



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

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

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


Re: Permit Modification Approval for JENKINS 6H
47-061-01743-00-00

Adjusted and lengthened the horizontal well bore

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

Operator's Well Number: JENKINS 6H
Farm Name: LOIS A. JENKINS IRREVOCABLE TRUST
U.S. WELL NUMBER: 47-061-01743-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: 5/18/2017

Promoting a healthy environment.

05/19/2017

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 Blacksville
Operator ID County District Quadrangle

2) Operator's Well Number: Jenkins 6H Well Pad Name: Jenkins

3) Farm Name/Surface Owner: Lois A. Jenkins Irrevocable Trust Public Road Access: Mason Dixon Highway (State Route 7)

4) Elevation, current ground: 1,128' Elevation, proposed post-construction: 1,113.77'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No *MSK 5/11/2017*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus, 7,921', 103', 3,600 psi

8) Proposed Total Vertical Depth: 7,921'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 19,694.54'

11) Proposed Horizontal Leg Length: 11,350'

12) Approximate Fresh Water Strata Depths: 50' ; 1,034'

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

14) Approximate Saltwater Depths: 1,340' ; 2,182'

15) Approximate Coal Seam Depths: 830 ; 1,032'

16) Approximate Depth to Possible Void (coal mine, karst, other): NA

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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18)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	24"	New	NA	94.71	40'	40'	GTS
Fresh Water	13-3/8"	New	J-55	54.5	1100'	1090'	CTS
Coal							
Intermediate	9-5/8"	New	J-55	40	2280'	2250'	CTS
Production	5-1/2"	New	P-110	20	19,694.54'	19,664.54'	4,701 Cu. Ft.
Tubing	2-7/8"	New	N-80	6.5	NA	8,500'	NA
Liners							

MSK 5/11/2017

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	24"	30"	.375	415		4,500 psi Grout	NA
Fresh Water	13-3/8"	17 1/2"	.38"	2,760	2,000	Class A	1.23
Coal							
Intermediate	9-5/8"	12 1/4"	.395"	3,950	3,000	Class A	1.3
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	NZ	NA
Liners							

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 5,769.99' TVD/MD. The well will then be horizontally drilled on synthetic based mud from the KOP to approximately 7,921' TVD / 19,694.54' MD along a 149 degree 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): 18.2

22) Area to be disturbed for well pad only, less access road (acres): 9.7

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.

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

Surface string cement will be a Class A + Max 3% bwoc Calcium Chloride Fresh Water blend. Intermediate string cement will be a Class A 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.

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*Note: Attach additional sheets as needed.

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Page 3 of 3
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Map



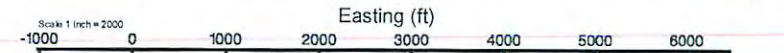
NORTHEAST NATURAL ENERGY, LLC

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

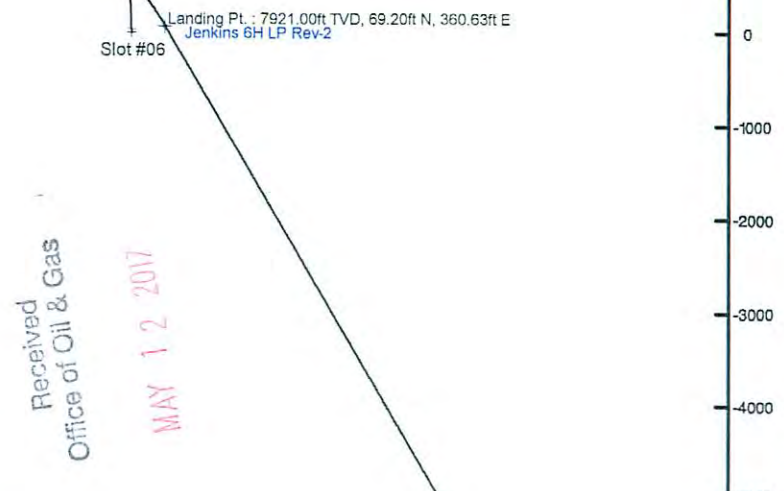
Slot: Slot #06
Well: Jenkins 6H
Wellbore: Jenkins 6H PWB



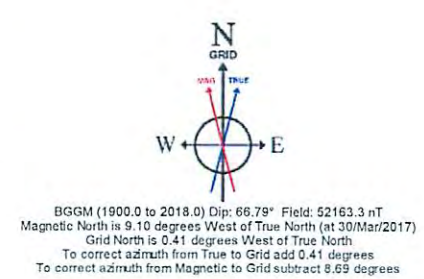
Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Jenkins Pad	1788480.777	441088.186	39°42'33.300"N	80°08'23.600"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot #06	-20.58	75.79	1788556.560	441085.610
			Latitude	Longitude
			39°42'33.102"N	80°08'22.628"W
Comment: Jenkins 6H				
Ground Level (GL) to Mud line (At Slot: Slot #06)			0ft	
Mean Sea Level to Mud line (At Slot: Slot #06)			-1114ft	
Ground Level (GL) to Mean Sea Level			1114ft	



Tie On : -0.00ft TVD, 0.00ft N, 0.00ft E
KOP 1 : 5769.99ft TVD, 0.00ft N, 0.00ft E
End of Build : 5965.95ft TVD, 34.52ft N, 1.62ft W
KOP 2 : 7184.87ft TVD, 477.68ft N, 22.45ft W



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Tie On : 0.00° Inc, 0.00ft MD, -0.00ft TVD, 0.00ft VS
24in Conductor : 0.00° Inc, 40.00ft MD, 40.00ft TVD, 0.00ft VS

13.375in Casing Surface : 0.00° Inc, 1090.00ft MD, 1090.00ft TVD, 0.00ft VS

Type	Hole Size	Casing Size	Grade	GL Depth (Csg)
Conductor	28"	24"	NA	40'
Surface	17-1/2"	13-3/8"	J-55	54.5
Intermediate	12-1/4"	9-5/8"	J-55	40

9.625in Casing Intermediate : 0.00° Inc, 2250.00ft MD, 2250.00ft TVD, 0.00ft VS

Formation	Depth (KBTVD)
Geneseo	7633'
Tully	7685'
Hamilton	7749'
Upper Marcellus	7856'
Cherry Valley	7897'
Lower Marcellus	7901'
Onondaga	7959'

KOP 1 : 0.00° Inc, 5769.99ft MD, 5769.99ft TVD, 0.00ft VS
10.00°/100ft
End of Build : 20.00° Inc, 5969.99ft MD, 5965.95ft TVD, -30.61ft VS

