



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
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-1HM
47-051-02048-00-00

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

A blue ink signature of James A. Martin, written in a cursive style.

Operator's Well Number: BLAKE N-1HM
Farm Name: WILBERT H. BUNGARD, ET U
U.S. WELL NUMBER: 47-051-02048-00-00
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

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.

4705102048

API Number: _____

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.

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-1HM Well Pad Name: Blake

3) Farm Name/Surface Owner: William 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 Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

ju
5/17/18

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6492 - 6543' thickness of 51' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,643' ✓

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 14,122'

11) Proposed Horizontal Leg Length: 7,217'

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

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

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Environmental Protection

WW-6B
(04/15)

API NO. 47-051
OPERATOR WELL NO. Blake N-1HM
Well Pad Name: Blake

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#	14,122'	14,122'	3609ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,917'	
Liners							

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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							

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PACKERS

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

WW-6B
(10/14)

4705 + 02048
API NO. 47-051 -
OPERATOR WELL NO. Blake N-1HM
Well Pad Name: Blake

Joe
5/17/18

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 18,042,500 lb proppant and 278,950 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

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25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottom of well, 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 DPS GIS (05/04/2018) 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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Permit well - Blake N-1HM

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	6,562 TVD 12,673' 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.
4705170803	Manufacturers Light & Heat	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete
4705101017	CNX Gas Company LLC	0'	None	None	No	Permitted 4/3/2005 but never drilled. Abandoned Location

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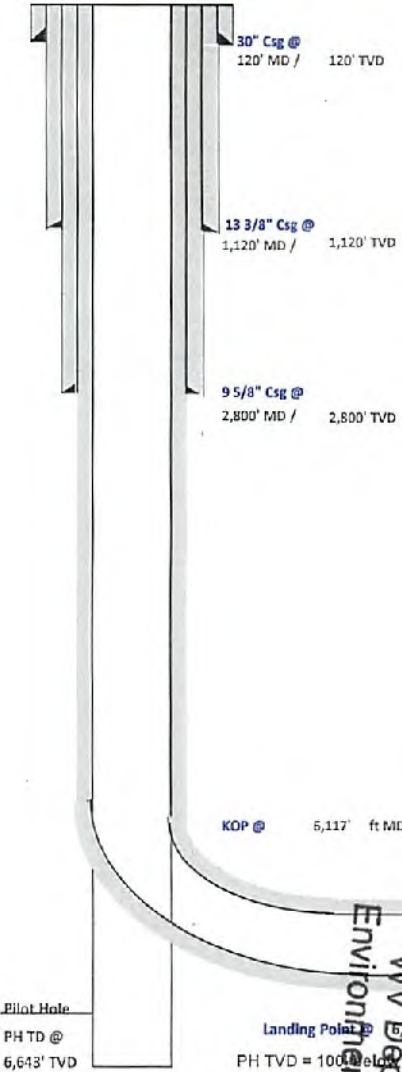


WELL NAME: Blake N-1HM
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DF Elev: 1,326' **GLE Elev:** 1,326'
TD: 14,122'
TH Latitude: 39.76416471
TH Longitude: -80.80498839
BH Latitude: 39.778051
BH Longitude: -80.827819

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1042
Sewickley Coal	951
Pittsburgh Coal	1036
Big Lime	2042
Weir	2430
Berea	2585
Gordon	2865
Rhinestreet	5906
Geneseo/Burkett	6353
Tully	6437
Hamilton	6460
Marcellus	6492
Landing Depth	6527
Onondaga	6543
Pilot Hole Depth	6643

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	14,122'	6,401'	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	3,182	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other it to sfc



5/17/18

Pilot Hole
PH TD @
6,643' TVD

Landing Point @ 6,527' MD / 6,527' TVD
PH TVD = 100' below Onondaga Top

Lateral TD @ 14,122' ft MD
6,401' ft TVD

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4705402048

4705102048



TUG HILL
OPERATING

Well: Blake 01 HM (slot G)
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 1990
Zone: Zone 17N (84 W to 78 W)

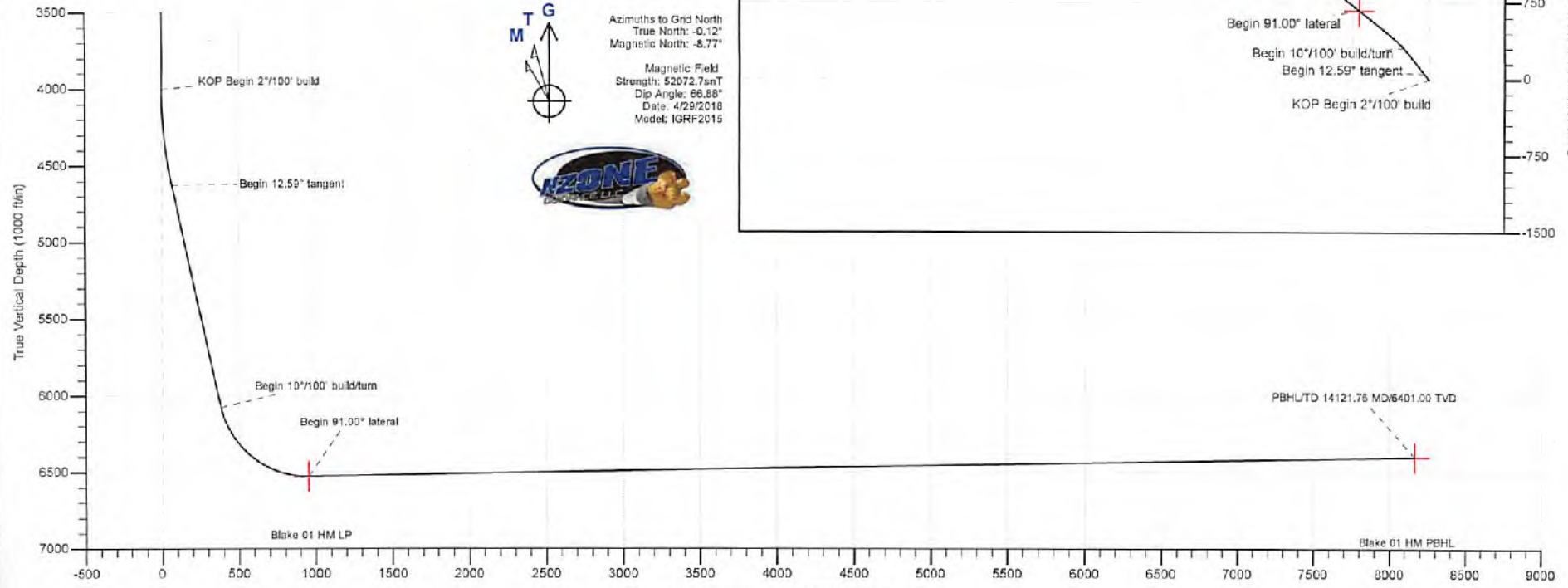
System Datum: Mean Sea Level
Depth Reference: GL @ 1326.00ft

Northing: 14440917.72 Easting: 1695217.29 Latitude: 39.76416471 Longitude: -90.60499839

