45' W	276.75	90.07	89.87
C3	N 37°53' W	1210.57	184.92	184.74
C4	N 44°49' W	2694.79	299.84	299.49

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

DRAWING NUMBER BLAKE\_WP\_N-2HM

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

*David L Jackson*



JACKSON SURVEYING INC.  
P.O. Box 1460  
Clarksburg, WV 26302  
304-623-9851

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

DATE: May 16, 2018  
OPERATORS WELL NO. BLAKE N-2HM  
API WELL NO. \_\_\_\_\_

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

LOCATION ELEVATION 1326' WATERSHED (HUC 10) French Creek - Ohio River  
DISTRICT Franklin COUNTY Marshall  
QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER WILBERT H. BUNGARD, ET UX ACREAGE 114.989  
OIL & GAS ROYALTY OWNER RUSSELL BLAKE, ET AL LEASE ACREAGE 114.989  
PROPOSED WORK: DRILL X CONVERT \_\_\_\_\_ DRILL DEEPER \_\_\_\_\_ REDRILL \_\_\_\_\_ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION \_\_\_\_\_  
PERFORATE NEW FORMATION \_\_\_\_\_ OTHER PHYSICAL CHANGE (SPECIFY) \_\_\_\_\_

TARGET FORMATION Marcellus PLUG & ABANDON \_\_\_\_\_ CLEAN OUT & REPLUG \_\_\_\_\_  
ESTIMATED DEPTH TVD: 6,645' TMD: 17,939'

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

08/03/2018

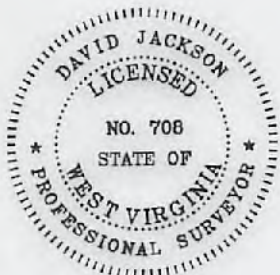
COUNTY NAME PERMIT

47 051 02049

FORM WVS

PG 2 OF 2 **BLAKE LEASE**  
**WELL N-2HM**  
**775.276± ACRES**

Number	TAX MAP - PARCEL	ADJOINER OWNER	ACRES
S1	05-19-28	DAVID D. & MARK E. YOHO	56.899
S2	05-19-32	JASPER N. BURCH ET AL - TRUSTEES	0.397
S3	05-22-04	CNX GAS COMPANY, LLC	159.05
S4	05-13-41A	RODNEY & RHONDA JACKSON	17.05
S5	05-13-41B	LARRY & JUDY DARRAH	4.15
S6	05-13-41C	BENTON DARRAH, LILLIE MAY DUGAN, ALMA BITMER, ALBERTA PALMER & AUDREY HOWARD	1.0
S7	05-14-02	JOHN B. WILLIAMS, ET AL	20.17
S8	05-13-28	AARON PAUL HOLDREN, ET UX	17.0
S9	05-13-13D	CINDY ALIFF	3.0
S10	05-13-28.1	CINDY ALIFF	1.80
S11	05-13-29	RAYMOND E. CONNER	1.0
S12	05-13-31	CNX LAND RESOURCES, INC.	31.723
S13	05-13-31.1	RAYMOND E. CONNER, ET UX	0.277
S14	05-13-31.2	CNX LAND RESOURCES, INC.	0.938
S15	05-12-27	CNX LAND RESOURCES, INC.	0.67
S16	05-12-28	W.V. DEPT. OF HIGHWAYS	1.1
S17	05-12-24.2	W.V. DEPT. OF HIGHWAYS	0.539
S18	05-12-26	OHIO RIVER R.R. CO.	4.00
S19	05-12-25	OHIO RIVER R.R. CO.	12.8
S20	05-12-24	W.V. DEPT. OF HIGHWAYS	0.964
S21	05-12-24.3	CNX LAND RESOURCES, INC.	18.523
S22	05-12-24.1	W.V. DEPT. OF HIGHWAYS	0.99
S23	05-12-23.2	CONSOLIDATION COAL COMPANY MURRAY ENERGY	12.50
S24	05-12-6.2	CONSOLIDATION COAL COMPANY MURRAY ENERGY	25.50
S25	05-12-6.1	W.V. DEPT. OF HIGHWAYS	0.31
S26	05-12-23.3	W.V. DEPT. OF HIGHWAYS	0.111
S27	05-12-23.1	JAMES N. DAUGHERTY	0.28
S28	05-12-22	CNX LAND RESOURCES, INC.	0.944
S29	05-12-07	ROBERT WM. RIGGENBACH, ET UX	104.231
S30	05-12-21.1	ROBERT W. JR. & WENDY L. RIGGENBACH	14.222
S31	05-12-15	WOODLAND HILL CHURCH OF GOD, TRS	0.375
S32	05-12-16	GARY E. GIBSON, ET AL	0.104
S33	05-12-16.1	GARY E. GIBSON, ET AL	0.148
S34	05-12-20	JONI LYN LEON	0.457
S35	05-12-19	JONI LYN LEON	0.457
S36	05-12-18	HILDA DELORIS BAXTER	1.018
S37	05-12-17	HILDA DELORIS BAXTER	0.752
S38	05-14-9.1	MARIA T. FLOREZ	2.882
S39	05-14-9.5	MARIA T. FLOREZ	6.024
S40	05-14-19	BRIAN A. & CHARLOTTE MULL	0.92
S41	05-14-09	WALTER W. STREIGHT JR., ET UX	9.311
S42	05-14-17	JUSTIN & JODY RINE	1.1044
S43	05-14-16	GEORGE A. KNUTH	1.6386
S44	05-14-9.4	VERNIE A. RINE, ET UX	3.404
S45	05-14-9.3	VERNIE A. RINE, ET UX	4.118
S46	05-14-10.3	VERNIE A. & JODY K. RINE	1.54
S47	05-14-07	DONNA K. & LEROY ANDERSON	4.60
S48	05-14-08	LAWRENCE EUGENE ANDERSON	18.29
S49	05-14-10.1	IDA RUTAN (LIFE), RALPH R. HOYT	0.50
S50	05-14-10.2	IDA RUTAN (LIFE), RALPH R. HOYT	0.495
S51	05-14-11	DALE R. GALLAHER, ET AL	12
S52	05-14-12	DALE R. GALLAHER, ET AL	135.100
S53	05-14-14	ROBERT L. SHIELD, ET AL	29.05
S54	05-19-06	MARTHA M. RUTAN	5.1099
S55	05-19-7.3	OLAN V. RUTAN, ET UX	0.341
S56	05-19-7.4	OLAN V. RUTAN, ET UX	1.787
S57	05-19-7.2	OLAN RUTAN	2.783
S58	05-19-7	OLAN V. RUTAN, ET UX	32.4801
S59	05-19-7.1	ROBERT L. SHIELD, ET AL	3.399
S60	05-19-20.2	CASANDRA L. HARMON	7.448
S61	05-19-20.1	JOHN J. EBERT, EST.	3.848
S62	05-19-20.3	SIDNEY HARMON	3.715
S63	05-19-7.5	ADAM T. & JESSE L. ROBINSON	2.640
S64	05-19-8	CNX GAS COMPANY, LLC	40
S65	05-19-11	ERNIE L. ANDERSON, ET UX	0.80
S66	05-19-10	ERNIE L. ANDERSON, ET UX	0.8125
S67	05-19-12	ERNIE L. ANDERSON, ET UX	5.33
S68	05-19-09	PENNY ELAINE MENENDEZ	10.44
S69	05-19-29	ERNIE L. & TAMMY L. ANDERSON	10.961
S70	05-19-15	B.J. HERRAN REVOCABLE TRUST	0.177
S71	05-19-30	ERNIE & TAMMY ANDERSON	19.037
S72	05-19-30.1	ERIC R.W. & ASHLEY A. HUGGINS	2.911
S73	05-19-31	CHARLES F. & DIANA L. HAYNES	8.779



