

03/08/2019



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

Thursday, March 7, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

NORTHEAST NATURAL ENERGY LLC
707 VIRGINIA STREET EAST
STE 1200
CHARLESTON, WV 25301

Re: Permit Modification Approval for BOGGESS 17H
47-061-01812-00-00

Modified pilot hole to deep and extend lateral

NORTHEAST NATURAL ENERGY LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before 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: BOGGESS 17H
Farm Name: BLAKE R. & PRESTON H. BOGGESS
U.S. WELL NUMBER: 47-061-01812-00-00
Horizontal 6A New Drill
Date Modification Issued: March 7, 2018

Promoting a healthy environment.

03/08/2019



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

Barry K. Lay, Chairman
dep.wv.gov

March 5, 2019

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

RE: Application for Deep Well Permit – API #47-061-01812

COMPANY: Northeast Natural Energy, LLC

FARM: Blake R. & Preston H. Boggess Boggess No. 17H

COUNTY: Monongalia DISTRICT: Clay QUAD: Osage

The deep well review of the application for the above company is Approved to drill to Oriskany for Marcellus completion.

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

1. Comments to Notice of Deviation filed? NA
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? NA
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: None
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Susan Rose
Administrator

WW-6B
(04/15)

~~47-06101822~~
47-06101862 MOD
03/08/2019
API NO. 47-
OPERATOR WELL NO. Boggess 17H
Well Pad Name: Boggess

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

1) Well Operator: Northeast Natural Energy LLC 494498281 Monongalia Clay Osage, WV
Operator ID County District Quadrangle

2) Operator's Well Number: Boggess 17H Well Pad Name: Boggess

3) Farm Name/Surface Owner: Blake R. & H. Preston Boggess Public Road Access: Mason Dixon Hwy (State Rt 7)

4) Elevation, current ground: 1,280' Elevation, proposed post-construction: 1,268'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Pilot: Oriskany, Horizontal: Marcellus; Pilot: 8,400', Horizontal: 8,074'; 103'; 3,600 psi

8) Proposed Total Vertical Depth: Pilot: 8,400', Horizontal: 8,074'

9) Formation at Total Vertical Depth: Pilot: Oriskany, Horizontal: Marcellus

10) Proposed Total Measured Depth: 19,179'

11) Proposed Horizontal Leg Length: 9,040'

12) Approximate Fresh Water Strata Depths: 50' ; 1,209'

13) Method to Determine Fresh Water Depths: Driller's Log from Offset Wells

14) Approximate Saltwater Depths: 1,784' ; 2,435'

15) Approximate Coal Seam Depths: 934' ; 1,207'

16) Approximate Depth to Possible Void (coal mine, karst, other): N/A

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

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

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WW-6B
(04/15)

API NO. 47-
OPERATOR WELL NO. Boggess 17H
Well Pad Name: Boggess

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	24"	New	NA	94.71	40'	40'	GTS
Fresh Water	13-3/8"	New	J-55	54.5	1,290'	1,260'	CTS
Coal							
Intermediate	9-5/8"	New	J-55	40	2,530'	2,500'	CTS
Production	5-1/2"	New	P-110	20	19,179'	19,149'	4552 Cu. Ft.
Tubing	2-7/8"	New	N-80	6.5	NA	8,500'	NA
Liners							

Northeast Natural Energy LLC requests the ability to drill beyond elevation for the purpose of isolating the Red Rock Formation.

MRK 11/8/2018

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	24"	30"	.375	415		4,500 pst Grout	NA
Fresh Water	13-3/8"	17 1/2"	.38"	2,760	2,000	Type 1	1.18
Coal							
Intermediate	9-5/8"	12 1/4"	.395"	3,950	3,000	Type 1	1.18
Production	5-1/2"	8 3/4"	.361"	12,530	9,700	50:50 Poz	1.21
Tubing	2-7/8"	NA	.217"	10,570	3,600	NA	NA
Liners							

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PACKERS

Kind:					
Sizes:					
Depths Set:					

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

Drilling and completion of a horizontal Marcellus well. The well will be drilled on air to an approximate depth of 5344' TVD/MD. A pilot will then be drilled on synthetic based mud to an approximate depth of 8,400' and plugged back with solid cement to the KOP. The well will then be horizontally drilled on synthetic based mud from the KOP to approximately 8,074' TVD / 19,179' MD along a 329° azimuth.