KOP 2 : 20.00° Inc, 7267.14ft MD, 7184.87ft TVD, -423.60ft VS

10.00°/100ft

Landing Pt. : 90.00° Inc, 8343.50ft MD, 7921.00ft TVD, 122.44ft VS
Jenkins 6H LP Rev-2

BHL : 7921.00ft TVD, 9727.66ft S, 6093.66ft E
Jenkins 6H BHL Rev-2

Jenkins 6H BHL Rev-2

BHL : 90.00° Inc, 19694.54ft MD, 7921.00ft TVD, 11473.48ft VS
5.5in Casing Production : 90.00° Inc, 19694.45ft MD, 7921.00ft TVD, 11473.39ft VS

Scale 1 inch = 1500
True Vertical Depth (ft)

Vertical Section (ft)

Azimuth 149.66° with reference 0.00 N, 0.00 E

Scale 1 inch = 1500



northeast

NATURAL ENERGY

Jenkins 6H

SITE SAFETY PLAN

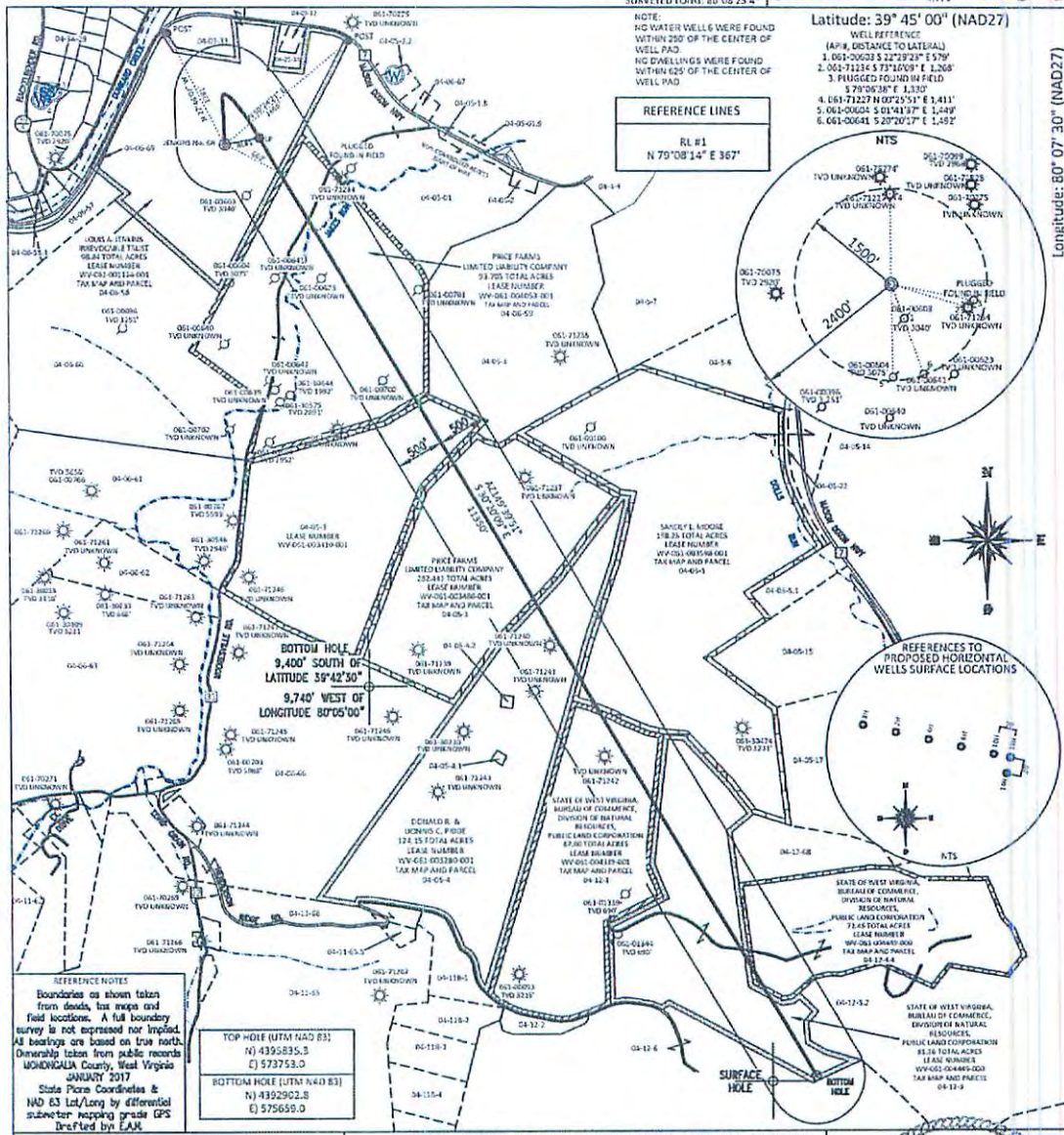
May 2, 2017

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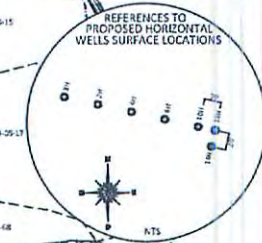
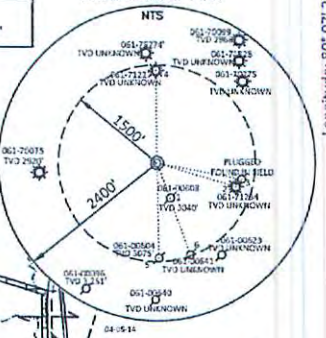
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 MAY 12 2017

Latitude: 39° 45' 00" (NAD27)
 WELL REFERENCE (APR. DISTANCE TO LATERAL)
 1. 061-00623 S 22°29'23" E 579'
 2. 061-71226 S 77°10'09" E 1,208'
 3. PILEGGS FOUNDED FIELD
 S 79°06'38" E 1,330'
 4. 061-71227 N 03°25'51" E 1,411'
 5. 061-00626 S 01°14'19" E 1,498'
 6. 061-00641 S 20°20'17" E 1,492'

REFERENCE LINES
 RL #1
 N 79°08'14" E 367'



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 JANUARY 2017
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS first tied by EAM

TOP HOLE (UTM NAD 83)
 N) 4395835.3
 E) 573753.0

BOTTOM HOLE (UTM NAD 83)
 N) 4392922.3
 E) 575659.0

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: *[Signature]*

L.L.S. #2124 : Ernest J. Benckek III



FILE #: NNE16
 DRAWING #: 2734
 SCALE: PLAT: 1" = 1500'
 TITLE: 1" = 2000'