P.S.  
708

*David L Jackson*

08/03/2018



**TUG HILL**  
**OPERATING**

OPERATOR'S  
 WELL #: Blake N-2HM  
 DISTRICT: Franklin  
 COUNTY: Marshall  
 STATE: WV

WELL PLAT  
 PAGE 2 OF 2  
 DATE: 05/16/2018

**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
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\*See attached pages

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

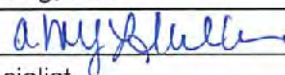
The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- 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

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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   
 Its: Permitting Specialist

Lease ID	Tag	Parcel	Lessor	Lessee	Royalty	Deed Book/Page		Assignment	Assignment	Assignment
10*14141	A	5-19-20	DAVID TAKACH AND DEBORAH TAKACH	GASTAR EXPLORATION USA INC.	1/8+	720	233	Gastar Explororation USA Inc to Atinum Marcellus I LLC: 27/639	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14141	B	5-19-20.3	DAVID TAKACH AND DEBORAH TAKACH	GASTAR EXPLORATION USA INC.	1/8+	720	233	Gastar Explororation USA Inc to Atinum Marcellus I LLC: 27/639	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14925	C	5-19-5	MOUNTAIN TOP PRODUCTIONS LLC	GASTAR EXPLORATION INC	1/8+	840	444	N/A	N/A	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14568	D	5-14-3	LEROY ANDERSON & DONNA K ANDERSON	GASTAR EXPLORATION USA	1/8+	772	69	Gastar Explororation USA Inc to Atinum Marcellus I LLC: 27/639	Cert. of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14568	E	5-14-4	LEROY ANDERSON & DONNA K ANDERSON	GASTAR EXPLORATION USA	1/8+	772	69	Gastar Explororation USA Inc to Atinum Marcellus I LLC: 27/639	Cert. of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14699	F	5-12-23	CNX GAS COMPANY LLC AND NOBLE ENERGY INC	GASTAR EXPLORATION INC & ATINUM MARCELLUS I LLC	1/8+	833	514	N/A	N/A	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*16610	G	5-13-32	RICHARD B SMITH SR AND EVELYN MARIE SMITH	TH EXPLORATION LLC	1/8+	916	120	N/A	N/A	N/A
10*16609	G	5-13-32	C PATRICIA WOBIG AND JAMES CLINTON WOBIG	TH EXPLORATION LLC	1/8+	916	118	N/A	N/A	N/A
10*14688	H	5-13-31	DEBBIE RICHMOND	GASTAR EXPLORATION USA INC	1/8+	786	398	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 29/157	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14690	H	5-13-31	DANA HAMBEL	GASTAR EXPLORATION USA INC	1/8+	789	289	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 29/157	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14692	H	5-13-31	BARBARA ANN DEEM	GASTAR EXPLORATION USA INC	1/8+	804	247	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 31/184	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14693	H	5-13-31	CHARLES DOWNS	GASTAR EXPLORATION USA INC	1/8+	809	501	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 31/184	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14694	H	5-13-31	MARY FUNK	GASTAR EXPLORATION USA INC	1/8+	821	36	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 32/428	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14695	H	5-13-31	KATHY MITCHELL	GASTAR EXPLORATION USA INC	1/8+	822	258	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 32/428	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14696	H	5-13-31	MCKENZIE ANN ADAMS	GASTAR EXPLORATION USA INC	1/8+	827	224	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 32/428	Certificate of Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14699	H	5-13-31	CNX GAS COMPANY LLC AND NOBLE ENERGY INC	GASTAR EXPLORATION INC & ATINUM MARCELLUS I LLC	1/8+	833	514	N/A	N/A	Gastar Exploration Inc to TH Exploration II LLC: 36/9

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 MAY 21 2018  
 WV Department of Environmental Protection

4705102049

Lease ID	Tag	Parcel	Lessor	Lessee	Royalty	Deed Book/Page		Assignment	Assignment	Assignment
10*14697	H	5-13-31	ANGELA ADAMS WILHITE	GASTAR EXPLORATION INC	1/8+	839	533	N/A	N/A	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14698	H	5-13-31	JASON ADAMS	GASTAR EXPLORATION INC	1/8+	842	372	N/A	N/A	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*16878	H	5-13-31	DIANE L GOODE	TH EXPLORATION LLC	1/8+	917	91	N/A	N/A	N/A
10*16875	H	5-13-31	CHRISTOPHER M EARICH AND BREA D EARICH	TH EXPLORATION LLC	1/8+	917	99	N/A	N/A	N/A
10*16877	H	5-13-31	RENEE E CAIN AND GERALD D CAIN JR	TH EXPLORATION LLC	1/8+	917	89	N/A	N/A	N/A
10*16873	H	5-13-31	LUCILLE R YOUNG	TH EXPLORATION LLC	1/8+	917	93	N/A	N/A	N/A
10*18571	H	5-13-31	JUDITH R GADE AND WILLIAM S GADE	TH EXPLORATION LLC	1/8+	935	72	N/A	N/A	N/A
10*18760	H	5-13-31	DAVID HAMBEL	TH EXPLORATION LLC	1/8+	938	452	N/A	N/A	N/A
10*19420	H	5-13-31	REBECCA L RICHMOND	TH EXPLORATION LLC	1/8+	940	264	N/A	N/A	N/A
10*19916	H	5-13-31	RALPH M RICHMOND AND WENDY L RICHMOND	TH EXPLORATION LLC	1/8+	948	595	N/A	N/A	N/A

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 Office of Oil and Gas  
 MAY 21 2018  
 WV Department of  
 Environmental Protection

4705102049

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**

STATE OF WV §  
 COUNTY OF MARSHALL § 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 Oil and Gas 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

WV Department of Environmental Protection



TUG HILL 4705 + 02049

May 17, 2018

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

RE: Blake N-2HM

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Blake N-2HM well plat.