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

Multi-stage / high-rate slickwater fracture treatment using various size sands as proppant. First stage will be initiated via pressurization against a burst disc ran in the production casing string or perforated with coiled tubing. Subsequent stages will be perforated with pumped down guns ran on wireline. Individual stages will be isolated with composite frac plugs. Maximum pump rate during any stage will be 110 BPM with a maximum allowable surface pressure of 9,500 PSI. Composite bridge plugs will be set at the end of the last stage to isolate the treated formation.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.18

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22) Area to be disturbed for well pad only, less access road (acres): 11.67

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23) Describe centralizer placement for each casing string:

Surface and intermediate casing strings will have bow spring centralizers placed every third joint (~120') from the shoe joint to surface. Production casing will have rigid body centralizers placed at a minimum of every fourth joint (~160') from TD to surface.

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

Surface string cement will be a Type 1 + Max 3% bwoc Calcium Chloride Fresh Water blend. Intermediate string cement will be a Type 1 Cement + Max 3% bwoc Calcium Chloride + Fresh Water. Production string cement will be (50:50) Poz (Fly Ash):Type I Cement with a gas migration additive.

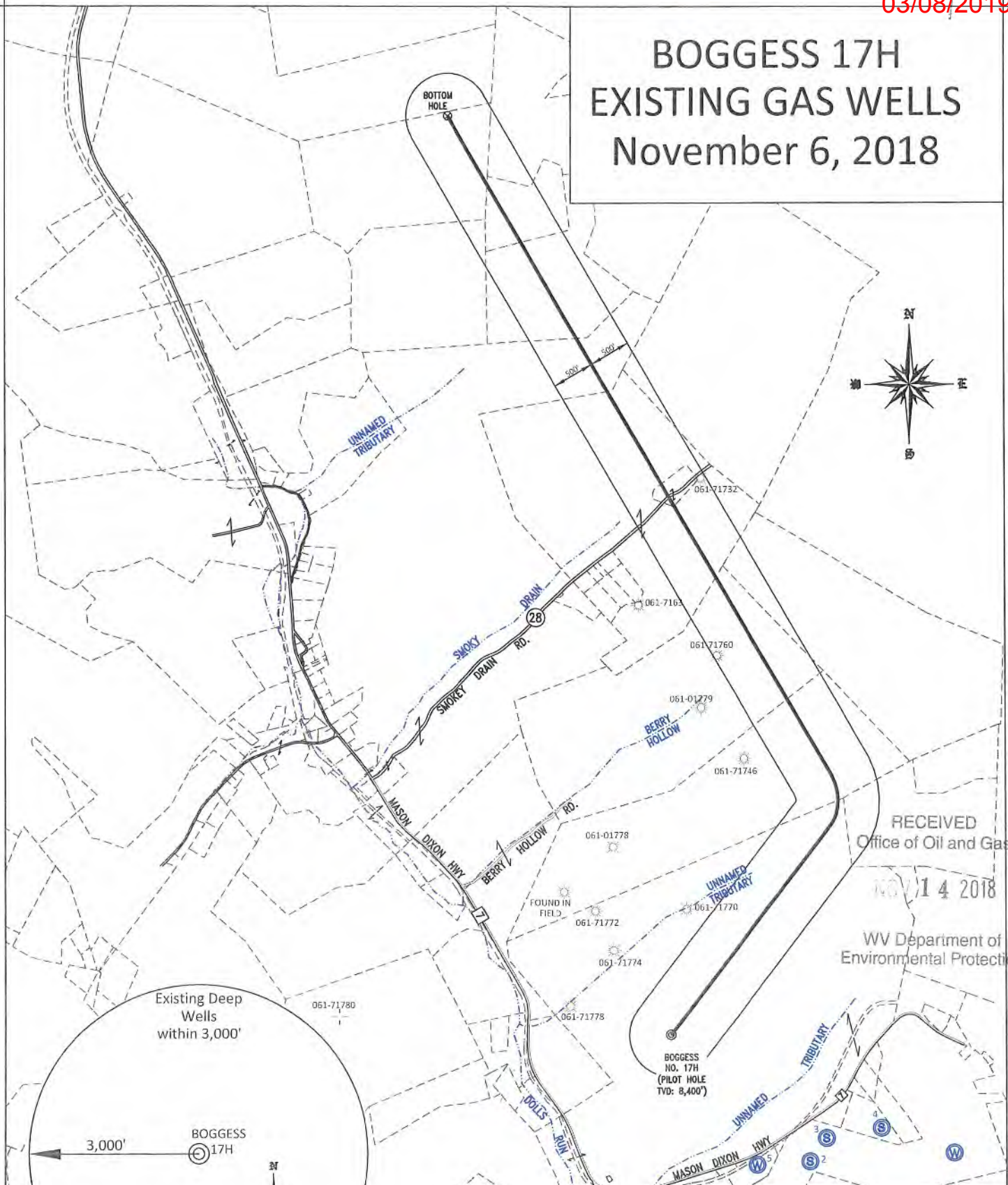
25) Proposed borehole conditioning procedures:

Surface string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Intermediate string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Production string will use a 50.0 bbls SealBond 25 + 1 gal/bbl US-40 + 275 lbs/bbl Barite + 1 gal/bbl SS-2 Spacer @ 13.5 ppg prior to cement.