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WYDEP
 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: LOIS A. JENKINS IRREVOCABLE TRUST
 OIL & GAS ROYALTY OWNER: LOIS A. JENKINS IRREVOCABLE TRUST, ET AL
 LEASE NUMBERS:

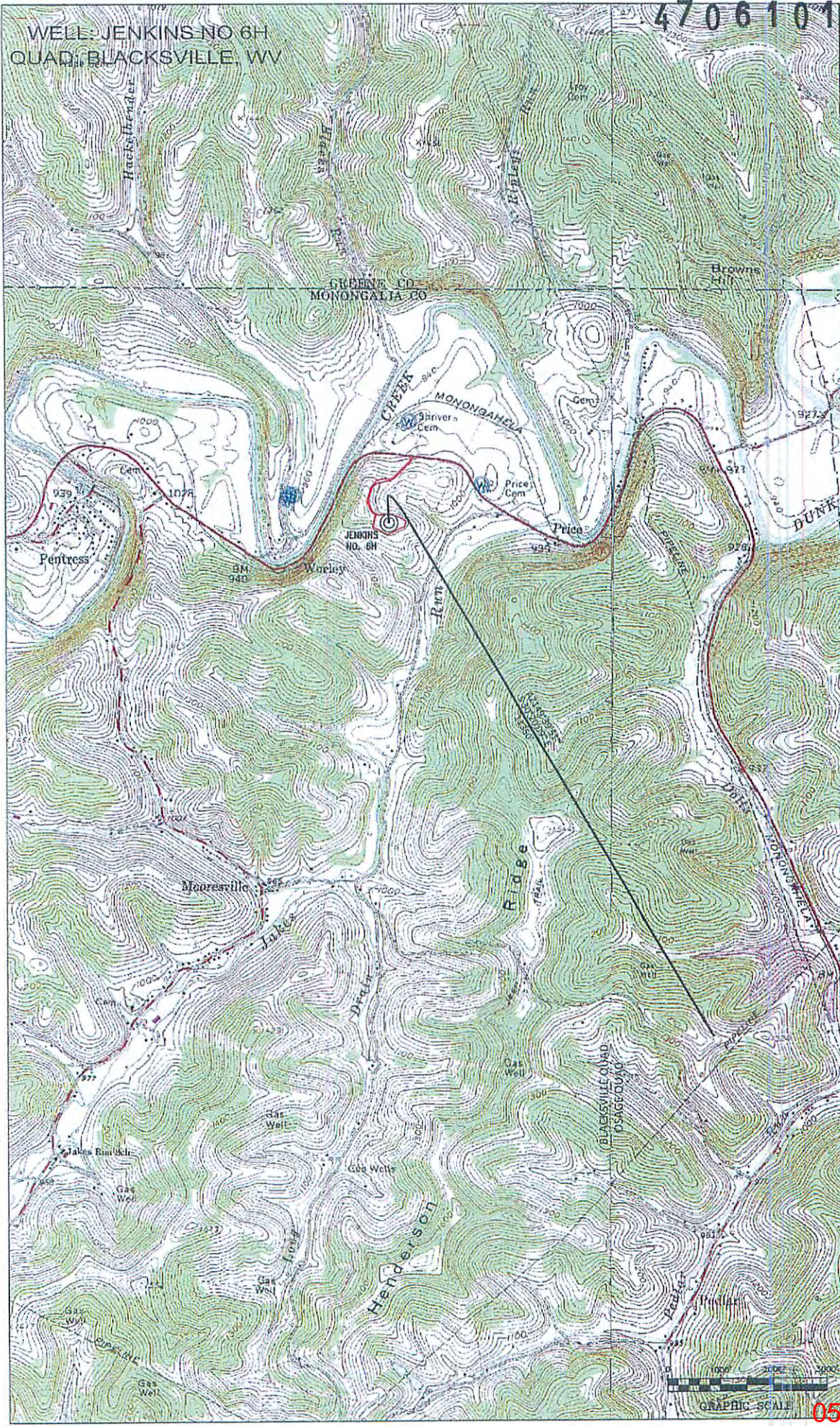
DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY):

TARGET FORMATION: MARCELLUS
 ESTIMATED DEPTH: TVD: 7,921' TMD: 19,694.54'
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

DATE: MAY 10, 2017
 OPERATOR'S WELL #: JENKINS NO. 6H
 API WELL #: 47 61
 STATE COUNTY PERMIT
 PROPOSED ELEVATION: 1,113.77'
 CURRENT ELEVATION: 1,128'
 QUADRANGLE: BLACKSVILLE
 ACREAGE: 96.84 +/-
 ACREAGE: 1,035.996 +/-

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WELL: JENKINS NO 6H
QUAD: BLACKSVILLE, WV



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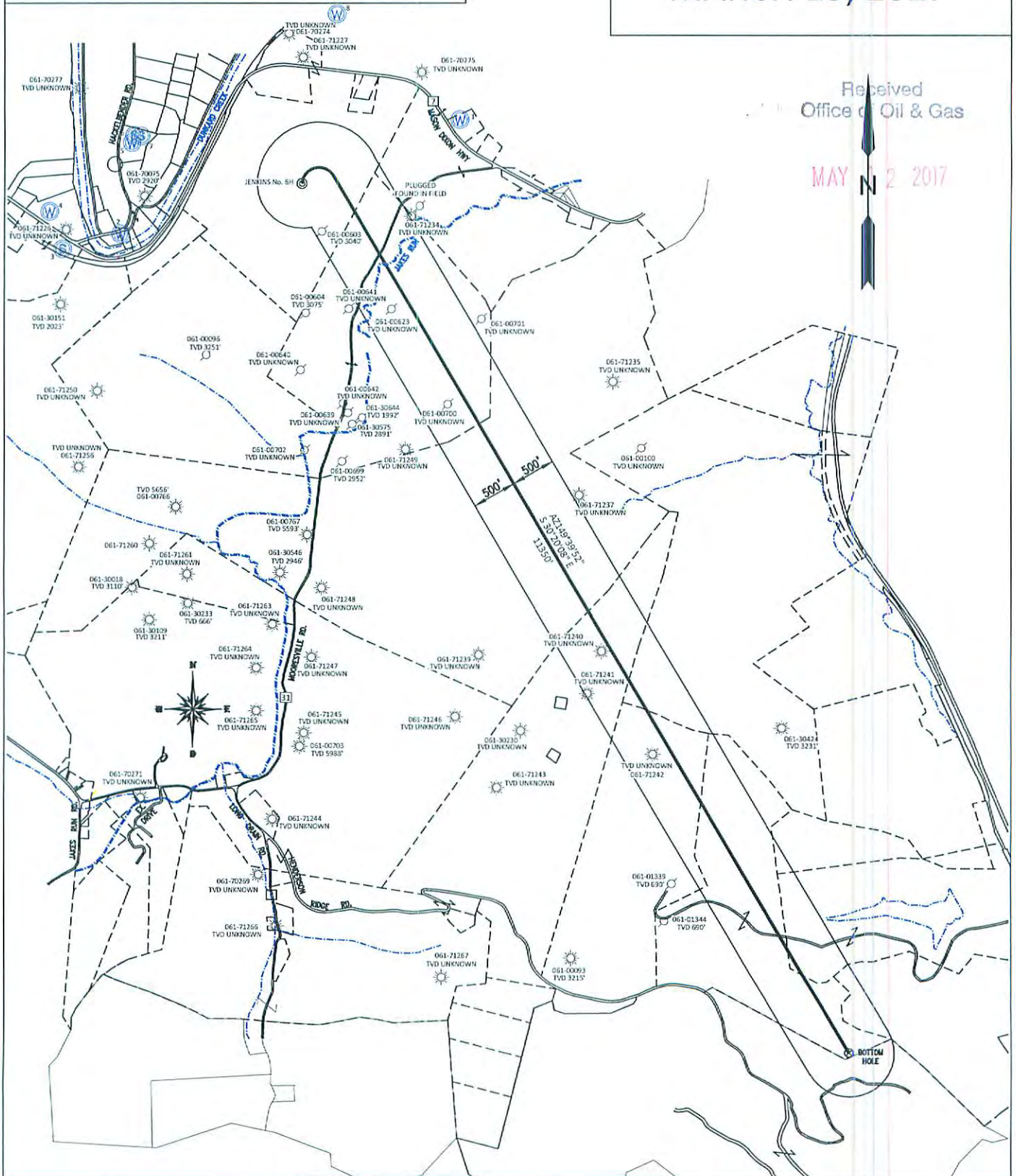
SCALE: 1" = 1,500'