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 0.77°

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	4629.60	12.59	321.30	4624.54	53.78	-43.08	2.00	321.30	87.09	Begin 12.59° tangent
4	6116.83	12.59	321.30	6076.00	306.83	-245.78	0.00	0.00	382.78	Begin 10°/100' build/turn
5	6904.71	91.00	307.29	6527.00	671.88	-884.22	10.00	-14.30	953.07	Begin 91.00° lateral
6	14121.76	91.00	307.29	6401.00	5043.22	-6426.41	0.00	0.00	8168.23	PBHL/TD 14121.76 MD/6401.00 TVD

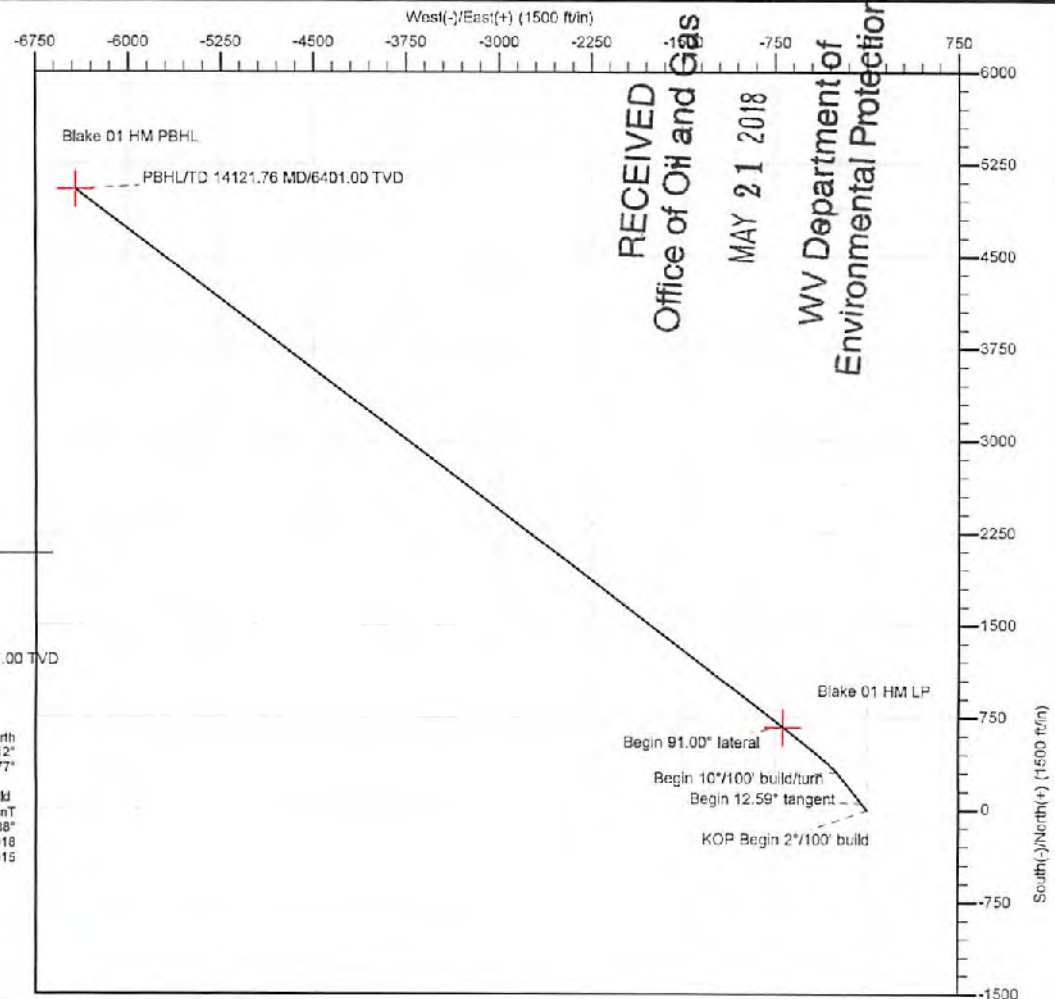


M T G
Azimuths to Grid North
True North: -0.12°
Magnetic North: -8.77°

Magnetic Field
Strength: 52072.75nT
Dip Angle: 86.88°
Date: 4/29/2018
Model: IGRF2015



Vertical Section at 308.13° (1000 ft/in)



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4705 * 02048



Tug Hill Operating, LLC Casing and Cement Program

Blake N-1HM

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	14,122'	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 15.8 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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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: _____

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Title: Oil and Gas Inspector Date: 5/17/18

Field Reviewed? Yes No

WW-9

PROPOSED BLAKE N-1HM

SUPPLEMENT PG 1

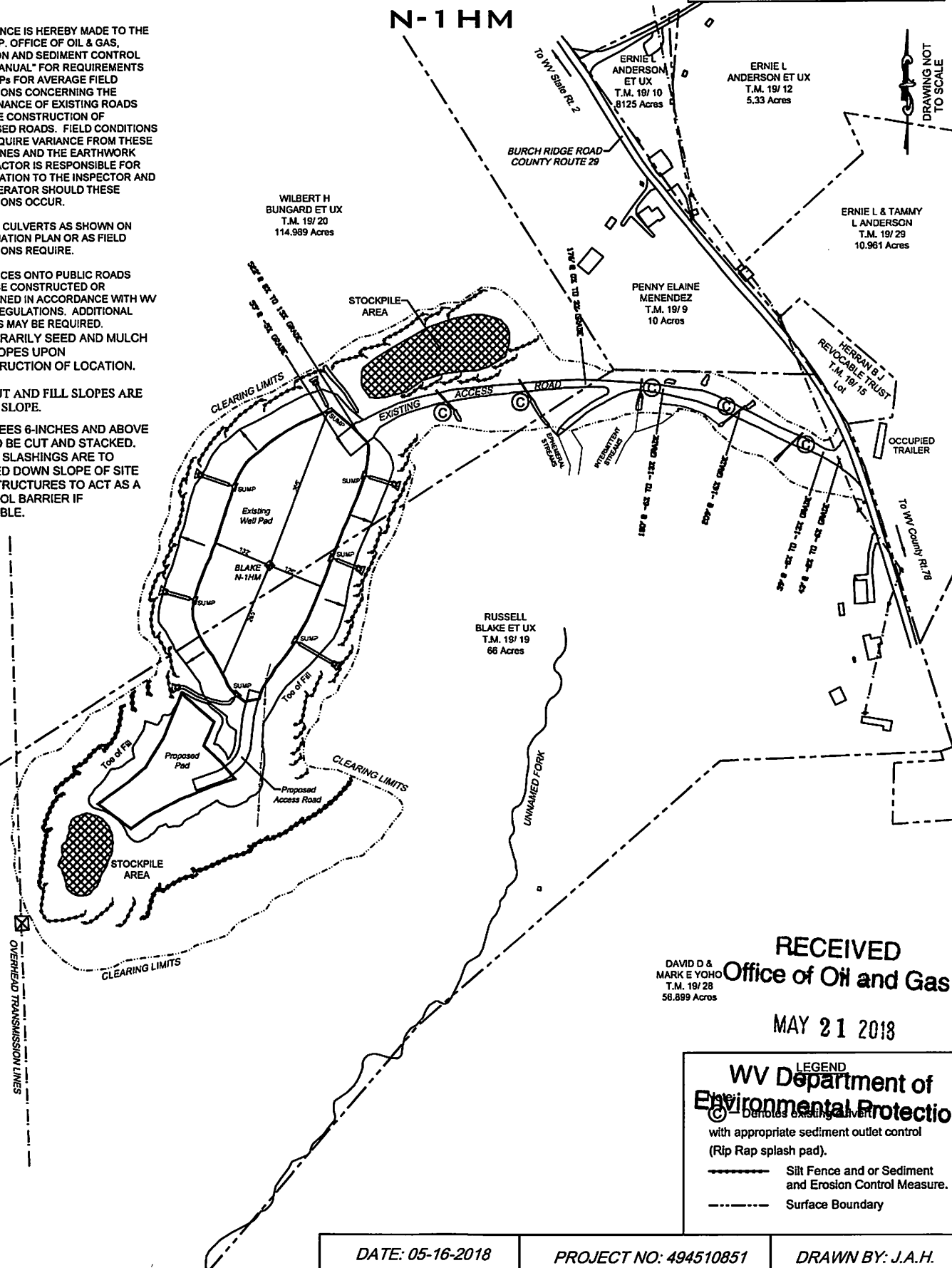
REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES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