*Note: Attach additional sheets as needed.

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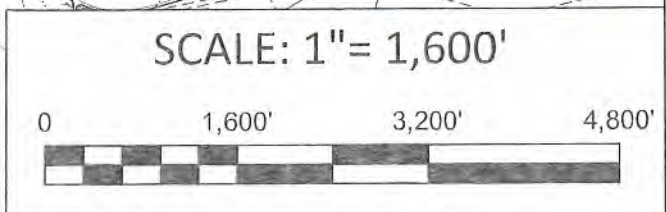
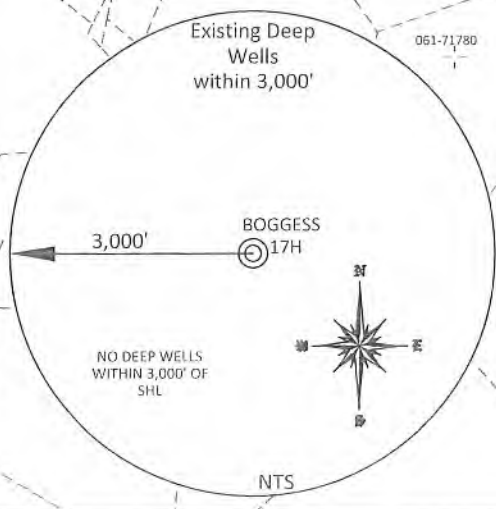
BOGGESS 17H EXISTING GAS WELLS November 6, 2018



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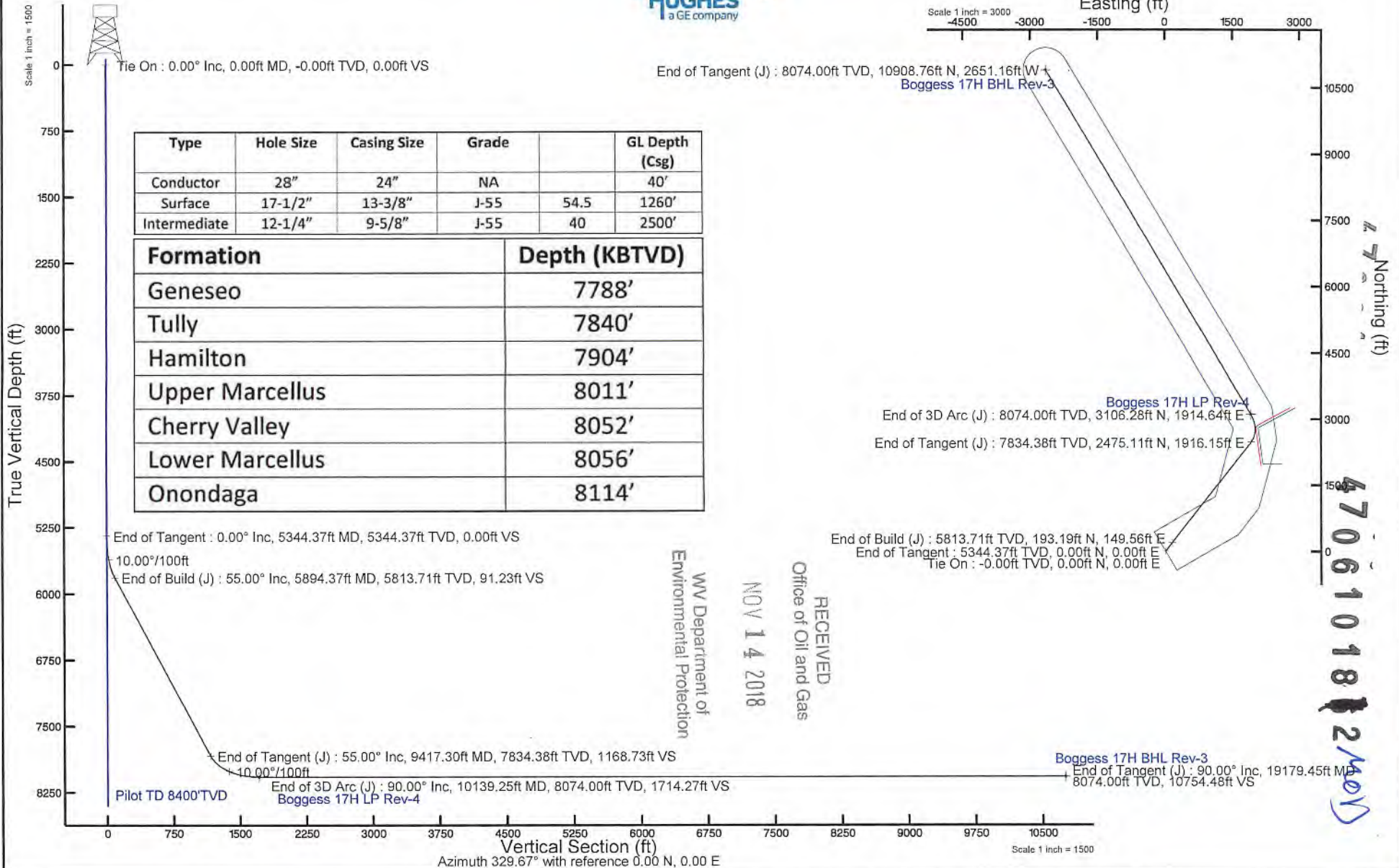
Location: Monongalia County, WV
 Field: Monongalia
 Facility: Boggess Pad