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

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4705 \* 02049

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

Date of Notice Certification: 05/17/2018

API No. 47- 051 - \_\_\_\_\_

Operator's Well No. Blake N-2HM

Well Pad Name: Blake

**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: <u>West Virginia</u>	UTM NAD 83	Easting: <u>516,705.94</u>
County: <u>Marshall</u>		Northing: <u>4,401,607.33</u>
District: <u>Franklin</u>	Public Road Access: <u>Burch Ridge Road - County Route 29</u>	
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Blake, Russell, et al</u>	
Watershed: <u>French Creek - Ohio River</u>		

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

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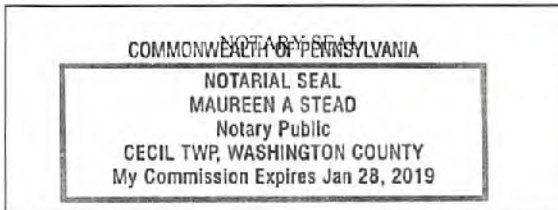
**Required Attachments:**

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.

**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:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller <i>Amy Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permit Specialist - Appalachia</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hill.com</u>



Subscribed and sworn before me this 17 day of MAY, 2018  
Maureen A Stead Notary Public  
 My Commission Expires 1/28/19

**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).

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**4705102049**

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: 5/17/2018 Date Permit Application Filed: 5/18/2018

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: Wilbert H. and Pamela June Bungard (access road and well pad)  
Address: 243 Bandit Drive  
Proctor, WV 26055

Name: Russell and Mary Blake (access road and well pad)  
Address: 3343 Burch Ridge Road  
Proctor, WV 26055

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: CNX Land Resources, Attn: Casey Saunders  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15318

COAL OPERATOR

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

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: Wilbert H. Bungard and Pamela June Bungard (\*See attached list)  
Address: 243 Bandit Drive  
Proctor, WV 26055

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

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

\*Please attach additional forms if necessary

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**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 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

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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 the 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.

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**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.**

**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.

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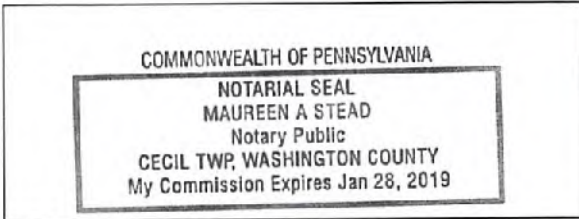
**Notice is hereby given by:**

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

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030 **4705102049**

**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 17 day of MAY, 2018.  
Maureen A Stead Notary Public  
My Commission Expires 1/28/19

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WW-6A

Supplement Pg. 1A

Tug Hill Operating, LLC  
 380 Southpointe BLVD, Suite 200  
 Canonsburg, PA 15317

## WATER WELL REPORT

Well: BLAKE N -2HM  
 District: Franklin  
 County: Marshall  
 State: WV

There appears to be Sixteen ( 16 ) possible water sources within 2,000 feet of the above referenced well location.

Topo Spot # 1 (House) TM 19 Par. 20 Wilbert H. Bungard and Pamela June Bungard 304-476-6494 243 Bandit Drive Proctor, WV 26055	Topo Spot #2 (Abandoned House) TM 19 Par. 20 Wilbert H. Bungard and Pamela June Bungard 304-476-6494 243 Bandit Drive Proctor, WV 26055	Topo Spot # 3 (House) TM 19 Par. 20.2 Casandra L. Harmon 304-639-9837 37 Bandit Drive Proctor, WV 26055
Topo Spot # 4 (House) TM 19 Par. 20.1 John J. Ebert (Life) 304-455-3967 26 Bandit Drive Proctor, WV 26055	Topo Spot # 5 (House) TM 19 Par. 7.1 Robert L. Shields, et ux 304-455-5387 2756 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 6 (House) TM 19 Par. 7.5 Adam & Jesse Robinson 304-280-9745 2932 Burch Ridge Rd. Proctor, WV 26055
Topo Spot # 7 (House-New) TM 19 Par. 10 Ernie L. & Tammy L. Anderson 304-455-3818 3156 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 8 (House) TM 19 Par. 10 Ernie L. & Tammy L. Anderson 304-455-3818 3156 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 9 (House) TM 19 Par. 9 Penny E. Menendez 304-455-5338 3171 Burch Ridge Rd. Proctor, WV 26055
Topo Spot # 10 (Trailer) TM 19 Par. 29 Ernie L. & Tammy L. Anderson 304-455-3818 3156 Burch Ridge Rd. (3298 Burch Ridge Rd.) Proctor, WV 26055	Topo Spot # 11 (House) TM 19 Par. 19 Russell and Mary Blake 304-455-1158 3343 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 12 (Trailer) TM 19 Par. 19 Russell and Mary Blake 304-455-1158 3343 Burch Ridge Rd. (3435 Burch Ridge Rd.) Proctor, WV 26055

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4705102049

Topo Spot # 13 (House) TM 19 Par. 30 Ernie L. & Tammy L. Anderson 304-455-3818 3156 Burch Ridge Rd. (3486 Burch Ridge Rd.) Proctor, WV 26055	Topo Spot # 14 (House) TM 19 Par. 31 Charles F. & Diana L. Haynes 304-312-5210 3508 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 15 (House) TM 19 Par. 28 David D. Yoho & Mark E. Yoho 304-455-3176 3555 Burch Ridge Rd. Proctor, WV 26055
Topo Spot # 16 (House) TM 19 Par. 28 David D. Yoho & Mark E. Yoho 304-455-3176 3555 Burch Ridge Rd. Proctor, WV 26055		