JENKINS No. 6H EXISTING GAS WELLS MARCH 15, 2017

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Jenkins 6H Area of Review

API Number	Well Name	Well Number	Operator	Latitude (NAD 27)	Longitude (NAD 27)	TMP	TVD	Producing Formation
47-061-71242	N G Brand	NA	UNKNOWN	39.692157	-80.125541	4-12-01	NA	Pre 1929 Well
47-061-71241	A I Tennant	NA	Hope Natural Gas Company	39.693609	-80.128169	4-05-04	NA	Pre 1929 Well
47-061-71240	A I Tennant	NA	UNKNOWN	39.694915	-80.127606	4-05-04	NA	Pre 1929 Well
47-061-00700	A B & J O Price	NA	Consolidation Coal Co.	39.702468	-80.133801	4-06-59	1,277'	Plugged 8/30/1982
47-061-00623	A B Price	4	Consolidation Coal Co.	39.705368	-80.136054	4-06-59	1,088'	Plugged 8/5/1981
47-061-00603	Junior Jenkins	5	Consolidation Coal Co.	39.707688	-80.139058	4-06-58	3040'	Plugged 8/5/1980
47-061-71234	J O Price	4	UNKNOWN	39.708122	-80.135300	4-06-59	NA	Pre 1929 Well

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 Environmental Protection

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WW-6A1
(5/13)

Operator's Well No. Jenkins 6H

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

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

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

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

**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: Northeast Natural Energy LLC
 By: Hollie M. Medley
 Its: Regulatory Coordinator

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WW-6A1			Operator's Well No.	Jenkins 6H
NNE Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
WV-061-001124-001	JUNIOR JENKINS AND LOIS JENKINS	*CHESAPEAKE APPALACHIA LLC	0.125 OR GREATER	1359/668
WV-061-004053-001	PRICE, JOHN E., ET AL	*JOSEPH J. MCDERMOTT	0.125 OR GREATER	137/21
WV-061-003410-001	PRICE FARMS LLC	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1512/733
WV-061-003411-001	PRICE FARMS LLC	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1514/083
WV-061-003412-001	PRICE FARMS LLC	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1513/301
WV-061-003480-001	RUCKER, HELEN JOANNE AND BERT E.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/0781
WV-061-003480-002	GROVES, JOHN T. AND ANDREA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1521/123
WV-061-003480-003	CLARK, WILLIAM J. AND VANIA L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1520/156
WV-061-003480-004	HASSETT, DIANE LEE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1521/194
WV-061-003480-005	CLARK, JR., THOMAS	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1519/824
WV-061-003480-006	GROVES, ALLEN W. AND MOLINDA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/0779
WV-061-003480-007	GROVES, EDGAR W. AND JEANETTE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/336
WV-061-003480-008	HENNING, VICTORIA R. AND JAMES L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/0385
WV-061-003480-009	TAYLOR, IV, JOSIAH PRESTON AND DIANE FERGUSON	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/0775
WV-061-003480-010	BURTON, SHERYL T.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/0403
WV-061-003480-011	GROVES, LESTER R. AND DEBRA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/5
WV-061-003480-012	TAYLOR, SANDRA J.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1520/94
WV-061-003480-013	REID, JULIE A. AND KURT L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/158
WV-061-003480-014	HART, DEBORAH ANN AND TIMOTHY LEE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/0401
WV-061-003480-015	SARMANTO, JOANNA L. AND RAYMOND	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1518/35
WV-061-003480-016	THISTLETHWAITE, RICHARD AND JODI	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/359
WV-061-003480-017	HARRIS, ROBERT L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/791
WV-061-003480-018	THISTLETHWAITE, JAMES E. AND DAWNA LISA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1523/797
WV-061-003480-019	THISTLETHWAITE, BRENDA L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/786
WV-061-003480-020	THISTLETHWAITE, ALETA Y.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/338
WV-061-003480-021	THISTLETHWAITE, ROBERT JAVIER AND DAWN ROSE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/242
WV-061-003480-022	THISTLETHWAITE, SHELLY	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/709
WV-061-003587-001	GWYNNE, JOHN ROBERT	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1532/140
WV-061-003587-002	GWYNNE, JOHN T.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1529/57
WV-061-003587-003	GWYNNE, JAMES RICHARD	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1532/142
WV-061-003480-001	RUCKER, HELEN JOANNE AND BERT E.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/781
WV-061-003480-002	GROVES, JOHN T. AND ANDREA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1521/123
WV-061-003480-003	CLARK, WILLIAM J. AND VANIA L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1520/156
WV-061-003480-004	HASSETT, DIANE LEE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1521/194
WV-061-003480-005	CLARK, THOMAS J. JR.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1519/824
WV-061-003480-006	GROVES, ALLEN W. AND MOLINDA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/779
WV-061-003480-007	GROVES, EDGAR W. AND JEANETTE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/336
WV-061-003480-008	HENNING, VICTORIA R. AND JAMES L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/385
WV-061-003480-009	TAYLOR, JOSIAH PRESTON AND DIANE FERGUSON	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/775
WV-061-003480-010	BURTON, SHERYL T.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/403
WV-061-003480-011	GROVES, LESTER R. AND DEBRA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/5
WV-061-003480-012	TAYLOR, SANDRA J.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1520/94
WV-061-003480-013	REID, JULIE A. AND KURT L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/158
WV-061-003480-014	HART, DEBORAH ANN AND TIMOTHY LEE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/401
WV-061-003480-015	SARMANTO, JOANNA L. AND RAYMOND	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1518/35
WV-061-003480-016	THISTLETHWAITE, RICHARD AND JODI	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/359
WV-061-003480-017	HARRIS, ROBERT L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/791
WV-061-003480-018	THISTLETHWAITE, JAMES E. AND DAWNA LISA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1523/797
WV-061-003480-019	THISTLETHWAITE, BRENDA L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/786
WV-061-003480-020	THISTLETHWAITE, ALETA Y.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/338
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WV-061-003598-001	MOORE, SANDY	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1524/30
WV-061-004339-001	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	NORTHEAST NATURAL ENERGY LLC	MODIFICATION	1586/642
WV-061-004449-000	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1586/640