Slot: Slot 17
 Well: Boggess 17H
 Wellbore: Boggess 17H PWB



Location Information

Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
Boggess Pad		1801481.600	426749.600	39°40'12.490"N	80°05'36.030"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot 17	60.00	79.70	1801561.300	426809.600	39°40'13.089"N	80°05'35.015"W
Rig on Slot 17 (RT) to Ground level (At Slot: Slot 17)				0ft		
Mean Sea Level to Ground level (At Slot: Slot 17)				-1268ft		
Rig on Slot 17 (RT) to Mean Sea Level				1268ft		



End of 3D Arc (J) : 8074.00ft TVD, 3106.28ft N, 1914.64ft E
 End of Tangent (J) : 7834.38ft TVD, 2475.11ft N, 1916.15ft E

End of Build (J) : 5813.71ft TVD, 193.19ft N, 149.56ft E
 End of Tangent : 5344.37ft TVD, 0.00ft N, 0.00ft E
 Tie On : -0.00ft TVD, 0.00ft N, 0.00ft E

Boggess 17H BHL Rev-3
 End of Tangent (J) : 90.00° Inc, 19179.45ft MD, 8074.00ft TVD, 10754.48ft VS

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Azimuth 329.67° with reference 0.00 N, 0.00 E

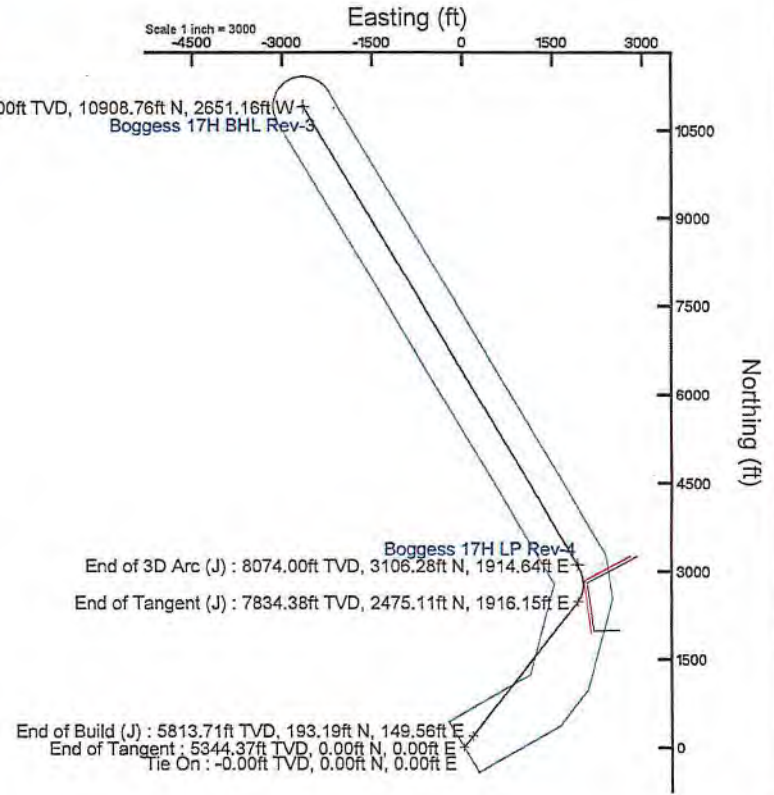
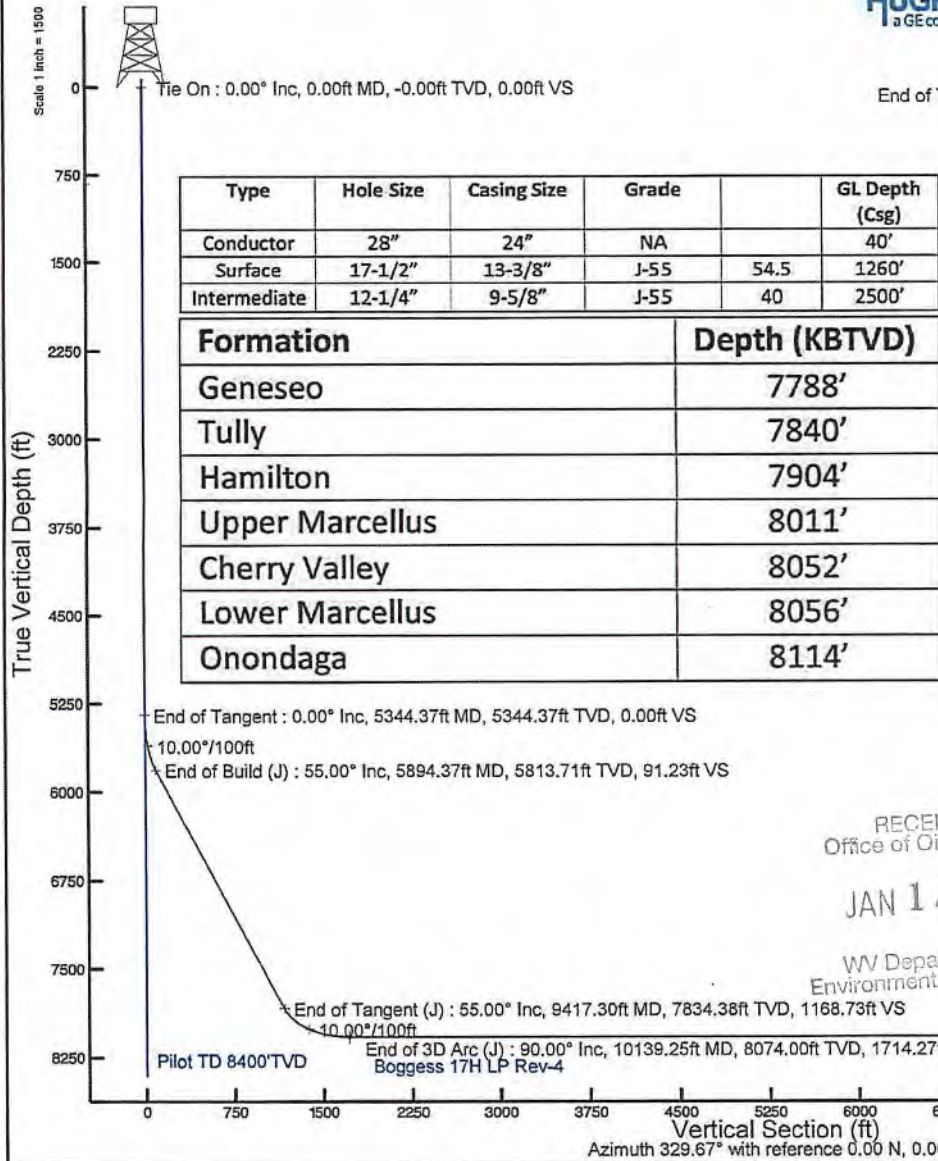
NORTHEAST NATURAL ENERGY, LLC

Location: Monongalia County, WV
 Field: Monongalia
 Facility: Boggess Pad

Slot: Slot 17
 Well: Boggess 17H
 Wellbore: Boggess 17H PWB



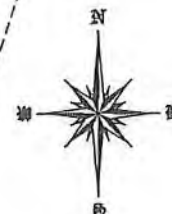
Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Boggess Pad	1801481.600	426749.600	39°40'12.490"N	80°05'36.030"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot 17	60.00	79.70	1801561.300	426809.600
			39°40'13.089"N	80°05'35.015"W
Rig on Slot 17 (RT) to Ground level (At Slot: Slot 17)			0ft	
Mean Sea Level to Ground level (At Slot: Slot 17)			-1268ft	
Rig on Slot 17 (RT) to Mean Sea Level			1268ft	