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 DAVID D & MARK E YOHO
 Office of Oil and Gas
 T.M. 19/28
 58.899 Acres

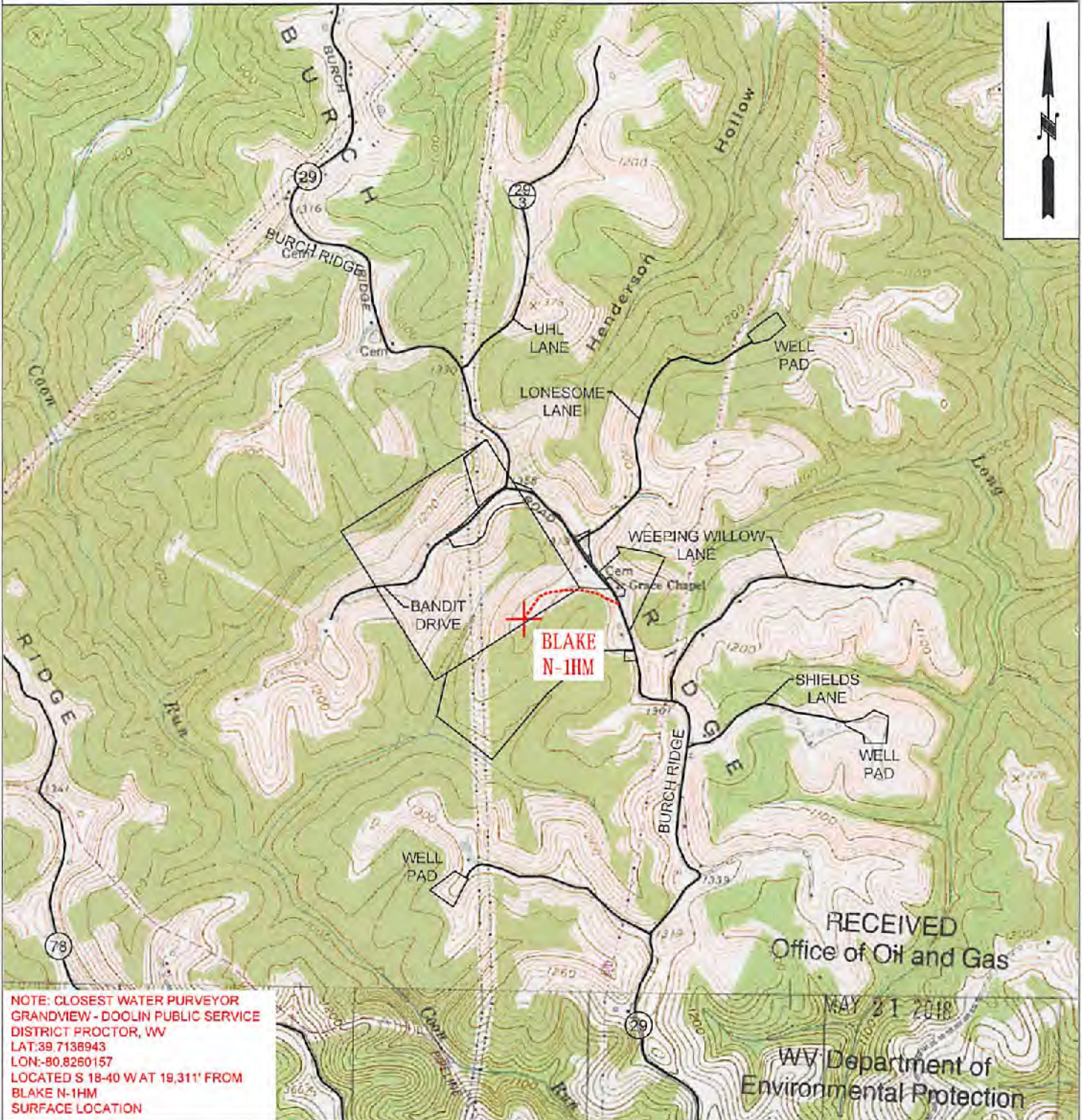
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LEGEND
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 (C) Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 --- Silt Fence and or Sediment and Erosion Control Measure.
 - - - - - Surface Boundary

WW-9

PROPOSED BLAKE N-1HM

4705-02049 SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR
 GRANDVIEW - DOOLIN PUBLIC SERVICE
 DISTRICT PROCTOR, WV
 LAT: 39 7138943
 LON: -80.8260157
 LOCATED S 18-40 W AT 19,311' FROM
 BLAKE N-1HM
 SURFACE LOCATION

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TUG HILL
 OPERATING

OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	BLAKE
		SCALE:	DATE:
		1" = 2000'	DATE: 05-16-2018



Well Site Safety Plan
Tug Hill Operating, LLC

John
5/17/18

Well Name: Blake N-1HM

Pad Location: Blake Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,401,600.53

Easting: 516,703.26

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BLAKE LEASE WELL N-1HM 689.869± ACRES

TOP HOLE LATITUDE: 39°47'30"
BOTTOM HOLE LATITUDE: 39°50'00"

U-7H (01766)