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MAY 21 2018

WV Department of  
Environmental Protection

08/03/2018

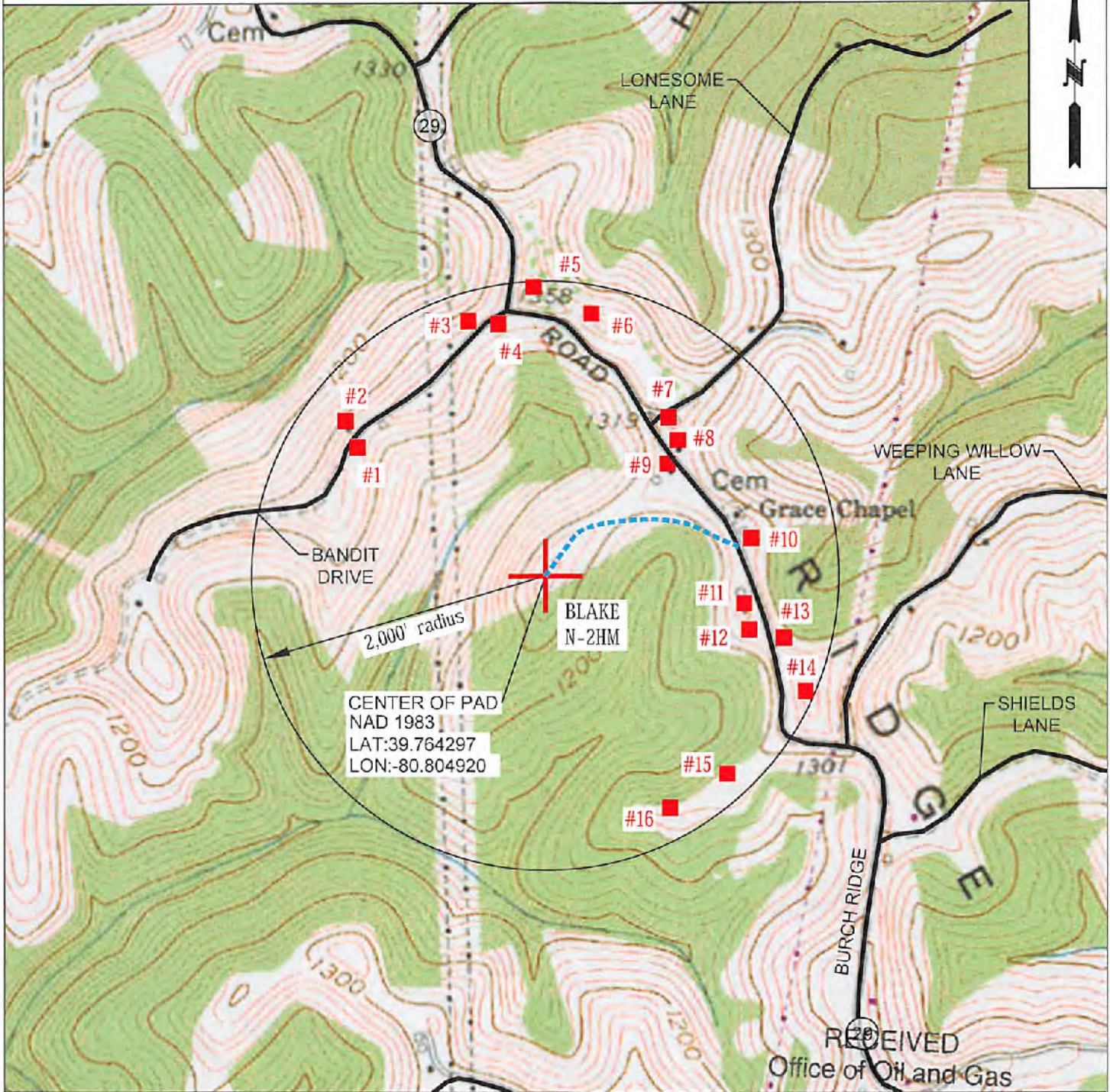
WW-6A

# PROPOSED BLAKE N-2HM

SUPPLEMENT PG 1

## 4705102049

*There appears to be Sixteen ( 16 ) possible water sources within 2,000'.*



**OPERATOR** 494510851  
 TUG HILL OPERATING, LLC  
 380 SOUTHPOINTE BLVD  
 SUITE 200  
 CANONSBURG, PA 15317

**TOPO SECTION** MAY 9, 2018  
**LEASE NAME** BLAKE  
**SCALE:** 1" = 1000'  
**DATE:** 05/10/2018

08/03/2018

**STATE OF WEST VIRGINIA** **4705102049**  
**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:** 4/19/2018      **Date of Planned Entry:** 4/26/2018

**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: Wilbert H. and Pamela June Bungard (access road and well pad)  
Address: 243 Bandit Drive  
Proctor, WV 26055

Name: Russell and Mary Blake (access road and well pad)  
Address: 3343 Burch Ridge Road  
Proctor, WV 26055

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

COAL OWNER OR LESSEE

Name: CNX Land Resources  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15318

MINERAL OWNER(s)

Name: David A. and Deborah Takach (\*See Attached List)  
Address: 14 Zilko Terrace  
Glen Dale, WV 26038

*\*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: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.76422598; - 80.80495697</u>
County: <u>Marshall</u>	Public Road Access: <u>Burch Ridge Road - CR 29</u>
District: <u>Franklin</u>	Watershed: <u>huc-13: FRENCH CREEK - OHIO RIVER (UNDEFINED)</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Blake, Russell Et Al</u>

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-hillop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317

Facsimile: 724-338-2030

**RECEIVED**  
**Office of Oil and Gas**

**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 of your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

MAY 21 2018  
WV Department of  
Environmental Protection

**WW-6A3 Notice Attachment  
Blake N-2HM**

**4705 \* 02049**

**Mineral Owners**

Russell and Mary Blake  
3343 Burch Ridge Road  
Proctor, WV 26055

Gary L. and Pamela S. Witschey  
2645 Paden Fork Road  
New Martinsville, WV 26155

Gordon L. Witschey  
160 E. Thistle Drive  
New Martinsville, WV 26155

Carl Coffield  
970 Allendale Avenue  
Akron, OH 44306

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Office of Oil and Gas**

**MAY 21 2018**

**WV Department of  
Environmental Protection**

**08/03/2018**

**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:** 05/17/2018      **Date Permit Application Filed:** 05/18/2018

4705102049

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

- CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

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: Wilbert H. and Pamela June Bungard  
Address: 243 Bendit Drive  
Proctor, WV 26055

Name: Russell and Mary Blake  
Address: 3343 Burch Ridge Road  
Proctor, WV 26055

**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:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>516,705.94</u>
County:	<u>Marshall</u>		Northing:	<u>4,401,607.33</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Burch Ridge Road - County Route 29</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Blake, Russell, et al</u>	
Watershed:	<u>French Creek - Ohio River</u>			

**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

**RECEIVED**  
**Office of Oil and Gas**

**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).

MAY 21 2018

WV Department of  
Environmental Protection



## 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

May 3, 2018

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 Permits for the Blake Well Pad, Marshall County

Blake N-2HM

Dear Mr. Martin,

This well site will be accessed from Permit #06-2013-0426 transferred to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 29 SLS.

The operator has signed a DISTRICT WIDE 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 January 3, 2012.

Very Truly Yours,

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

Cc: Jonathan White  
 Tug Hill Operating  
 CH, OM, D-6  
 File

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MAY 21 2018

WV Department of  
 Environmental Protection

08/03/2018



4705702049

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Blake N-2HM

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

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Office of Oil and Gas

MAY 21 2018

WV Department of  
Environmental Protection

**WEST VIRGINIA COUNTY MAP**



**WVDEP OOG  
ACCEPTED AS-BUILT**

*WJ* 6/14/2018

**Blake Well Site**  
Site Design, Construction Plan, &  
Erosion and Sediment Control Plans  
Tug Hill Operating  
Marshall County  
Franklin District  
Latitude 39.76429745°  
Longitude -80.80492031°  
Stillhouse Run - Ohio River Watershed

**Pertinent Site Information**  
Blake Well Site  
Emergency Number: 304-845-1920  
Franklin District, Marshall County, WV  
Watershed: Stillhouse Run - Ohio River Watershed  
Site 911 Address:  
Tug Hill Contact Number: 1-817-632-3400