*See Attachment

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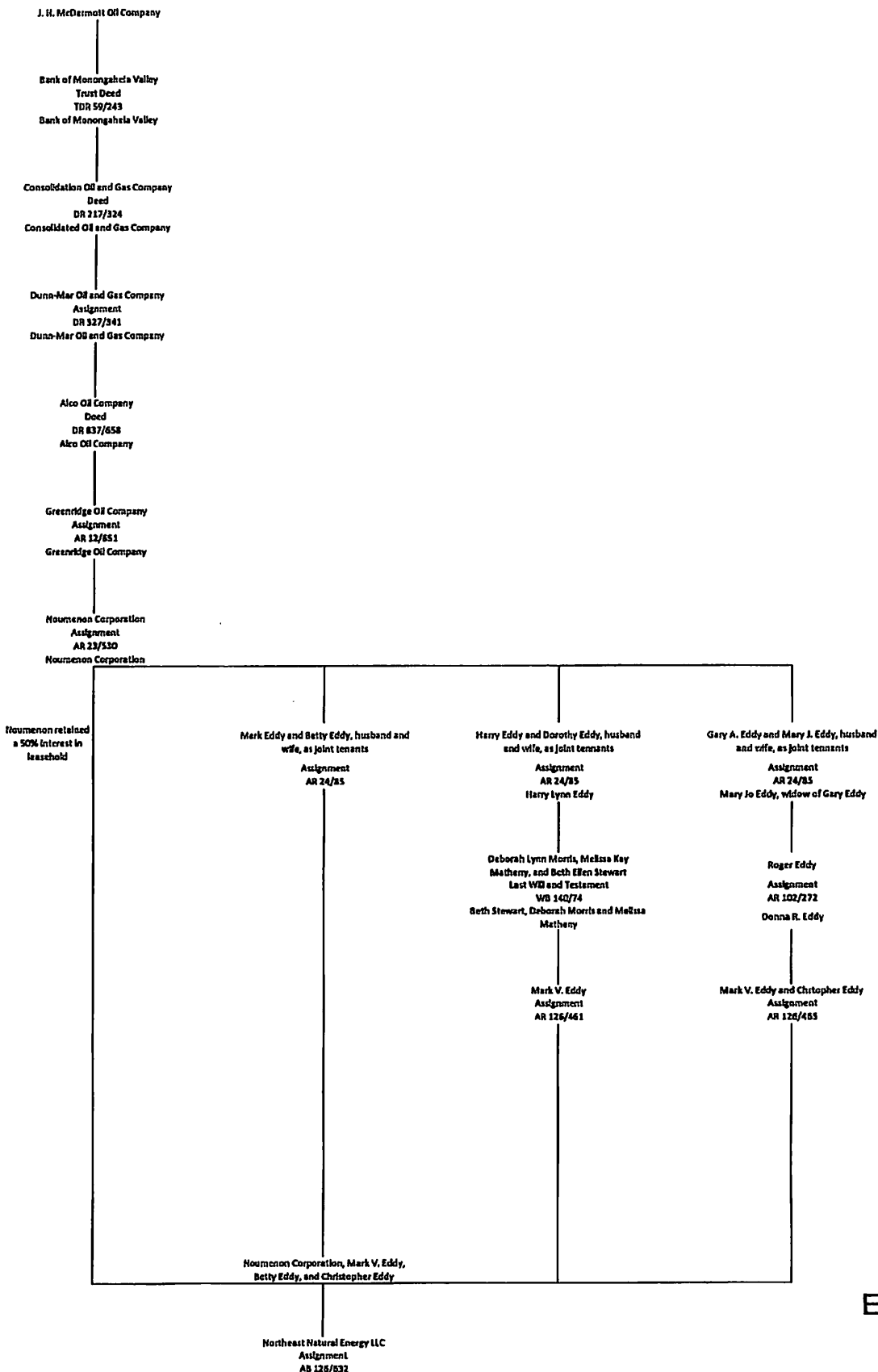
4706101743 MOD

Chesapeake Appalachia, LLC.
Statoil USA Onshore Properties, Inc

Northeast Natural Energy
Assignment
BK 120/769

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Environmental Protection

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WV Department of
Environmental Protection

WW-60
(7-01)

DATE: April 26th, 20 17
OPERATOR'S
WELL NO. JENKINS 6H

RECEIVED
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MAY 12 2017

API NO: 47-
State County Permit No.

WV Department of
Environmental Protection

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

A F F I D A V I T

State of WEST VIRGINIA
County of MONONGALIA

I, Jeanne Morgan Johnson (the designated owner or operator, or authorized representative thereof), after being duly sworn, do declare that the undersigned is authorized by the owner of the working interest in the well permit application to which this affidavit is attached to state that (he, she, or it) shall tender to the owner of the oil and gas in place not less than one-eighth of the total amount paid to or received by or allowed to the owner of the working interest at the wellhead for the oil or gas so extracted, produced, or marketed before deducting the amount to be paid or set aside for the owner of the oil or gas in place, or all such oil or gas to be extracted, produced, or marketed from the well. West Virginia Code 22-6-8(e).

Signed: Jeanne Morgan Johnson

Taken, subscribed and sworn to before me this 26th day of April, 20 17.