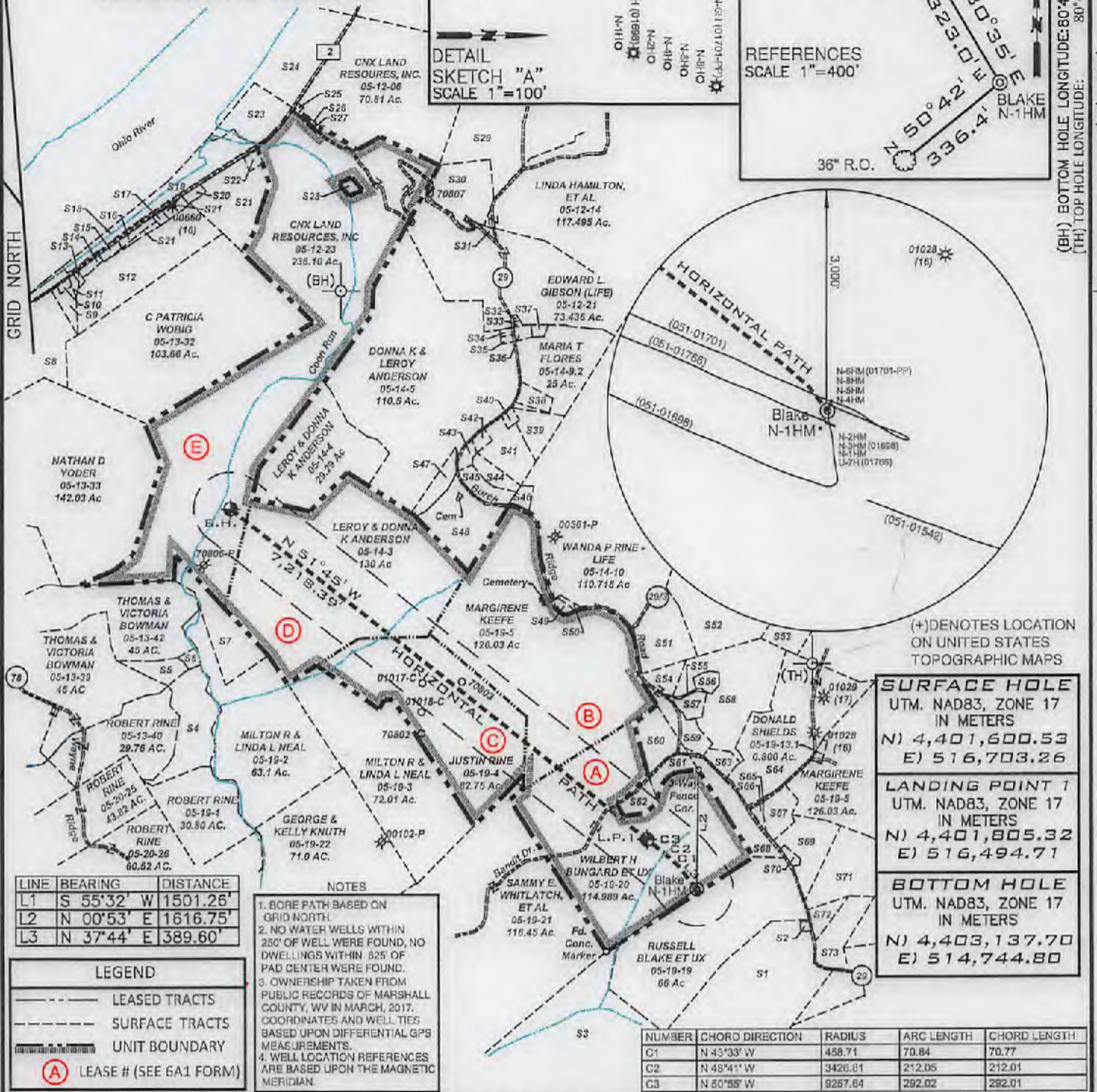
DETAIL
SKETCH "A"
SCALE 1"=100'



REFERENCES
SCALE 1"=400'

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

(BH) 4,989'
(TH) 10,044'



LINE	BEARING	DISTANCE
L1	S 55°32' W	1501.26'
L2	N 00°53' E	1616.75'
L3	N 37°44' E	389.60'

- 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 43°33' W	458.71	70.84	70.77
C2	N 48°41' W	3426.81	212.05	212.01
C3	N 60°58' W	9257.64	292.02	292.01

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,401,600.53
E) 516,703.26

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,401,805.32
E) 516,494.71

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,403,137.70
E) 514,744.80

FILE NUMBER _____

DRAWING NUMBER BLAKE_WP_N-1HM

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
304-623-5851



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

DATE: May 16, 2018
OPERATORS WELL NO. BLAKE N-1HM
API WELL NO. _____

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

LOCATION ELEVATION 1326' WATERSHED (HUG 10) French Creek - Ohio River

47-051-02048
STATE COUNTY PERMIT

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 ESTIMATED DEPTH TVD: 6,643' TMD: 14,122'

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

COUNTY NAME
PERMIT

PG 2 OF 2 **BLAKE LEASE**
WELL N-1HM
689.869± ACRES

47 051-02048 H6A

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	0.146
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	4.80
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



TUG HILL
OPERATING

OPERATOR'S
WELL #: Blake N-1HM
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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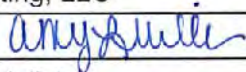
*See attached pages

**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

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	Grantor, Lessor, etc.	Grantee, Lessee, etc.	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 Exploration 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	B	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*14612	C	5-19-4	HAYHURST COMPANY	CHESAPEAKE APPALACHIA LLC	1/8+	708 107	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc & Atinum Marcellus I LLC: 27/321	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 Exploration 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	E	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

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WV Department of
Environmental Protection

4705102048



TUG HILL

4705102048

May 17, 2018

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

RE: Blake N-1HM

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-1HM 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.

Sincerely,

Amy L. Miller
Permitting Specialist – Appalachia Region

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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-1HM

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>516,703.26</u>
County: <u>Marshall</u>		Northing: <u>4,401,600.53</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 <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED
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Required Attachments:

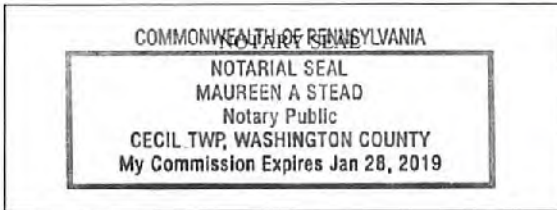
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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.

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Department of
Environmental Protection

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-hillop.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 deprivacyofficer@wv.gov.