**Property Owner Information - Blake Well Site**

Owner	TM - Parcel	Well Pad	Prod. Pad	Access Road	Topsol/Excess	Add. Clearing	Total Disturbed
Russell Blake et ux	19-29	1.91	1.40	1.38	0.37	7.69	12.75
William Bungard et ux	19-20	4.03	0.00	0.83	0.81	2.30	7.97
<b>Site Totals (Ac)</b>	<b>5.94</b>	<b>1.40</b>	<b>2.21</b>	<b>1.18</b>	<b>9.99</b>	<b>20.72</b>	

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



WV State Plane Coordinate System  
North Zone, NAD 83  
Elevations Based on NAV88  
Established By Survey Grade GPS  
and OPUS Post-Processing

**Access Road**

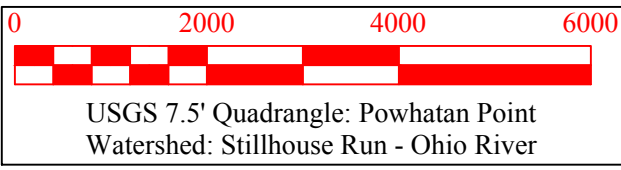
Surface Owner	TM - Parcel	Road Length	Type
Russell Blake et ux	19-29	250.52'	New Access Road Construction
Russell Blake et ux	19-29	633.24'	Existing Access Road
William Bungard et ux	19-20	590.83'	Existing Access Road

**Disturbed Area**

Well Pad Construction	5.94 Ac
Production Pad Construction	1.40 Ac
Access Road Construction	2.21 Ac
Topsol / Excess Material	1.18 Ac
Additional Clearing	9.99 Ac
<b>Total Disturbed Area</b>	<b>20.72 Ac</b>
<b>Additional Information</b>	
Total Wooded Acres Disturbed	3.38 Ac
Total Linear Feet of Access Road	1,474.59'

**Blake Well Site Quantities**

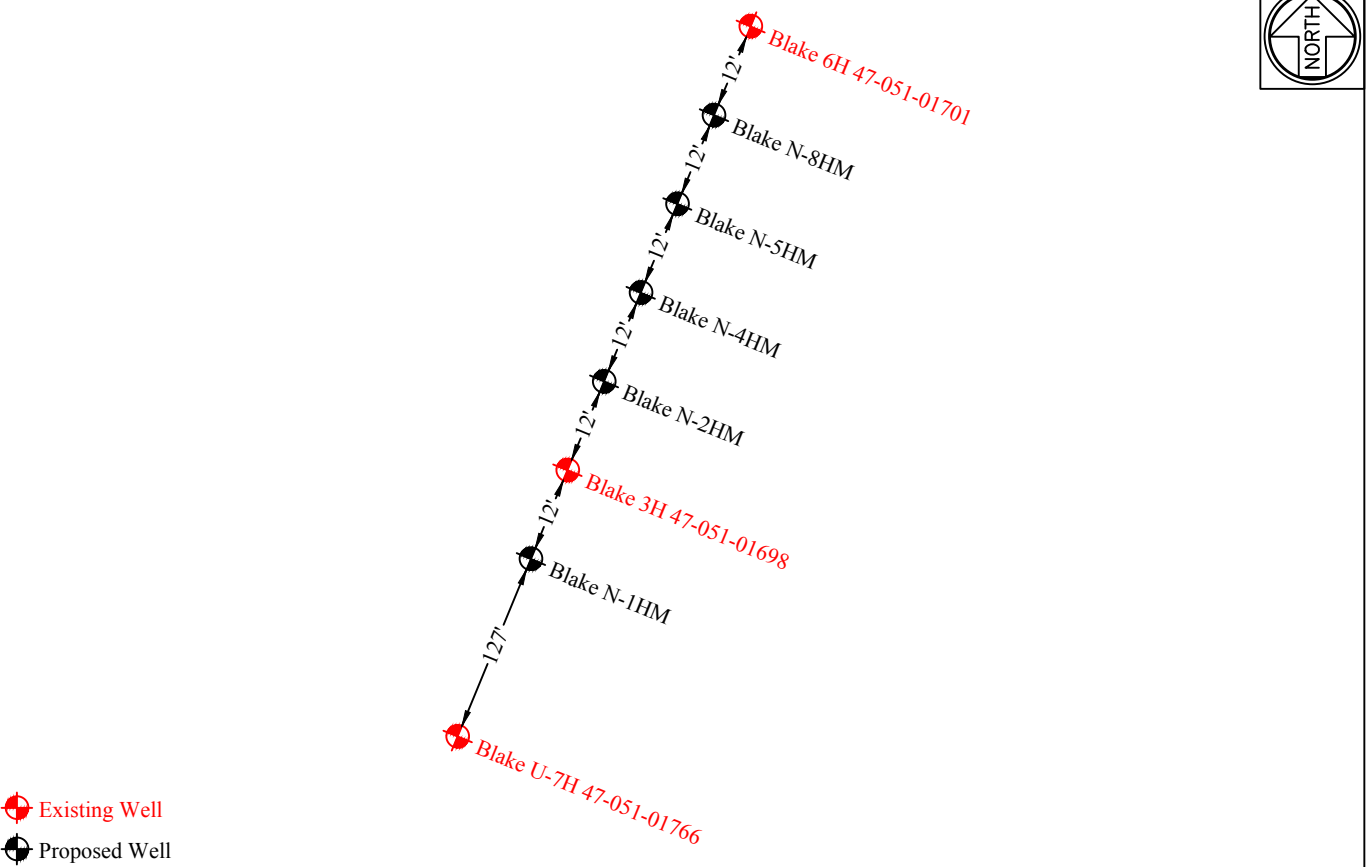
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope	Length of Slope
Well Pad Berm	0.00	250.00	0.00	250.00	N/A	N/A
Production Pad	4,518.56	2,526.89	1,991.67		N/A	N/A
Production Pad Access Road	0.00	1,351.30		1,351.30	18.00%	190.15'
Borrow Area	5,000.00	0.00	5,000.00		N/A	N/A
Topsol/Excess Material Stockpile	0.00	3,002.83		3,002.83	N/A	N/A
<b>Totals</b>	<b>9,518.56</b>	<b>7,131.02</b>	<b>6,991.67</b>	<b>4,604.13</b>		
<b>Total Spoil (CY) =</b>	<b>2,387.54</b>			<b>(Excess Borrow Material)</b>		



**Site Entrance**  
WV-N NAD 83 N: 463332.84  
WV-N NAD 83 E: 1602993.42  
WV-N NAD 27 N: 463296.79  
WV-N NAD 27 E: 1634431.10  
Lat. NAD 83: 39.7642352  
Lon. NAD 83: -80.80029039  
Lat. NAD 27: 39.76474683  
Lon. NAD 27: -80.80047668  
UTM 17 NAD 83 N: 4401674.53  
UTM 17 NAD 83 E: 517105.50

**Center of Well Pad**  
WV-N NAD 83 N: 463160.11  
WV-N NAD 83 E: 1601689.28  
WV-N NAD 27 N: 463124.09  
WV-N NAD 27 E: 163326.99  
Lat. NAD 83: 39.76429745  
Lon. NAD 83: -80.80492031  
Lat. NAD 27: 39.76422083  
Lon. NAD 27: -80.80510638  
UTM 17 NAD 83 N: 4401615.27  
UTM 17 NAD 83 E: 516709.06  
Pad Elev.: 1326.20'