Brenda Malone-Pence
Notary Public

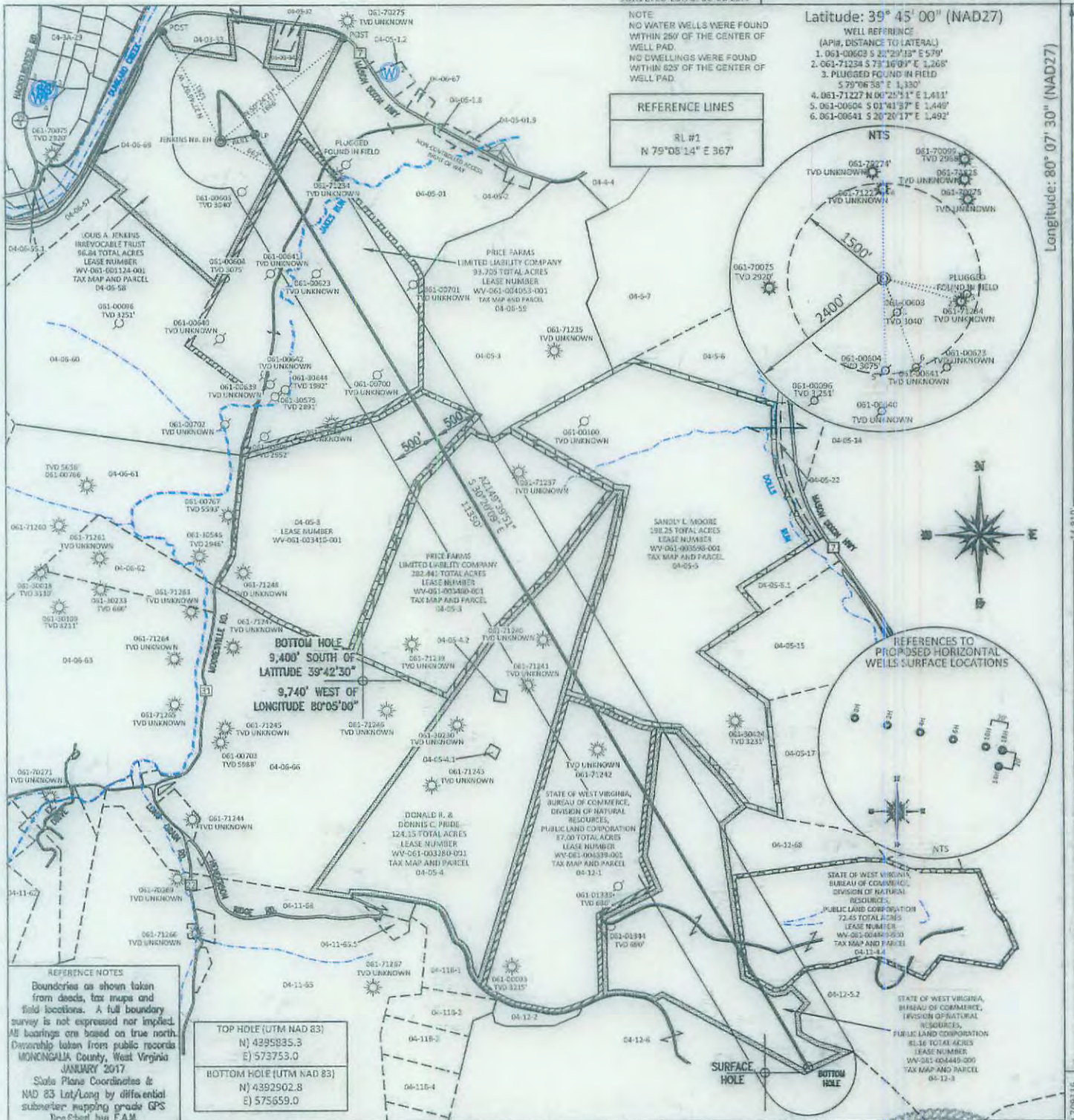
My Commission expires: 09/26/2017



- WELL REFERENCE (API# DISTANCE TO LATERAL)
- 061-00603 S 2° 29' 13" E 579'
 - 061-71234 S 73° 16' 09" E 1,268'
 - PLUGGED FOUND IN FIELD S 79° 08' 38" E 1,330'
 - 061-71227 N 06° 25' 11" E 1,411'
 - 061-00504 S 01° 41' 37" E 1,449'
 - 061-00541 S 20° 20' 17" E 1,492'

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.

REFERENCE LINES
RL #1
N 79° 08' 14" E 367'



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. Data taken from public records MONONGALIA County, West Virginia JANUARY 2017
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS. Unchecked by EAM.

TOP HOLE (UTM NAD 83)
N) 4295835.3
E) 573753.0
BOTTOM HOLE (UTM NAD 83)
N) 4392902.8
E) 575659.0



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: *[Signature]*
L.L.S. #2124 : Ernest J. Benchek III

FILE #: NNE16
DRAWING #: 2734
SCALE: PLAT: 1" = 1500' TICK: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS W/DEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304
Well Type: Oil Waste Dipsal Production Deep
 Gas Liquid Injection Storage Shallow
WATERSHED: DUNKARD CREEK
COUNTY/DISTRICT: MONONGALIA / CLAY
SURFACE OWNER: LOIS A. JENKINS IRREVOCABLE TRUST
OIL & GAS ROYALTY OWNER: LOIS A. JENKINS IRREVOCABLE TRUST, ET AL
LEASE NUMBERS:

DATE: MAY 10, 2017
OPERATOR'S WELL #: JENKINS NO. 6H
API WELL #: 47 61 01743 MOD
STATE COUNTY PERMIT
PROPOSED ELEVATION: 1,113.77'
CURRENT ELEVATION: 1,128'
QUADRANGLE: BLACKSVILLE
ACREAGE: 96.84 +/-
ACREAGE: 1,035.996

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
ESTIMATED DEPTH: TVD: 7,921' TMD: 19,694.54'
WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC
DESIGNATED AGENT: JOHN ADAMS
ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
CITY: CHARLESTON STATE: WV ZIP CODE: 25301
CITY: CHARLESTON STATE: WV ZIP CODE: 25301

SURFACE HOLE DEC. LAT: 39.769116 SURVEYED LAT: 39.427925'