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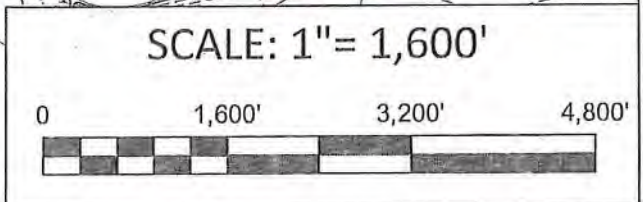
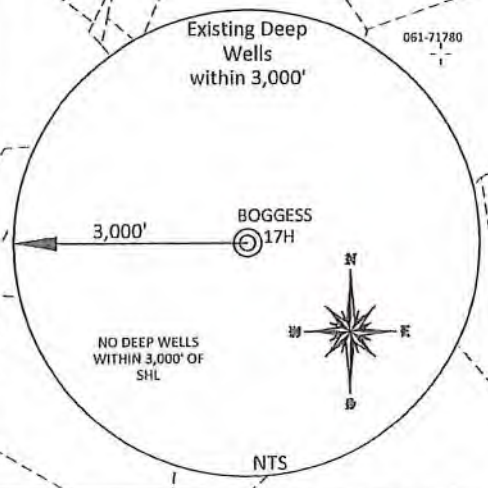
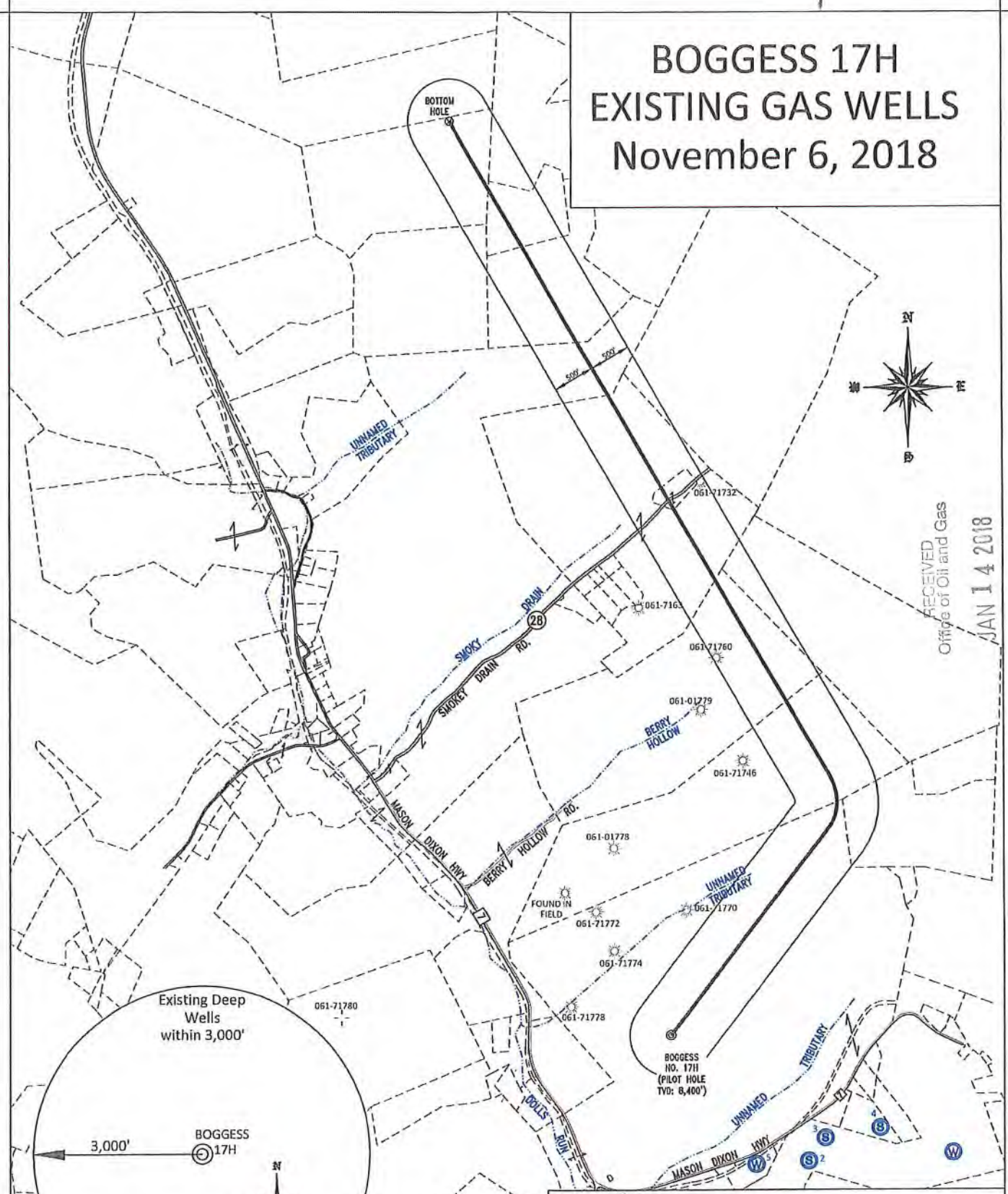
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BOGGESS 17H EXISTING GAS WELLS November 6, 2018