**Center of Production Pad**  
WV-N NAD 83 N: 462656.71  
WV-N NAD 83 E: 1601448.56  
WV-N NAD 27 N: 462620.70  
WV-N NAD 27 E: 1632886.29  
Lat. NAD 83: 39.76290599  
Lon. NAD 83: -80.80575050  
Lat. NAD 27: 39.76292935  
Lon. NAD 27: -80.80593650  
UTM 17 NAD 83 N: 4401460.68  
UTM 17 NAD 83 E: 516638.29  
Pad Elev.: 1292.02'



**Well Table**

Well	WV-N NAD 83 N	WV-N NAD 83 E	WV-N NAD 27 N	WV-N NAD 27 E	Lat. NAD 83	Lon. NAD 83	Lat. NAD 27	Lon. NAD 27	UTM 17 NAD 83 (m) N	UTM 17 NAD 83 (m) E
<b>Blake 6H</b>	463178.46	1601697.00	463142.44	1633134.72	39.76434815	-80.80489377	39.76427153	-80.80507984	4401620.90	516711.32
<b>Blake N-8HM</b>	463167.50	1601692.53	463131.48	1633130.04	39.76431788	-80.80498984	39.76424124	-80.80505950	4401617.54	516709.95
<b>Blake N-5HM</b>	463156.41	1601687.75	463120.39	1633125.46	39.76428724	-80.80492555	39.76421061	-80.80511161	4401614.14	516708.62
<b>Blake N-4HM</b>	463145.32	1601683.17	463109.30	1633120.89	39.76425661	-80.80494126	39.76417998	-80.80512732	4401610.73	516707.28
<b>Blake N-2HM</b>	463134.22	1601678.59	463098.21	1633117.73	39.76422598	-80.80495697	39.76419311	-80.80497264	4401613.22	516711.32
<b>Blake N-1HM</b>	463123.32	1601674.01	463086.30	1633111.73	39.76419311	-80.80497264	39.76416448	-80.80514363	4401603.68	516704.60
<b>Blake U-7H</b>	462995.05	1601669.44	463076.02	1633107.15	39.76416471	-80.80498839	39.76408808	-80.80517445	4401600.52	516703.26
<b>Blake L-7H</b>	463145.32	1601691.80	463098.21	1633105.51	39.76415892	-80.80514996	39.76376495	-80.80534496	4401600.52	516688.73

**Project Contacts**

**Tug Hill Operating**  
Jonathan White - Regulatory Analyst  
724-485-2000 OIF: 304-689-7676 Cell  
Geoff Radler - V.P. Production  
817-632-5200 OIF.

**Survey and Engineer**  
Kenneth Kelly  
304-338-6985 OIF.  
John P. See  
304-442-0220 OIF.  
Zachary Summerfield  
304-338-6987 OIF.

**Geotechnical Engineer**  
American Geotech. Inc.  
Kam Patel  
304-340-4277 OIF.

**Environmental:**  
Wetland Delineations as provided by Allstar Ecology dated March 30, 2018

**Topographic Information:**  
The topographic information shown herein is based on aerial photography by Blue Mountain Aerial Mapping, Burton, WV

MISS UTILITY OF WEST VIRGINIA  
1-800-245-4848  
West Virginia State Law  
Section XIV, Chapter 24-C requires that you call two business days before you dig in the state of West Virginia.  
**IT'S THE LAW**  
Know what's below. Call before you dig.

Tug Hill Operating will obtain an Encroachment Permit (Form MM-109) from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities

The WV Mines Website was consulted. Previous (Current) mining activities are not within the AOI

WVDEP Website files show that there are active and/or abandoned gas wells within the AOI

**Floodplain Conditions**

Do site construction activities take place in a floodplain:	NO
Permit needed from county floodplain coordinator:	NO
Flood Hazard Zone:	X
HEC-RAS Study completed:	N/A
Floodplain shown on drawings:	N/A
FIRM Map Number(s) for site:	S405C 0143E
Acres of construction in floodplain:	N/A

**Site Locations (NAD 27)**

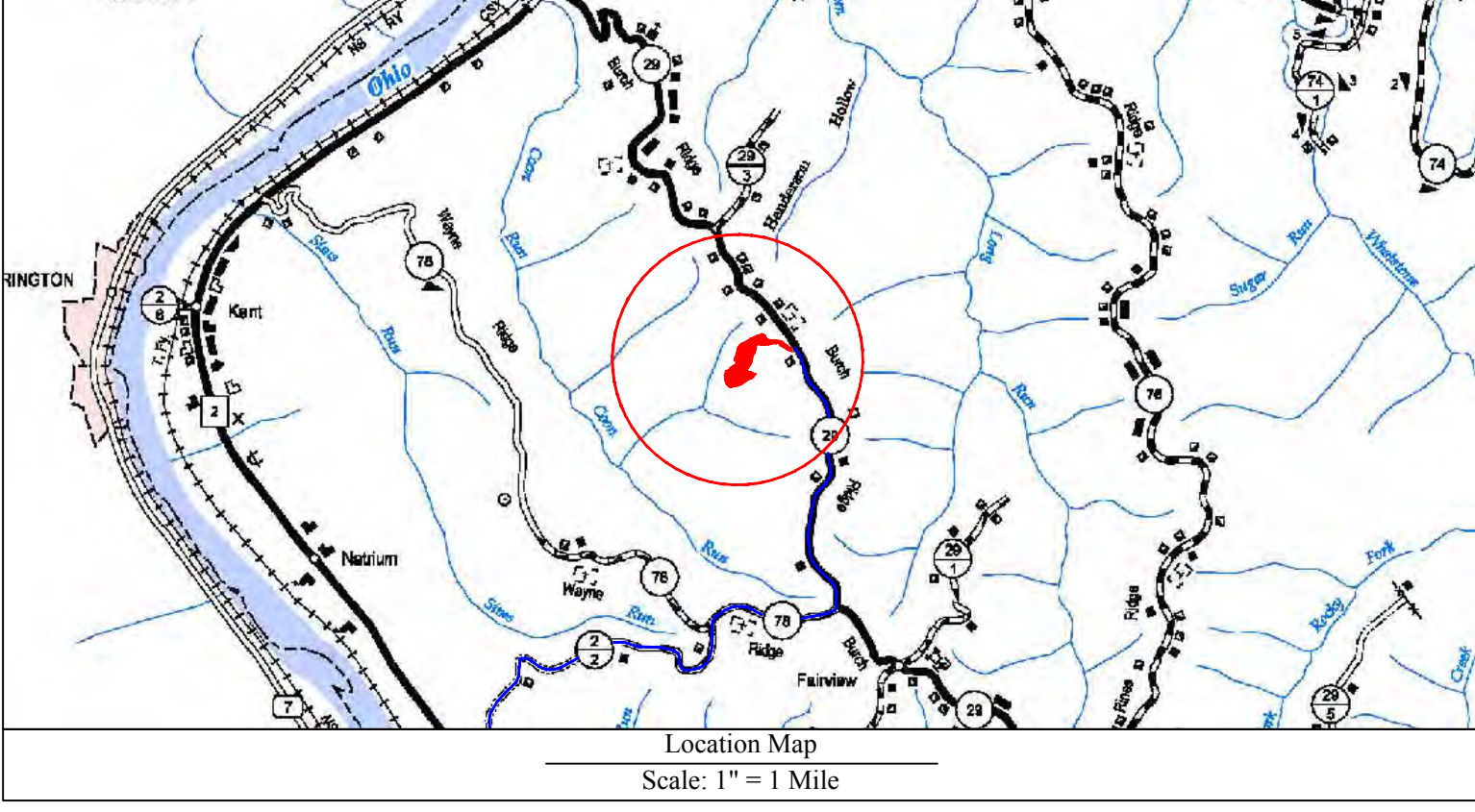
Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.76474683	-80.80047668
Center of Well Pad	39.76422083	-80.80510638
Center of Production Pad	39.76282935	-80.80593650