05/19/2017

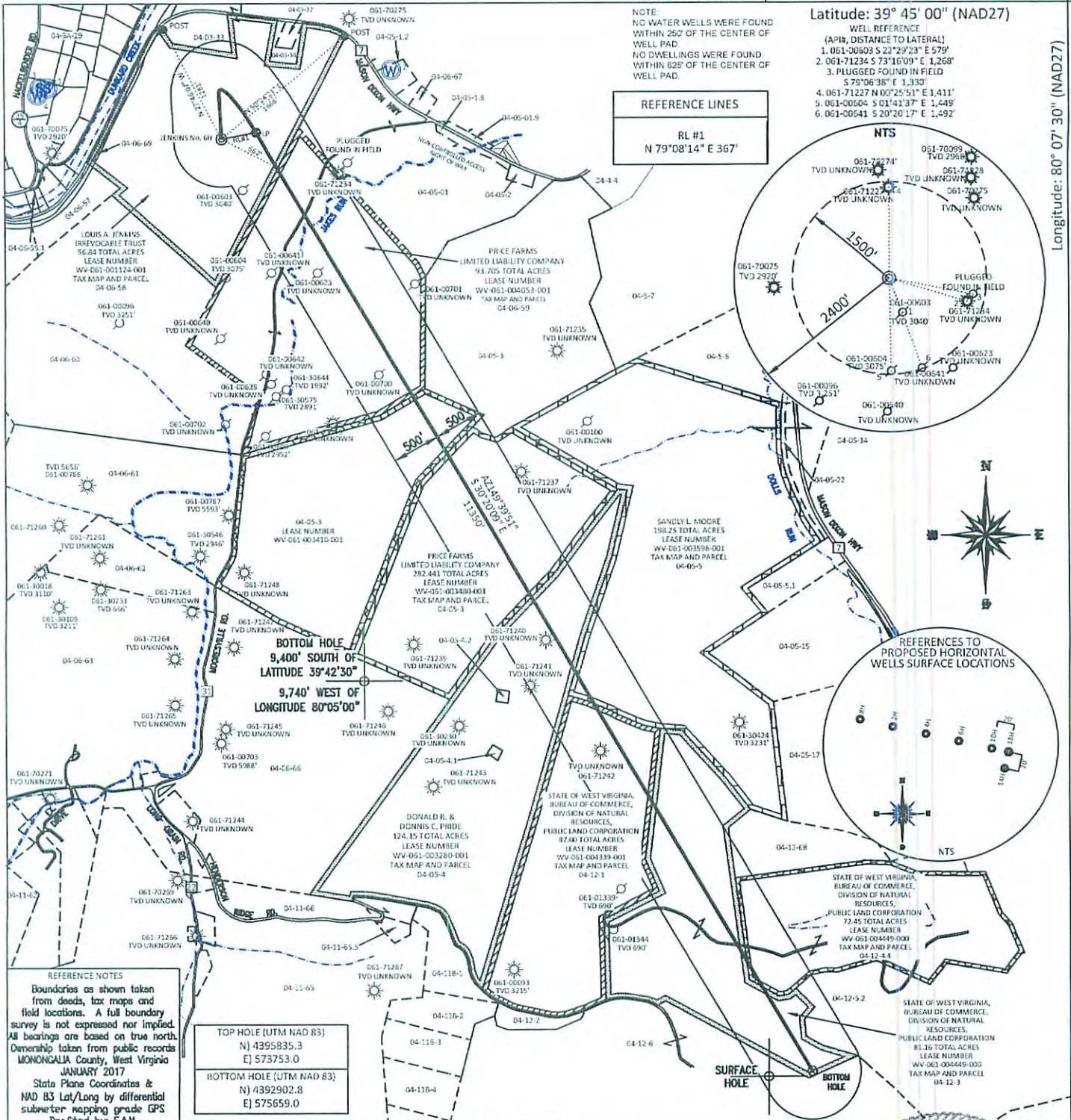
SURFACE HOLE DEC. LONG: 80.139828
 SURVEYED LONG: 80°08'23.4" ← 4.170

Latitude: 39° 45' 00" (NAD27)

- WELL REFERENCE
 (API#, DISTANCE TO LATERAL)
 1. 061-00603 S 22°29'23" E 579'
 2. 061-71234 S 73°16'09" E 1,268'
 3. PLUGGED FOUND IN FIELD
 S 73°06'38" E 1,330'
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REFERENCE LINES

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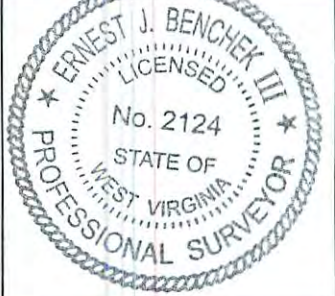


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 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
 Drafted by EAJM

TOP HOLE (UTM NAD 83)
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 E) 573753.0
 BOTTOM HOLE (UTM NAD 83)
 N) 4392902.8
 E) 575659.0

FILE #: NNE16
 DRAWING #: 2734
 SCALE: 1" = 1500'
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: [Signature]
 L.L.S. #2124 : Ernest J. Benchek III