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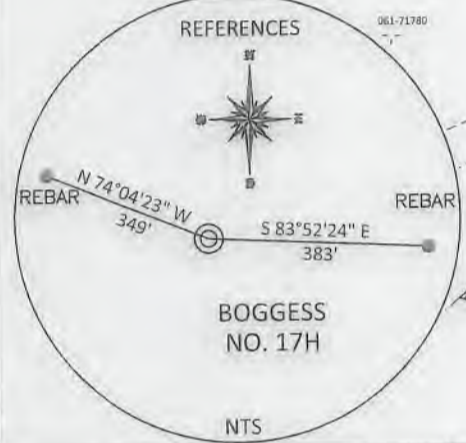
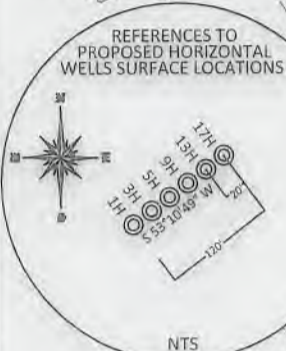
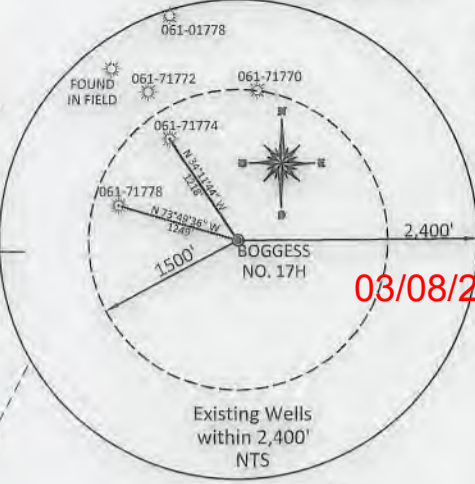
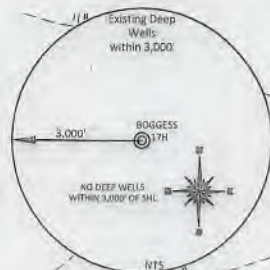
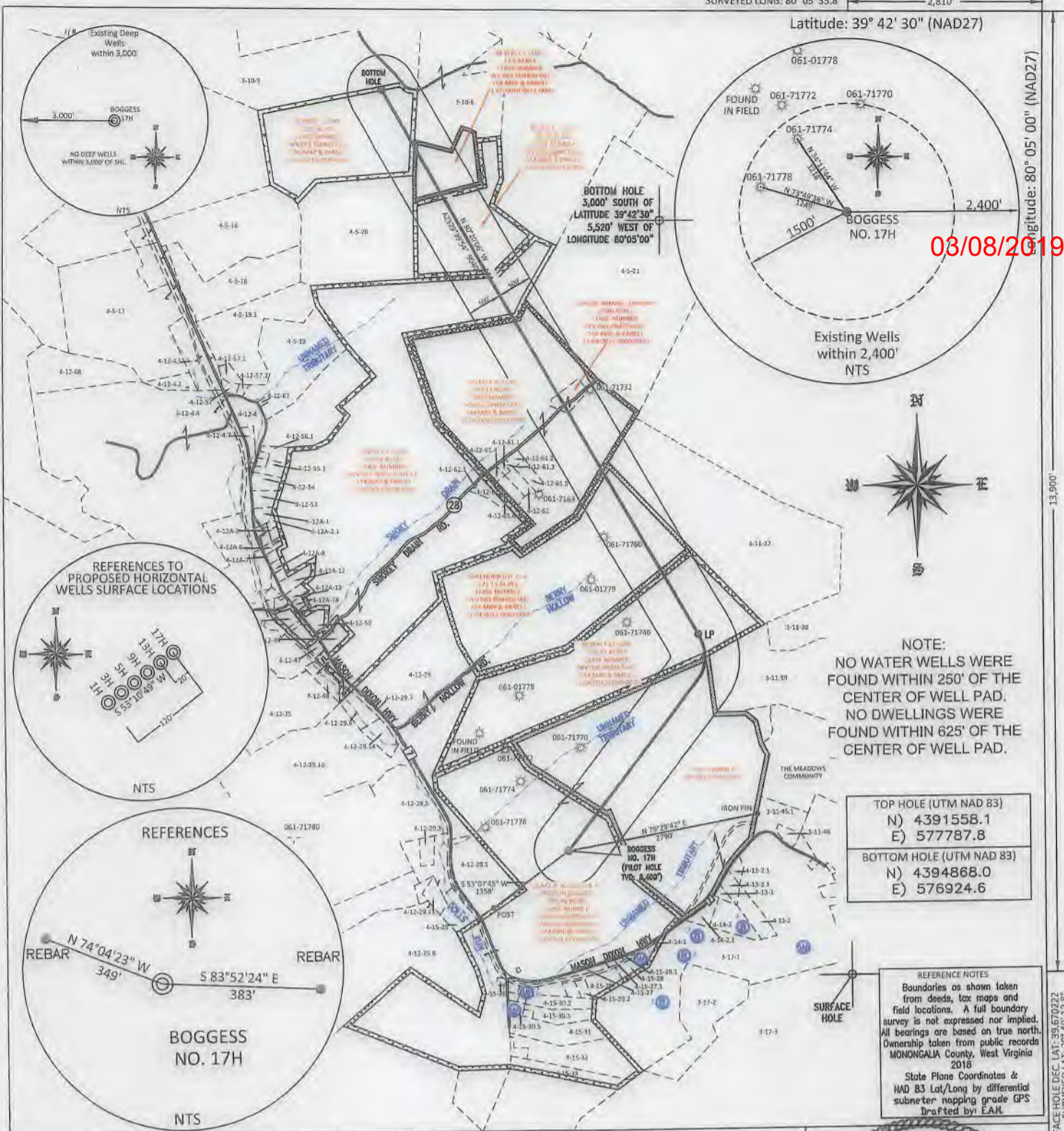
northeast
NATURAL ENERGY