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 MAY 21 2018
 WV Department of
 Environmental Protection

4705102048

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)
Address: 243 Bandit Drive
Proctor, WV 26055

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

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*Please attach additional forms if necessary

4705102048

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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act 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 determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within ~~thirty days~~ ^{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 57th St. SE
Charleston, WV 25304
(304) 926-0450

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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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WW-6A
(8-13)

API NO. 47- 051
OPERATOR WELL NO. Blake N-1HM
Well Pad Name: Blake

4705102048

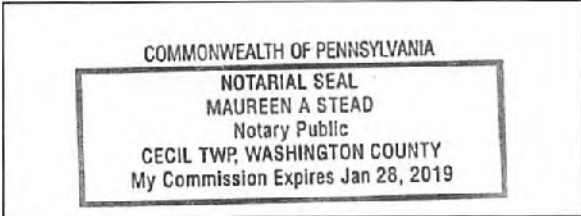
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8368
Email: amiller@tug-hilltop.com *amy hill*

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

Oil and Gas Privacy Notice:

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



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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Environmental Protection

WW-6A

Supplement Pg. 1A

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

WATER WELL REPORT

Well: BLAKE N -1HM
 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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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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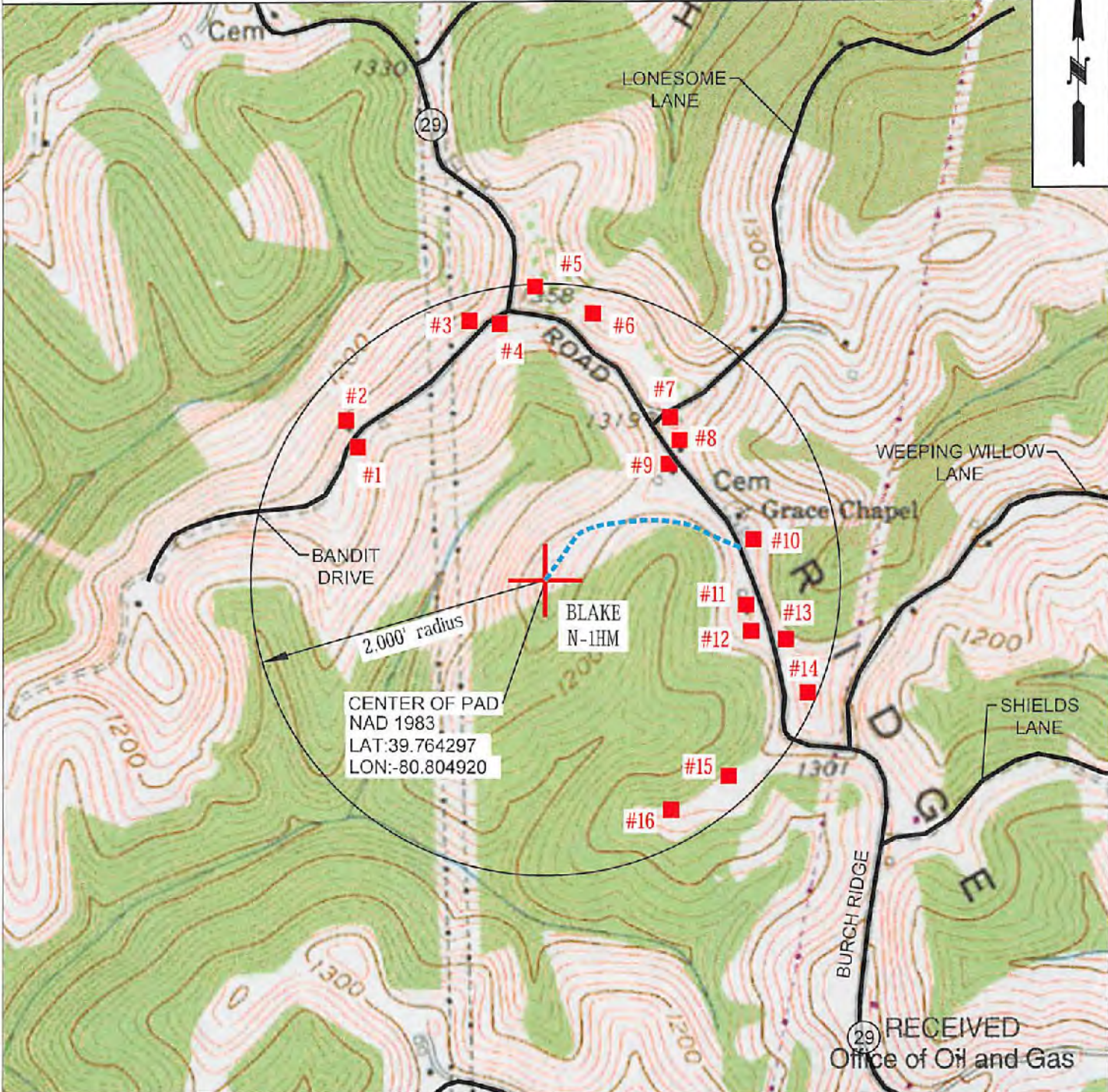
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WW-6A

PROPOSED BLAKE N-1HM

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



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TUG HILL
OPERATING

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

TOPO SECTION POWHATAN POINT 7.5'
 SCALE: 1" = 1000'

MAY 21 2018
 LEASE NAME BLAKE
 WV Department of Environmental Protection
 DATE: 05-16-2018

4705102048

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

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

Date of Notice: 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: West Virginia
County: Marshall
District: Franklin
Quadrangle: Powhatan Point 7.5'

Approx. Latitude & Longitude: 39.76422598; - 80.80495697
Public Road Access: Burch Ridge Road - CR 29
Watershed: hus-10: FRENCH CREEK - OHIO RIVER (UNDEFINED)
Generally used farm name: Blake, Russell Et Al

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 57th 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.

Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, Suite 100, Canonsburg, PA 15307
Facsimile: 724-338-2030

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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. 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.

4705102048

**WW-6A3 Notice Attachment
Blake N-1HM**

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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WW-6A5
(1/12)

**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

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 Bandit 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:	West Virginia	UTM NAD 83	Easting:	516,703.26
County:	Marshall		Northing:	4,401,600.53
District:	Franklin	Public Road Access:	Burch Ridge Road - County Route 29	
Quadrangle:	Powhatan Point 7.5'	Generally used farm name:	Blake, Russell, et al	
Watershed:	French Creek - Ohio River			

This Notice Shall Include:

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

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-0388
Email: amiller@tug-hill.com

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

Oil and Gas Privacy Notice:

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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 57th Street, SE
Charleston, WV 25304

Subject: DOH Permits for the Blake Well Pad, Marshall County

Blake N-1HM

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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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Blake N-1HM