**Site Locations (NAD 83)**

Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.7642352	-80.80029039
Center of Well Pad	39.76429745	-80.80492031
Center of Production Pad	39.76290599	-80.80575050

**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 2/2 (Wells Hill Rd). Follow Co Rt 2/2 for 2.4 mi. Turn Right onto Co Rt 78 (Waynes Ridge). Follow Co Rt 78 for 0.8 mi. Turn Left onto Co Rt 29 (Burch Ridge Rd). Follow Co Rt 29 for 1.65 mi. The site entrance will be on the Left (West) side of the road.



**Well Location Restrictions**

All Pad construction complies with the following restrictions.

- \*250' from an existing well or developed spring used for human or domestic animals.
- \*625' from an occupied dwelling or barn greater than 2,500 SF used for poultry or dairy measured from the center of the pad.
- \*100' from the edge of disturbance to wetlands, perennial streams, natural or artificial lake, pond or reservoir.
- \*300' from the edge of disturbance to a naturally reproducing trout stream.
- \*1,000' of a surface or ground water intake to a public water supply.

(Well Location Restrictions of WV Code 22-6A-12)

Design Certification

The drawings, construction notes and reference diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas, 38CSR08

All Plans, Sheets, and/or Reference Diagrams included in this design constitute a complete set of plans. A complete set of plans is necessary to construct the site in accordance with the design.

Zachary C. Summerfield  
RPE 22214  
Kelly Surveying PLLC  
COA: C04232-00

Date: 06-13-2018

Sheet	Description
1	Cover Sheet
V1	Schedule of Quantities
N1-N4	Site Notes
2	Pre-Construction Site Conditions
3	Site Soil Map
4	Clearing Exhibit
5	Overall Plan View
6-7	E&S Plan View
8	Toe Key Exhibit
9-10	Plan View
11	Cross Sections - Well Pad
12	Cross Sections - Production Pad
13	Cross Sections - Access Road
G1-G2	Geotechnical Exhibit
L1	Landowner Disturbed Area Exhibit
S1	Site Reclamation
M1-M3	Production Exhibit
D1-D2	Erosion and Sediment Control Details
R1	Access Road Details
P1	Pad Details

Revision: Design: WJ  
Date: 05-11-2018  
06-13-2018

**TUG HILL OPERATING**

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

**Kelly Surveying**  
254  
Delaware, WV 26039  
304-338-6985

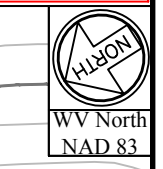
**Blake Well Site**  
Franklin District  
Marshall County, WV