Bogges 17H
SITE SAFETY PLAN

November 2018

James J. Smith
11/8/2018

03/08/2019



NOTE:
NO WATER WELLS WERE FOUND WITHIN 250' OF THE CENTER OF WELL PAD.
NO DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF WELL PAD.

TOP HOLE (UTM NAD 83)
N) 4391558.1
E) 577787.8
BOTTOM HOLE (UTM NAD 83)
N) 4394868.0
E) 576924.6

REFERENCE NOTES
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records MONONGALIA County, West Virginia 2018
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
Drafted by EAM

SURFACE HOLE DEC. LAT: 39°42'30\"/>

FILE #: NEE14
DRAWING #: 2867
SCALE: PLAT: 1" = 2000'
TICK MARK: 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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
Signed:
L.L.S. #2124 : Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

Well Type: Oil Waste Diposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: DUNKARD CREEK
COUNTY/DISTRICT: MONONGALIA / CLAY
SURFACE OWNER: BLAKE R. & PRESTON H. BOGGESS
OIL & GAS ROYALTY OWNER: BLAKE R. & PRESTON H. BOGGESS 'et al'
LEASE NUMBERS:

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY):

TARGET FORMATION: MARCELLUS
WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC
ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
CITY: CHARLESTON STATE: WV ZIP CODE: 25301

DATE: November 6, 2018
OPERATOR'S WELL #: BOGGESS NO. 17H
API WELL #: 47 61 47-061-01812
STATE COUNTY PERMIT
PROPOSED ELEVATION: 1,265.4'
QUADRANGLE: OSAGE, WV
ACREAGE: 389.96 +/-
ACREAGE: 11183.8 +/-
ESTIMATED DEPTH: TVD: 8,074' TMD: 19,179' (PILOT HOLE TVD: 8,400')
DESIGNATED AGENT: JOHN ADAMS
ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
CITY: CHARLESTON STATE: WV ZIP CODE: 25301