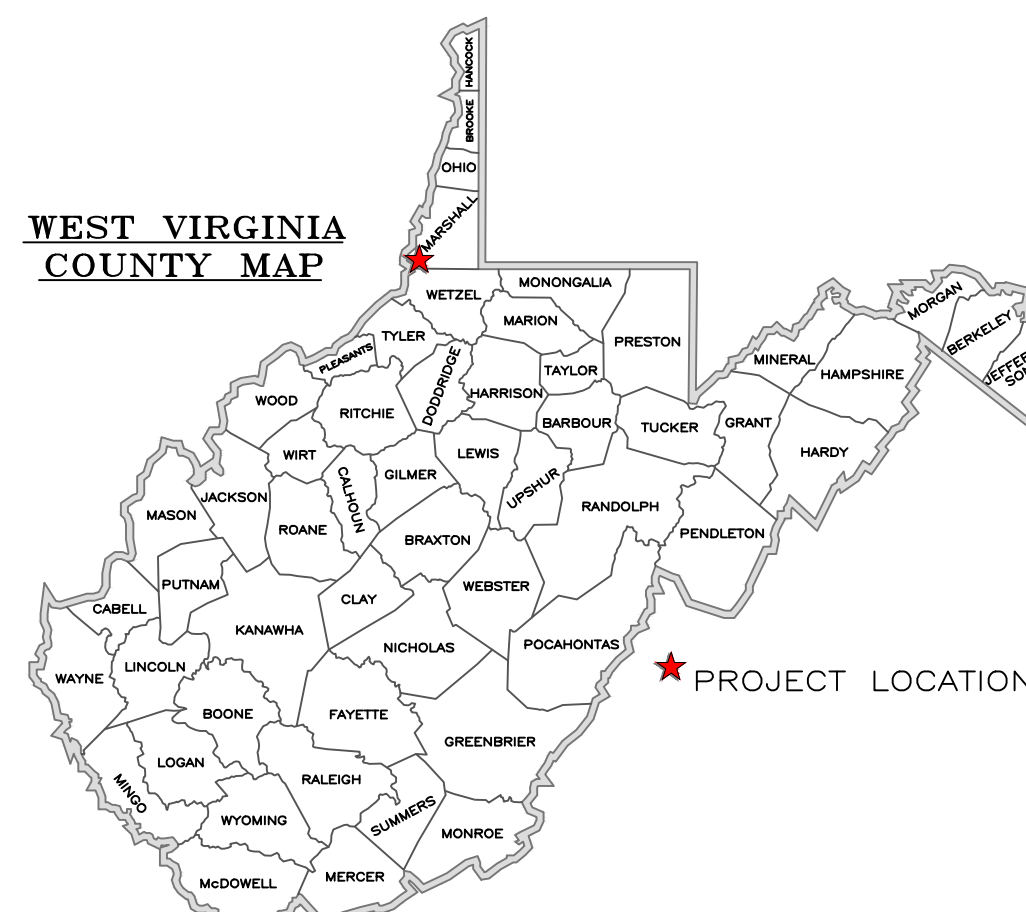
PRODUCT NAME:	CHEMICAL DESCRIPTION:	PRODUCT USE:	HAZARDOUS COMPONENT:
GBW-20C	Hemicellulase Breaker	Breaker - Water	None
ALPHA 1427		Biocide	Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride CAS# 007173-51-5 Alky dimethyl benzyl ammonium Chloride (C12-16) – CAS#068424-85-1 Ethanol – CAS# 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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Environmental Protection