Cover Sheet

Date: 05/11/2018  
Scale: As Shown  
Designed By: ZS  
File No.  
Sheet 1 of 13



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

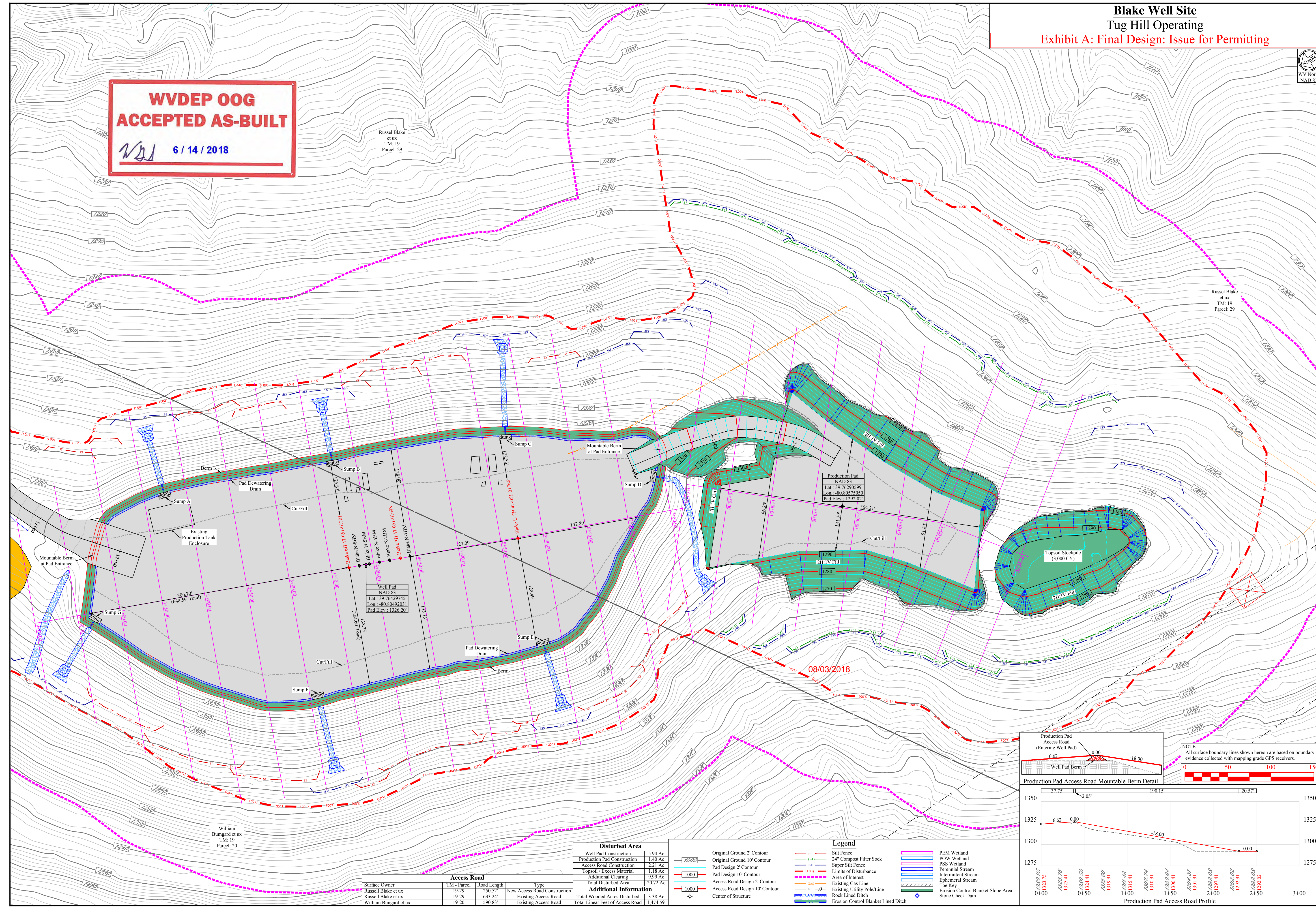


**WVDEP OOG**  
**ACCEPTED AS-BUILT**  
WJ 6/14/2018

Russel Blake et ux  
TM: 19  
Parcel: 29

Russel Blake et ux  
TM: 19  
Parcel: 29

Date	Revision
05-11-2018 <td>Design</td>	Design
06-13-2018 <td>Design: WVDEP Comments</td>	Design: WVDEP Comments



08/03/2018

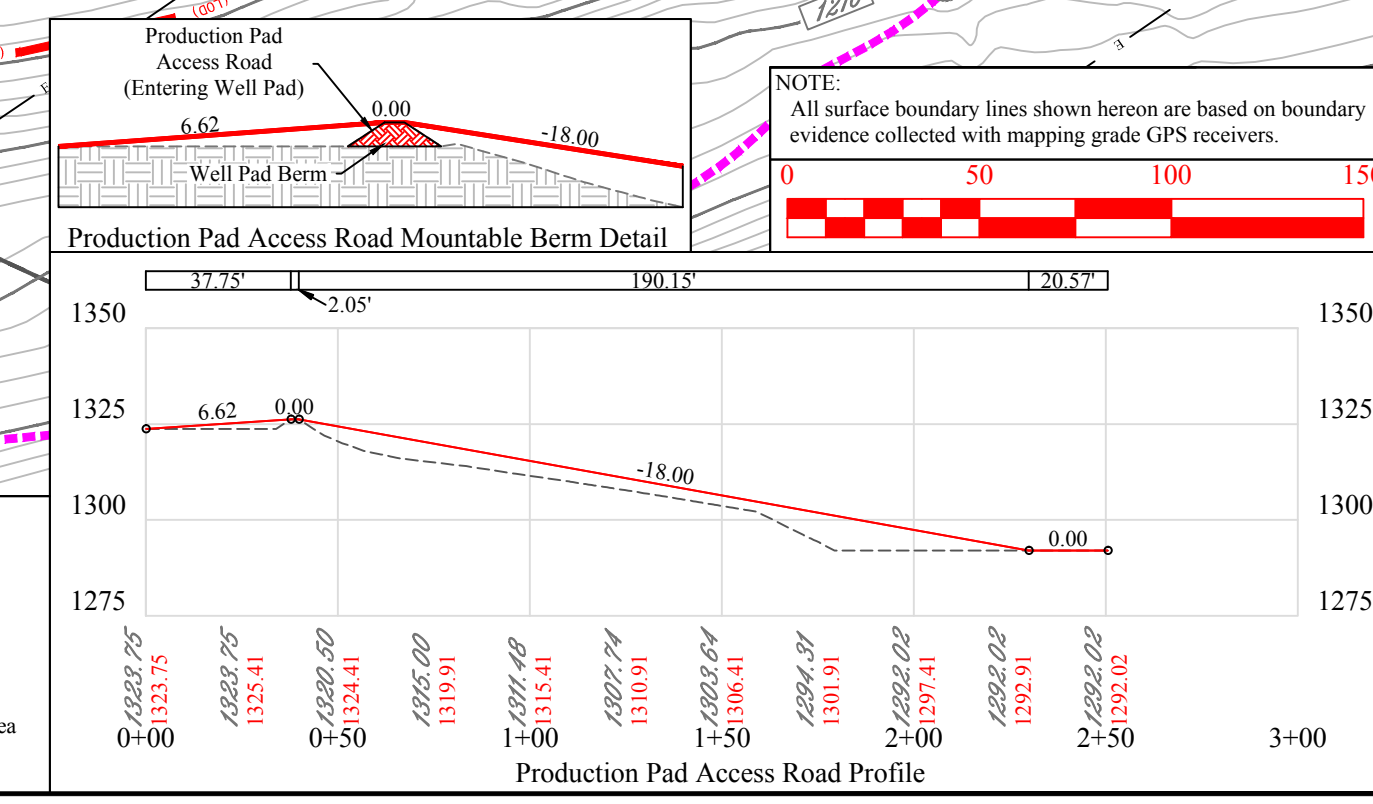
William Bungard et ux  
TM: 19  
Parcel: 20

Surface Owner	TM - Parcel	Road Length	Type
Russel Blake et ux	19-29	230.52'	New Access Road Construction
Russel Blake et ux	19-29	633.24'	Existing Access Road
William Bungard et ux	19-20	590.83'	Existing Access Road

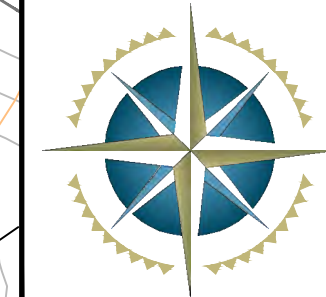
Disturbed Area	
Well Pad Construction	5.94 Ac
Production Pad Construction	1.40 Ac
Access Road Construction	2.21 Ac
Topsoil / Excess Material	1.18 Ac
Additional Clearing	9.99 Ac
<b>Total Disturbed Area</b>	<b>20.72 Ac</b>

Additional Information	
Total Wooded Area Disturbed	1.38 Ac
Total Linear Feet of Access Road	1,474.59'

- Legend**
- Original Ground 2' Contour
  - Original Ground 10' Contour
  - Access Road Design 2' Contour
  - Access Road Design 10' Contour
  - Center of Structure
  - Silt Fence
  - 24" Compost Filter Sock
  - Super Silt Fence
  - Limits of Disturbance
  - Area of Interest
  - Existing Gas Line
  - Existing Utility Pole Line
  - Rock Lined Ditch
  - PEM Wetland
  - POW Wetland
  - PSS Wetland
  - Perennial Stream
  - Intermittent Stream
  - Ephemeral Stream
  - Toe Key
  - Erosion Control Blanket Slope Area
  - Stone Check Dam



**TUG HILL**  
OPERATING



THIS DOCUMENT  
PREPARED FOR  
TUG HILL  
OPERATING

**Kelly S** Surveying  
1250 West 254  
Way, WV 26239  
304-538-6985

**Blake Well Site**  
Franklin District  
Marshall County, WV

Date: 05/11/2018  
Scale: As Shown  
Designed By: ZS  
File No.  
Sheet 10 of 13