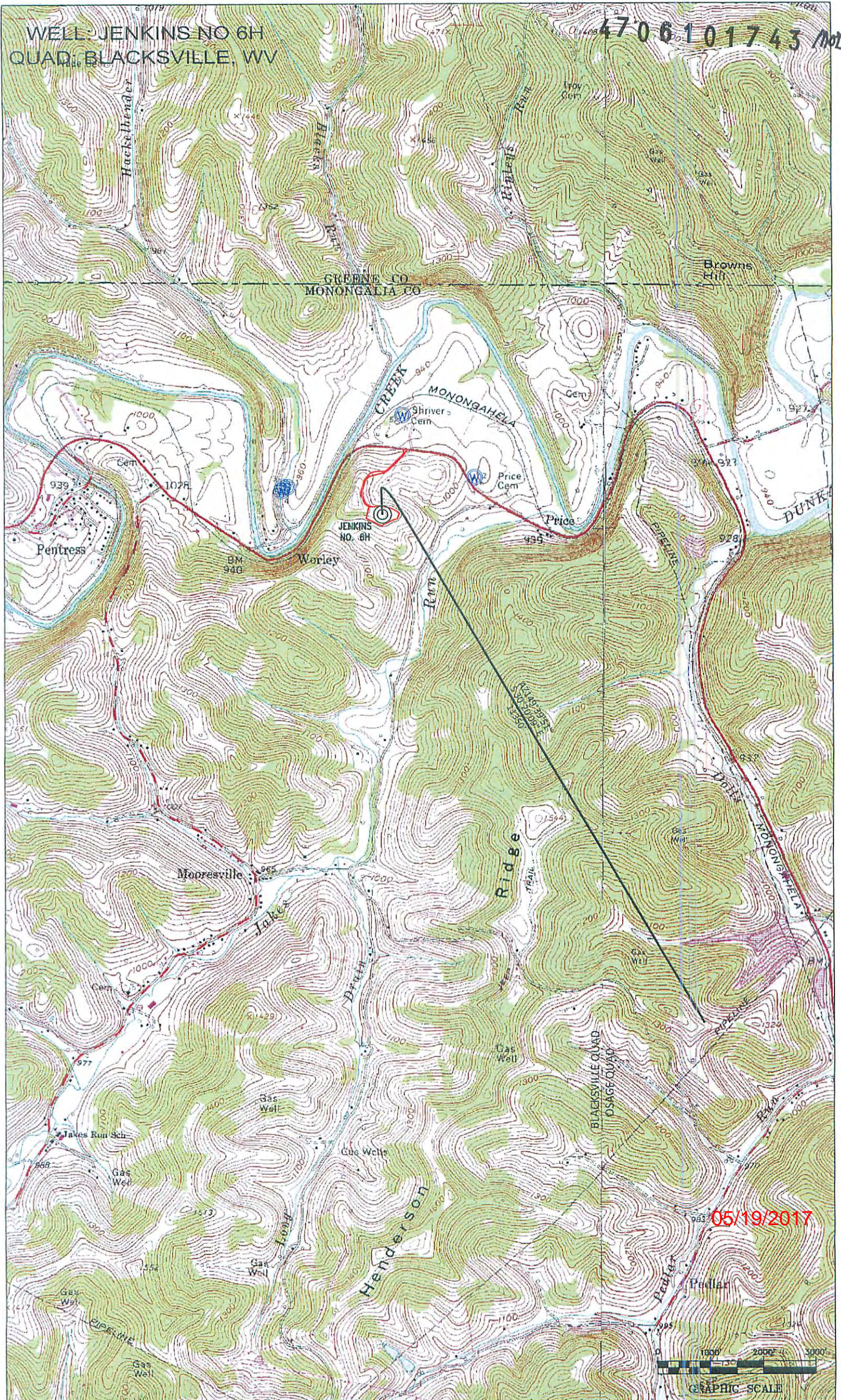


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 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304
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 Gas Liquid Injection Storage Shallow
 WATERSHED: DUNKARD CREEK
 COUNTY/DISTRICT: MONONGALIA / CLAY
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 OIL & GAS ROYALTY OWNER: LOIS A. JENKINS IRREVOCABLE TRUST, 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
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 API WELL #: 47 61 01743 MOD
 STATE COUNTY PERMIT
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 ACREAGE: 1,035.996 +/- **05/19/2017**
 ESTIMATED DEPTH: TVD: 7,921' TMD: 19,694.54'
 DESIGNATED AGENT: JOHN ADAMS
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

SURFACE HOLE DEC. LAT: 39.709116 SURVEYED LAT: 39°42'32.8"

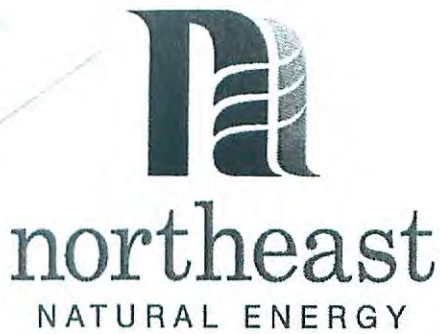
WELL JENKINS NO 6H
QUAD BLACKSVILLE, WV

4706101743 MOD



05/19/2017





May 11, 2017

WV Department of Environmental Protection
Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304

Re: Jenkins 2H, 4H, 6H, 8H, 10H, 14H and 18H Permit Modifications
API # 061-01741, 061-01742, 061-01743, 061-01720, 061-01725

Dear Permit Reviewer,

Northeast Natural Energy LLC ("NNE") would like to request modifications to its existing Jenkins 2H, 4H, 6H, 8H, and 10H Permits (061-01741, 061-01742, 061-01743, 061-01720, 061-01725). Additionally, NNE has submitted to the Office for review two applications for its proposed Jenkins 14H and 18H wells. NNE has adjusted and lengthened the horizontal well bores to allow for more efficient development of the permitted Jenkins Pad.

Please find enclosed with this request revised WW-6B Forms, WW-6A1 Forms and Attachments, Site Safety Plans, Well Bore Schematics, Area of Review Maps and Spreadsheets, and Mylar Plats for all seven wells.

Should you have any questions please contact me at 304.212.0422 or by email at hmedley@nne-llc.com.

Sincerely,

A handwritten signature in black ink that reads 'Hollie M. Medley'.

Hollie M. Medley
Regulatory Coordinator

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MAY 12 2017

WV Department of
Environmental Protection

WW-6A1			Operator's Well No.	Jenkins 6H
NNE Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
WV-061-001124-001	JUNIOR JENKINS AND LOIS JENKINS	*CHESAPEAKE APPALACHIA LLC	0.125 OR GREATER	1359/668
WV-061-004053-001	PRICE, JOHN E., ET AL	*JOSEPH J. MCDERMOTT	0.125 OR GREATER	137/21
WV-061-003410-001	PRICE FARMS LLC	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1514/733
WV-061-003411-001	PRICE FARMS LLC	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1514/083
WV-061-003412-001	PRICE FARMS LLC	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1513/301
WV-061-003480-001	RUCKER, HELEN JOANNE AND BERT E.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/0781
WV-061-003480-002	GROVES, JOHN T. AND ANDREA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1521/123
WV-061-003480-003	CLARK, WILLIAM J. AND VANIA L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1520/156
WV-061-003480-004	HASSETT, DIANE LEE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1521/194
WV-061-003480-005	CLARK, JR., THOMAS	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1519/824
WV-061-003480-006	GROVES, ALLEN W. AND MOLINDA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/0779
WV-061-003480-007	GROVES, EDGAR W. AND JEANETTE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/336
WV-061-003480-008	HENNING, VICTORIA R. AND JAMES L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/0385
WV-061-003480-009	TAYLOR, IV, JOSIAH PRESTON AND DIANE FERGUSON	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/0775
WV-061-003480-010	BURTON, SHERYL T.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/0403
WV-061-003480-011	GROVES, LESTER R. AND DEBRA	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/5
WV-061-003480-012	TAYLOR, SANDRA J.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1520/94
WV-061-003480-013	REID, JULIE A. AND KURT L.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/158
WV-061-003480-014	HART, DEBORAH ANN AND TIMOTHY LEE	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1517/0401
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WV-061-003480-001	RUCKER, HELEN JOANNE AND BERT E.	NORTHEAST NATURAL ENERGY LLC	0.125 OR GREATER	1516/781
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