WEST VIRGINIA COUNTY MAP



**WVDEP OOG
ACCEPTED AS-BUILT**

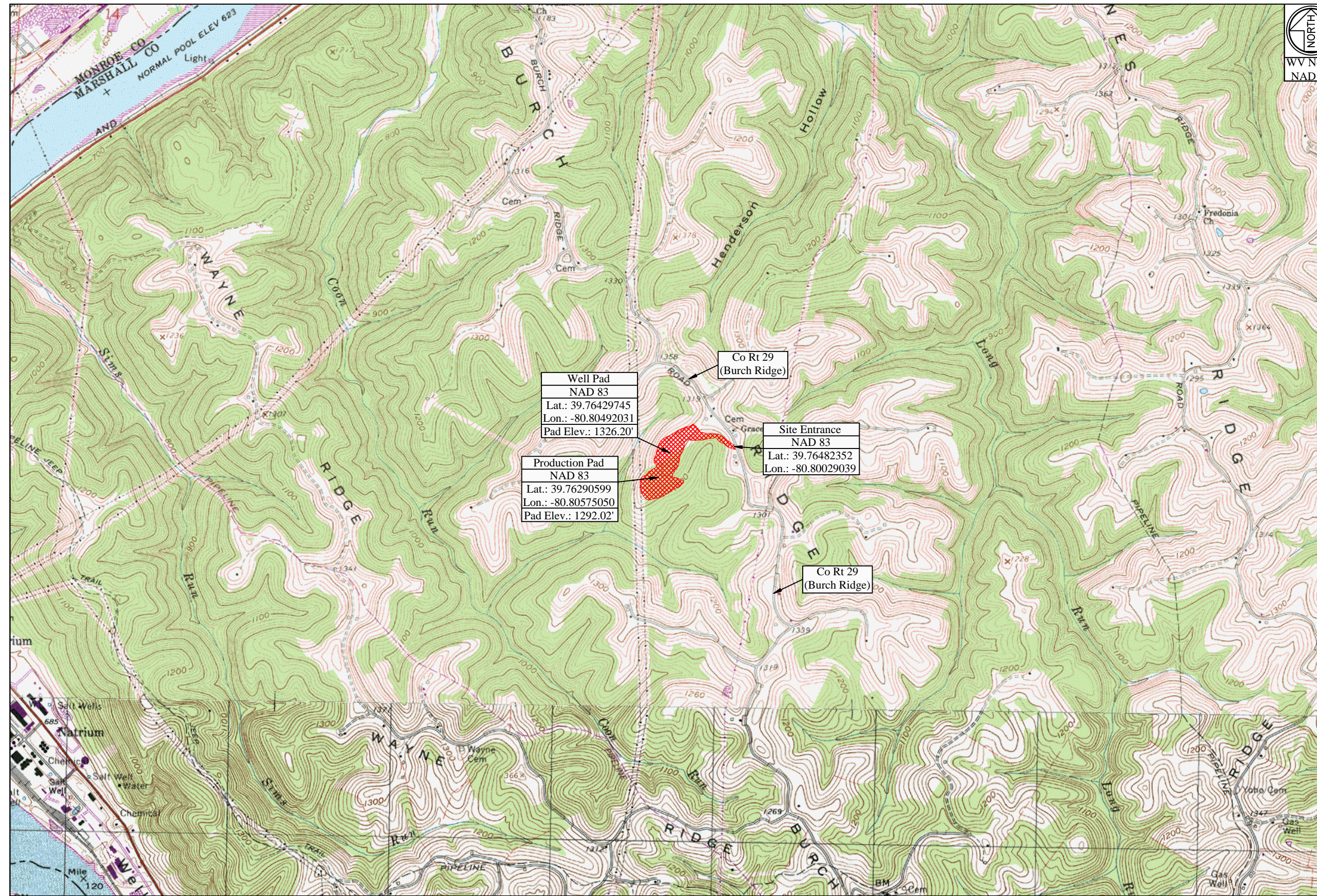
WJ 6/14/2018

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

Exhibit A: Final Design: Issue for Permitting



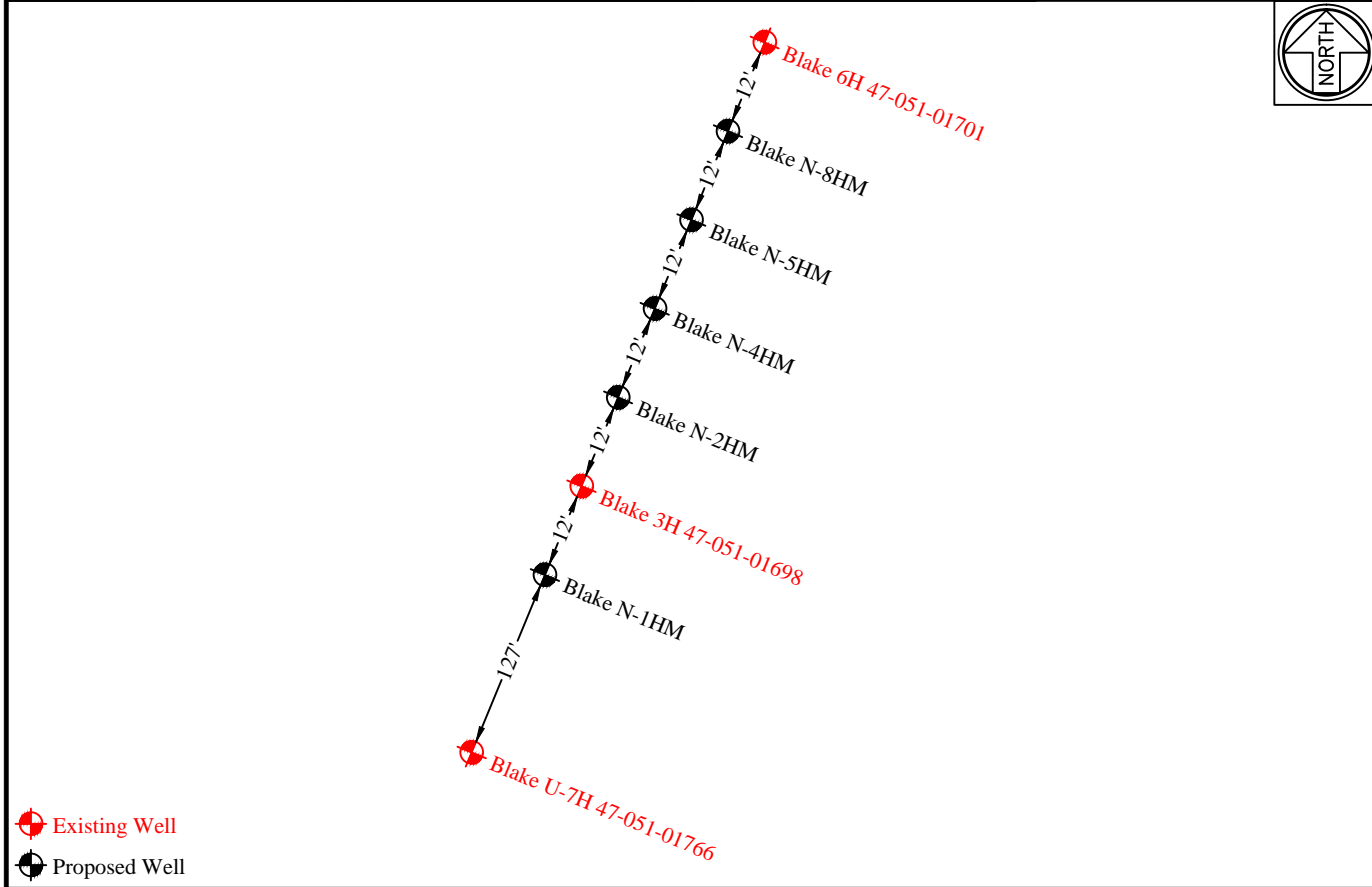
WV State Plane Coordinate System
North Zone, NAD 83
Elevations Based on NAV88
Established By Survey Grade GPS
and OPUS Post-Processing

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

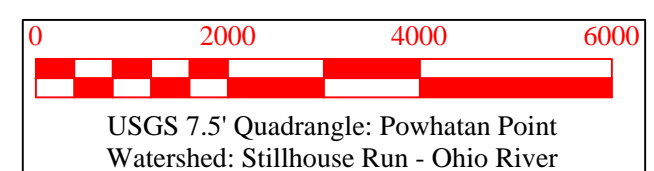
Disturbed Area	
Well Pad Construction	5.94 Ac
Production Pad Construction	1.40 Ac
Access Road Construction	2.21 Ac
Topsol / Excess Material	1.18 Ac
Additional Clearing	9.99 Ac
Total Disturbed Area	20.72 Ac
Additional Information	
Total Wooded Acres Disturbed	3.38 Ac
Total Linear Feet of Access Road	1,474.59'

Blake Well Site Quantities				
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)
Well Pad Berm	0.00	250.00	0.00	250.00
Production Pad	4,518.56	2,526.89	1,991.67	N/A
Production Pad Access Road	0.00	1,351.30	18.00%	1,901.15'
Borrow Area	5,000.00	0.00	5,000.00	N/A
Topsol/Excess Material Stockpile	0.00	3,002.83	3,002.83	N/A
Totals	9,518.56	7,131.02	6,991.67	4,604.13
			2,387.54	(Excess Borrow Material)

Site Entrance	Center of Well Pad	Center of Production Pad
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: 1634451.10 Lat. NAD 83: 39.76429745 Lon. NAD 83: -80.80492031 Lat. NAD 27: 39.76429745 Lon. NAD 27: -80.80492031 UTM 17 NAD 83 N: 4401674.53 UTM 17 NAD 83 E: 517105.50	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: 1633126.99 Lat. NAD 83: 39.76429745 Lon. NAD 83: -80.80492031 Lat. NAD 27: 39.76429745 Lon. NAD 27: -80.80492031 UTM 17 NAD 83 N: 4401617.54 UTM 17 NAD 83 E: 516709.06 Pad Elev.: 1326.20'	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: 39.76282935 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			
Blake 6H WV-N NAD 83 N: 463178.46 WV-N NAD 83 E: 1601697.00 WV-N NAD 27 N: 463142.44 WV-N NAD 27 E: 1633134.72 Lat. NAD 83: 39.76434815 Lon. NAD 83: -80.80499377 Lat. NAD 27: 39.76427153 Lon. NAD 27: -80.80507984 UTM 17 NAD 83 (m) N: 4401620.90 UTM 17 NAD 83 (m) E: 516711.32	Blake N-SHM WV-N NAD 83 N: 463167.50 WV-N NAD 83 E: 1601692.53 WV-N NAD 27 N: 463131.48 WV-N NAD 27 E: 1633130.04 Lat. NAD 83: 39.76431788 Lon. NAD 83: -80.80499894 Lat. NAD 27: 39.76424124 Lon. NAD 27: -80.80509590 UTM 17 NAD 83 (m) N: 4401617.54 UTM 17 NAD 83 (m) E: 516709.95	Blake N-SHM WV-N NAD 83 N: 463156.41 WV-N NAD 83 E: 1601687.75 WV-N NAD 27 N: 463120.39 WV-N NAD 27 E: 1633125.46 Lat. NAD 83: 39.76428724 Lon. NAD 83: -80.80492555 Lat. NAD 27: 39.76421061 Lon. NAD 27: -80.80511161 UTM 17 NAD 83 (m) N: 4401614.14 UTM 17 NAD 83 (m) E: 516708.62	Blake N-4HM WV-N NAD 83 N: 463145.32 WV-N NAD 83 E: 1601683.17 WV-N NAD 27 N: 463109.30 WV-N NAD 27 E: 1633120.89 Lat. NAD 83: 39.76425661 Lon. NAD 83: -80.80494126 Lat. NAD 27: 39.76417998 Lon. NAD 27: -80.80512732 UTM 17 NAD 83 (m) N: 4401610.73 UTM 17 NAD 83 (m) E: 516707.28
Blake N-2HM WV-N NAD 83 N: 463134.22 WV-N NAD 83 E: 1601678.59 WV-N NAD 27 N: 463098.21 WV-N NAD 27 E: 1633111.73 Lat. NAD 83: 39.76422598 Lon. NAD 83: -80.80495697 Lat. NAD 27: 39.76414935 Lon. NAD 27: -80.80514393 UTM 17 NAD 83 (m) N: 4401607.33 UTM 17 NAD 83 (m) E: 516705.94	Blake 3H WV-N NAD 83 N: 463122.32 WV-N NAD 83 E: 1601674.01 WV-N NAD 27 N: 463086.30 WV-N NAD 27 E: 1633111.73 Lat. NAD 83: 39.76419311 Lon. NAD 83: -80.80497264 Lat. NAD 27: 39.76411648 Lon. NAD 27: -80.80515870 UTM 17 NAD 83 (m) N: 4401603.68 UTM 17 NAD 83 (m) E: 516704.60	Blake N-HM WV-N NAD 83 N: 463112.04 WV-N NAD 83 E: 1601669.44 WV-N NAD 27 N: 463076.02 WV-N NAD 27 E: 1633107.15 Lat. NAD 83: 39.76416471 Lon. NAD 83: -80.80498839 Lat. NAD 27: 39.76408808 Lon. NAD 27: -80.80517445 UTM 17 NAD 83 (m) N: 4401600.52 UTM 17 NAD 83 (m) E: 516703.26	Blake U-7H WV-N NAD 83 N: 462995.05 WV-N NAD 83 E: 1601619.80 WV-N NAD 27 N: 462959.03 WV-N NAD 27 E: 1633057.54 Lat. NAD 83: 39.76384158 Lon. NAD 83: -80.80515892 Lat. NAD 27: 39.76376495 Lon. NAD 27: -80.80534496 UTM 17 NAD 83 (m) N: 4401564.63 UTM 17 NAD 83 (m) E: 516688.73



Project Contacts

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

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

Geotechnical Engineer
American Geotech. Inc.
Miami Patel
304-340-4277 Off.

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.

811

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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.

Floodplain Conditions

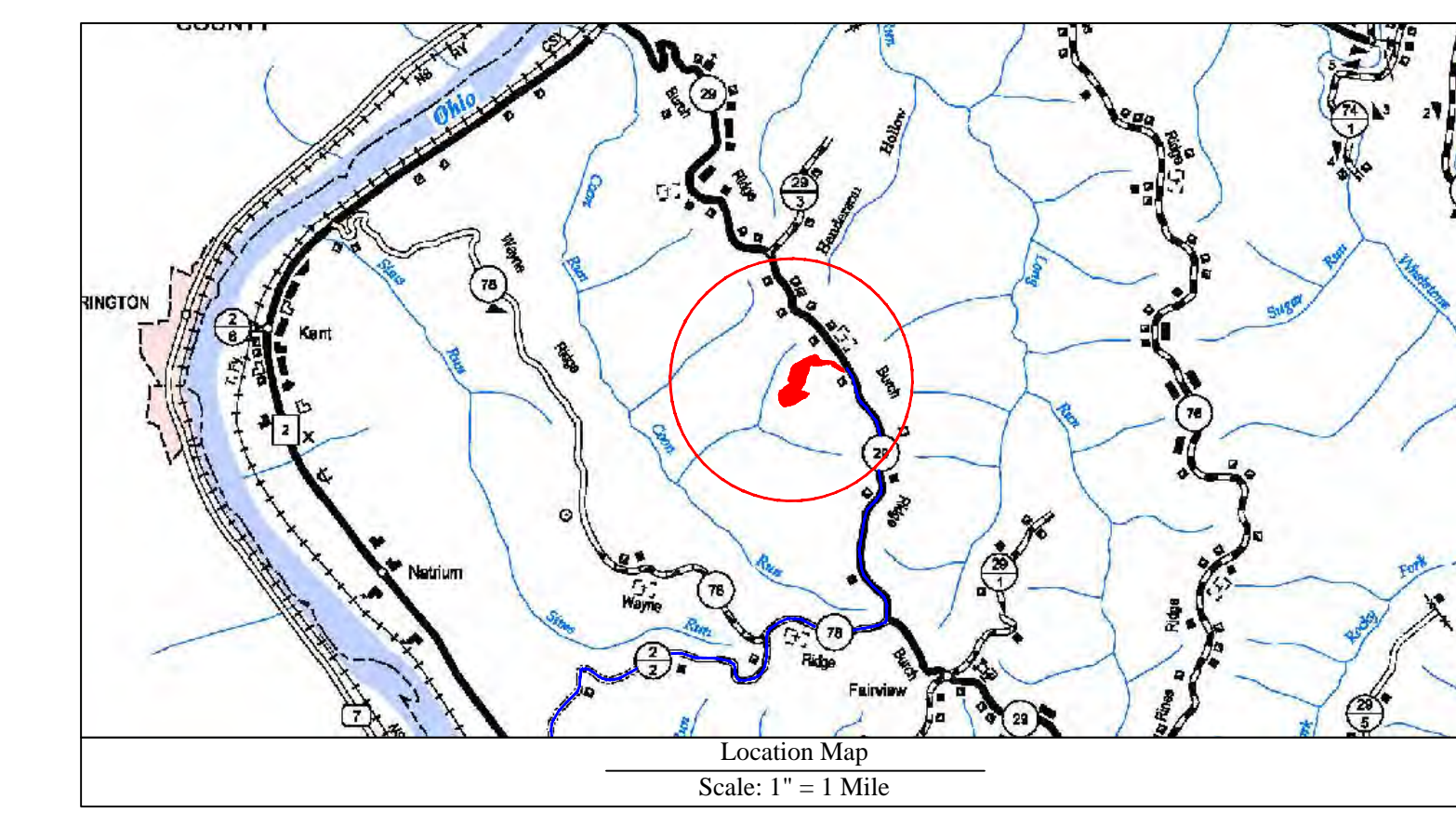
Do site construction activities take place in a floodplain:	NO
Permit needed from county floodplain coordinator:	NO
Flood Hazard Zone:	X
HEC-RAS Study completed:	N/A
Floodplain shown on drawings:	N/A
FIRM Map Number(s) for site:	S4051C 0143E
Acres of construction in floodplain:	N/A

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

Site Locations (NAD 27)		
Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.76429745	-80.80492031
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	39.76429745	-80.80492031
Center of Well Pad	39.76429745	-80.80492031
Center of Production Pad	39.76290599	-80.80575050



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, 20C8308

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: C0423-09

ZACHARY C. SUMMERFIELD
REGISTERED PROFESSIONAL ENGINEER
22214
STATE OF WEST VIRGINIA

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

Blake Well Site
Franklin District
Marshall County, WV

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

Revision
Design
Comments
WVDEP

Date
05-11-2018
06-13-2018



THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Kelly Surveying
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224
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